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MATRIX 1 RESULTS OF THE FY07 ENHANCED DOE HIGH-LEVEL WASTE MELTER THROUGHPUT STUDIES AT SRNL

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September 2008

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SAVANNAH RIVER NATIONAL LABORATORY

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EXECUTIVE SUMMARY

High-level waste (HLW) throughput (i.e., the amount of waste processed per unit time) is a function of two critical parameters: waste loading (WL) and melt rate. For the Waste Treatment and Immobilization Plant (WTP) at the Hanford Site and the Defense Waste Processing Facility (DWPF) at the Savannah River Site (SRS), increasing HLW throughput would significantly reduce the overall mission life cycle costs for the Department of Energy (DOE).

It has been proposed that a team of glass formulation and processing experts at the Pacific Northwest National Laboratory (PNNL), Savannah River National Laboratory (SRNL), and Vitreous State Laboratory (VSL) at Catholic University of America develop a systematic approach to increase HLW throughput (by increasing WL with minimal or positive impacts on melt rate).[1] Programmatically, this task is aimed at proof-of-principle testing and the development of tools to improve waste loading and melt rate, which will lead to higher waste throughput. The following four specific tasks have been proposed to meet this programmatic objective: 1) Integration and Oversight, 2) Crystal Accumulation Modeling (led by PNNL)/Higher Waste Loading Glasses (led by SRNL), 3) Melt Rate Evaluation and Modeling, and 4) Melter Scale Demonstrations. The details of these tasks can be found in the associated task plan WSRC-STI-2007-00483. The current study is focused on Task 2 (crystal accumulation modeling and higher waste loading glasses) and involves glass formulation and physical property testing by both PNNL and SRNL (as defined in the PNNL and SRNL test plans).

The intent of this report is to document the chemical composition and Product Consistency Test (PCT) results and statistical analysis of PNNL's Test Matrix 1 glasses. Note that this document is only a compilation of the data collected by SRNL for PNNL's glasses in support of this task and no conclusions will be drawn.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ARM	Approved Reference Material
bc	Bias-Corrected
CCC	Centerline Canister Cooled
DOE	Department Of Energy
DWPF	Defense Waste Processing Facility
EA	Environmental Assessment
EM	Environmental Management
HLW	High-Level Waste
ICP-AES	Inductively Coupled Plasma – Atomic Emission Spectroscopy
ID	Identification
LM	Lithium Metaborate
LRM	Low-Activity Reference Material
NL[B]	Normalized Leachate for Boron
NL[Li]	Normalized Leachate for Lithium
NL[Na]	Normalized Leachate for Sodium
NL[Si]	Normalized Leachate for Silicon
PF	Peroxide Fusion
PH	Potassium Hydroxide
PCCS	Product Control Composition System
PCT	Product Consistency Test
PNNL	Pacific Northwest National Laboratory
ppm	Parts Per Million
PSAL	Process Science Analytical Laboratory
QA	Quality Assurance
QAP	Quality Assurance Plan
SB	Sludge Batch
SME	Slurry Mix Evaporator
SRNL	Savannah River National Laboratory
SRS	Savannah River Site
VSL	Vitreous State Laboratory
WCP	Waste Compliance Plan
WL	Waste Loading
wt	Weight

1.0 Introduction

High-level waste (HLW) throughput (i.e., the amount of waste processed per unit time) is a function of two critical parameters: waste loading (WL) and melt rate. For the Waste Treatment and Immobilization Plant (WTP) at the Hanford Site and the Defense Waste Processing Facility (DWPF) at the Savannah River Site (SRS), increasing HLW throughput would significantly reduce the overall mission life cycle costs for the Department of Energy (DOE).

It has been proposed that a team of glass formulation and processing experts at Pacific Northwest National Laboratory (PNNL), SRNL, and the Vitreous State Laboratory (VSL) at Catholic University of America develop a systematic approach to increase HLW throughput (by increasing WL with minimal or positive impacts on melt rate).[1] Programmatically, this task is aimed at proof-of-principle testing and the development of tools to improve waste loading and melt rate, which will lead to higher waste throughput. The following four specific tasks have been proposed to meet this programmatic objective: 1) Integration and Oversight, 2) Crystal Accumulation Modeling (led by PNNL)/Higher Waste Loading Glasses (led by SRNL), 3) Melt Rate Evaluation and Modeling, and 4) Melter Scale Demonstrations. The details of these tasks can be found in the associated task plan WSRC-STI-2007-00483.[2] The current study is focused on Task 2 (crystal accumulation modeling and higher waste loading glasses) and involves glass formulation and physical property testing by both PNNL and SRNL (as defined in the PNNL and SRNL test plans).[1-3]

The intent of this report is to document the chemical composition and Product Consistency Test (PCT) results and statistical analysis[4] of PNNL's Test Matrix 1 glasses.[a] Note that this document is only a compilation of the data collected by SRNL for PNNL's glasses in support of this task and no conclusions will be drawn.

2.0 Experimental Procedures

2.1.1 Chemical Composition

To confirm that the as-fabricated (quenched) glasses met the target compositions, a representative sample from each glass was submitted to the SRNL Process Science Analytical Laboratory (PSAL) for chemical analysis under the auspices of an analytical plan (SRNL-SCS-2007-00055).[5] Three dissolution methods were utilized in measuring these chemical compositions: samples prepared by lithium metaborate (LM) dissolution were used to measure elemental concentrations of aluminum (Al), barium (Ba), bismuth (Bi), calcium (Ca), cadmium (Cd), cerium (Ce), chromium (Cr), iron (Fe), potassium (K), lathanum (La), magnesium (Mg), manganese (Mn), sodium (Na), neodymium (Nd), nickel (Ni), phosphorus (P), lead (Pb), sulfur (S), titanium (Ti), zinc (Zn), and zirconium (Zr), while samples from glasses prepared by peroxide fusion (PF) dissolution were used to measure elemental concentrations of boron (B), lithium (Li), and silicon (Si) and a sample from a select glass was prepared by potassium hydroxide (PH) to conduct a fluorine (F) measurement. For each study glass, measurements were obtained from samples prepared in duplicate by each of these dissolution methods. All of the prepared samples were analyzed (twice for each element of interest) by Inductively Coupled Plasma – Atomic Emission Spectroscopy (ICP-AES). The instrument was re-calibrated between the duplicate analyses.

[a] As stated in the SRNL and PNNL test plans for this study, 38 quenched and centerline canister cooled (ccc) Test Matrix 1 glasses were fabricated and treated at PNNL and sent to SRNL for chemical composition measurements and PCTs. Note that chemical composition measurements were only conducted on quenched glasses. Test Matrix 1 glasses should not be confused with the 28 Test Matrix 2 glasses that were fabricated at SRNL. The results of these glasses will be documented in a separate report (SRNS-STI-2008-00055).

Samples of two glass standards were included in the analytical plans to provide an opportunity for checking the performance of the instrumentation over the course of the analyses and for potential bias correction. Specifically, several samples of Waste Compliance Plan (WCP) Batch 1 were included in the LM and PF portions of both analytical plans.[6] The Low-Activity Reference Material (LRM) was included in the KH portion of the analytical plan.[7] This standard contains fluorine, which was of interest for the KH-prepared samples of one of the study glasses.

Elemental concentrations were converted to oxide concentrations by multiplying the values for each element by the gravimetric factor for the corresponding oxide. During this process, an elemental concentration that was determined to be below the detection limit of the analytical procedures used by the PSAL was reduced to half of that detection limit as the oxide concentration was determined.

2.1.2 Product Consistency Test (PCT)

A 7-day PCT was performed in triplicate on each quenched and ccc glass to assess chemical durability using Method A of the PCT procedure (ASTM C1285-97).[8] Also included in the experimental test matrix was the Environmental Assessment (EA) glass, the Approved Reference Material (ARM) glass, and blanks from the sample cleaning batch.[9] Quenched and ccc samples were ground, washed, and prepared according to the standard procedure.[10] The resulting solutions were sampled (filtered and acidified) and analyzed by PSAL under the auspices of an analytical plan (SRNL-SCS-2007-00059).[11] Samples of a multi-element, standard solution were also included in the analytical plan (as a check on the accuracy of the ICP-AES). PCTs were also conducted in triplicate for samples of the Environmental Assessment (EA) glass and for samples of the Approved Reference Material (ARM) glass. Blanks (samples consisting only of ASTM Type I water) were also submitted for the PCT.

Normalized release rates were calculated based on target, measured, and bias-corrected (bc) compositions using the average of the logs of the leachate concentrations.

3.0 Quality Assurance (QA)

SRNL's work scope was performed in accordance with 1Q, QAP with supplemental quality assurance requirements as defined by L1, 8.21, Supplemental QA Requirements for DOE/RW-0333P also being applied (although not specified by the DOE-EM customer. Specific activities conducted in accordance with the SRNL DOE/RW-0333P compliant QA program include chemical composition measurements and PCTs. In addition, the JMP™ software used to support the analysis of the Test Matrix 1 glasses is controlled under WSRC-RP-99-00422 (Software QA Plan and Verification & Validation for Commercial Statistical Packages Utilized by the Statistical Consulting Section of SRNL).[4,12]

4.0 Results

4.1 A Statistical Review of the Chemical Composition Measurements

Target compositions of each of 36 Test Matrix 1 glasses are provided in Table A1 (a two-part table) of Appendix A.

Table A2 in Appendix A provides the elemental concentration measurements derived from the samples prepared using LM, Table A3 in Appendix A provides the measurements derived from the samples prepared using PF, and Table A4 in Appendix A provides the measurements derived from

the limited number of samples prepared using KH. The values for the standards are also provided in these tables.

In the following sections, the analytical sequences of the measurements are explored, the measurements of the standards are investigated and used for bias correction, the measurements for each glass are reviewed, the average chemical compositions (measured and bias-corrected) for each glass are determined, and comparisons are made between the measurements and the targeted compositions for the glasses.

4.1.1 Measurements in Analytical Sequence

Figure A1 in Appendix A provides plots in analytical sequence for each analyte of the measurements generated by the PSAL grouped by preparation method. Different symbols and colors are used to represent each of the study and standard glasses. These plots include all of the measurement data from Tables A2, A3, and A4. While these plots provide only a limited opportunity for revealing patterns in the data, a review of these plots indicates no significant patterns or trends in the analytical process over the course of these measurements, and there appear to be no dramatic outliers in these chemical composition measurements.

4.1.2 Batch 1 and LRM Standard Results

In this section, the PSAL measurements of the chemical compositions of the Batch 1 and LRM samples are reviewed. These measurements are investigated across the ICP-AES analytical sets and blocks, and the results are used to bias correct the measurements for the study glasses.

Figure A2 in Appendix A provides statistical analyses of the results for each analyte grouped by preparation method by analytical set/block/sub-block. The results include analysis of variance (ANOVA) investigations looking for statistically significant differences between the means of these groups for each of the analytes for each of the standards. The results from the statistical tests for the Batch 1 standard may be summarized as follows: Al_2O_3, BaO, Ce_2O_3 (a detection limit effect), Cr_2O_3, Nd_2O_3, SiO_2, and ZrO_2 have measurements that indicate a significant ICP-AES calibration effect on the block averages at the 5% significance level. There was no indication of a statistically significant effect for the F results for the LRM standard; however, the measurements for this analyte did fall below the targeted value of 1 wt% for the LRM samples. The reference value for the oxide concentration of the standard is given in the header for each set of measurements in the figure.

Some of these results provide incentive for adjusting the measurements by the effects of the ICP-AES calibration and analytical process; therefore, the oxide measurements of the study glasses were bias corrected for the effect of the ICP-AES calibration on each of the analytical sets, blocks and sub-blocks. The basis for this bias correction is presented as part of Figure A2 – the average measurements for Batch 1 for each ICP-AES set/block/sub-block for Al_2O_3, B_2O_3, BaO, CaO, Cr_2O_3, Fe_2O_3, Li_2O, MgO, MnO, Na_2O, Nd_2O_3, NiO, SiO_2, and TiO_2 and the average measurement for LRM for each ICP-AES set/block/sub-block for F. The results for the standards were used to conduct the bias correction as long as the reference value for the analyte concentration in the standard glass was greater than or equal to 0.1 wt%. Thus, applying this approach and based upon the information in the figures, bias correction was conducted for Al_2O_3, B_2O_3, BaO, CaO, Cr_2O_3, F, Fe_2O_3, K_2O, Li_2O, MgO, MnO, Na_2O, Nd_2O_3, NiO, SiO_2, and TiO_2 measurements. No bias correction was conducted for Bi_2O_3, CdO, Ce_2O_3, La_2O_3, P_2O_5, PbO, ZnO, or ZrO_2.

The bias correction was conducted as follows. For each analyte, let $\bar{a}_{ij}$ be the average measurement for the i^{th} analyte at analytical group j for the standard glass, and let t_i be the reference value for the i^{th} analyte for the standard glass. (The averages and reference values are provided in Figure A2.). Let $\bar{c}_{ijk}$ be the average measurement for the i^{th} analyte at analytical group j for the k^{th} glass. The bias adjustment was conducted as follows

$$\bar{c}_{ijk} \bullet \left(1 - \frac{\bar{a}_{ij} - t_i}{\bar{a}_{ij}}\right) = \bar{c}_{ijk} \bullet \frac{t_i}{\bar{a}_{ij}}$$

Bias-corrected measurements are indicated by a "bc" suffix, and such adjustments were performed for all of the oxides of this study except for Bi_2O_3, CdO, Ce_2O_3, La_2O_3, P_2O_5, PbO, ZnO, and ZrO_2. Both measured and measured "bc" values are included in the discussion that follows. In these discussions bias-corrected values for Bi_2O_3, CdO, Ce_2O_3, La_2O_3, P_2O_5, PbO, ZnO, and ZrO_2, which are the same as the original values, are included for completeness (e.g., to allow a sum of oxides to be computed for the bias-corrected results).

4.1.3 Composition Measurements by Glass Number

Figure A3 in Appendix A provides plots of the analyte concentration measurements by Lab ID within Glass ID (including Batch 1 and LRM) sorted by target values for the measured and bias-corrected (bc) values grouped by preparation method. Different symbols and colors are used to represent the different glasses. These plots demonstrate the individual measurements across the duplicates of each preparation method and the two ICP-AES calibrations. In general, the repeatability of the four individual measurements appears to be consistent.

4.1.4 Measured versus Targeted Compositions

The four measurements of each analyte were averaged to determine a representative chemical composition for each glass. These determinations were conducted both for the measured and for the bias-corrected data. A sum of oxides was also computed for each glass based upon both the measured and bias-corrected values except for the LRM glass. Figure A4 in Appendix A provides plots showing results for each glass for each oxide to help highlight the comparisons among the measured, bias-corrected, and targeted values. In general, the measured values are consistent with the target values; however, the measured values of La_2O_3, P_2O_5, PbO and ZrO_2 are consistently low.

Table A5 in Appendix A provides a summary of the average compositions as well as the targeted compositions and some associated differences and relative differences. All of the sums of oxides (both measured and bias-corrected) for the study glasses fall within the interval of 95 to 105 wt% except for one of the Batch 1 glasses and for EM07-Si-37, which fell just below 95%. Entries in Table A5 show the relative differences between the measured or bias-corrected values and the targeted values. These differences are shaded when they are greater than or equal to 5%. Overall, there are only minor differences between the measured and targeted compositions for some of the oxides in some of glasses.

4.2 A Statistical Review of the PCT Results for the Test Matrix 1 Study Glasses

Table B1 in Appendix B provides the elemental leachate concentration measurements determined by the PSAL for the solution samples generated by the PCTs by analytical set. One of the quality control checkpoints for the PCT procedure is solution-weight loss over the course of the 7-day test. No water loss issues were observed in any of the samples. Any measurement in Table B1 below the detection limit of the analytical procedure (indicated by a "<") was replaced by ½ of the detection limit in subsequent analyses. In addition to adjustments for detection limits, the values were adjusted for the dilution factors: the values for the study glasses, the blanks, and the ARM glass in Table B1 were multiplied by 1.6667 to determine the values in parts per million (ppm) and the values for EA were multiplied by 16.6667. Table B2 in Appendix B provides the resulting measurements.

In the following sections, the analytical sequence of the measurements over the four sets of PCTs is explored, the measurements of the standards are investigated and used to assess the overall accuracy of the ICP-AES measurement process, the measurements for each glass are reviewed, plots are provided that explore the effects of heat treatment on the PCTs for these glasses, and the PCTs are normalized using the compositions (targeted, measured, and bias-corrected) presented in Table A4.

4.2.1 Measurements in Analytical Sequence

Figures B1 and B2 in Appendix B provide plots of the leachate (ppm) concentrations in analytical sequence as generated by the PSAL for all of the data and for the data from only the study glasses, respectively. A different color and symbol are used to distinguish the Test Matrix 1 study glasses from the standards. No problems are seen in these plots.

4.2.2 Results for the Samples of the Multi-Element Solution Standard

Figure B3 in Appendix B provides analyses of the PSAL measurements of the samples of the multi-element solution standard by analytical set by ICP-AES block. An analysis of variance (ANOVA) investigating for statistically significant differences among the block averages for these samples for each element of interest is included in these figures. These results indicate a statistically significant (at approximately a 5% level) difference among the Li, Na and Si average measurements over these sets and blocks. No bias correction of the PCT results for the study glasses was conducted. This approach was taken since the triplicate PCTs for a single study glass were placed in different ICP-AES blocks. Averaging the ppm's for each set of triplicates helps to minimize the impact of the ICP-AES effects.

Table 1 summarizes the average measurements and the reference values for the 4 primary elements of interest. The results indicate consistent and accurate measurements from the PSAL processes used to conduct these analyses.

4.2.3 Measurements by Glass Number

Figure B4 in Appendix B provide plots of the leachate concentrations for each type of submitted sample by analytical set: the study glasses by heat treatment and the standards (EA, ARM, the multi-element solution standard, and blanks). These plots allow for the assessment of the repeatability of the measurements, which suggests some scatter in the triplicate values for some analytes for some of the glasses. Also, note that some differences between the values for the two heat treatments for some glasses are evident. More will be said regarding comparisons between the heat treatments in the discussions that follow.

Table 1. Results from Samples of the Multi-Element Solution Standard

Analytical Set	Analytical Block	Avg B (ppm)	Avg Li (ppm)	Avg Na (ppm)	Avg Si (ppm)
1	1	19.9	9.9	82.7	50.2
	2	20.3	9.8	82.0	49.9
	3	19.6	9.7	82.3	48.8
2	1	21.0	9.7	80.0	48.5
	2	20.0	9.7	79.6	47.9
	3	20.1	9.6	77.7	48.3
3	1	21.3	10.1	80.8	52.2
	2	20.5	9.9	83.0	51.1
	3	21.0	10.0	81.5	53.1
4	1	20.8	10.0	81.0	52.4
	2	20.4	9.9	81.8	51.7
	3	20.3	9.8	81.6	52.2
	Grand Average	20.4	9.9	81.2	50.5
	Reference Value	20	10	81	50
	% difference	2.15%	-1.48%	0.21%	1.06%

4.2.4 Normalized PCT Results

PCT leachate concentrations are typically normalized using the cation composition (expressed as a weight percent) in the glass to obtain a grams-per-liter (g/L) leachate concentration. Two of the three replicate PCTs for a glass (whether the quenched or the ccc version) must be available for this computation to be completed. Otherwise, no PCT can be reported for the glass. The normalization of the PCTs is usually conducted using the measured compositions of the glasses. This is the preferred normalization process for the PCTs. For completeness, the targeted cation and the bias-corrected cation compositions were also used to conduct this normalization.

As is the usual convention, the common logarithm of the normalized PCT (normalized leachate, NL) for each element of interest was determined and used for comparison. To accomplish this computation, one must

1. Determine the common logarithm of the elemental parts per million (ppm) leachate concentration for each of the triplicates and each of the elements of interest (these values are provided in Table B2 of Appendix B),

2. Average the common logarithms over the triplicates for each element of interest, and then

Normalizing Using Measured Composition (preferred method)

3. Subtract a quantity equal to 1 plus the common logarithm of the average cation measured concentration (expressed as a weight percent of the glass) from the average computed in step 2.

Or Normalizing Using Target Composition

3. Subtract a quantity equal to 1 plus the common logarithm of the target cation concentration (expressed as a weight percent of the glass) from the average computed in step 2.

Or Normalizing Using Measured Bias-Corrected Composition

3. Subtract a quantity equal to 1 plus the common logarithm of the measured bias-corrected cation concentration (expressed as a weight percent of the glass) from the average computed in step 2.

Figure B5 in Appendix B provides scatter plots for these results and offers an opportunity to investigate the consistency in the leaching across the elements for the glasses of this study. All combinations of the normalizations of the PCTs (i.e., those generated using the targeted, measured, and bias-corrected compositional views) and both heat treatments are represented in the series of scatter plots. Consistency in the leaching across the elements is typically demonstrated by a high degree of linear correlation among the values for pairs of these elements. The smallest correlation in this plot is between Li and Si, with a value of ~53%, which is a lower correlation than typically seen for a set of PCTs.

Table 2 summarizes the normalized PCTs for the glasses of this study. The glasses are by glass identifier. Note that 4 values are shown for ARM and EA corresponding to the 4 analytical sets that were used to conduct all of these PCT measurements.

Table 2. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
ARM	ref	reference	-0.3313	-0.2550	-0.2811	-0.5742	0.466	0.556	0.524	0.267
ARM	ref	reference	-0.3429	-0.2503	-0.3315	-0.5717	0.454	0.562	0.466	0.268
ARM	ref	reference	-0.1953	-0.1574	-0.2168	-0.4856	0.638	0.696	0.607	0.327
ARM	ref	reference	-0.2230	-0.1768	-0.2201	-0.4942	0.598	0.666	0.602	0.320
EA	ref	reference	1.2552	0.9836	1.1413	0.5923	17.998	9.629	13.845	3.911
EA	ref	reference	1.2408	0.9694	1.1223	0.5794	17.411	9.320	13.252	3.797
EA	ref	reference	1.2790	0.9961	1.1460	0.6192	19.012	9.910	13.995	4.161
EA	ref	reference	1.1777	0.9130	1.0644	0.5588	15.057	8.184	11.600	3.620
EM07-Al-06	ccc	measured	-0.2335	-0.2687	-0.2942	-0.5796	0.584	0.539	0.508	0.263
EM07-Al-06	quenched	measured	-0.1695	-0.2207	-0.1966	-0.4631	0.677	0.602	0.636	0.344
EM07-Al-06	ccc	measured bc	-0.2324	-0.2699	-0.2951	-0.6110	0.586	0.537	0.507	0.245
EM07-Al-06	quenched	measured bc	-0.1684	-0.2218	-0.1975	-0.4946	0.679	0.600	0.635	0.320
EM07-Al-06	ccc	targeted	-0.2273	-0.2850	-0.2904	-0.6007	0.593	0.519	0.512	0.251
EM07-Al-06	quenched	targeted	-0.1633	-0.2369	-0.1928	-0.4843	0.687	0.580	0.641	0.328
EM07-Al-15	ccc	measured	-0.4037	-0.3075	-0.3968	-0.4878	0.395	0.493	0.401	0.325
EM07-Al-15	quenched	measured	-0.3592	-0.2575	-0.3502	-0.5156	0.437	0.553	0.446	0.305
EM07-Al-15	ccc	measured bc	-0.4026	-0.3087	-0.3977	-0.5192	0.396	0.491	0.400	0.303
EM07-Al-15	quenched	measured bc	-0.3581	-0.2587	-0.3511	-0.5471	0.438	0.551	0.446	0.284
EM07-Al-15	ccc	targeted	-0.3946	-0.3189	-0.4024	-0.4913	0.403	0.480	0.396	0.323
EM07-Al-15	quenched	targeted	-0.3501	-0.2689	-0.3558	-0.5191	0.447	0.538	0.441	0.303
EM07-Al-20	ccc	measured	-0.3362	-0.1878	-0.4210	-0.4572	0.461	0.649	0.379	0.349
EM07-Al-20	quenched	measured	-0.3106	-0.1162	-0.3491	-0.3942	0.489	0.765	0.448	0.403
EM07-Al-20	ccc	measured bc	-0.3300	-0.1894	-0.4190	-0.4887	0.468	0.647	0.381	0.325
EM07-Al-20	quenched	measured bc	-0.3044	-0.1177	-0.3471	-0.4257	0.496	0.763	0.450	0.375
EM07-Al-20	ccc	targeted	-0.3141	-0.1908	-0.4162	-0.4580	0.485	0.644	0.384	0.348
EM07-Al-20	quenched	targeted	-0.2885	-0.1192	-0.3443	-0.3949	0.515	0.760	0.453	0.403
EM07-B-05	ccc	measured	-0.2567	-0.3210	-0.2703	-0.4689	0.554	0.478	0.537	0.340
EM07-B-05	quenched	measured	-0.2849	-0.3251	-0.2460	-0.4848	0.519	0.473	0.568	0.327
EM07-B-05	ccc	measured bc	-0.2519	-0.3172	-0.2582	-0.4803	0.560	0.482	0.552	0.331

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-B-05	quenched	measured bc	-0.2801	-0.3213	-0.2339	-0.4962	0.525	0.477	0.584	0.319
EM07-B-05	ccc	targeted	-0.2349	-0.3197	-0.2547	-0.4767	0.582	0.479	0.556	0.334
EM07-B-05	quenched	targeted	-0.2632	-0.3237	-0.2304	-0.4926	0.546	0.475	0.588	0.322
EM07-B-15	ccc	measured	0.2403	0.1483	-0.0019	-0.5608	1.739	1.407	0.996	0.275
EM07-B-15	quenched	measured	0.1320	0.0577	-0.0647	-0.5942	1.355	1.142	0.862	0.255
EM07-B-15	ccc	measured bc	0.2451	0.1520	0.0103	-0.5722	1.758	1.419	1.024	0.268
EM07-B-15	quenched	measured bc	0.1367	0.0614	-0.0526	-0.6056	1.370	1.152	0.886	0.248
EM07-B-15	ccc	targeted	0.2421	0.1532	0.0100	-0.5667	1.746	1.423	1.023	0.271
EM07-B-15	quenched	targeted	0.1338	0.0626	-0.0529	-0.6000	1.361	1.155	0.885	0.251
EM07-B-20	ccc	measured	0.9968	0.9231	0.7276	-0.7238	9.926	8.378	5.341	0.189
EM07-B-20	quenched	measured	0.8219	0.7525	0.5635	-0.7202	6.636	5.656	3.660	0.190
EM07-B-20	ccc	measured bc	1.0015	0.9269	0.7403	-0.7352	10.035	8.451	5.500	0.184
EM07-B-20	quenched	measured bc	0.8266	0.7563	0.5761	-0.7316	6.709	5.705	3.768	0.186
EM07-B-20	ccc	targeted	0.9979	0.9306	0.7358	-0.7276	9.952	8.524	5.442	0.187
EM07-B-20	quenched	targeted	0.8230	0.7600	0.5716	-0.7239	6.653	5.755	3.729	0.189
EM07-Bi-025	ccc	measured	-0.2873	-0.2934	-0.3270	-0.5180	0.516	0.509	0.471	0.303
EM07-Bi-025	quenched	measured	-0.2886	-0.2775	-0.2825	-0.5319	0.515	0.528	0.522	0.294
EM07-Bi-025	ccc	measured bc	-0.2780	-0.2859	-0.3144	-0.5206	0.527	0.518	0.485	0.302
EM07-Bi-025	quenched	measured bc	-0.2793	-0.2700	-0.2698	-0.5345	0.526	0.537	0.537	0.292
EM07-Bi-025	ccc	targeted	-0.2712	-0.2891	-0.3250	-0.5162	0.536	0.514	0.473	0.305
EM07-Bi-025	quenched	targeted	-0.2725	-0.2733	-0.2805	-0.5301	0.534	0.533	0.524	0.295
EM07-Bi-05	ccc	measured	-0.3275	-0.2815	-0.3125	-0.5219	0.470	0.523	0.487	0.301
EM07-Bi-05	quenched	measured	-0.3553	-0.2849	-0.2941	-0.5426	0.441	0.519	0.508	0.287
EM07-Bi-05	ccc	measured bc	-0.3181	-0.2740	-0.3004	-0.5246	0.481	0.532	0.501	0.299
EM07-Bi-05	quenched	measured bc	-0.3459	-0.2774	-0.2820	-0.5452	0.451	0.528	0.522	0.285
EM07-Bi-05	ccc	targeted	-0.3049	-0.2714	-0.3022	-0.5172	0.496	0.535	0.499	0.304
EM07-Bi-05	quenched	targeted	-0.3327	-0.2747	-0.2838	-0.5379	0.465	0.531	0.520	0.290
EM07-BL-1	ccc	measured	-0.3527	-0.3205	-0.3504	-0.4870	0.444	0.478	0.446	0.326
EM07-BL-1	quenched	measured	-0.3300	-0.3162	-0.3192	-0.5106	0.468	0.483	0.480	0.309

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-BL-1	ccc	measured bc	-0.3516	-0.3217	-0.3513	-0.5185	0.445	0.477	0.445	0.303
EM07-BL-1	quenched	measured bc	-0.3289	-0.3174	-0.3201	-0.5420	0.469	0.482	0.479	0.287
EM07-BL-1	ccc	targeted	-0.3479	-0.3291	-0.3399	-0.4963	0.449	0.469	0.457	0.319
EM07-BL-1	quenched	targeted	-0.3252	-0.3247	-0.3087	-0.5199	0.473	0.473	0.491	0.302
EM07-BL-2	ccc	measured	-0.3366	-0.3302	-0.3374	-0.5069	0.461	0.467	0.460	0.311
EM07-BL-2	quenched	measured	-0.3306	-0.3140	-0.3053	-0.5193	0.467	0.485	0.495	0.302
EM07-BL-2	ccc	measured bc	-0.3304	-0.3317	-0.3353	-0.5383	0.467	0.466	0.462	0.290
EM07-BL-2	quenched	measured bc	-0.3244	-0.3156	-0.3033	-0.5508	0.474	0.484	0.497	0.281
EM07-BL-2	ccc	targeted	-0.3284	-0.3396	-0.3524	-0.5200	0.469	0.457	0.444	0.302
EM07-BL-2	quenched	targeted	-0.3224	-0.3234	-0.3203	-0.5324	0.476	0.475	0.478	0.293
EM07-Ca-035	ccc	measured	-0.3473	-0.3104	-0.3025	-0.5918	0.450	0.489	0.498	0.256
EM07-Ca-035	quenched	measured	-0.7477	-0.5796	-1.2019	-1.5052	0.179	0.263	0.063	0.031
EM07-Ca-035	ccc	measured bc	-0.3425	-0.3066	-0.2904	-0.6032	0.454	0.494	0.512	0.249
EM07-Ca-035	quenched	measured bc	-0.7430	-0.5759	-1.1897	-1.5166	0.181	0.266	0.065	0.030
EM07-Ca-035	ccc	targeted	-0.3302	-0.3113	-0.2960	-0.5989	0.468	0.488	0.506	0.252
EM07-Ca-035	quenched	targeted	-0.7306	-0.5806	-1.1954	-1.5124	0.186	0.263	0.064	0.031
EM07-Ca-07	ccc	measured	-0.3275	-0.2409	-0.2321	-0.6603	0.470	0.574	0.586	0.219
EM07-Ca-07	quenched	measured	-0.1761	-0.1679	-0.1268	-0.5933	0.667	0.679	0.747	0.255
EM07-Ca-07	ccc	measured bc	-0.3183	-0.2333	-0.2200	-0.6629	0.481	0.584	0.603	0.217
EM07-Ca-07	quenched	measured bc	-0.1668	-0.1603	-0.1147	-0.5959	0.681	0.691	0.768	0.254
EM07-Ca-07	ccc	targeted	-0.3064	-0.2312	-0.2186	-0.6582	0.494	0.587	0.604	0.220
EM07-Ca-07	quenched	targeted	-0.1549	-0.1582	-0.1133	-0.5913	0.700	0.695	0.770	0.256
EM07-Cr-001	ccc	measured	-0.2991	-0.2656	-0.3166	-0.4497	0.502	0.543	0.482	0.355
EM07-Cr-001	quenched	measured	-0.3175	-0.2860	-0.3068	-0.4916	0.481	0.518	0.493	0.322
EM07-Cr-001	ccc	measured bc	-0.2929	-0.2671	-0.3146	-0.4811	0.509	0.541	0.485	0.330
EM07-Cr-001	quenched	measured bc	-0.3112	-0.2875	-0.3048	-0.5231	0.488	0.516	0.496	0.300
EM07-Cr-001	ccc	targeted	-0.2868	-0.2784	-0.3184	-0.4673	0.517	0.527	0.480	0.341
EM07-Cr-001	quenched	targeted	-0.3052	-0.2989	-0.3087	-0.5093	0.495	0.502	0.491	0.310
EM07-Cr-012	ccc	measured	-0.3198	-0.2804	-0.3049	-0.4573	0.479	0.524	0.496	0.349
EM07-Cr-012	quenched	measured	-0.3349	-0.2987	-0.3130	-0.5050	0.463	0.503	0.486	0.313

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-Cr-012	ccc	measured bc	-0.3136	-0.2820	-0.3029	-0.4888	0.486	0.522	0.498	0.325
EM07-Cr-012	quenched	measured bc	-0.3287	-0.3002	-0.3109	-0.5365	0.469	0.501	0.489	0.291
EM07-Cr-012	ccc	targeted	-0.3089	-0.2921	-0.3039	-0.4718	0.491	0.510	0.497	0.337
EM07-Cr-012	quenched	targeted	-0.3240	-0.3103	-0.3120	-0.5195	0.474	0.489	0.488	0.302
EM07-Cr-02	ccc	measured	-0.3504	-0.3175	-0.3537	-0.4748	0.446	0.481	0.443	0.335
EM07-Cr-02	quenched	measured	-0.3220	-0.2892	-0.3056	-0.4843	0.476	0.514	0.495	0.328
EM07-Cr-02	ccc	measured bc	-0.3492	-0.3187	-0.3546	-0.5063	0.448	0.480	0.442	0.312
EM07-Cr-02	quenched	measured bc	-0.3208	-0.2904	-0.3065	-0.5158	0.478	0.512	0.494	0.305
EM07-Cr-02	ccc	targeted	-0.3442	-0.3327	-0.3511	-0.4908	0.453	0.465	0.446	0.323
EM07-Cr-02	quenched	targeted	-0.3158	-0.3044	-0.3030	-0.5004	0.483	0.496	0.498	0.316
EM07-F-02	ccc	measured	-0.4223	-0.3827	-0.3825	-0.5616	0.378	0.414	0.414	0.274
EM07-F-02	quenched	measured	-0.3855	-0.3350	-0.3397	-0.5719	0.412	0.462	0.457	0.268
EM07-F-02	ccc	measured bc	-0.4132	-0.3751	-0.3704	-0.5643	0.386	0.422	0.426	0.273
EM07-F-02	quenched	measured bc	-0.3763	-0.3275	-0.3276	-0.5746	0.420	0.470	0.470	0.266
EM07-F-02	ccc	targeted	-0.3983	-0.3701	-0.3665	-0.5561	0.400	0.426	0.430	0.278
EM07-F-02	quenched	targeted	-0.3615	-0.3224	-0.3237	-0.5664	0.435	0.476	0.475	0.271
EM07-Fe-05	ccc	measured	-0.3502	-0.3336	-0.3372	-0.5034	0.447	0.464	0.460	0.314
EM07-Fe-05	quenched	measured	-0.3254	-0.3469	-0.3098	-0.5296	0.473	0.450	0.490	0.295
EM07-Fe-05	ccc	measured bc	-0.3490	-0.3347	-0.3381	-0.5349	0.448	0.463	0.459	0.292
EM07-Fe-05	quenched	measured bc	-0.3243	-0.3481	-0.3108	-0.5611	0.474	0.449	0.489	0.275
EM07-Fe-05	ccc	targeted	-0.3431	-0.3478	-0.3388	-0.5201	0.454	0.449	0.458	0.302
EM07-Fe-05	quenched	targeted	-0.3183	-0.3611	-0.3115	-0.5463	0.481	0.435	0.488	0.284
EM07-Fe-15	ccc	measured	-0.3015	-0.2804	-0.3088	-0.4369	0.499	0.524	0.491	0.366
EM07-Fe-15	quenched	measured	-0.2956	-0.2465	-0.2967	-0.4952	0.506	0.567	0.505	0.320
EM07-Fe-15	ccc	measured bc	-0.2953	-0.2819	-0.3097	-0.4684	0.507	0.522	0.490	0.340
EM07-Fe-15	quenched	measured bc	-0.2894	-0.2480	-0.2976	-0.5267	0.514	0.565	0.504	0.297
EM07-Fe-15	ccc	targeted	-0.2931	-0.2937	-0.3113	-0.4526	0.509	0.509	0.488	0.353
EM07-Fe-15	quenched	targeted	-0.2873	-0.2598	-0.2992	-0.5109	0.516	0.550	0.502	0.308
EM07-Fe-20	ccc	measured	-0.3256	-0.3240	-0.3229	-0.4475	0.473	0.474	0.475	0.357
EM07-Fe-20	quenched	measured	-0.2582	-0.2019	-0.2960	-0.4821	0.552	0.628	0.506	0.330

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-Fe-20	ccc	measured bc	-0.3244	-0.3252	-0.3238	-0.4790	0.474	0.473	0.474	0.332
EM07-Fe-20	quenched	measured bc	-0.2571	-0.2031	-0.2970	-0.5136	0.553	0.627	0.505	0.307
EM07-Fe-20	ccc	targeted	-0.3218	-0.3377	-0.3176	-0.4549	0.477	0.460	0.481	0.351
EM07-Fe-20	quenched	targeted	-0.2544	-0.2156	-0.2907	-0.4895	0.557	0.609	0.512	0.324
EM07-K-03	ccc	measured	-0.2399	-0.2610	-0.2584	-0.5082	0.576	0.548	0.552	0.310
EM07-K-03	quenched	measured	-0.3031	-0.3245	-0.2820	-0.5539	0.498	0.474	0.522	0.279
EM07-K-03	ccc	measured bc	-0.2352	-0.2573	-0.2463	-0.5196	0.582	0.553	0.567	0.302
EM07-K-03	quenched	measured bc	-0.2984	-0.3208	-0.2698	-0.5653	0.503	0.478	0.537	0.272
EM07-K-03	ccc	targeted	-0.2171	-0.2573	-0.2463	-0.5131	0.607	0.553	0.567	0.307
EM07-K-03	quenched	targeted	-0.2803	-0.3208	-0.2698	-0.5588	0.524	0.478	0.537	0.276
EM07-K-06	ccc	measured	0.0864	0.0346	0.0213	-0.4101	1.220	1.083	1.050	0.389
EM07-K-06	quenched	measured	-0.0468	-0.0913	-0.0944	-0.5059	0.898	0.810	0.805	0.312
EM07-K-06	ccc	measured bc	0.0957	0.0422	0.0334	-0.4127	1.247	1.102	1.080	0.387
EM07-K-06	quenched	measured bc	-0.0375	-0.0838	-0.0823	-0.5085	0.917	0.825	0.827	0.310
EM07-K-06	ccc	targeted	0.1058	0.0451	0.0311	-0.4070	1.276	1.109	1.074	0.392
EM07-K-06	quenched	targeted	-0.0274	-0.0808	-0.0846	-0.5028	0.939	0.830	0.823	0.314
EM07-Li-015	ccc	measured	-0.4206	-0.3141	-0.3662	-0.5442	0.380	0.485	0.430	0.286
EM07-Li-015	quenched	measured	-0.4129	-0.3277	-0.3541	-0.5883	0.386	0.470	0.442	0.258
EM07-Li-015	ccc	measured bc	-0.4195	-0.3153	-0.3641	-0.5757	0.381	0.484	0.432	0.266
EM07-Li-015	quenched	measured bc	-0.4118	-0.3289	-0.3521	-0.6198	0.387	0.469	0.444	0.240
EM07-Li-015	ccc	targeted	-0.4098	-0.3183	-0.3679	-0.5552	0.389	0.480	0.429	0.278
EM07-Li-015	quenched	targeted	-0.4021	-0.3319	-0.3559	-0.5993	0.396	0.466	0.441	0.252
EM07-Li-04	ccc	measured	-0.3094	-0.2721	-0.2629	-0.4647	0.491	0.534	0.546	0.343
EM07-Li-04	quenched	measured	-0.2978	-0.2741	-0.2423	-0.4928	0.504	0.532	0.572	0.322
EM07-Li-04	ccc	measured bc	-0.3031	-0.2736	-0.2609	-0.4961	0.498	0.533	0.548	0.319
EM07-Li-04	quenched	measured bc	-0.2916	-0.2757	-0.2403	-0.5242	0.511	0.530	0.575	0.299
EM07-Li-04	ccc	targeted	-0.3000	-0.2883	-0.2683	-0.4829	0.501	0.515	0.539	0.329
EM07-Li-04	quenched	targeted	-0.2885	-0.2903	-0.2476	-0.5110	0.515	0.512	0.565	0.308
EM07-Mn-01	ccc	measured	-0.3601	-0.3381	-0.3433	-0.4970	0.436	0.459	0.454	0.318
EM07-Mn-01	quenched	measured	-0.3558	-0.3401	-0.3243	-0.5130	0.441	0.457	0.474	0.307

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-Mn-01	ccc	measured bc	-0.3554	-0.3344	-0.3306	-0.5084	0.441	0.463	0.467	0.310
EM07-Mn-01	quenched	measured bc	-0.3510	-0.3363	-0.3116	-0.5244	0.446	0.461	0.488	0.299
EM07-Mn-01	ccc	targeted	-0.3568	-0.3330	-0.3383	-0.5092	0.440	0.465	0.459	0.310
EM07-Mn-01	quenched	targeted	-0.3525	-0.3349	-0.3193	-0.5252	0.444	0.462	0.479	0.298
EM07-Mn-04	ccc	measured	-0.3359	-0.3177	-0.3279	-0.5039	0.461	0.481	0.470	0.313
EM07-Mn-04	quenched	measured	-0.2971	-0.2931	-0.2954	-0.5009	0.505	0.509	0.507	0.316
EM07-Mn-04	ccc	measured bc	-0.3267	-0.3102	-0.3158	-0.5065	0.471	0.490	0.483	0.312
EM07-Mn-04	quenched	measured bc	-0.2879	-0.2856	-0.2833	-0.5035	0.515	0.518	0.521	0.314
EM07-Mn-04	ccc	targeted	-0.3222	-0.3113	-0.3114	-0.5026	0.476	0.488	0.488	0.314
EM07-Mn-04	quenched	targeted	-0.2834	-0.2867	-0.2788	-0.4995	0.521	0.517	0.526	0.317
EM07-Na-05	ccc	measured	-0.5376	-0.2051	-1.7232	-0.5853	0.290	0.624	0.019	0.260
EM07-Na-05	quenched	measured	-0.5199	-0.2116	-2.2201	-0.5743	0.302	0.614	0.006	0.267
EM07-Na-05	ccc	measured bc	-0.5329	-0.2014	-1.7110	-0.5967	0.293	0.629	0.019	0.253
EM07-Na-05	quenched	measured bc	-0.5152	-0.2079	-2.2080	-0.5857	0.305	0.620	0.006	0.260
EM07-Na-05	ccc	targeted	-0.5358	-0.2060	-1.6890	-0.6051	0.291	0.622	0.020	0.248
EM07-Na-05	quenched	targeted	-0.5182	-0.2125	-2.1860	-0.5942	0.303	0.613	0.007	0.255
EM07-Na-10	ccc	measured	-0.5000	-0.2562	-0.6397	-0.5493	0.316	0.554	0.229	0.282
EM07-Na-10	quenched	measured	-0.4477	-0.1785	-0.6481	-0.5655	0.357	0.663	0.225	0.272
EM07-Na-10	ccc	measured bc	-0.4909	-0.2487	-0.6270	-0.5519	0.323	0.564	0.236	0.281
EM07-Na-10	quenched	measured bc	-0.4386	-0.1709	-0.6354	-0.5681	0.364	0.675	0.232	0.270
EM07-Na-10	ccc	targeted	-0.4839	-0.2507	-0.6218	-0.5492	0.328	0.561	0.239	0.282
EM07-Na-10	quenched	targeted	-0.4316	-0.1729	-0.6302	-0.5654	0.370	0.672	0.234	0.272
EM07-Na-20	ccc	measured	-0.0018	-0.2022	0.0013	-0.4064	0.996	0.628	1.003	0.392
EM07-Na-20	quenched	measured	-0.0603	-0.3150	-0.0103	-0.4317	0.870	0.484	0.977	0.370
EM07-Na-20	ccc	measured bc	0.0029	-0.1985	0.0140	-0.4178	1.007	0.633	1.033	0.382
EM07-Na-20	quenched	measured bc	-0.0556	-0.3113	0.0024	-0.4431	0.880	0.488	1.006	0.360
EM07-Na-20	ccc	targeted	0.0048	-0.1966	0.0031	-0.4033	1.011	0.636	1.007	0.395
EM07-Na-20	quenched	targeted	-0.0537	-0.3095	-0.0084	-0.4286	0.884	0.490	0.981	0.373
EM07-Ni-001	ccc	measured	-0.3917	-0.3202	-0.3465	-0.5242	0.406	0.478	0.450	0.299
EM07-Ni-001	quenched	measured	-0.3832	-0.3174	-0.3324	-0.5583	0.414	0.482	0.465	0.277

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-Ni-001	ccc	measured bc	-0.3906	-0.3214	-0.3446	-0.5557	0.407	0.477	0.452	0.278
EM07-Ni-001	quenched	measured bc	-0.3822	-0.3185	-0.3304	-0.5898	0.415	0.480	0.467	0.257
EM07-Ni-001	ccc	targeted	-0.3861	-0.3362	-0.3467	-0.5348	0.411	0.461	0.450	0.292
EM07-Ni-001	quenched	targeted	-0.3776	-0.3333	-0.3325	-0.5688	0.419	0.464	0.465	0.270
EM07-Ni-02	ccc	measured	-0.3721	-0.3065	-0.3068	-0.5124	0.425	0.494	0.493	0.307
EM07-Ni-02	quenched	measured	-0.3648	-0.3030	-0.2862	-0.5324	0.432	0.498	0.517	0.294
EM07-Ni-02	ccc	measured bc	-0.3658	-0.3080	-0.3048	-0.5439	0.431	0.492	0.496	0.286
EM07-Ni-02	quenched	measured bc	-0.3586	-0.3045	-0.2841	-0.5638	0.438	0.496	0.520	0.273
EM07-Ni-02	ccc	targeted	-0.3591	-0.3193	-0.3154	-0.5256	0.437	0.479	0.484	0.298
EM07-Ni-02	quenched	targeted	-0.3519	-0.3159	-0.2947	-0.5456	0.445	0.483	0.507	0.285
EM07-NM-0025	ccc	measured	-0.3506	-0.3193	-0.3367	-0.4769	0.446	0.479	0.461	0.333
EM07-NM-0025	quenched	measured	-0.3184	-0.2999	-0.3154	-0.5155	0.480	0.501	0.484	0.305
EM07-NM-0025	ccc	measured bc	-0.3444	-0.3208	-0.3347	-0.5084	0.452	0.478	0.463	0.310
EM07-NM-0025	quenched	measured bc	-0.3123	-0.3014	-0.3133	-0.5470	0.487	0.500	0.486	0.284
EM07-NM-0025	ccc	targeted	-0.3390	-0.3330	-0.3408	-0.4931	0.458	0.465	0.456	0.321
EM07-NM-0025	quenched	targeted	-0.3069	-0.3136	-0.3194	-0.5316	0.493	0.486	0.479	0.294
EM07-P-0	ccc	measured	-0.3243	-0.3105	-0.3367	-0.5029	0.474	0.489	0.461	0.314
EM07-P-0	quenched	measured	-0.2557	-0.3094	-0.3205	-0.5326	0.555	0.490	0.478	0.293
EM07-P-0	ccc	measured bc	-0.3196	-0.3067	-0.3240	-0.5143	0.479	0.493	0.474	0.306
EM07-P-0	quenched	measured bc	-0.2509	-0.3056	-0.3078	-0.5440	0.561	0.495	0.492	0.286
EM07-P-0	ccc	targeted	-0.3285	-0.3168	-0.3326	-0.5193	0.469	0.482	0.465	0.302
EM07-P-0	quenched	targeted	-0.2599	-0.3157	-0.3164	-0.5490	0.550	0.483	0.483	0.283
EM07-P-025	ccc	measured	-0.3463	0.0006	-0.2459	-0.4952	0.451	1.001	0.568	0.320
EM07-P-025	quenched	measured	-0.2659	-0.2932	-0.3102	-0.5381	0.542	0.509	0.490	0.290
EM07-P-025	ccc	measured bc	-0.3371	0.0082	-0.2332	-0.4978	0.460	1.019	0.585	0.318
EM07-P-025	quenched	measured bc	-0.2567	-0.2857	-0.2975	-0.5407	0.554	0.518	0.504	0.288
EM07-P-025	ccc	targeted	-0.3271	0.0096	-0.2385	-0.4941	0.471	1.022	0.577	0.321
EM07-P-025	quenched	targeted	-0.2467	-0.2842	-0.3028	-0.5370	0.567	0.520	0.498	0.290
EM07-Si-30	ccc	measured	1.7386	1.5052	1.4258	0.0435	54.783	32.007	26.656	1.105
EM07-Si-30	quenched	measured	0.4355	0.2564	0.2719	-0.3740	2.726	1.805	1.870	0.423

Table 2 cont. Normalized PCTs by Glass ID/Compositional View

Glass ID	Heat Treatment	Comp View	log NL [B (g/L)]	log NL [Li(g/L)]	log NL [Na (g/L)]	log NL [Si (g/L)]	NL B(g/L)	NL Li (g/L)	NL Na (g/L)	NL Si (g/L)
EM07-Si-30	ccc	measured bc	1.7449	1.5037	1.4249	0.0121	55.574	31.895	26.601	1.028
EM07-Si-30	quenched	measured bc	0.4418	0.2549	0.2710	-0.4054	2.765	1.798	1.866	0.393
EM07-Si-30	ccc	targeted	1.7519	1.4919	1.4251	0.0382	56.480	31.036	26.615	1.092
EM07-Si-30	quenched	targeted	0.4488	0.2430	0.2712	-0.3794	2.811	1.750	1.867	0.417
EM07-Si-37	ccc	measured	0.0727	-0.0492	-0.0404	-0.4456	1.182	0.893	0.911	0.358
EM07-Si-37	quenched	measured	-0.0808	-0.2123	-0.1483	-0.5076	0.830	0.613	0.711	0.311
EM07-Si-37	ccc	measured bc	0.0739	-0.0503	-0.0413	-0.4770	1.185	0.891	0.909	0.333
EM07-Si-37	quenched	measured bc	-0.0797	-0.2134	-0.1492	-0.5391	0.832	0.612	0.709	0.289
EM07-Si-37	ccc	targeted	0.0733	-0.0687	-0.0455	-0.4562	1.184	0.854	0.901	0.350
EM07-Si-37	quenched	targeted	-0.0802	-0.2318	-0.1534	-0.5183	0.831	0.586	0.702	0.303
EM07-Si-50	ccc	measured	-0.3920	-0.2844	-0.4704	-0.5246	0.406	0.519	0.339	0.299
EM07-Si-50	quenched	measured	-0.4056	-0.2669	-0.4578	-0.5574	0.393	0.541	0.349	0.277
EM07-Si-50	ccc	measured bc	-0.3909	-0.2856	-0.4713	-0.5561	0.407	0.518	0.338	0.278
EM07-Si-50	quenched	measured bc	-0.4045	-0.2680	-0.4587	-0.5888	0.394	0.539	0.348	0.258
EM07-Si-50	ccc	targeted	-0.3872	-0.2999	-0.4649	-0.5499	0.410	0.501	0.343	0.282
EM07-Si-50	quenched	targeted	-0.4009	-0.2823	-0.4523	-0.5826	0.397	0.522	0.353	0.261
EM07-Zr-001	ccc	measured	-0.3467	-0.3196	-0.3045	-0.4706	0.450	0.479	0.496	0.338
EM07-Zr-001	quenched	measured	-0.3454	-0.3311	-0.2906	-0.5006	0.451	0.467	0.512	0.316
EM07-Zr-001	ccc	measured bc	-0.3373	-0.3121	-0.2918	-0.4732	0.460	0.487	0.511	0.336
EM07-Zr-001	quenched	measured bc	-0.3360	-0.3236	-0.2779	-0.5032	0.461	0.475	0.527	0.314
EM07-Zr-001	ccc	targeted	-0.3211	-0.3119	-0.3017	-0.4665	0.477	0.488	0.499	0.342
EM07-Zr-001	quenched	targeted	-0.3198	-0.3234	-0.2878	-0.4965	0.479	0.475	0.515	0.319
EM07-Zr-05	ccc	measured	-0.4363	-0.3535	-0.3840	-0.5918	0.366	0.443	0.413	0.256
EM07-Zr-05	quenched	measured	-0.4085	-0.3331	-0.3549	-0.6040	0.390	0.464	0.442	0.249
EM07-Zr-05	ccc	measured bc	-0.4271	-0.3459	-0.3713	-0.5944	0.374	0.451	0.425	0.254
EM07-Zr-05	quenched	measured bc	-0.3993	-0.3255	-0.3422	-0.6066	0.399	0.473	0.455	0.247
EM07-Zr-05	ccc	targeted	-0.4217	-0.3429	-0.3767	-0.5915	0.379	0.454	0.420	0.256
EM07-Zr-05	quenched	targeted	-0.3939	-0.3225	-0.3476	-0.6037	0.404	0.476	0.449	0.249

4.2.5 Effects of Heat Treatment on PCTs

Figure B6 in Appendix B provides a series of plots and statistical comparisons that show the effects of heat treatment on the common logarithm ppm-responses of the triplicate PCTs for each glass. The quenched version of a given glass yielded measurements indicating a significantly different mean log(ppm) response than the ccc version (at the 5% significance level) for a given element if the **Prob>|t|** value in the figure is 0.05 or smaller.

Many of these glasses exhibited a statistically significant difference between the ccc and quenched versions of one or more of the PCT elements. In a few cases (EM07-B-15, EM07-Si-30, and EM07-Si-37), the ccc versions of the glasses were less durable than their quenched counterparts for all four elements (B, Li, Na and Si). Figure B7 in Appendix B provides plots of the normalized PCT responses for both of the heat treatments. These plots provide a basis for judging the practical impact of differences in the PCT response due to the heat treatment of the glass.

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Appendix A:

Tables and Figures Supporting the Analysis of the Chemical Composition Measurements of the Test Matrix 1 Glasses

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Table A1. Targeted Oxide Concentrations (in mass fractions) for the Test Matrix 1 Study Glasses (part 1)

Glass ID	Al2O3	B2O3	BaO	Bi2O3	CaO	CdO	Ce2O3	Cr2O3	F	Fe2O3	K2O	La2O3	Li2O	MgO	MnO
EM07-BL-1	0.1	0.1	0.0005	0	0	0.0014	0.0005	0.005	0.001	0.1	0	0.0007	0.0275	0.0015	0.02
EM07-Al-06	0.06	0.10444	0.00052	0	0	0.00146	0.00052	0.00522	0.00104	0.10444	0	0.00073	0.02872	0.00157	0.02089
EM07-Al-15	0.15	0.09444	0.00047	0	0	0.00132	0.00047	0.00472	0.00094	0.09444	0	0.00066	0.02597	0.00142	0.01889
EM07-Al-20	0.2	0.08889	0.00044	0	0	0.00124	0.00044	0.00444	0.00089	0.08889	0	0.00062	0.02444	0.00133	0.01778
EM07-B-05	0.10556	0.05	0.00053	0	0	0.00148	0.00053	0.00528	0.00106	0.10556	0	0.00074	0.02903	0.00158	0.02111
EM07-B-15	0.09444	0.15	0.00047	0	0	0.00132	0.00047	0.00472	0.00094	0.09444	0	0.00066	0.02597	0.00142	0.01889
EM07-B-20	0.08889	0.2	0.00044	0	0	0.00124	0.00044	0.00444	0.00089	0.08889	0	0.00062	0.02444	0.00133	0.01778
EM07-Bi-025	0.0975	0.0975	0.00049	0.025	0	0.00137	0.00049	0.00488	0.00098	0.0975	0	0.00068	0.02681	0.00146	0.0195
EM07-Bi-05	0.095	0.095	0.00048	0.05	0	0.00133	0.00048	0.00475	0.00095	0.095	0	0.00067	0.02613	0.00143	0.019
EM07-Ca-035	0.0965	0.0965	0.00048	0	0.035	0.00135	0.00048	0.00483	0.00097	0.0965	0	0.00068	0.02654	0.00145	0.0193
EM07-Ca-07	0.093	0.093	0.00047	0	0.07	0.0013	0.00047	0.00465	0.00093	0.093	0	0.00065	0.02558	0.0014	0.0186
EM07-Cr-001	0.1004	0.1004	0.0005	0	0	0.00141	0.0005	0.001	0.001	0.1004	0	0.0007	0.02761	0.00151	0.02008
EM07-Cr-012	0.0993	0.0993	0.0005	0	0	0.00139	0.0005	0.012	0.00099	0.0993	0	0.0007	0.02731	0.00149	0.01986
EM07-Cr-02	0.09849	0.09849	0.00049	0	0	0.00138	0.00049	0.02	0.00098	0.09849	0	0.00069	0.02709	0.00148	0.0197
EM07-F-02	0.0981	0.0981	0.00049	0	0	0.00137	0.00049	0.0049	0.02	0.0981	0	0.00069	0.02698	0.00147	0.01962
EM07-Fe-05	0.10556	0.10556	0.00053	0	0	0.00148	0.00053	0.00528	0.00106	0.05	0	0.00074	0.02903	0.00158	0.02111
EM07-Fe-15	0.09444	0.09444	0.00047	0	0	0.00132	0.00047	0.00472	0.00094	0.15	0	0.00066	0.02597	0.00142	0.01889
EM07-Fe-20	0.08889	0.08889	0.00044	0	0	0.00124	0.00044	0.00444	0.00089	0.2	0	0.00062	0.02444	0.00133	0.01778
EM07-K-03	0.097	0.097	0.00049	0	0	0.00136	0.00049	0.00485	0.00097	0.097	0.03	0.00068	0.02668	0.00146	0.0194
EM07-K-06	0.094	0.094	0.00047	0	0	0.00132	0.00047	0.0047	0.00094	0.094	0.06	0.00066	0.02585	0.00141	0.0188
EM07-Li-015	0.10129	0.10129	0.00051	0	0	0.00142	0.00051	0.00506	0.00101	0.10129	0	0.00071	0.015	0.00152	0.02026
EM07-Li-04	0.09871	0.09871	0.00049	0	0	0.00138	0.00049	0.00494	0.00099	0.09871	0	0.00069	0.04	0.00148	0.01974
EM07-Mn-01	0.10194	0.10194	0.00051	0	0	0.00143	0.00051	0.0051	0.00102	0.10194	0	0.00071	0.02803	0.00153	0.001
EM07-Mn-04	0.09796	0.09796	0.00049	0	0	0.00137	0.00049	0.0049	0.00098	0.09796	0	0.00069	0.02694	0.00147	0.04
EM07-Na-05	0.11176	0.11176	0.00056	0	0	0.00156	0.00056	0.00559	0.00112	0.11176	0	0.00078	0.03074	0.00168	0.02235
EM07-Na-10	0.10588	0.10588	0.00053	0	0	0.00148	0.00053	0.00529	0.00106	0.10588	0	0.00074	0.02912	0.00159	0.02118
EM07-Na-20	0.09412	0.09412	0.00047	0	0	0.00132	0.00047	0.00471	0.00094	0.09412	0	0.00066	0.02588	0.00141	0.01882
EM07-Ni-001	0.10091	0.10091	0.0005	0	0	0.00141	0.0005	0.00505	0.00101	0.10091	0	0.00071	0.02775	0.00151	0.02018
EM07-Ni-02	0.09899	0.09899	0.00049	0	0	0.00139	0.00049	0.00495	0.00099	0.09899	0	0.00069	0.02722	0.00148	0.0198
EM07-P-0	0.10127	0.10127	0.00051	0	0	0.00142	0.00051	0.00506	0.00101	0.10127	0	0.00071	0.02785	0.00152	0.02025
EM07-P-025	0.09873	0.09873	0.00049	0	0	0.00138	0.00049	0.00494	0.00099	0.09873	0	0.00069	0.02715	0.00148	0.01975
EM07-Si-30	0.12352	0.12352	0.00062	0	0	0.00173	0.00062	0.00618	0.00124	0.12352	0	0.00086	0.03397	0.00185	0.0247
EM07-Si-37	0.11117	0.11117	0.00056	0	0	0.00156	0.00056	0.00556	0.00111	0.11117	0	0.00078	0.03057	0.00167	0.02223
EM07-Si-50	0.08823	0.08823	0.00044	0	0	0.00124	0.00044	0.00441	0.00088	0.08823	0	0.00062	0.02426	0.00132	0.01765
EM07-Zr-001	0.10246	0.10246	0.00051	0	0	0.00143	0.00051	0.00512	0.00102	0.10246	0	0.00072	0.02818	0.00154	0.02049
EM07-Zr-05	0.09744	0.09744	0.00049	0	0	0.00136	0.00049	0.00487	0.00097	0.09744	0	0.00068	0.02679	0.00146	0.01949
EM07-NM-0025	0.09979	0.09979	0.0005	0	0	0.0014	0.0005	0.00499	0.001	0.09979	0	0.0007	0.02744	0.0015	0.01996
EM07-BL-2	0.1	0.1	0.0005	0	0	0.0014	0.0005	0.005	0.001	0.1	0	0.0007	0.0275	0.0015	0.02

Table A1. Targeted Oxide Concentrations (in mass fractions) for the Test Matrix 1 Study Glasses (part 2)

Glass ID	Na2O	Nd2O3	NiO	P2O5	PbO	PdO	Rh2O3	RuO2	SiO2	SO3	SrO	TiO2	ZnO	ZrO2
EM07-BL-1	0.15	0.0007	0.01	0.0125	0.0037	0.00009	0.00003	0.00018	0.4333	0.003	0.0024	0.0004	0.0006	0.025
EM07-Al-06	0.15667	0.00073	0.01044	0.01306	0.00386	0.00009	0.00003	0.00019	0.45258	0.00313	0.00251	0.00042	0.00063	0.02611
EM07-Al-15	0.14167	0.00066	0.00944	0.01181	0.00349	0.00009	0.00003	0.00017	0.40924	0.00283	0.00227	0.00038	0.00057	0.02361
EM07-Al-20	0.13333	0.00062	0.00889	0.01111	0.00329	0.00008	0.00003	0.00016	0.38518	0.00267	0.00213	0.00036	0.00053	0.02222
EM07-B-05	0.15833	0.00074	0.01056	0.01319	0.00391	0.0001	0.00003	0.00019	0.45735	0.00317	0.00253	0.00042	0.00063	0.02639
EM07-B-15	0.14167	0.00066	0.00944	0.01181	0.00349	0.00009	0.00003	0.00017	0.40924	0.00283	0.00227	0.00038	0.00057	0.02361
EM07-B-20	0.13333	0.00062	0.00889	0.01111	0.00329	0.00008	0.00003	0.00016	0.38518	0.00267	0.00213	0.00036	0.00053	0.02222
EM07-Bi-025	0.14625	0.00068	0.00975	0.01219	0.00361	0.00009	0.00003	0.00018	0.42243	0.00293	0.00234	0.00039	0.00059	0.02438
EM07-Bi-05	0.1425	0.00067	0.0095	0.01188	0.00352	0.00009	0.00003	0.00017	0.41159	0.00285	0.00228	0.00038	0.00057	0.02375
EM07-Ca-035	0.14475	0.00068	0.00965	0.01206	0.00357	0.00009	0.00003	0.00017	0.4181	0.0029	0.00232	0.00039	0.00058	0.02413
EM07-Ca-07	0.1395	0.00065	0.0093	0.01163	0.00344	0.00008	0.00003	0.00017	0.40295	0.00279	0.00223	0.00037	0.00056	0.02325
EM07-Cr-001	0.1506	0.0007	0.01004	0.01255	0.00371	0.00009	0.00003	0.00018	0.43507	0.00301	0.00241	0.0004	0.0006	0.0251
EM07-Cr-012	0.14894	0.0007	0.00993	0.01241	0.00367	0.00009	0.00003	0.00018	0.43023	0.00298	0.00238	0.0004	0.0006	0.02482
EM07-Cr-02	0.14774	0.00069	0.00985	0.01231	0.00364	0.00009	0.00003	0.00018	0.42679	0.00295	0.00236	0.00039	0.00059	0.02462
EM07-F-02	0.14715	0.00069	0.00981	0.01226	0.00363	0.00009	0.00003	0.00018	0.42506	0.00294	0.00235	0.00039	0.00059	0.02452
EM07-Fe-05	0.15833	0.00074	0.01056	0.01319	0.00391	0.0001	0.00003	0.00019	0.45735	0.00317	0.00253	0.00042	0.00063	0.02639
EM07-Fe-15	0.14167	0.00066	0.00944	0.01181	0.00349	0.00009	0.00003	0.00017	0.40924	0.00283	0.00227	0.00038	0.00057	0.02361
EM07-Fe-20	0.13333	0.00062	0.00889	0.01111	0.00329	0.00008	0.00003	0.00016	0.38518	0.00267	0.00213	0.00036	0.00053	0.02222
EM07-K-03	0.1455	0.00068	0.0097	0.01213	0.00359	0.00009	0.00003	0.00017	0.42027	0.00291	0.00233	0.00039	0.00058	0.02425
EM07-K-06	0.141	0.00066	0.0094	0.01175	0.00348	0.00008	0.00003	0.00017	0.40729	0.00282	0.00226	0.00038	0.00056	0.0235
EM07-Li-015	0.15193	0.00071	0.01013	0.01266	0.00375	0.00009	0.00003	0.00018	0.43884	0.00304	0.00243	0.00041	0.00061	0.02532
EM07-Li-04	0.14807	0.00069	0.00987	0.01234	0.00365	0.00009	0.00003	0.00018	0.42776	0.00296	0.00237	0.00039	0.00059	0.02468
EM07-Mn-01	0.15291	0.00071	0.01019	0.01274	0.00377	0.00009	0.00003	0.00018	0.44171	0.00306	0.00245	0.00041	0.00061	0.02548
EM07-Mn-04	0.14694	0.00069	0.0098	0.01224	0.00362	0.00009	0.00003	0.00018	0.42444	0.00294	0.00235	0.00039	0.00059	0.02449
EM07-Na-05	0.05	0.00078	0.01118	0.01397	0.00414	0.0001	0.00003	0.0002	0.48429	0.00335	0.00268	0.00045	0.00067	0.02794
EM07-Na-10	0.1	0.00074	0.01059	0.01324	0.00392	0.0001	0.00003	0.00019	0.45878	0.00318	0.00254	0.00042	0.00064	0.02647
EM07-Na-20	0.2	0.00066	0.00941	0.01176	0.00348	0.00008	0.00003	0.00017	0.40782	0.00282	0.00226	0.00038	0.00056	0.02353
EM07-Ni-001	0.15136	0.00071	0.001	0.01261	0.00373	0.00009	0.00003	0.00018	0.43725	0.00303	0.00242	0.0004	0.00061	0.02523
EM07-Ni-02	0.14848	0.00069	0.02	0.01237	0.00366	0.00009	0.00003	0.00018	0.42894	0.00297	0.00238	0.0004	0.00059	0.02475
EM07-P-0	0.1519	0.00071	0.01013	0	0.00375	0.00009	0.00003	0.00018	0.43875	0.00304	0.00243	0.00041	0.00061	0.02532
EM07-P-025	0.1481	0.00069	0.00987	0.025	0.00365	0.00009	0.00003	0.00018	0.42785	0.00296	0.00237	0.00039	0.00059	0.02468
EM07-Si-30	0.1853	0.00086	0.01235	0.01544	0.00457	0.00011	0.00004	0.00022	0.3	0.00371	0.00296	0.00049	0.00074	0.03088
EM07-Si-37	0.16674	0.00078	0.01112	0.0139	0.00411	0.0001	0.00003	0.0002	0.37	0.00334	0.00267	0.00044	0.00067	0.02779
EM07-Si-50	0.13234	0.00062	0.00882	0.01103	0.00326	0.00008	0.00003	0.00016	0.5	0.00265	0.00212	0.00035	0.00053	0.02206
EM07-Zr-001	0.15369	0.00072	0.01025	0.01281	0.00379	0.00009	0.00003	0.00018	0.44399	0.00307	0.00246	0.00041	0.00061	0.001
EM07-Zr-05	0.14615	0.00068	0.00974	0.01218	0.00361	0.00009	0.00003	0.00018	0.42219	0.00292	0.00234	0.00039	0.00058	0.05
EM07-NM-0025	0.14968	0.0007	0.00998	0.01247	0.00369	0.00072	0.00024	0.00144	0.43239	0.00299	0.00239	0.0004	0.0006	0.02495
EM07-BL-2	0.15	0.0007	0.01	0.0125	0.0037	0.00009	0.00003	0.00018	0.4333	0.003	0.0024	0.0004	0.0006	0.025

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 1)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Al (wt%)	Ba (wt%)	Bi (wt%)	Ca (wt%)	Cd (wt%)	Ce (wt%)	Cr (wt%)	Fe (wt%)	K (wt%)	La (wt%)	Mg (wt%)	Mn (wt%)
1	Batch 1	1	1	1	BCHLM1111	2.55	0.13	<0.010	0.817	<0.010	0.003	0.068	8.55	2.6	<0.010	0.815	1.28
1	EM07-K-06	1	1	2	A07LM21	4.99	0.04	<0.010	0.013	0.109	0.04	0.323	6.39	4.16	0.044	0.074	1.45
1	EM07-Na-05	1	1	3	A03LM21	6.02	0.048	<0.010	0.017	0.131	0.049	0.367	7.4	<0.100	0.053	0.09	1.71
1	EM07-B-15	1	1	4	A11LM21	5.05	0.041	<0.010	0.015	0.109	0.041	0.307	6.55	<0.100	0.045	0.078	1.5
1	EM07-F-02	1	1	5	A13LM11	5.34	0.042	<0.010	0.009	0.113	0.043	0.312	6.61	<0.100	0.046	0.078	1.52
1	EM07-Ca-035	1	1	6	A04LM11	5.12	0.04	<0.010	2.68	0.106	0.041	0.295	6.37	<0.100	0.046	0.075	1.45
1	EM07-K-03	1	1	7	A06LM21	5.2	0.042	<0.010	0.01	0.11	0.042	0.324	6.52	2.36	0.045	0.077	1.49
1	EM07-Ca-035	1	1	8	A04LM21	5.13	0.04	<0.010	2.71	0.108	0.042	0.297	6.14	<0.100	0.046	0.077	1.4
1	EM07-B-05	1	1	9	A10LM11	5.7	0.046	<0.010	0.012	0.121	0.045	0.353	6.65	<0.100	0.049	0.083	1.52
1	EM07-Ca-07	1	1	10	A14LM21	4.95	0.039	<0.010	5.27	0.104	0.04	0.296	5.98	<0.100	0.044	0.096	1.36
1	EM07-B-15	1	1	11	A11LM11	5.08	0.041	<0.010	0.011	0.108	0.042	0.304	6.19	<0.100	0.045	0.077	1.4
1	Batch 1	1	1	12	BCHLM1112	2.6	0.128	<0.010	0.816	<0.010	0.003	0.067	8.69	2.6	<0.010	0.807	1.3
1	EM07-Ca-07	1	1	13	A14LM11	4.92	0.038	<0.010	5.18	0.101	0.04	0.29	6.29	<0.100	0.044	0.073	1.43
1	EM07-Bi-05	1	1	14	A17LM21	5.05	0.041	4.4	0.012	0.105	0.042	0.294	6.4	<0.100	0.044	0.074	1.46
1	EM07-F-02	1	1	15	A13LM21	5.29	0.042	<0.010	0.012	0.111	0.043	0.308	6.63	<0.100	0.046	0.078	1.52
1	EM07-Mn-04	1	1	16	A19LM11	5.23	0.041	<0.010	0.012	0.11	0.043	0.295	6.47	<0.100	0.046	0.078	3.01
1	EM07-Bi-05	1	1	17	A17LM11	5.06	0.041	4.38	0.011	0.106	0.042	0.298	6.23	<0.100	0.044	0.074	1.42
1	EM07-K-03	1	1	18	A06LM11	5.15	0.042	<0.010	0.031	0.108	0.043	0.312	6.48	2.37	0.045	0.078	1.48
1	EM07-K-06	1	1	19	A07LM11	5.07	0.04	<0.010	0.021	0.106	0.04	0.303	6.41	4.18	0.044	0.074	1.46
1	EM07-B-05	1	1	20	A10LM21	5.66	0.045	<0.010	0.011	0.119	0.045	0.339	7.22	<0.100	0.05	0.083	1.65
1	EM07-Mn-04	1	1	21	A19LM21	5.28	0.041	<0.010	0.017	0.11	0.042	0.292	6.34	<0.100	0.045	0.078	2.97
1	EM07-Na-05	1	1	22	A03LM11	6.02	0.047	<0.010	0.017	0.127	0.048	0.363	7.12	<0.100	0.052	0.089	1.65
1	Batch 1	1	1	23	BCHLM1113	2.62	0.127	<0.010	0.808	<0.010	0.003	0.067	8.6	2.58	<0.010	0.805	1.29
1	Batch 1	1	2	1	BCHLM1121	2.57	0.129	<0.010	0.806	<0.010	0.003	0.067	9.23	2.57	<0.010	0.815	1.39
1	EM07-Na-05	1	2	2	A03LM12	6.06	0.047	<0.010	0.016	0.128	0.048	0.366	8.01	<0.100	0.052	0.088	1.85
1	EM07-Ca-07	1	2	3	A14LM22	5.04	0.038	<0.010	5.29	0.102	0.04	0.296	6.6	<0.100	0.044	0.095	1.5
1	EM07-Ca-035	1	2	4	A04LM12	5.15	0.039	<0.010	2.67	0.105	0.041	0.296	6.9	<0.100	0.047	0.074	1.56
1	EM07-Na-05	1	2	5	A03LM22	6.07	0.047	<0.010	0.017	0.129	0.049	0.365	7.87	<0.100	0.053	0.088	1.79
1	EM07-K-03	1	2	6	A06LM22	5.29	0.041	<0.010	0.009	0.108	0.042	0.324	6.47	2.36	0.045	0.076	1.47
1	EM07-F-02	1	2	7	A13LM12	5.32	0.041	<0.010	0.009	0.11	0.043	0.311	6.73	<0.100	0.046	0.077	1.53
1	EM07-Ca-07	1	2	8	A14LM12	5.01	0.038	<0.010	5.36	0.1	0.04	0.294	6.17	<0.100	0.044	0.073	1.39
1	EM07-K-03	1	2	9	A06LM12	5.24	0.042	<0.010	0.03	0.108	0.042	0.313	6.65	2.34	0.045	0.077	1.51
1	EM07-B-05	1	2	10	A10LM12	5.75	0.045	<0.010	0.011	0.119	0.045	0.353	7.18	<0.100	0.05	0.082	1.65
1	EM07-B-05	1	2	11	A10LM22	5.73	0.045	<0.010	0.01	0.118	0.045	0.343	6.98	<0.100	0.05	0.082	1.6
1	Batch 1	1	2	12	BCHLM1122	2.6	0.128	<0.010	0.818	<0.010	0.003	0.067	8.85	2.61	<0.010	0.814	1.33
1	EM07-Ca-035	1	2	13	A04LM22	5.16	0.04	<0.010	2.74	0.106	0.041	0.297	6.4	<0.100	0.046	0.075	1.45
1	EM07-Mn-04	1	2	14	A19LM22	5.31	0.041	<0.010	0.017	0.11	0.043	0.297	6.56	<0.100	0.046	0.078	3.06
1	EM07-K-06	1	2	15	A07LM22	5.1	0.039	<0.010	0.012	0.106	0.04	0.321	6.53	4.16	0.044	0.072	1.47
1	EM07-F-02	1	2	16	A13LM22	5.41	0.041	<0.010	0.011	0.11	0.043	0.309	6.7	<0.100	0.047	0.077	1.52
1	EM07-Bi-05	1	2	17	A17LM22	5.16	0.04	4.46	0.012	0.105	0.042	0.294	6.4	<0.100	0.045	0.073	1.45
1	EM07-Bi-05	1	2	18	A17LM12	5.14	0.04	4.39	0.01	0.105	0.041	0.297	6.32	<0.100	0.044	0.073	1.42
1	EM07-B-15	1	2	19	A11LM22	5.14	0.04	<0.010	0.015	0.106	0.041	0.304	6.14	<0.100	0.045	0.075	1.39
1	EM07-K-06	1	2	20	A07LM12	5.07	0.039	<0.010	0.021	0.105	0.04	0.305	6.13	4.17	0.044	0.073	1.39

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 1)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Al (wt%)	Ba (wt%)	Bi (wt%)	Ca (wt%)	Cd (wt%)	Ce (wt%)	Cr (wt%)	Fe (wt%)	K (wt%)	La (wt%)	Mg (wt%)	Mn (wt%)
1	EM07-B-15	1	2	21	A11LM12	5.11	0.04	<0.010	0.01	0.105	0.041	0.301	6.26	<0.100	0.045	0.074	1.42
1	EM07-Mn-04	1	2	22	A19LM12	5.29	0.04	<0.010	0.012	0.108	0.043	0.296	6.36	<0.100	0.046	0.077	2.96
1	Batch 1	1	2	23	BCHLM1123	2.57	0.129	<0.010	0.844	<0.010	0.003	0.067	8.71	2.67	<0.010	0.814	1.3
1	Batch 1	2	1	1	BCHLM1211	2.59	0.129	<0.010	0.808	<0.010	0.003	0.066	9.04	2.55	<0.010	0.811	1.36
1	EM07-P-0	2	1	2	A16LM21	5.37	0.045	<0.010	0.011	0.113	0.045	0.311	7.1	<0.100	0.047	0.078	1.63
1	EM07-Na-20	2	1	3	A01LM11	5.06	0.041	<0.010	0.015	0.103	0.04	0.313	6.61	<0.100	0.044	0.08	1.53
1	EM07-Na-10	2	1	4	A12LM21	5.67	0.046	<0.010	0.011	0.116	0.046	0.309	7.23	<0.100	0.049	0.082	1.68
1	EM07-B-20	2	1	5	A18LM21	4.76	0.038	<0.010	0.009	0.097	0.039	0.283	6.06	<0.100	0.042	0.069	1.38
1	EM07-B-20	2	1	6	A18LM11	4.72	0.038	<0.010	0.03	0.096	0.039	0.281	5.81	<0.100	0.042	0.069	1.36
1	EM07-Bi-025	2	1	7	A05LM21	5.22	0.043	2.16	0.041	0.108	0.043	0.338	6.38	<0.100	0.048	0.078	1.47
1	EM07-Zr-001	2	1	8	A09LM11	5.52	0.044	<0.010	0.015	0.11	0.044	0.33	6.59	<0.100	0.048	0.08	1.51
1	EM07-Na-10	2	1	9	A12LM11	5.74	0.047	<0.010	0.017	0.117	0.047	0.311	7.25	<0.100	0.05	0.083	1.67
1	EM07-Mn-01	2	1	10	A02LM21	5.51	0.045	<0.010	0.018	0.114	0.044	0.327	6.75	<0.100	0.047	0.08	0.03
1	EM07-Na-20	2	1	11	A01LM21	5.09	0.041	<0.010	0.019	0.103	0.041	0.309	6.22	<0.100	0.044	0.085	1.44
1	Batch 1	2	1	12	BCHLM1212	2.59	0.129	<0.010	0.837	<0.010	0.004	0.066	8.46	2.63	<0.010	0.805	1.28
1	EM07-Bi-025	2	1	13	A05LM11	5.16	0.043	2.18	0.019	0.107	0.044	0.335	6.41	<0.100	0.049	0.078	1.48
1	EM07-P-025	2	1	14	A15LM11	5.26	0.043	<0.010	0.012	0.11	0.043	0.312	6.4	<0.100	0.047	0.108	1.48
1	EM07-Zr-05	2	1	15	A08LM21	5.19	0.043	<0.010	0.013	0.108	0.044	0.285	6.24	<0.100	0.045	0.076	1.44
1	EM07-Zr-001	2	1	16	A09LM21	5.42	0.044	<0.010	0.018	0.11	0.044	0.327	6.54	<0.100	0.048	0.08	1.51
1	EM07-Mn-01	2	1	17	A02LM11	5.43	0.045	<0.010	0.02	0.112	0.044	0.328	6.51	<0.100	0.048	0.08	0.03
1	EM07-P-0	2	1	18	A16LM11	5.35	0.045	<0.010	0.016	0.112	0.046	0.312	6.48	<0.100	0.048	0.079	1.59
1	EM07-Zr-05	2	1	19	A08LM11	5.14	0.043	<0.010	0.013	0.106	0.044	0.289	6.27	<0.100	0.045	0.075	1.43
1	EM07-P-025	2	1	20	A15LM21	5.19	0.043	<0.010	0.013	0.107	0.043	0.299	6.35	<0.100	0.047	0.077	1.46
1	Batch 1	2	1	21	BCHLM1213	2.58	0.131	<0.010	0.872	<0.010	0.004	0.067	8.35	2.72	<0.010	0.813	1.25
1	Batch 1	2	2	1	BCHLM1221	2.58	0.129	<0.010	0.81	<0.010	0.005	0.066	8.74	2.52	<0.010	0.81	1.34
1	EM07-Na-20	2	2	2	A01LM22	5.03	0.04	<0.010	0.018	0.104	0.041	0.308	6.28	<0.100	0.041	0.084	1.49
1	EM07-Zr-05	2	2	3	A08LM12	5.14	0.042	<0.010	0.012	0.106	0.042	0.286	6.36	<0.100	0.041	0.073	1.47
1	EM07-Na-20	2	2	4	A01LM12	4.99	0.04	<0.010	0.015	0.103	0.041	0.311	6.29	<0.100	0.041	0.078	1.47
1	EM07-P-0	2	2	5	A16LM22	5.39	0.044	<0.010	0.011	0.111	0.045	0.309	6.42	<0.100	0.044	0.077	1.51
1	EM07-B-20	2	2	6	A18LM12	4.65	0.037	<0.010	0.03	0.096	0.039	0.278	5.6	<0.100	0.038	0.067	1.34
1	EM07-Na-10	2	2	7	A12LM22	5.58	0.046	<0.010	0.011	0.116	0.047	0.308	6.34	<0.100	0.047	0.081	1.51
1	EM07-P-025	2	2	8	A15LM12	5.18	0.042	<0.010	0.011	0.109	0.043	0.307	6.22	<0.100	0.043	0.105	1.46
1	EM07-Na-10	2	2	9	A12LM12	5.6	0.046	<0.010	0.016	0.116	0.047	0.308	6.89	<0.100	0.046	0.082	1.63
1	EM07-Bi-025	2	2	10	A05LM12	5.09	0.042	2.15	0.019	0.107	0.044	0.333	6.31	<0.100	0.046	0.076	1.5
1	EM07-Mn-01	2	2	11	A02LM12	5.38	0.044	<0.010	0.019	0.112	0.045	0.324	6.49	<0.100	0.044	0.078	0.06
1	Batch 1	2	2	12	BCHLM1222	2.64	0.129	<0.010	0.854	<0.010	0.005	0.066	8.32	2.63	<0.010	0.805	1.28
1	EM07-Zr-05	2	2	13	A08LM22	5.1	0.042	<0.010	0.013	0.106	0.044	0.28	6.17	<0.100	0.042	0.074	1.45
1	EM07-Bi-025	2	2	14	A05LM22	5.11	0.041	2.15	0.042	0.107	0.044	0.334	6.32	<0.100	0.045	0.076	1.49
1	EM07-Mn-01	2	2	15	A02LM22	5.38	0.044	<0.010	0.018	0.112	0.045	0.325	6.61	<0.100	0.045	0.078	0.06
1	EM07-Zr-001	2	2	16	A09LM12	5.4	0.044	<0.010	0.015	0.109	0.046	0.33	6.55	<0.100	0.046	0.079	1.53
1	EM07-P-0	2	2	17	A16LM12	5.33	0.044	<0.010	0.016	0.109	0.046	0.309	6.45	<0.100	0.045	0.077	1.61
1	EM07-P-025	2	2	18	A15LM22	5.14	0.042	<0.010	0.013	0.106	0.043	0.296	6.44	<0.100	0.045	0.076	1.51
1	EM07-Zr-001	2	2	19	A09LM22	5.31	0.043	<0.010	0.019	0.107	0.045	0.324	6.77	<0.100	0.046	0.079	1.58

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 1)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Al (wt%)	Ba (wt%)	Bi (wt%)	Ca (wt%)	Cd (wt%)	Ce (wt%)	Cr (wt%)	Fe (wt%)	K (wt%)	La (wt%)	Mg (wt%)	Mn (wt%)
1	EM07-B-20	2	2	20	A18LM22	4.64	0.037	<0.010	0.01	0.094	0.04	0.279	5.78	<0.100	0.04	0.066	1.34
1	Batch 1	2	2	21	BCHLM1223	2.63	0.127	<0.010	0.874	<0.010	0.005	0.065	8.25	2.68	<0.010	0.792	1.27
2	Batch 1	1	1	1	BCHLM2111	2.48	0.124	<0.010	0.821	<0.010	<0.010	0.074	8.81	2.51	<0.010	0.808	1.32
2	EM07-Fe-15	1	1	2	B01LM11	4.86	0.039	<0.010	<0.010	0.106	0.04	0.283	10.2	<0.100	0.048	0.074	1.5
2	EM07-Si-50	1	1	3	B11LM11	4.51	0.036	<0.010	<0.010	0.097	0.037	0.288	6.08	<0.100	0.043	0.068	1.39
2	EM07-Al-15	1	1	4	B13LM21	7.86	0.038	<0.010	<0.010	0.104	0.039	0.268	6.6	<0.100	0.047	0.074	1.52
2	EM07-Cr-02	1	1	5	B03LM11	5.09	0.04	<0.010	0.012	0.107	0.041	1.04	6.63	<0.100	0.048	0.076	1.51
2	EM07-Si-30	1	1	6	B18LM11	6.45	0.051	<0.010	<0.010	0.14	0.051	0.376	8.47	<0.100	0.061	0.097	1.96
2	EM07-BL-1	1	1	7	B07LM21	5.25	0.041	<0.010	<0.010	0.113	0.042	0.32	6.81	<0.100	0.05	0.079	1.56
2	EM07-Fe-05	1	1	8	B14LM21	5.42	0.044	<0.010	<0.010	0.117	0.045	0.341	3.44	<0.100	0.052	0.083	1.61
2	EM07-Al-15	1	1	9	B13LM11	7.72	0.038	<0.010	0.013	0.103	0.04	0.27	6.27	<0.100	0.048	0.074	1.45
2	EM07-Si-30	1	1	10	B18LM21	6.42	0.053	<0.010	<0.010	0.138	0.051	0.373	8.75	<0.100	0.061	0.097	1.91
2	EM07-Si-37	1	1	11	B19LM11	5.7	0.045	<0.010	<0.010	0.122	0.046	0.349	7.54	<0.100	0.055	0.087	1.73
2	Batch 1	1	1	12	BCHLM2112	2.49	0.125	<0.010	0.83	<0.010	<0.010	0.075	9.05	2.55	<0.010	0.809	1.37
2	EM07-Al-06	1	1	13	B17LM21	3.17	0.042	<0.010	0.057	0.114	0.043	0.333	7.25	<0.100	0.052	0.086	1.68
2	EM07-Fe-20	1	1	14	B02LM11	4.71	0.036	<0.010	0.028	0.095	0.038	0.27	13.5	<0.100	0.044	0.068	1.38
2	EM07-Fe-15	1	1	15	B01LM21	4.81	0.038	<0.010	<0.010	0.101	0.04	0.273	9.62	<0.100	0.047	0.072	1.41
2	EM07-Si-50	1	1	16	B11LM21	4.57	0.036	<0.010	<0.010	0.097	0.038	0.29	5.77	<0.100	0.044	0.068	1.32
2	EM07-Cr-02	1	1	17	B03LM21	5.14	0.04	<0.010	0.011	0.107	0.042	1.057	6.41	<0.100	0.049	0.077	1.45
2	EM07-Fe-20	1	1	18	B02LM21	4.65	0.036	<0.010	<0.010	0.097	0.038	0.271	13.3	<0.100	0.045	0.069	1.37
2	EM07-Si-37	1	1	19	B19LM21	5.77	0.046	<0.010	<0.010	0.121	0.047	0.35	7.46	<0.100	0.056	0.087	1.71
2	EM07-Al-06	1	1	20	B17LM11	3.2	0.043	<0.010	0.017	0.115	0.044	0.339	7.22	<0.100	0.052	0.083	1.66
2	EM07-Fe-05	1	1	21	B14LM11	5.61	0.044	<0.010	0.014	0.115	0.046	0.343	3.47	<0.100	0.054	0.083	1.69
2	EM07-BL-1	1	1	22	B07LM11	5.31	0.041	<0.010	0.01	0.113	0.044	0.32	6.84	<0.100	0.051	0.079	1.56
2	Batch 1	1	1	23	BCHLM2113	2.51	0.125	<0.010	0.856	<0.010	<0.010	0.075	8.68	2.64	<0.010	0.809	1.3
2	Batch 1	1	2	1	BCHLM2121	2.5	0.127	<0.010	0.806	<0.010	<0.010	0.076	8.94	2.63	<0.010	0.816	1.35
2	EM07-Fe-05	1	2	2	B14LM12	5.46	0.045	<0.010	0.014	0.122	0.045	0.351	3.41	<0.100	0.054	0.086	1.65
2	EM07-Cr-02	1	2	3	B03LM12	5.12	0.041	<0.010	0.014	0.112	0.042	1.082	6.51	<0.100	0.051	0.08	1.48
2	EM07-Al-15	1	2	4	B13LM12	7.69	0.039	<0.010	0.015	0.105	0.041	0.274	6.17	<0.100	0.049	0.076	1.42
2	EM07-Si-30	1	2	5	B18LM12	6.42	0.052	<0.010	0.01	0.143	0.052	0.384	8.1	<0.100	0.063	0.1	1.88
2	EM07-Fe-05	1	2	6	B14LM22	5.38	0.045	<0.010	0.011	0.121	0.046	0.348	3.32	<0.100	0.054	0.085	1.54
2	EM07-Fe-15	1	2	7	B01LM22	4.71	0.038	<0.010	<0.010	0.104	0.04	0.275	9.36	<0.100	0.047	0.074	1.37
2	EM07-Fe-20	1	2	8	B02LM12	4.67	0.036	<0.010	0.03	0.098	0.039	0.275	13.6	<0.100	0.046	0.071	1.38
2	EM07-Si-37	1	2	9	B19LM12	5.71	0.046	<0.010	0.011	0.126	0.048	0.355	7.38	<0.100	0.057	0.089	1.71
2	EM07-Al-15	1	2	10	B13LM22	7.85	0.038	<0.010	0.011	0.104	0.041	0.272	6.25	<0.100	0.049	0.076	1.44
2	EM07-Al-06	1	2	11	B17LM12	3.17	0.043	<0.010	0.019	0.119	0.045	0.345	6.75	<0.100	0.054	0.086	1.56
2	Batch 1	1	2	12	BCHLM2122	2.5	0.126	<0.010	0.868	<0.010	<0.010	0.075	8.3	2.57	<0.010	0.801	1.26
2	EM07-Al-06	1	2	13	B17LM22	3.14	0.042	<0.010	0.058	0.116	0.043	0.335	6.83	<0.100	0.052	0.087	1.58
2	EM07-Si-37	1	2	14	B19LM22	5.73	0.046	<0.010	0.011	0.124	0.048	0.352	7.41	<0.100	0.056	0.089	1.71
2	EM07-BL-1	1	2	15	B07LM12	5.3	0.041	<0.010	0.011	0.113	0.044	0.319	6.73	<0.100	0.052	0.08	1.55
2	EM07-Fe-15	1	2	16	B01LM12	4.94	0.038	<0.010	0.011	0.103	0.041	0.278	9.96	<0.100	0.049	0.074	1.47
2	EM07-Fe-20	1	2	17	B02LM22	4.66	0.036	<0.010	0.01	0.096	0.039	0.269	12.9	<0.100	0.046	0.07	1.35
2	EM07-Si-50	1	2	18	B11LM22	4.62	0.035	<0.010	0.011	0.097	0.039	0.291	5.66	<0.100	0.045	0.07	1.3

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 1)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Al (wt%)	Ba (wt%)	Bi (wt%)	Ca (wt%)	Cd (wt%)	Ce (wt%)	Cr (wt%)	Fe (wt%)	K (wt%)	La (wt%)	Mg (wt%)	Mn (wt%)
2	EM07-BL-1	1	2	19	B07LM22	5.22	0.042	<0.010	0.011	0.115	0.044	0.326	6.44	<0.100	0.052	0.081	1.48
2	EM07-Cr-02	1	2	20	B03LM22	5.11	0.041	<0.010	0.013	0.11	0.043	1.074	6.07	<0.100	0.051	0.079	1.38
2	EM07-Si-50	1	2	21	B11LM12	4.52	0.036	<0.010	0.01	0.099	0.039	0.297	5.79	<0.100	0.046	0.071	1.32
2	EM07-Si-30	1	2	22	B18LM22	6.44	0.054	<0.010	<0.010	0.143	0.053	0.385	8.73	<0.100	0.064	0.1	1.9
2	Batch 1	1	2	23	BCHLM2123	2.52	0.129	<0.010	0.845	<0.010	<0.010	0.077	8.84	2.43	<0.010	0.828	1.33
2	Batch 1	2	1	1	BCHLM2211	2.51	0.125	<0.010	0.823	<0.010	<0.010	0.074	8.81	2.48	<0.010	0.815	1.36
2	EM07-Li-015	2	1	2	B04LM11	5.35	0.042	<0.010	<0.010	0.115	0.043	0.317	7.02	<0.100	0.05	0.081	1.64
2	EM07-NM-0025	2	1	3	B05LM21	5.16	0.04	<0.010	0.012	0.112	0.042	0.318	6.64	<0.100	0.049	0.08	1.54
2	EM07-BL-2	2	1	4	B06LM11	5.13	0.041	<0.010	0.013	0.113	0.042	0.325	6.35	<0.100	0.049	0.079	1.48
2	EM07-Al-20	2	1	5	B12LM21	9.74	0.037	<0.010	<0.010	0.101	0.039	0.247	5.64	<0.100	0.045	0.071	1.33
2	EM07-Ni-001	2	1	6	B09LM21	5.25	0.041	<0.010	<0.010	0.115	0.042	0.33	6.39	<0.100	0.05	0.08	1.48
2	EM07-Cr-001	2	1	7	B10LM21	5.2	0.042	<0.010	<0.010	0.115	0.043	0.076	6.7	<0.100	0.049	0.081	1.56
2	EM07-Al-20	2	1	8	B12LM11	9.69	0.037	<0.010	<0.010	0.1	0.038	0.244	5.94	<0.100	0.045	0.071	1.39
2	EM07-Ni-001	2	1	9	B09LM11	5.26	0.041	<0.010	<0.010	0.114	0.042	0.329	6.71	<0.100	0.05	0.079	1.56
2	EM07-Ni-02	2	1	10	B15LM11	5.13	0.04	<0.010	<0.010	0.113	0.041	0.313	6.49	<0.100	0.049	0.079	1.52
2	EM07-Li-04	2	1	11	B16LM11	5.12	0.041	<0.010	0.022	0.112	0.041	0.322	6.4	<0.100	0.049	0.079	1.49
2	Batch 1	2	1	12	BCHLM2212	2.49	0.127	<0.010	0.855	<0.010	<0.010	0.076	8.29	2.61	<0.010	0.825	1.29
2	EM07-Li-04	2	1	13	B16LM21	5.1	0.042	<0.010	<0.010	0.114	0.042	0.32	6.32	<0.100	0.049	0.084	1.47
2	EM07-BL-2	2	1	14	B06LM21	5.07	0.04	<0.010	<0.010	0.111	0.042	0.32	6.46	<0.100	0.048	0.078	1.5
2	EM07-Cr-012	2	1	15	B08LM21	5.2	0.042	<0.010	<0.010	0.114	0.043	0.729	6.73	<0.100	0.05	0.08	1.56
2	EM07-Cr-012	2	1	16	B08LM11	5.23	0.042	<0.010	<0.010	0.112	0.043	0.726	6.61	<0.100	0.05	0.08	1.54
2	EM07-Cr-001	2	1	17	B10LM11	5.22	0.042	<0.010	<0.010	0.115	0.043	0.078	6.64	<0.100	0.05	0.081	1.54
2	EM07-Li-015	2	1	18	B04LM21	5.34	0.042	<0.010	<0.010	0.115	0.044	0.321	6.64	<0.100	0.05	0.082	1.54
2	EM07-NM-0025	2	1	19	B05LM11	5.24	0.041	<0.010	<0.010	0.115	0.044	0.327	6.27	<0.100	0.05	0.081	1.47
2	EM07-Ni-02	2	1	20	B15LM21	4.94	0.039	<0.010	<0.010	0.109	0.04	0.297	6.87	<0.100	0.047	0.075	1.39
2	Batch 1	2	1	21	BCHLM2213	2.53	0.127	<0.010	0.873	<0.010	<0.010	0.076	8.44	2.65	<0.010	0.826	1.3
2	Batch 1	2	2	1	BCHLM2221	2.46	0.125	<0.010	0.821	<0.010	<0.010	0.073	9.02	2.47	<0.010	0.812	1.33
2	EM07-NM-0025	2	2	2	B05LM12	5.14	0.039	<0.010	0.01	0.114	0.042	0.319	7.11	<0.100	0.049	0.079	1.59
2	EM07-Ni-02	2	2	3	B15LM12	5.07	0.038	<0.010	<0.010	0.112	0.041	0.308	7.06	<0.100	0.048	0.077	1.59
2	EM07-BL-2	2	2	4	B06LM22	5.05	0.038	<0.010	<0.010	0.109	0.041	0.316	7.06	<0.100	0.048	0.077	1.58
2	EM07-Ni-02	2	2	5	B15LM22	5.05	0.038	<0.010	<0.010	0.112	0.041	0.303	7.02	<0.100	0.047	0.077	1.58
2	EM07-Al-20	2	2	6	B12LM12	9.57	0.035	<0.010	<0.010	0.1	0.038	0.243	6.09	<0.100	0.044	0.07	1.38
2	EM07-Li-015	2	2	7	B04LM22	5.27	0.04	<0.010	<0.010	0.115	0.043	0.32	6.85	<0.100	0.05	0.081	1.52
2	EM07-Li-04	2	2	8	B16LM12	5.04	0.039	<0.010	0.022	0.111	0.041	0.32	6.63	<0.100	0.048	0.079	1.48
2	EM07-Cr-012	2	2	9	B08LM12	5.1	0.039	<0.010	<0.010	0.111	0.042	0.719	6.71	<0.100	0.049	0.079	1.5
2	EM07-Al-20	2	2	10	B12LM22	9.65	0.035	<0.010	<0.010	0.1	0.038	0.244	6.19	<0.100	0.044	0.071	1.38
2	EM07-Cr-012	2	2	11	B08LM22	5.17	0.04	<0.010	<0.010	0.113	0.043	0.726	6.91	<0.100	0.049	0.08	1.54
2	Batch 1	2	2	12	BCHLM2222	2.5	0.126	<0.010	0.834	<0.010	<0.010	0.075	9.14	2.52	<0.010	0.82	1.35
2	EM07-BL-2	2	2	13	B06LM12	5.08	0.04	<0.010	0.014	0.113	0.042	0.324	6.67	<0.100	0.049	0.079	1.49
2	EM07-Li-015	2	2	14	B04LM12	5.26	0.04	<0.010	<0.010	0.117	0.043	0.319	6.77	<0.100	0.05	0.082	1.52
2	EM07-Li-04	2	2	15	B16LM22	5.07	0.039	<0.010	<0.010	0.113	0.041	0.318	6.74	<0.100	0.048	0.083	1.51
2	EM07-Ni-001	2	2	16	B09LM22	5.25	0.04	<0.010	0.01	0.116	0.043	0.334	6.92	<0.100	0.05	0.08	1.54
2	EM07-Cr-001	2	2	17	B10LM12	5.14	0.039	<0.010	<0.010	0.113	0.042	0.075	6.96	<0.100	0.049	0.08	1.53

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 1)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Al (wt%)	Ba (wt%)	Bi (wt%)	Ca (wt%)	Cd (wt%)	Ce (wt%)	Cr (wt%)	Fe (wt%)	K (wt%)	La (wt%)	Mg (wt%)	Mn (wt%)
2	EM07-Cr-001	2	2	18	B10LM22	5.24	0.04	<0.010	<0.010	0.115	0.043	0.074	6.96	<0.100	0.049	0.08	1.55
2	EM07-Ni-001	2	2	19	B09LM12	5.19	0.039	<0.010	<0.010	0.112	0.042	0.326	6.93	<0.100	0.049	0.078	1.54
2	EM07-NM-0025	2	2	20	B05LM22	5.14	0.038	<0.010	0.014	0.111	0.042	0.315	6.81	<0.100	0.049	0.079	1.51
2	Batch 1	2	2	21	BCHLM2223	2.52	0.123	<0.010	0.847	<0.010	<0.010	0.073	9.14	2.55	<0.010	0.805	1.34

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 2)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Na (wt%)	Nd (wt%)	Ni (wt%)	P (wt%)	Pb (wt%)	Ti (wt%)	Zn (wt%)	Zr (wt%)
1	Batch 1	1	1	1	BCHLM1111	6.75	0.109	0.547	<0.100	<0.100	0.389	<0.010	0.068
1	EM07-K-06	1	1	2	A07LM21	10.5	0.052	0.688	0.294	0.298	0.025	0.046	1.07
1	EM07-Na-05	1	1	3	A03LM21	4.01	0.063	0.818	0.443	0.355	0.031	0.056	1.72
1	EM07-B-15	1	1	4	A11LM21	10.6	0.054	0.694	0.314	0.296	0.025	0.048	1.17
1	EM07-F-02	1	1	5	A13LM11	11.3	0.056	0.722	0.311	0.313	0.027	0.049	1.26
1	EM07-Ca-035	1	1	6	A04LM11	10.8	0.054	0.675	0.378	0.295	0.026	0.046	1.26
1	EM07-K-03	1	1	7	A06LM21	11	0.054	0.708	0.334	0.304	0.026	0.047	1.23
1	EM07-Ca-035	1	1	8	A04LM21	10.9	0.054	0.688	0.37	0.3	0.026	0.047	1.17
1	EM07-B-05	1	1	9	A10LM11	12.3	0.059	0.758	0.352	0.326	0.028	0.052	1.28
1	EM07-Ca-07	1	1	10	A14LM21	10.8	0.052	0.671	0.334	0.289	0.025	0.046	1.25
1	EM07-B-15	1	1	11	A11LM11	10.8	0.055	0.689	0.385	0.296	0.025	0.047	1.38
1	Batch 1	1	1	12	BCHLM1112	6.89	0.108	0.543	<0.100	<0.100	0.383	<0.010	0.072
1	EM07-Ca-07	1	1	13	A14LM11	10.4	0.051	0.658	0.323	0.283	0.025	0.046	0.998
1	EM07-Bi-05	1	1	14	A17LM21	10.7	0.054	0.678	0.33	0.295	0.027	0.044	1.34
1	EM07-F-02	1	1	15	A13LM21	11.1	0.056	0.715	0.363	0.308	0.027	0.05	1.3
1	EM07-Mn-04	1	1	16	A19LM11	11.2	0.055	0.69	0.354	0.304	0.026	0.047	1.24
1	EM07-Bi-05	1	1	17	A17LM11	10.7	0.054	0.675	0.355	0.294	0.027	0.045	1.26
1	EM07-K-03	1	1	18	A06LM11	11	0.055	0.704	0.407	0.303	0.026	0.047	1.41
1	EM07-K-06	1	1	19	A07LM11	10.8	0.052	0.681	0.393	0.292	0.025	0.045	1.36
1	EM07-B-05	1	1	20	A10LM21	12	0.059	0.758	0.37	0.326	0.028	0.051	1.34
1	EM07-Mn-04	1	1	21	A19LM21	11.3	0.055	0.689	0.391	0.302	0.026	0.049	1.35
1	EM07-Na-05	1	1	22	A03LM11	4.05	0.062	0.806	0.461	0.349	0.03	0.056	1.63
1	Batch 1	1	1	23	BCHLM1113	7.06	0.107	0.539	<0.100	<0.100	0.383	<0.010	0.072
1	Batch 1	1	2	1	BCHLM1121	6.78	0.108	0.544	<0.100	<0.100	0.382	<0.010	0.06
1	EM07-Na-05	1	2	2	A03LM12	3.97	0.062	0.812	0.449	0.349	0.03	0.055	1.71
1	EM07-Ca-07	1	2	3	A14LM22	10.8	0.052	0.672	0.33	0.289	0.024	0.043	1.29
1	EM07-Ca-035	1	2	4	A04LM12	10.9	0.055	0.679	0.36	0.295	0.025	0.044	1.28
1	EM07-Na-05	1	2	5	A03LM22	4.02	0.063	0.815	0.435	0.354	0.03	0.054	1.72
1	EM07-K-03	1	2	6	A06LM22	11.3	0.054	0.708	0.324	0.304	0.025	0.045	1.19
1	EM07-F-02	1	2	7	A13LM12	11.4	0.055	0.718	0.247	0.309	0.026	0.047	1.23
1	EM07-Ca-07	1	2	8	A14LM12	10.7	0.052	0.66	0.291	0.285	0.024	0.044	0.992
1	EM07-K-03	1	2	9	A06LM12	11.1	0.054	0.708	0.4	0.305	0.025	0.045	1.41
1	EM07-B-05	1	2	10	A10LM12	12.2	0.059	0.756	0.342	0.324	0.027	0.05	1.34
1	EM07-B-05	1	2	11	A10LM22	12.2	0.06	0.766	0.362	0.329	0.027	0.05	1.28
1	Batch 1	1	2	12	BCHLM1122	6.84	0.108	0.543	<0.100	<0.100	0.384	<0.010	0.065
1	EM07-Ca-035	1	2	13	A04LM22	11	0.054	0.686	0.351	0.299	0.026	0.045	1.17
1	EM07-Mn-04	1	2	14	A19LM22	11.4	0.055	0.701	0.388	0.308	0.026	0.047	1.34
1	EM07-K-06	1	2	15	A07LM22	10.7	0.052	0.683	0.272	0.292	0.024	0.043	1.07
1	EM07-F-02	1	2	16	A13LM22	11.5	0.056	0.715	0.305	0.308	0.026	0.048	1.28
1	EM07-Bi-05	1	2	17	A17LM22	11	0.054	0.68	0.316	0.295	0.026	0.042	1.29
1	EM07-Bi-05	1	2	18	A17LM12	10.9	0.053	0.671	0.342	0.293	0.026	0.043	1.26
1	EM07-B-15	1	2	19	A11LM22	11	0.054	0.686	0.306	0.292	0.024	0.046	1.09
1	EM07-K-06	1	2	20	A07LM12	10.8	0.052	0.684	0.375	0.293	0.024	0.043	1.26

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 2)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Na (wt%)	Nd (wt%)	Ni (wt%)	P (wt%)	Pb (wt%)	Ti (wt%)	Zn (wt%)	Zr (wt%)
1	EM07-B-15	1	2	21	A11LM12	10.8	0.054	0.679	0.37	0.292	0.024	0.045	1.36
1	EM07-Mn-04	1	2	22	A19LM12	11.4	0.055	0.693	0.334	0.302	0.026	0.045	1.19
1	Batch 1	1	2	23	BCHLM1123	6.89	0.11	0.545	<0.100	<0.100	0.388	<0.010	0.067
1	Batch 1	2	1	1	BCHLM1211	6.86	0.108	0.538	<0.100	<0.100	0.382	<0.010	0.06
1	EM07-P-0	2	1	2	A16LM21	11.3	0.057	0.72	<0.100	0.315	0.028	0.049	1.75
1	EM07-Na-20	2	1	3	A01LM11	14.9	0.053	0.689	0.319	0.291	0.025	0.048	1.34
1	EM07-Na-10	2	1	4	A12LM21	7.7	0.059	0.73	0.416	0.327	0.028	0.05	1.54
1	EM07-B-20	2	1	5	A18LM21	10.2	0.051	0.643	0.285	0.274	0.023	0.041	1.27
1	EM07-B-20	2	1	6	A18LM11	10.2	0.05	0.642	0.267	0.271	0.023	0.042	0.971
1	EM07-Bi-025	2	1	7	A05LM21	11.1	0.057	0.724	0.305	0.304	0.025	0.052	1.14
1	EM07-Zr-001	2	1	8	A09LM11	11.7	0.101	0.74	0.483	0.318	0.027	0.049	0.049
1	EM07-Na-10	2	1	9	A12LM11	7.89	0.06	0.738	0.408	0.331	0.028	0.052	1.46
1	EM07-Mn-01	2	1	10	A02LM21	11.7	0.058	0.732	0.32	0.31	0.027	0.049	1.72
1	EM07-Na-20	2	1	11	A01LM21	15.1	0.053	0.692	0.303	0.29	0.025	0.045	1.11
1	Batch 1	2	1	12	BCHLM1212	6.9	0.109	0.54	<0.100	<0.100	0.385	<0.010	0.066
1	EM07-Bi-025	2	1	13	A05LM11	11	0.058	0.721	0.336	0.301	0.026	0.049	1.16
1	EM07-P-025	2	1	14	A15LM11	11.5	0.055	0.713	0.368	0.308	0.022	0.047	0.33
1	EM07-Zr-05	2	1	15	A08LM21	11.1	0.061	0.689	0.467	0.307	0.026	0.046	3.17
1	EM07-Zr-001	2	1	16	A09LM21	11.5	0.102	0.737	0.492	0.315	0.027	0.049	0.043
1	EM07-Mn-01	2	1	17	A02LM11	11.5	0.059	0.728	0.362	0.311	0.028	0.05	1.2
1	EM07-P-0	2	1	18	A16LM11	11.4	0.06	0.724	<0.100	0.315	0.028	0.049	1.66
1	EM07-Zr-05	2	1	19	A08LM11	11	0.061	0.685	0.427	0.303	0.026	0.045	2.81
1	EM07-P-025	2	1	20	A15LM21	11.1	0.055	0.705	0.374	0.304	0.022	0.047	0.391
1	Batch 1	2	1	21	BCHLM1213	6.86	0.114	0.544	<0.100	<0.100	0.395	<0.010	0.066
1	Batch 1	2	2	1	BCHLM1221	6.9	0.105	0.541	<0.100	<0.100	0.384	<0.010	0.064
1	EM07-Na-20	2	2	2	A01LM22	14.8	0.051	0.69	0.316	0.293	0.024	0.045	2.75
1	EM07-Zr-05	2	2	3	A08LM12	11.1	0.056	0.678	0.416	0.302	0.024	0.044	1.29
1	EM07-Na-20	2	2	4	A01LM12	14.8	0.051	0.686	0.318	0.288	0.024	0.047	1.67
1	EM07-P-0	2	2	5	A16LM22	11.5	0.055	0.715	0.01	0.314	0.027	0.048	0.971
1	EM07-B-20	2	2	6	A18LM12	10	0.048	0.638	0.284	0.272	0.022	0.042	1.4
1	EM07-Na-10	2	2	7	A12LM22	7.66	0.058	0.73	0.422	0.329	0.027	0.05	1.4
1	EM07-P-025	2	2	8	A15LM12	11.2	0.051	0.704	0.415	0.307	0.022	0.046	0.439
1	EM07-Na-10	2	2	9	A12LM12	7.67	0.057	0.735	0.406	0.331	0.027	0.051	1.39
1	EM07-Bi-025	2	2	10	A05LM12	10.8	0.056	0.716	0.341	0.299	0.025	0.049	1.14
1	EM07-Mn-01	2	2	11	A02LM12	11.4	0.056	0.721	0.387	0.309	0.027	0.049	1.2
1	Batch 1	2	2	12	BCHLM1222	6.88	0.109	0.538	<0.100	<0.100	0.388	<0.010	0.072
1	EM07-Zr-05	2	2	13	A08LM22	10.9	0.058	0.679	0.461	0.304	0.025	0.044	3.1
1	EM07-Bi-025	2	2	14	A05LM22	10.7	0.055	0.714	0.3	0.3	0.025	0.062	1.13
1	EM07-Mn-01	2	2	15	A02LM22	11.3	0.056	0.725	0.317	0.311	0.027	0.048	1.59
1	EM07-Zr-001	2	2	16	A09LM12	11.4	0.101	0.736	0.48	0.315	0.027	0.049	0.043
1	EM07-P-0	2	2	17	A16LM12	11.3	0.058	0.715	<0.100	0.311	0.027	0.048	1.64
1	EM07-P-025	2	2	18	A15LM22	10.9	0.053	0.698	0.313	0.302	0.021	0.046	0.26
1	EM07-Zr-001	2	2	19	A09LM22	11.3	0.102	0.726	0.492	0.31	0.027	0.048	0.033

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 2)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Na (wt%)	Nd (wt%)	Ni (wt%)	P (wt%)	Pb (wt%)	Ti (wt%)	Zn (wt%)	Zr (wt%)
1	EM07-B-20	2	2	20	A18LM22	9.91	0.05	0.634	0.284	0.27	0.023	0.041	1.16
1	Batch 1	2	2	21	BCHLM1223	6.86	0.11	0.529	<0.100	<0.100	0.385	<0.010	0.071
2	Batch 1	1	1	1	BCHLM2111	6.54	0.117	0.535	<0.100	<0.100	0.382	<0.010	0.06
2	EM07-Fe-15	1	1	2	B01LM11	10.4	0.051	0.642	0.312	0.285	0.027	0.046	1.21
2	EM07-Si-50	1	1	3	B11LM11	9.67	0.047	0.63	0.39	0.27	0.025	0.043	1.38
2	EM07-Al-15	1	1	4	B13LM21	10.4	0.05	0.63	0.283	0.29	0.026	0.045	1.11
2	EM07-Cr-02	1	1	5	B03LM11	10.8	0.053	0.645	0.351	0.302	0.027	0.044	1.31
2	EM07-Si-30	1	1	6	B18LM11	13.7	0.067	0.86	0.252	0.383	0.03	0.061	1.16
2	EM07-BL-1	1	1	7	B07LM21	11.2	0.055	0.718	0.378	0.312	0.026	0.048	1.38
2	EM07-Fe-05	1	1	8	B14LM21	11.6	0.057	0.762	0.442	0.323	0.03	0.05	1.59
2	EM07-Al-15	1	1	9	B13LM11	10.3	0.051	0.637	0.297	0.292	0.026	0.045	1.16
2	EM07-Si-30	1	1	10	B18LM21	13.7	0.067	0.853	0.141	0.381	0.031	0.06	0.846
2	EM07-Si-37	1	1	11	B19LM11	12.2	0.06	0.78	0.175	0.341	0.029	0.055	0.887
2	Batch 1	1	1	12	BCHLM2112	6.59	0.118	0.536	<0.100	<0.100	0.383	<0.010	0.065
2	EM07-Al-06	1	1	13	B17LM21	11.7	0.056	0.735	0.426	0.32	0.029	0.055	1.52
2	EM07-Fe-20	1	1	14	B02LM11	10.1	0.049	0.594	0.295	0.268	0.025	0.044	1.14
2	EM07-Fe-15	1	1	15	B01LM21	10.4	0.051	0.622	0.322	0.275	0.026	0.045	1.24
2	EM07-Si-50	1	1	16	B11LM21	10	0.048	0.635	0.414	0.27	0.026	0.042	1.46
2	EM07-Cr-02	1	1	17	B03LM21	11.2	0.055	0.652	0.4	0.305	0.028	0.044	1.47
2	EM07-Fe-20	1	1	18	B02LM21	10	0.05	0.597	0.347	0.272	0.025	0.043	1.29
2	EM07-Si-37	1	1	19	B19LM21	12.3	0.061	0.779	0.222	0.341	0.03	0.055	1.02
2	EM07-Al-06	1	1	20	B17LM11	11.7	0.058	0.742	0.385	0.324	0.029	0.051	1.41
2	EM07-Fe-05	1	1	21	B14LM11	12.1	0.059	0.76	0.404	0.322	0.03	0.05	1.49
2	EM07-BL-1	1	1	22	B07LM11	11.5	0.057	0.714	0.408	0.309	0.027	0.048	1.5
2	Batch 1	1	1	23	BCHLM2113	6.78	0.121	0.534	<0.100	<0.100	0.39	<0.010	0.066
2	Batch 1	1	2	1	BCHLM2121	6.51	0.118	0.543	<0.100	<0.100	0.382	<0.010	0.054
2	EM07-Fe-05	1	2	2	B14LM12	11.5	0.057	0.782	0.389	0.334	0.03	0.052	1.42
2	EM07-Cr-02	1	2	3	B03LM12	11	0.054	0.67	0.355	0.313	0.028	0.045	1.33
2	EM07-Al-15	1	2	4	B13LM12	10.3	0.052	0.647	0.304	0.295	0.026	0.045	1.17
2	EM07-Si-30	1	2	5	B18LM12	13.8	0.068	0.876	0.21	0.391	0.031	0.062	1.04
2	EM07-Fe-05	1	2	6	B14LM22	11.6	0.057	0.774	0.446	0.331	0.031	0.051	1.59
2	EM07-Fe-15	1	2	7	B01LM22	10.3	0.051	0.626	0.316	0.277	0.026	0.045	1.22
2	EM07-Fe-20	1	2	8	B02LM12	9.85	0.05	0.605	0.298	0.275	0.025	0.045	1.14
2	EM07-Si-37	1	2	9	B19LM12	12.2	0.062	0.791	0.174	0.345	0.029	0.056	0.883
2	EM07-Al-15	1	2	10	B13LM22	10.5	0.052	0.639	0.286	0.293	0.026	0.046	1.12
2	EM07-Al-06	1	2	11	B17LM12	11.8	0.059	0.76	0.391	0.331	0.03	0.052	1.41
2	Batch 1	1	2	12	BCHLM2122	6.81	0.123	0.539	<0.100	<0.100	0.392	<0.010	0.06
2	EM07-Al-06	1	2	13	B17LM22	11.7	0.056	0.739	0.424	0.321	0.029	0.055	1.5
2	EM07-Si-37	1	2	14	B19LM22	12.2	0.061	0.785	0.213	0.344	0.03	0.055	0.987
2	EM07-BL-1	1	2	15	B07LM12	11.5	0.056	0.72	0.372	0.311	0.026	0.048	1.39
2	EM07-Fe-15	1	2	16	B01LM12	10.7	0.052	0.632	0.313	0.276	0.027	0.045	1.21
2	EM07-Fe-20	1	2	17	B02LM22	10.1	0.051	0.596	0.342	0.271	0.025	0.043	1.29
2	EM07-Si-50	1	2	18	B11LM22	10.1	0.048	0.635	0.415	0.269	0.026	0.042	1.45

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 2)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Na (wt%)	Nd (wt%)	Ni (wt%)	P (wt%)	Pb (wt%)	Ti (wt%)	Zn (wt%)	Zr (wt%)
2	EM07-BL-1	1	2	19	B07LM22	11.4	0.056	0.727	0.382	0.314	0.027	0.049	1.4
2	EM07-Cr-02	1	2	20	B03LM22	11.1	0.055	0.662	0.403	0.31	0.028	0.045	1.47
2	EM07-Si-50	1	2	21	B11LM12	10	0.049	0.642	0.402	0.273	0.026	0.044	1.42
2	EM07-Si-30	1	2	22	B18LM22	13.7	0.069	0.873	0.141	0.391	0.032	0.062	0.852
2	Batch 1	1	2	23	BCHLM2123	6.76	0.121	0.549	<0.100	<0.100	0.393	<0.010	0.061
2	Batch 1	2	1	1	BCHLM2211	6.6	0.116	0.539	<0.100	<0.100	0.385	<0.010	0.054
2	EM07-Li-015	2	1	2	B04LM11	11.2	0.054	0.723	0.388	0.316	0.026	0.049	1.41
2	EM07-NM-0025	2	1	3	B05LM21	10.9	0.052	0.712	0.317	0.305	0.025	0.049	1.23
2	EM07-BL-2	2	1	4	B06LM11	10.9	0.052	0.724	0.456	0.312	0.025	0.049	1.59
2	EM07-Al-20	2	1	5	B12LM21	10.2	0.048	0.597	0.249	0.282	0.023	0.043	0.986
2	EM07-Ni-001	2	1	6	B09LM21	11.3	0.053	0.073	0.327	0.314	0.026	0.046	1.27
2	EM07-Cr-001	2	1	7	B10LM21	11.2	0.053	0.739	0.368	0.315	0.026	0.049	1.37
2	EM07-Al-20	2	1	8	B12LM11	10	0.048	0.593	0.258	0.279	0.023	0.042	1.02
2	EM07-Ni-001	2	1	9	B09LM11	11.2	0.053	0.073	0.35	0.313	0.026	0.046	1.33
2	EM07-Ni-02	2	1	10	B15LM11	11.1	0.053	1.436	0.344	0.31	0.026	0.051	1.26
2	EM07-Li-04	2	1	11	B16LM11	10.9	0.052	0.719	0.362	0.308	0.025	0.048	1.31
2	Batch 1	2	1	12	BCHLM2212	6.89	0.119	0.549	<0.100	<0.100	0.395	<0.010	0.061
2	EM07-Li-04	2	1	13	B16LM21	11.1	0.053	0.719	0.37	0.311	0.026	0.048	1.39
2	EM07-BL-2	2	1	14	B06LM21	10.8	0.052	0.711	0.358	0.307	0.025	0.048	1.33
2	EM07-Cr-012	2	1	15	B08LM21	11.3	0.054	0.714	0.38	0.313	0.026	0.048	1.4
2	EM07-Cr-012	2	1	16	B08LM11	11.2	0.053	0.706	0.329	0.311	0.026	0.048	1.27
2	EM07-Cr-001	2	1	17	B10LM11	11.2	0.053	0.737	0.415	0.314	0.027	0.049	1.5
2	EM07-Li-015	2	1	18	B04LM21	11.4	0.055	0.724	0.346	0.314	0.027	0.05	1.33
2	EM07-NM-0025	2	1	19	B05LM11	11.3	0.054	0.734	0.362	0.317	0.026	0.049	1.37
2	EM07-Ni-02	2	1	20	B15LM21	10.7	0.051	1.361	0.384	0.298	0.025	0.049	1.4
2	Batch 1	2	1	21	BCHLM2213	6.84	0.121	0.548	<0.100	<0.100	0.399	<0.010	0.062
2	Batch 1	2	2	1	BCHLM2221	6.43	0.117	0.542	<0.100	<0.100	0.384	<0.010	0.055
2	EM07-NM-0025	2	2	2	B05LM12	10.7	0.053	0.722	0.346	0.311	0.025	0.048	1.29
2	EM07-Ni-02	2	2	3	B15LM12	10.7	0.052	1.412	0.331	0.308	0.025	0.05	1.21
2	EM07-BL-2	2	2	4	B06LM22	10.5	0.052	0.705	0.349	0.303	0.025	0.047	1.3
2	EM07-Ni-02	2	2	5	B15LM22	10.7	0.052	1.392	0.385	0.305	0.025	0.049	1.39
2	EM07-Al-20	2	2	6	B12LM12	9.8	0.048	0.589	0.251	0.279	0.023	0.041	0.992
2	EM07-Li-015	2	2	7	B04LM22	11.1	0.054	0.722	0.336	0.313	0.026	0.048	1.29
2	EM07-Li-04	2	2	8	B16LM12	10.7	0.052	0.714	0.353	0.308	0.025	0.047	1.29
2	EM07-Cr-012	2	2	9	B08LM12	10.8	0.053	0.698	0.321	0.31	0.026	0.046	1.24
2	EM07-Al-20	2	2	10	B12LM22	10	0.048	0.592	0.244	0.28	0.023	0.042	0.967
2	EM07-Cr-012	2	2	11	B08LM22	11	0.054	0.708	0.37	0.314	0.026	0.047	1.37
2	Batch 1	2	2	12	BCHLM2222	6.88	0.119	0.545	<0.100	<0.100	0.389	<0.010	0.062
2	EM07-BL-2	2	2	13	B06LM12	10.8	0.053	0.723	0.452	0.313	0.026	0.049	1.58
2	EM07-Li-015	2	2	14	B04LM12	11.2	0.055	0.728	0.39	0.319	0.026	0.049	1.41
2	EM07-Li-04	2	2	15	B16LM22	10.7	0.053	0.712	0.363	0.311	0.025	0.047	1.36
2	EM07-Ni-001	2	2	16	B09LM22	11.2	0.054	0.074	0.325	0.318	0.026	0.046	1.27
2	EM07-Cr-001	2	2	17	B10LM12	10.9	0.053	0.726	0.4	0.311	0.027	0.047	1.45

Table A2. Measured Elemental Concentrations (wt%) for Samples Prepared Using Lithium Metaborate (part 2)

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	Na (wt%)	Nd (wt%)	Ni (wt%)	P (wt%)	Pb (wt%)	Ti (wt%)	Zn (wt%)	Zr (wt%)
2	EM07-Cr-001	2	2	18	B10LM22	11.2	0.053	0.733	0.361	0.314	0.026	0.047	1.35
2	EM07-Ni-001	2	2	19	B09LM12	11.2	0.053	0.072	0.34	0.311	0.026	0.045	1.31
2	EM07-NM-0025	2	2	20	B05LM22	11.1	0.053	0.703	0.314	0.303	0.025	0.047	1.23
2	Batch 1	2	2	21	BCHLM2223	6.62	0.119	0.536	<0.100	<0.100	0.386	<0.010	0.062

Table A3. Measured Elemental Concentrations (wt%) for Samples Prepared Using Peroxide Fusion

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	B (wt%)	Li (wt%)	Si (wt%)
1	Batch 1	1	1	1	BCHPF1111	2.39	2.15	23.6
1	EM07-Zr-05	1	1	2	A08PF11	3.08	1.3	20
1	EM07-Zr-001	1	1	3	A09PF11	3.34	1.34	20.9
1	EM07-K-06	1	1	4	A07PF21	2.95	1.22	18.9
1	EM07-Mn-04	1	1	5	A19PF21	3.04	1.26	19.7
1	EM07-Zr-001	1	1	6	A09PF21	3.27	1.31	20.7
1	EM07-Zr-05	1	1	7	A08PF21	3.09	1.26	19.7
1	EM07-Bi-025	1	1	8	A05PF21	3.11	1.27	19.9
1	EM07-F-02	1	1	9	A13PF21	3.2	1.29	20.2
1	EM07-P-025	1	1	10	A15PF11	3.25	1.29	20.5
1	EM07-Na-10	1	1	11	A12PF11	3.42	1.37	21.7
1	Batch 1	1	1	12	BCHPF1112	2.35	2.06	22.9
1	EM07-K-06	1	1	13	A07PF11	3.03	1.22	19
1	EM07-Bi-05	1	1	14	A17PF21	3.07	1.24	19.4
1	EM07-Mn-04	1	1	15	A19PF11	3.15	1.28	20
1	EM07-F-02	1	1	16	A13PF11	3.2	1.29	20.2
1	EM07-Na-10	1	1	17	A12PF21	3.39	1.37	21.3
1	EM07-P-025	1	1	18	A15PF21	3.09	1.27	19.6
1	EM07-Bi-05	1	1	19	A17PF11	3	1.22	19
1	EM07-Ca-07	1	1	20	A14PF21	3.01	1.22	19.1
1	EM07-Ca-07	1	1	21	A14PF11	2.98	1.2	18.5
1	EM07-Bi-025	1	1	22	A05PF11	3.07	1.23	19.5
1	Batch 1	1	1	23	BCHPF1113	2.45	2.1	23.4
1	Batch 1	1	2	1	BCHPF1121	2.62	2.1	23.6
1	EM07-Bi-05	1	2	2	A17PF22	3.19	1.26	19.7
1	EM07-Bi-05	1	2	3	A17PF12	3.17	1.25	19.7
1	EM07-F-02	1	2	4	A13PF22	3.24	1.29	20
1	EM07-Zr-05	1	2	5	A08PF12	3.13	1.26	19.5
1	EM07-Ca-07	1	2	6	A14PF12	3.03	1.21	18.6
1	EM07-Ca-07	1	2	7	A14PF22	3.11	1.23	19.5
1	EM07-Na-10	1	2	8	A12PF22	3.44	1.38	21.5
1	EM07-Bi-025	1	2	9	A05PF22	3.24	1.28	20.2
1	EM07-Zr-001	1	2	10	A09PF12	3.44	1.35	21.2
1	EM07-Mn-04	1	2	11	A19PF12	3.13	1.26	19.6
1	Batch 1	1	2	12	BCHPF1122	2.47	2.07	23.2
1	EM07-F-02	1	2	13	A13PF12	3.24	1.29	20.1
1	EM07-Zr-05	1	2	14	A08PF22	3.22	1.28	19.8
1	EM07-Bi-025	1	2	15	A05PF12	3.15	1.25	19.7
1	EM07-K-06	1	2	16	A07PF12	3.13	1.25	19.5
1	EM07-Mn-04	1	2	17	A19PF22	3.24	1.28	20.3
1	EM07-Na-10	1	2	18	A12PF12	3.4	1.36	21.3
1	EM07-P-025	1	2	19	A15PF12	3.23	1.29	20
1	EM07-Zr-001	1	2	20	A09PF22	3.45	1.33	21
1	EM07-K-06	1	2	21	A07PF22	3.1	1.23	19.3
1	EM07-P-025	1	2	22	A15PF22	3.25	1.3	20.1
1	Batch 1	1	2	23	BCHPF1123	2.53	2.08	23.3
1	Batch 1	2	1	1	BCHPF1211	2.56	2.09	23
1	EM07-B-05	2	1	2	A10PF11	1.69	1.36	21.2
1	EM07-K-03	2	1	3	A06PF11	3.2	1.26	19.5
1	EM07-Na-20	2	1	4	A01PF21	2.96	1.22	20
1	EM07-Na-20	2	1	5	A01PF11	2.94	1.21	18.7
1	EM07-B-20	2	1	6	A18PF21	6.24	1.15	17.8
1	EM07-Mn-01	2	1	7	A02PF21	3.19	1.34	20
1	EM07-B-05	2	1	8	A10PF21	1.68	1.37	21
1	EM07-B-15	2	1	9	A11PF21	4.76	1.23	19.1
1	EM07-Ca-035	2	1	10	A04PF21	3.21	1.25	19.7
1	EM07-B-15	2	1	11	A11PF11	4.69	1.22	18.8
1	Batch 1	2	1	12	BCHPF1212	2.39	2.07	22.7
1	EM07-Ca-035	2	1	13	A04PF11	3.12	1.22	19
1	EM07-P-0	2	1	14	A16PF21	3.18	1.29	20
1	EM07-K-03	2	1	15	A06PF21	3.21	1.25	19.5

Table A3. Measured Elemental Concentrations (wt%) for Samples Prepared Using Peroxide Fusion

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	B (wt%)	Li (wt%)	Si (wt%)
1	EM07-B-20	2	1	16	A18PF11	6.4	1.18	18.1
1	EM07-Na-05	2	1	17	A03PF21	3.5	1.43	21.5
1	EM07-Mn-01	2	1	18	A02PF11	3.25	1.32	20.3
1	EM07-P-0	2	1	19	A16PF11	3.13	1.28	19.7
1	EM07-Na-05	2	1	20	A03PF11	3.52	1.43	21.8
1	Batch 1	2	1	21	BCHPF1213	2.44	2.1	23
1	Batch 1	2	2	1	BCHPF1221	2.45	2.03	22.5
1	EM07-B-20	2	2	2	A18PF22	6.05	1.13	17.4
1	EM07-P-0	2	2	3	A16PF12	3.11	1.26	19.6
1	EM07-Na-05	2	2	4	A03PF22	3.5	1.42	21.8
1	EM07-K-03	2	2	5	A06PF22	3.16	1.25	19.4
1	EM07-B-05	2	2	6	A10PF22	1.61	1.35	21.1
1	EM07-Na-20	2	2	7	A01PF22	3.03	1.23	19.3
1	EM07-K-03	2	2	8	A06PF12	3.13	1.24	19.3
1	EM07-B-05	2	2	9	A10PF12	1.55	1.33	20.7
1	EM07-B-15	2	2	10	A11PF22	4.54	1.2	18.6
1	EM07-P-0	2	2	11	A16PF22	3.04	1.27	19.7
1	Batch 1	2	2	12	BCHPF1222	2.4	2.08	23.1
1	EM07-Ca-035	2	2	13	A04PF12	3.12	1.23	19.3
1	EM07-Na-05	2	2	14	A03PF12	3.42	1.42	21.4
1	EM07-Ca-035	2	2	15	A04PF22	3.02	1.22	18.9
1	EM07-Mn-01	2	2	16	A02PF22	3.14	1.3	19.7
1	EM07-Mn-01	2	2	17	A02PF12	3.18	1.31	20.3
1	EM07-Na-20	2	2	18	A01PF12	2.94	1.21	18.8
1	EM07-B-20	2	2	19	A18PF12	6.22	1.16	18.1
1	EM07-B-15	2	2	20	A11PF12	4.72	1.23	19
1	Batch 1	2	2	21	BCHPF1223	2.41	2.08	22.9
2	Batch 1	1	1	1	BCHPF2111	2.6	2.08	22.1
2	EM07-Si-37	1	1	2	B19PF21	3.43	1.35	17
2	EM07-Al-06	1	1	3	B17PF11	3.29	1.28	19.8
2	EM07-Si-50	1	1	4	B11PF11	2.78	1.09	22.4
2	EM07-Si-37	1	1	5	B19PF11	3.54	1.37	16.9
2	EM07-BL-1	1	1	6	B07PF11	3.12	1.25	19.8
2	EM07-Fe-05	1	1	7	B14PF11	3.43	1.31	20.5
2	EM07-Li-015	1	1	8	B04PF21	3.28	0.69	20.1
2	EM07-Cr-02	1	1	9	B03PF21	3.22	1.23	19.6
2	EM07-BL-1	1	1	10	B07PF21	3.18	1.25	19.7
2	EM07-Al-15	1	1	11	B13PF11	3.06	1.18	18.9
2	Batch 1	1	1	12	BCHPF2112	2.41	2.05	21.6
2	EM07-Fe-20	1	1	13	B02PF11	2.83	1.1	17.7
2	EM07-Al-15	1	1	14	B13PF21	3	1.17	18.9
2	EM07-Al-06	1	1	15	B17PF21	3.25	1.28	20.2
2	EM07-Li-015	1	1	16	B04PF11	3.2	0.69	20
2	EM07-Ni-001	1	1	17	B09PF21	3.15	1.23	19.9
2	EM07-Fe-05	1	1	18	B14PF21	3.26	1.3	20.6
2	EM07-Fe-20	1	1	19	B02PF21	2.78	1.09	17.6
2	EM07-Ni-001	1	1	20	B09PF11	3.14	1.23	19.8
2	EM07-Si-50	1	1	21	B11PF21	2.73	1.08	21.7
2	EM07-Cr-02	1	1	22	B03PF11	3.06	1.21	19.2
2	Batch 1	1	1	23	BCHPF2113	2.32	2.01	21.6
2	Batch 1	1	2	1	BCHPF2121	2.54	2.08	22.2
2	EM07-Si-37	1	2	2	B19PF22	3.49	1.36	17
2	EM07-Fe-20	1	2	3	B02PF12	2.73	1.1	17.8
2	EM07-Al-15	1	2	4	B13PF12	2.91	1.17	18.9
2	EM07-Al-15	1	2	5	B13PF22	3.01	1.18	19.2
2	EM07-BL-1	1	2	6	B07PF22	3.2	1.26	20.1
2	EM07-Fe-05	1	2	7	B14PF12	3.42	1.31	20.8
2	EM07-Al-06	1	2	8	B17PF22	3.36	1.3	20.5
2	EM07-Ni-001	1	2	9	B09PF22	3.19	1.26	20
2	EM07-Al-06	1	2	10	B17PF12	3.26	1.28	20.1
2	EM07-BL-1	1	2	11	B07PF12	3.06	1.25	19.7

Table A3. Measured Elemental Concentrations (wt%) for Samples Prepared Using Peroxide Fusion

Set	Glass ID	Block	Sub-Block	Sequence	Lab ID	B (wt%)	Li (wt%)	Si (wt%)
2	Batch 1	1	2	12	BCHPF2122	2.37	2.06	21.8
2	EM07-Si-50	1	2	13	B11PF22	2.81	1.1	21.9
2	EM07-Ni-001	1	2	14	B09PF12	3.22	1.25	20.1
2	EM07-Li-015	1	2	15	B04PF22	3.2	0.69	19.9
2	EM07-Cr-02	1	2	16	B03PF12	3.11	1.22	19.3
2	EM07-Cr-02	1	2	17	B03PF22	3.02	1.2	18.8
2	EM07-Fe-05	1	2	18	B14PF22	3.22	1.3	20.4
2	EM07-Si-50	1	2	19	B11PF12	2.76	1.08	22.2
2	EM07-Li-015	1	2	20	B04PF12	3.22	0.69	20
2	EM07-Fe-20	1	2	21	B02PF22	2.8	1.11	17.7
2	EM07-Si-37	1	2	22	B19PF12	3.37	1.35	16.6
2	Batch 1	1	2	23	BCHPF2123	2.29	2.03	21.7
2	Batch 1	2	1	1	BCHPF2211	2.55	2.08	21.9
2	EM07-Al-20	2	1	2	B12PF11	2.91	1.14	18
2	EM07-NM-0025	2	1	3	B05PF11	3.18	1.25	19.4
2	EM07-Ni-02	2	1	4	B15PF11	3.11	1.24	19.3
2	EM07-Li-04	2	1	5	B16PF11	3.09	1.79	19.1
2	EM07-Si-30	2	1	6	B18PF11	3.91	1.55	13.7
2	EM07-Fe-15	2	1	7	B01PF11	3	1.2	18.6
2	EM07-Si-30	2	1	8	B18PF21	3.85	1.53	13.7
2	EM07-Cr-012	2	1	9	B08PF21	3.08	1.23	19.3
2	EM07-Cr-012	2	1	10	B08PF11	3.12	1.25	19.4
2	EM07-Ni-02	2	1	11	B15PF21	3.07	1.23	19.2
2	Batch 1	2	1	12	BCHPF2212	2.32	2.04	21.4
2	EM07-Cr-001	2	1	13	B10PF11	3.2	1.26	19.4
2	EM07-Al-20	2	1	14	B12PF21	2.84	1.14	17.9
2	EM07-BL-2	2	1	15	B06PF21	3.1	1.26	19.5
2	EM07-Cr-001	2	1	16	B10PF21	3.08	1.25	19.3
2	EM07-NM-0025	2	1	17	B05PF21	3.13	1.24	19.4
2	EM07-Fe-15	2	1	18	B01PF21	2.91	1.18	18.2
2	EM07-BL-2	2	1	19	B06PF11	3.09	1.26	19.3
2	EM07-Li-04	2	1	20	B16PF21	3.04	1.8	18.8
2	Batch 1	2	1	21	BCHPF2213	2.37	2.06	21.9
2	Batch 1	2	2	1	BCHPF2221	2.57	2.04	21.8
2	EM07-Si-30	2	2	2	B18PF22	4.08	1.52	14.1
2	EM07-Cr-001	2	2	3	B10PF12	3.33	1.23	19.7
2	EM07-Ni-02	2	2	4	B15PF22	3.27	1.22	19.6
2	EM07-BL-2	2	2	5	B06PF22	3.23	1.24	19.7
2	EM07-Al-20	2	2	6	B12PF22	2.96	1.12	18.2
2	EM07-Li-04	2	2	7	B16PF12	3.24	1.79	19.7
2	EM07-Ni-02	2	2	8	B15PF12	3.22	1.22	19.7
2	EM07-Cr-001	2	2	9	B10PF22	3.22	1.24	19.7
2	EM07-BL-2	2	2	10	B06PF12	3.24	1.24	20.1
2	EM07-Li-04	2	2	11	B16PF22	3.16	1.78	19.1
2	Batch 1	2	2	12	BCHPF2222	2.43	2.03	22.2
2	EM07-Cr-012	2	2	13	B08PF12	3.21	1.22	19.5
2	EM07-Fe-15	2	2	14	B01PF22	3.05	1.15	18.6
2	EM07-Fe-15	2	2	15	B01PF12	3	1.15	18.4
2	EM07-Si-30	2	2	16	B18PF12	3.98	1.52	13.9
2	EM07-Al-20	2	2	17	B12PF12	2.91	1.11	17.8
2	EM07-NM-0025	2	2	18	B05PF22	3.21	1.22	19.7
2	EM07-Cr-012	2	2	19	B08PF22	3.24	1.24	19.6
2	EM07-NM-0025	2	2	20	B05PF12	3.21	1.23	19.4
2	Batch 1	2	2	21	BCHPF2223	2.46	2.05	21.8

Table A4. Measured Elemental Concentrations (wt%) for Samples Prepared Using Potassium Hydroxide

Set	Glass ID	Block	Sub Block	Seq.	ID Check	F (wt%)
1	LRM	1	1	1	LRMKH11	0.77
1	EM07-F-02	1	1	2	a13KH21	1.58
1	EM07-F-02	1	1	3	a13KH11	1.61
1	LRM	1	1	4	LRMKH12	0.77
1	LRM	2	1	1	LRMKH21	0.79
1	EM07-F-02	2	1	2	a13KH22	1.64
1	EM07-F-02	2	1	3	a13KH12	1.66
1	LRM	2	1	4	LRMKH22	0.78

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	Batch 1	Al2O3	4.9001	4.8770	4.8770	0.0231	0.0000	0.5%	0.0%
1	Batch 1	B2O3	7.9049	7.7770	7.7770	0.1279	0.0000	1.6%	0.0%
1	Batch 1	BaO	0.1437	0.1510	0.1510	-0.0073	0.0000	-4.8%	0.0%
1	Batch 1	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	Batch 1	CaO	1.1618	1.2200	1.2200	-0.0582	0.0000	-4.8%	0.0%
1	Batch 1	CdO	0.0057	0.0057	0.0000	0.0057	0.0057		
1	Batch 1	Ce2O3	0.0043	0.0043	0.0000	0.0043	0.0043		
1	Batch 1	Cr2O3	0.0973	0.1070	0.1070	-0.0097	0.0000	-9.0%	0.0%
1	Batch 1	Fe2O3	12.3657	12.8390	12.8390	-0.4733	0.0000	-3.7%	0.0%
1	Batch 1	K2O	3.1480	3.3270	3.3270	-0.1790	0.0000	-5.4%	0.0%
1	Batch 1	La2O3	0.0059	0.0059	0.0000	0.0059	0.0059		
1	Batch 1	Li2O	4.4870	4.4290	4.4290	0.0580	0.0000	1.3%	0.0%
1	Batch 1	MgO	1.3413	1.4190	1.4190	-0.0777	0.0000	-5.5%	0.0%
1	Batch 1	MnO	1.6861	1.7260	1.7260	-0.0399	0.0000	-2.3%	0.0%
1	Batch 1	Na2O	9.2641	9.0030	9.0030	0.2611	0.0000	2.9%	0.0%
1	Batch 1	Nd2O3	0.1268	0.1470	0.1470	-0.0202	0.0000	-13.7%	0.0%
1	Batch 1	NiO	0.6883	0.7510	0.7510	-0.0627	0.0000	-8.3%	0.0%
1	Batch 1	P2O5	0.1146	0.1146	0.0000	0.1146	0.1146		
1	Batch 1	PbO	0.0539	0.0539	0.0000	0.0539	0.0539		
1	Batch 1	SiO2	49.4178	50.2200	50.2200	-0.8022	0.0000	-1.6%	0.0%
1	Batch 1	TiO2	0.6433	0.6770	0.6770	-0.0337	0.0000	-5.0%	0.0%
1	Batch 1	ZnO	0.0062	0.0062	0.0000	0.0062	0.0062		
1	Batch 1	ZrO2	0.0904	0.0904	0.0980	-0.0076	-0.0076	-7.8%	-7.8%
1	Batch 1	Sum	97.6628	98.9565	98.7680	-1.1052	0.1885	-1.1%	0.2%
1	EM07-B-05	Al2O3	10.7890	10.7729	10.5560	0.2330	0.2169	2.2%	2.1%
1	EM07-B-05	B2O3	5.2565	5.1986	5.0000	0.2565	0.1986	5.1%	4.0%
1	EM07-B-05	BaO	0.0505	0.0532	0.0530	-0.0025	0.0002	-4.7%	0.3%
1	EM07-B-05	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-B-05	CaO	0.0154	0.0164	0.0000	0.0154	0.0164		
1	EM07-B-05	CdO	0.1362	0.1362	0.1480	-0.0118	-0.0118	-8.0%	-8.0%
1	EM07-B-05	Ce2O3	0.0527	0.0527	0.0530	-0.0003	-0.0003	-0.6%	-0.6%
1	EM07-B-05	Cr2O3	0.5072	0.5528	0.5280	-0.0208	0.0248	-3.9%	4.7%
1	EM07-B-05	Fe2O3	10.0186	10.2582	10.5560	-0.5374	-0.2978	-5.1%	-2.8%
1	EM07-B-05	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-B-05	La2O3	0.0583	0.0583	0.0740	-0.0157	-0.0157	-21.2%	-21.2%
1	EM07-B-05	Li2O	2.9118	2.8868	2.9030	0.0088	-0.0162	0.3%	-0.6%
1	EM07-B-05	MgO	0.1368	0.1442	0.1580	-0.0212	-0.0138	-13.4%	-8.7%
1	EM07-B-05	MnO	2.0724	2.1069	2.1110	-0.0386	-0.0041	-1.8%	-0.2%
1	EM07-B-05	Na2O	16.4119	15.9595	15.8330	0.5789	0.1265	3.7%	0.8%
1	EM07-B-05	Nd2O3	0.0691	0.0804	0.0740	-0.0049	0.0064	-6.6%	8.6%
1	EM07-B-05	NiO	0.9665	1.0495	1.0560	-0.0895	-0.0065	-8.5%	-0.6%
1	EM07-B-05	P2O5	0.8169	0.8169	1.3190	-0.5021	-0.5021	-38.1%	-38.1%
1	EM07-B-05	PbO	0.3514	0.3514	0.3910	-0.0396	-0.0396	-10.1%	-10.1%
1	EM07-B-05	SiO2	44.9253	46.1202	45.7350	-0.8097	0.3852	-1.8%	0.8%
1	EM07-B-05	TiO2	0.0459	0.0484	0.0420	0.0039	0.0064	9.2%	15.2%
1	EM07-B-05	ZnO	0.0632	0.0632	0.0630	0.0002	0.0002	0.3%	0.3%
1	EM07-B-05	ZrO2	1.7695	1.7695	2.6390	-0.8695	-0.8695	-32.9%	-32.9%
1	EM07-B-05	Sum	97.4910	98.5658	99.2920	-1.8010	-0.7262	-1.8%	-0.7%
1	EM07-B-15	Al2O3	9.6270	9.6126	9.4440	0.1830	0.1686	1.9%	1.8%
1	EM07-B-15	B2O3	15.0611	14.8982	15.0000	0.0611	-0.1018	0.4%	-0.7%
1	EM07-B-15	BaO	0.0452	0.0476	0.0470	-0.0018	0.0006	-3.8%	1.3%
1	EM07-B-15	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-B-15	CaO	0.0178	0.0190	0.0000	0.0178	0.0190		
1	EM07-B-15	CdO	0.1222	0.1222	0.1320	-0.0098	-0.0098	-7.4%	-7.4%
1	EM07-B-15	Ce2O3	0.0483	0.0483	0.0470	0.0013	0.0013	2.8%	2.8%
1	EM07-B-15	Cr2O3	0.4443	0.4843	0.4720	-0.0277	0.0123	-5.9%	2.6%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-B-15	Fe2O3	8.9857	9.2045	9.4440	-0.4583	-0.2395	-4.9%	-2.5%
1	EM07-B-15	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-B-15	La2O3	0.0528	0.0528	0.0660	-0.0132	-0.0132	-20.0%	-20.0%
1	EM07-B-15	Li2O	2.6265	2.6041	2.5970	0.0295	0.0071	1.1%	0.3%
1	EM07-B-15	MgO	0.1260	0.1329	0.1420	-0.0160	-0.0091	-11.2%	-6.4%
1	EM07-B-15	MnO	1.8432	1.8749	1.8890	-0.0458	-0.0141	-2.4%	-0.7%
1	EM07-B-15	Na2O	14.5584	14.1575	14.1670	0.3914	-0.0095	2.8%	-0.1%
1	EM07-B-15	Nd2O3	0.0633	0.0736	0.0660	-0.0027	0.0076	-4.1%	11.5%
1	EM07-B-15	NiO	0.8742	0.9493	0.9440	-0.0698	0.0053	-7.4%	0.6%
1	EM07-B-15	P2O5	0.7877	0.7877	1.1810	-0.3933	-0.3933	-33.3%	-33.3%
1	EM07-B-15	PbO	0.3167	0.3167	0.3490	-0.0323	-0.0323	-9.3%	-9.3%
1	EM07-B-15	SiO2	40.3793	41.4533	40.9240	-0.5447	0.5293	-1.3%	1.3%
1	EM07-B-15	TiO2	0.0409	0.0431	0.0380	0.0029	0.0051	7.5%	13.4%
1	EM07-B-15	ZnO	0.0579	0.0579	0.0570	0.0009	0.0009	1.5%	1.5%
1	EM07-B-15	ZrO2	1.6885	1.6885	2.3610	-0.6725	-0.6725	-28.5%	-28.5%
1	EM07-B-15	Sum	97.8328	98.6985	99.3670	-1.5342	-0.6685	-1.5%	-0.7%
1	EM07-B-20	Al2O3	8.8665	8.7972	8.8890	-0.0225	-0.0918	-0.3%	-1.0%
1	EM07-B-20	B2O3	20.0519	19.8343	20.0000	0.0519	-0.1657	0.3%	-0.8%
1	EM07-B-20	BaO	0.0419	0.0439	0.0440	-0.0021	-0.0001	-4.8%	-0.2%
1	EM07-B-20	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-B-20	CaO	0.0276	0.0286	0.0000	0.0276	0.0286		
1	EM07-B-20	CdO	0.1094	0.1094	0.1240	-0.0146	-0.0146	-11.8%	-11.8%
1	EM07-B-20	Ce2O3	0.0460	0.0460	0.0440	0.0020	0.0020	4.5%	4.5%
1	EM07-B-20	Cr2O3	0.4096	0.4543	0.4440	-0.0344	0.0103	-7.7%	2.3%
1	EM07-B-20	Fe2O3	8.3101	8.7512	8.8890	-0.5789	-0.1378	-6.5%	-1.6%
1	EM07-B-20	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-B-20	La2O3	0.0475	0.0475	0.0620	-0.0145	-0.0145	-23.4%	-23.4%
1	EM07-B-20	Li2O	2.4866	2.4653	2.4440	0.0426	0.0213	1.7%	0.9%
1	EM07-B-20	MgO	0.1123	0.1193	0.1330	-0.0207	-0.0137	-15.5%	-10.3%
1	EM07-B-20	MnO	1.7496	1.8036	1.7780	-0.0284	0.0256	-1.6%	1.4%
1	EM07-B-20	Na2O	13.5845	13.1936	13.3330	0.2515	-0.1394	1.9%	-1.0%
1	EM07-B-20	Nd2O3	0.0580	0.0670	0.0620	-0.0040	0.0050	-6.4%	8.0%
1	EM07-B-20	NiO	0.8134	0.8918	0.8890	-0.0756	0.0028	-8.5%	0.3%
1	EM07-B-20	P2O5	0.6416	0.6416	1.1110	-0.4694	-0.4694	-42.3%	-42.3%
1	EM07-B-20	PbO	0.2927	0.2927	0.3290	-0.0363	-0.0363	-11.0%	-11.0%
1	EM07-B-20	SiO2	38.1865	39.2021	38.5180	-0.3315	0.6841	-0.9%	1.8%
1	EM07-B-20	TiO2	0.0379	0.0398	0.0360	0.0019	0.0038	5.4%	10.7%
1	EM07-B-20	ZnO	0.0517	0.0517	0.0530	-0.0013	-0.0013	-2.5%	-2.5%
1	EM07-B-20	ZrO2	1.6213	1.6213	2.2220	-0.6007	-0.6007	-27.0%	-27.0%
1	EM07-B-20	Sum	97.6125	98.5712	99.4040	-1.7915	-0.8328	-1.8%	-0.8%
1	EM07-Bi-025	Al2O3	9.7215	9.6455	9.7500	-0.0285	-0.1045	-0.3%	-1.1%
1	EM07-Bi-025	B2O3	10.1185	9.9046	9.7500	0.3685	0.1546	3.8%	1.6%
1	EM07-Bi-025	BaO	0.0472	0.0495	0.0490	-0.0018	0.0005	-3.7%	0.9%
1	EM07-Bi-025	Bi2O3	2.4080	2.4080	2.5000	-0.0920	-0.0920	-3.7%	-3.7%
1	EM07-Bi-025	CaO	0.0423	0.0438	0.0000	0.0423	0.0438		
1	EM07-Bi-025	CdO	0.1225	0.1225	0.1370	-0.0145	-0.0145	-10.6%	-10.6%
1	EM07-Bi-025	Ce2O3	0.0512	0.0512	0.0490	0.0022	0.0022	4.6%	4.6%
1	EM07-Bi-025	Cr2O3	0.4896	0.5431	0.4880	0.0016	0.0551	0.3%	11.3%
1	EM07-Bi-025	Fe2O3	9.0857	9.5695	9.7500	-0.6643	-0.1805	-6.8%	-1.9%
1	EM07-Bi-025	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-Bi-025	La2O3	0.0551	0.0551	0.0680	-0.0129	-0.0129	-18.9%	-18.9%
1	EM07-Bi-025	Li2O	2.7073	2.6607	2.6810	0.0263	-0.0203	1.0%	-0.8%
1	EM07-Bi-025	MgO	0.1277	0.1356	0.1460	-0.0183	-0.0104	-12.5%	-7.2%
1	EM07-Bi-025	MnO	1.9174	1.9767	1.9500	-0.0326	0.0267	-1.7%	1.4%
1	EM07-Bi-025	Na2O	14.6932	14.2705	14.6250	0.0682	-0.3545	0.5%	-2.4%
1	EM07-Bi-025	Nd2O3	0.0659	0.0761	0.0680	-0.0021	0.0081	-3.1%	11.9%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-Bi-025	NiO	0.9146	1.0027	0.9750	-0.0604	0.0277	-6.2%	2.8%
1	EM07-Bi-025	P2O5	0.7344	0.7344	1.2190	-0.4846	-0.4846	-39.8%	-39.8%
1	EM07-Bi-025	PbO	0.3242	0.3242	0.3610	-0.0368	-0.0368	-10.2%	-10.2%
1	EM07-Bi-025	SiO2	42.4116	42.6688	42.2430	0.1686	0.4258	0.4%	1.0%
1	EM07-Bi-025	TiO2	0.0421	0.0442	0.0390	0.0031	0.0052	8.0%	13.4%
1	EM07-Bi-025	ZnO	0.0660	0.0660	0.0590	0.0070	0.0070	11.8%	11.8%
1	EM07-Bi-025	ZrO2	1.5433	1.5433	2.4380	-0.8947	-0.8947	-36.7%	-36.7%
1	EM07-Bi-025	Sum	97.7497	97.9593	99.3450	-1.5953	-1.3857	-1.6%	-1.4%
1	EM07-Bi-05	Al2O3	9.6412	9.6269	9.5000	0.1412	0.1269	1.5%	1.3%
1	EM07-Bi-05	B2O3	10.0058	9.7925	9.5000	0.5058	0.2925	5.3%	3.1%
1	EM07-Bi-05	BaO	0.0452	0.0476	0.0480	-0.0028	-0.0004	-5.8%	-0.8%
1	EM07-Bi-05	Bi2O3	4.9135	4.9135	5.0000	-0.0865	-0.0865	-1.7%	-1.7%
1	EM07-Bi-05	CaO	0.0157	0.0168	0.0000	0.0157	0.0168		
1	EM07-Bi-05	CdO	0.1202	0.1202	0.1330	-0.0128	-0.0128	-9.6%	-9.6%
1	EM07-Bi-05	Ce2O3	0.0489	0.0489	0.0480	0.0009	0.0009	1.9%	1.9%
1	EM07-Bi-05	Cr2O3	0.4323	0.4711	0.4750	-0.0427	-0.0039	-9.0%	-0.8%
1	EM07-Bi-05	Fe2O3	9.0607	9.2786	9.5000	-0.4393	-0.2214	-4.6%	-2.3%
1	EM07-Bi-05	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-Bi-05	La2O3	0.0519	0.0519	0.0670	-0.0151	-0.0151	-22.5%	-22.5%
1	EM07-Bi-05	Li2O	2.6750	2.6290	2.6130	0.0620	0.0160	2.4%	0.6%
1	EM07-Bi-05	MgO	0.1219	0.1285	0.1430	-0.0211	-0.0145	-14.8%	-10.1%
1	EM07-Bi-05	MnO	1.8561	1.8875	1.9000	-0.0439	-0.0125	-2.3%	-0.7%
1	EM07-Bi-05	Na2O	14.5921	14.1904	14.2500	0.3421	-0.0596	2.4%	-0.4%
1	EM07-Bi-05	Nd2O3	0.0627	0.0729	0.0670	-0.0043	0.0059	-6.4%	8.9%
1	EM07-Bi-05	NiO	0.8602	0.9341	0.9500	-0.0898	-0.0159	-9.5%	-1.7%
1	EM07-Bi-05	P2O5	0.7693	0.7693	1.1880	-0.4187	-0.4187	-35.2%	-35.2%
1	EM07-Bi-05	PbO	0.3170	0.3170	0.3520	-0.0350	-0.0350	-10.0%	-10.0%
1	EM07-Bi-05	SiO2	41.6094	41.8613	41.1590	0.4504	0.7023	1.1%	1.7%
1	EM07-Bi-05	TiO2	0.0442	0.0466	0.0380	0.0062	0.0086	16.3%	22.7%
1	EM07-Bi-05	ZnO	0.0541	0.0541	0.0570	-0.0029	-0.0029	-5.0%	-5.0%
1	EM07-Bi-05	ZrO2	1.7392	1.7392	2.3750	-0.6358	-0.6358	-26.8%	-26.8%
1	EM07-Bi-05	Sum	99.0969	99.0618	99.3630	-0.2661	-0.3012	-0.3%	-0.3%
1	EM07-Ca-035	Al2O3	9.7120	9.6975	9.6500	0.0620	0.0475	0.6%	0.5%
1	EM07-Ca-035	B2O3	10.0380	9.9290	9.6500	0.3880	0.2790	4.0%	2.9%
1	EM07-Ca-035	BaO	0.0444	0.0467	0.0480	-0.0036	-0.0013	-7.5%	-2.7%
1	EM07-Ca-035	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Ca-035	CaO	3.7778	4.0262	3.5000	0.2778	0.5262	7.9%	15.0%
1	EM07-Ca-035	CdO	0.1214	0.1214	0.1350	-0.0136	-0.0136	-10.1%	-10.1%
1	EM07-Ca-035	Ce2O3	0.0483	0.0483	0.0480	0.0003	0.0003	0.7%	0.7%
1	EM07-Ca-035	Cr2O3	0.4330	0.4719	0.4830	-0.0500	-0.0111	-10.4%	-2.3%
1	EM07-Ca-035	Fe2O3	9.2251	9.4423	9.6500	-0.4249	-0.2077	-4.4%	-2.2%
1	EM07-Ca-035	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-Ca-035	La2O3	0.0542	0.0542	0.0680	-0.0138	-0.0138	-20.2%	-20.2%
1	EM07-Ca-035	Li2O	2.6481	2.6254	2.6540	-0.0059	-0.0286	-0.2%	-1.1%
1	EM07-Ca-035	MgO	0.1248	0.1316	0.1450	-0.0202	-0.0134	-13.9%	-9.3%
1	EM07-Ca-035	MnO	1.8916	1.9226	1.9300	-0.0384	-0.0074	-2.0%	-0.4%
1	EM07-Ca-035	Na2O	14.6932	14.2883	14.4750	0.2182	-0.1867	1.5%	-1.3%
1	EM07-Ca-035	Nd2O3	0.0633	0.0736	0.0680	-0.0047	0.0056	-6.9%	8.3%
1	EM07-Ca-035	NiO	0.8678	0.9424	0.9650	-0.0972	-0.0226	-10.1%	-2.3%
1	EM07-Ca-035	P2O5	0.8358	0.8358	1.2060	-0.3702	-0.3702	-30.7%	-30.7%
1	EM07-Ca-035	PbO	0.3202	0.3202	0.3570	-0.0368	-0.0368	-10.3%	-10.3%
1	EM07-Ca-035	SiO2	41.1280	42.2218	41.8100	-0.6820	0.4118	-1.6%	1.0%
1	EM07-Ca-035	TiO2	0.0430	0.0453	0.0390	0.0040	0.0063	10.1%	16.2%
1	EM07-Ca-035	ZnO	0.0566	0.0566	0.0580	-0.0014	-0.0014	-2.3%	-2.3%
1	EM07-Ca-035	ZrO2	1.6480	1.6480	2.4130	-0.7650	-0.7650	-31.7%	-31.7%
1	EM07-Ca-035	Sum	97.8405	99.0186	99.3520	-1.5115	-0.3334	-1.5%	-0.3%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-Ca-07	Al2O3	9.4097	9.3957	9.3000	0.1097	0.0957	1.2%	1.0%
1	EM07-Ca-07	B2O3	9.7643	9.5592	9.3000	0.4643	0.2592	5.0%	2.8%
1	EM07-Ca-07	BaO	0.0427	0.0449	0.0470	-0.0043	-0.0021	-9.1%	-4.4%
1	EM07-Ca-07	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Ca-07	CaO	7.3808	7.8656	7.0000	0.3808	0.8656	5.4%	12.4%
1	EM07-Ca-07	CdO	0.1162	0.1162	0.1300	-0.0138	-0.0138	-10.6%	-10.6%
1	EM07-Ca-07	Ce2O3	0.0469	0.0469	0.0470	-0.0001	-0.0001	-0.3%	-0.3%
1	EM07-Ca-07	Cr2O3	0.4297	0.4684	0.4650	-0.0353	0.0034	-7.6%	0.7%
1	EM07-Ca-07	Fe2O3	8.9499	9.1624	9.3000	-0.3501	-0.1376	-3.8%	-1.5%
1	EM07-Ca-07	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-Ca-07	La2O3	0.0516	0.0516	0.0650	-0.0134	-0.0134	-20.6%	-20.6%
1	EM07-Ca-07	Li2O	2.6158	2.5708	2.5580	0.0578	0.0128	2.3%	0.5%
1	EM07-Ca-07	MgO	0.1397	0.1473	0.1400	-0.0003	0.0073	-0.2%	5.2%
1	EM07-Ca-07	MnO	1.8335	1.8639	1.8600	-0.0265	0.0039	-1.4%	0.2%
1	EM07-Ca-07	Na2O	14.3899	13.9935	13.9500	0.4399	0.0435	3.2%	0.3%
1	EM07-Ca-07	Nd2O3	0.0604	0.0702	0.0650	-0.0046	0.0052	-7.1%	8.0%
1	EM07-Ca-07	NiO	0.8465	0.9192	0.9300	-0.0835	-0.0108	-9.0%	-1.2%
1	EM07-Ca-07	P2O5	0.7321	0.7321	1.1630	-0.4309	-0.4309	-37.1%	-37.1%
1	EM07-Ca-07	PbO	0.3086	0.3086	0.3440	-0.0354	-0.0354	-10.3%	-10.3%
1	EM07-Ca-07	SiO2	40.4863	40.7317	40.2950	0.1913	0.4367	0.5%	1.1%
1	EM07-Ca-07	TiO2	0.0409	0.0431	0.0370	0.0039	0.0061	10.4%	16.5%
1	EM07-Ca-07	ZnO	0.0557	0.0557	0.0560	-0.0003	-0.0003	-0.5%	-0.5%
1	EM07-Ca-07	ZrO2	1.5298	1.5298	2.3250	-0.7952	-0.7952	-34.2%	-34.2%
1	EM07-Ca-07	Sum	99.2968	99.7462	99.3770	-0.0802	0.3692	-0.1%	0.4%
1	EM07-F-02	Al2O3	10.0899	10.0749	9.8100	0.2799	0.2649	2.9%	2.7%
1	EM07-F-02	B2O3	10.3681	10.1520	9.8100	0.5581	0.3420	5.7%	3.5%
1	EM07-F-02	BaO	0.0463	0.0488	0.0490	-0.0027	-0.0002	-5.4%	-0.5%
1	EM07-F-02	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-F-02	CaO	0.0143	0.0153	0.0000	0.0143	0.0153		
1	EM07-F-02	CdO	0.1268	0.1268	0.1370	-0.0102	-0.0102	-7.4%	-7.4%
1	EM07-F-02	Ce2O3	0.0504	0.0504	0.0490	0.0014	0.0014	2.8%	2.8%
1	EM07-F-02	Cr2O3	0.4531	0.4938	0.4900	-0.0369	0.0038	-7.5%	0.8%
1	EM07-F-02	F	1.6225	2.0867	2.0000	-0.3775	0.0867	-18.9%	4.3%
1	EM07-F-02	Fe2O3	9.5325	9.7611	9.8100	-0.2775	-0.0489	-2.8%	-0.5%
1	EM07-F-02	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-F-02	La2O3	0.0542	0.0542	0.0690	-0.0148	-0.0148	-21.4%	-21.4%
1	EM07-F-02	Li2O	2.7772	2.7294	2.6980	0.0792	0.0314	2.9%	1.2%
1	EM07-F-02	MgO	0.1285	0.1355	0.1470	-0.0185	-0.0115	-12.6%	-7.8%
1	EM07-F-02	MnO	1.9659	1.9990	1.9620	0.0039	0.0370	0.2%	1.9%
1	EM07-F-02	Na2O	15.2661	14.8459	14.7150	0.5511	0.1309	3.7%	0.9%
1	EM07-F-02	Nd2O3	0.0650	0.0757	0.0690	-0.0040	0.0067	-5.8%	9.6%
1	EM07-F-02	NiO	0.9130	0.9914	0.9810	-0.0680	0.0104	-6.9%	1.1%
1	EM07-F-02	P2O5	0.7023	0.7023	1.2260	-0.5237	-0.5237	-42.7%	-42.7%
1	EM07-F-02	PbO	0.3334	0.3334	0.3630	-0.0296	-0.0296	-8.2%	-8.2%
1	EM07-F-02	SiO2	43.0534	43.3151	42.5060	0.5474	0.8091	1.3%	1.9%
1	EM07-F-02	TiO2	0.0442	0.0466	0.0390	0.0052	0.0076	13.3%	19.5%
1	EM07-F-02	ZnO	0.0604	0.0604	0.0590	0.0014	0.0014	2.3%	2.3%
1	EM07-F-02	ZrO2	1.7121	1.7121	2.4520	-0.7399	-0.7399	-30.2%	-30.2%
1	EM07-F-02	Sum	99.4456	99.8801	99.4410	0.0046	0.4391	0.0%	0.4%
1	EM07-K-03	Al2O3	9.8632	9.8485	9.7000	0.1632	0.1485	1.7%	1.5%
1	EM07-K-03	B2O3	10.2232	10.1127	9.7000	0.5232	0.4127	5.4%	4.3%
1	EM07-K-03	BaO	0.0466	0.0491	0.0490	-0.0024	0.0001	-4.9%	0.1%
1	EM07-K-03	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-K-03	CaO	0.0280	0.0298	0.0000	0.0280	0.0298		
1	EM07-K-03	CdO	0.1239	0.1239	0.1360	-0.0121	-0.0121	-8.9%	-8.9%
1	EM07-K-03	Ce2O3	0.0495	0.0495	0.0490	0.0005	0.0005	1.0%	1.0%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-K-03	Cr2O3	0.4652	0.5070	0.4850	-0.0198	0.0220	-4.1%	4.5%
1	EM07-K-03	Fe2O3	9.3359	9.5602	9.7000	-0.3641	-0.1398	-3.8%	-1.4%
1	EM07-K-03	K2O	2.8398	3.0110	3.0000	-0.1602	0.0110	-5.3%	0.4%
1	EM07-K-03	La2O3	0.0528	0.0528	0.0680	-0.0152	-0.0152	-22.4%	-22.4%
1	EM07-K-03	Li2O	2.6911	2.6681	2.6680	0.0231	0.0001	0.9%	0.0%
1	EM07-K-03	MgO	0.1277	0.1346	0.1460	-0.0183	-0.0114	-12.5%	-7.8%
1	EM07-K-03	MnO	1.9207	1.9531	1.9400	-0.0193	0.0131	-1.0%	0.7%
1	EM07-K-03	Na2O	14.9628	14.5508	14.5500	0.4128	0.0008	2.8%	0.0%
1	EM07-K-03	Nd2O3	0.0633	0.0736	0.0680	-0.0047	0.0056	-6.9%	8.3%
1	EM07-K-03	NiO	0.8997	0.9769	0.9700	-0.0703	0.0069	-7.3%	0.7%
1	EM07-K-03	P2O5	0.8392	0.8392	1.2130	-0.3738	-0.3738	-30.8%	-30.8%
1	EM07-K-03	PbO	0.3275	0.3275	0.3590	-0.0315	-0.0315	-8.8%	-8.8%
1	EM07-K-03	SiO2	41.5559	42.6612	42.0270	-0.4711	0.6342	-1.1%	1.5%
1	EM07-K-03	TiO2	0.0425	0.0449	0.0390	0.0035	0.0059	9.1%	15.0%
1	EM07-K-03	ZnO	0.0573	0.0573	0.0580	-0.0007	-0.0007	-1.3%	-1.3%
1	EM07-K-03	ZrO2	1.7695	1.7695	2.4250	-0.6555	-0.6555	-27.0%	-27.0%
1	EM07-K-03	Sum	98.2908	99.4068	99.3500	-1.0592	0.0568	-1.1%	0.1%
1	EM07-K-06	Al2O3	9.5561	9.5419	9.4000	0.1561	0.1419	1.7%	1.5%
1	EM07-K-06	B2O3	9.8287	9.6199	9.4000	0.4287	0.2199	4.6%	2.3%
1	EM07-K-06	BaO	0.0441	0.0464	0.0470	-0.0029	-0.0006	-6.2%	-1.2%
1	EM07-K-06	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-K-06	CaO	0.0234	0.0250	0.0000	0.0234	0.0250		
1	EM07-K-06	CdO	0.1217	0.1217	0.1320	-0.0103	-0.0103	-7.8%	-7.8%
1	EM07-K-06	Ce2O3	0.0469	0.0469	0.0470	-0.0001	-0.0001	-0.3%	-0.3%
1	EM07-K-06	Cr2O3	0.4575	0.4986	0.4700	-0.0125	0.0286	-2.7%	6.1%
1	EM07-K-06	Fe2O3	9.1000	9.3203	9.4000	-0.3000	-0.0797	-3.2%	-0.8%
1	EM07-K-06	K2O	5.0202	5.3227	6.0000	-0.9798	-0.6773	-16.3%	-11.3%
1	EM07-K-06	La2O3	0.0516	0.0516	0.0660	-0.0144	-0.0144	-21.8%	-21.8%
1	EM07-K-06	Li2O	2.6481	2.6026	2.5850	0.0631	0.0176	2.4%	0.7%
1	EM07-K-06	MgO	0.1215	0.1281	0.1410	-0.0195	-0.0129	-13.9%	-9.2%
1	EM07-K-06	MnO	1.8626	1.8943	1.8800	-0.0174	0.0143	-0.9%	0.8%
1	EM07-K-06	Na2O	14.4236	14.0261	14.1000	0.3236	-0.0739	2.3%	-0.5%
1	EM07-K-06	Nd2O3	0.0607	0.0706	0.0660	-0.0053	0.0046	-8.1%	6.9%
1	EM07-K-06	NiO	0.8704	0.9451	0.9400	-0.0696	0.0051	-7.4%	0.5%
1	EM07-K-06	P2O5	0.7642	0.7642	1.1750	-0.4108	-0.4108	-35.0%	-35.0%
1	EM07-K-06	PbO	0.3164	0.3164	0.3480	-0.0316	-0.0316	-9.1%	-9.1%
1	EM07-K-06	SiO2	41.0211	41.2695	40.7290	0.2921	0.5405	0.7%	1.3%
1	EM07-K-06	TiO2	0.0409	0.0431	0.0380	0.0029	0.0051	7.5%	13.4%
1	EM07-K-06	ZnO	0.0551	0.0551	0.0560	-0.0009	-0.0009	-1.6%	-1.6%
1	EM07-K-06	ZrO2	1.6075	1.6075	2.3500	-0.7425	-0.7425	-31.6%	-31.6%
1	EM07-K-06	Sum	98.0476	98.3231	99.3700	-1.3224	-1.0469	-1.3%	-1.1%
1	EM07-Mn-01	Al2O3	10.2505	10.1704	10.1940	0.0565	-0.0236	0.6%	-0.2%
1	EM07-Mn-01	B2O3	10.2715	10.1605	10.1940	0.0775	-0.0335	0.8%	-0.3%
1	EM07-Mn-01	BaO	0.0497	0.0521	0.0510	-0.0013	0.0011	-2.6%	2.1%
1	EM07-Mn-01	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Mn-01	CaO	0.0262	0.0272	0.0000	0.0262	0.0272		
1	EM07-Mn-01	CdO	0.1285	0.1285	0.1430	-0.0145	-0.0145	-10.1%	-10.1%
1	EM07-Mn-01	Ce2O3	0.0521	0.0521	0.0510	0.0011	0.0011	2.2%	2.2%
1	EM07-Mn-01	Cr2O3	0.4765	0.5285	0.5100	-0.0335	0.0185	-6.6%	3.6%
1	EM07-Mn-01	Fe2O3	9.4217	9.9233	10.1940	-0.7723	-0.2707	-7.6%	-2.7%
1	EM07-Mn-01	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-Mn-01	La2O3	0.0539	0.0539	0.0710	-0.0171	-0.0171	-24.0%	-24.0%
1	EM07-Mn-01	Li2O	2.8364	2.8121	2.8030	0.0334	0.0091	1.2%	0.3%
1	EM07-Mn-01	MgO	0.1310	0.1391	0.1530	-0.0220	-0.0139	-14.4%	-9.1%
1	EM07-Mn-01	MnO	0.0581	0.0599	0.1000	-0.0419	-0.0401	-41.9%	-40.1%
1	EM07-Mn-01	Na2O	15.4683	15.0233	15.2910	0.1773	-0.2677	1.2%	-1.8%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-Mn-01	Nd2O3	0.0668	0.0771	0.0710	-0.0042	0.0061	-5.9%	8.6%
1	EM07-Mn-01	NiO	0.9245	1.0135	1.0190	-0.0945	-0.0055	-9.3%	-0.5%
1	EM07-Mn-01	P2O5	0.7940	0.7940	1.2740	-0.4800	-0.4800	-37.7%	-37.7%
1	EM07-Mn-01	PbO	0.3342	0.3342	0.3770	-0.0428	-0.0428	-11.4%	-11.4%
1	EM07-Mn-01	SiO2	42.9464	44.0888	44.1710	-1.2246	-0.0822	-2.8%	-0.2%
1	EM07-Mn-01	TiO2	0.0455	0.0477	0.0410	0.0045	0.0067	10.9%	16.4%
1	EM07-Mn-01	ZnO	0.0610	0.0610	0.0610	0.0000	0.0000	0.0%	0.0%
1	EM07-Mn-01	ZrO2	1.9283	1.9283	2.5480	-0.6197	-0.6197	-24.3%	-24.3%
1	EM07-Mn-01	Sum	96.3910	97.5444	99.3170	-2.9260	-1.7726	-2.9%	-1.8%
1	EM07-Mn-04	Al2O3	9.9718	9.9569	9.7960	0.1758	0.1609	1.8%	1.6%
1	EM07-Mn-04	B2O3	10.1105	9.8975	9.7960	0.3145	0.1015	3.2%	1.0%
1	EM07-Mn-04	BaO	0.0455	0.0479	0.0490	-0.0035	-0.0011	-7.1%	-2.3%
1	EM07-Mn-04	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Mn-04	CaO	0.0203	0.0216	0.0000	0.0203	0.0216		
1	EM07-Mn-04	CdO	0.1251	0.1251	0.1370	-0.0119	-0.0119	-8.7%	-8.7%
1	EM07-Mn-04	Ce2O3	0.0501	0.0501	0.0490	0.0011	0.0011	2.2%	2.2%
1	EM07-Mn-04	Cr2O3	0.4312	0.4700	0.4900	-0.0588	-0.0200	-12.0%	-4.1%
1	EM07-Mn-04	Fe2O3	9.1965	9.4175	9.7960	-0.5995	-0.3785	-6.1%	-3.9%
1	EM07-Mn-04	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-Mn-04	La2O3	0.0537	0.0537	0.0690	-0.0153	-0.0153	-22.2%	-22.2%
1	EM07-Mn-04	Li2O	2.7342	2.6871	2.6940	0.0402	-0.0069	1.5%	-0.3%
1	EM07-Mn-04	MgO	0.1289	0.1359	0.1470	-0.0181	-0.0111	-12.3%	-7.5%
1	EM07-Mn-04	MnO	3.8736	3.9388	4.0000	-0.1264	-0.0612	-3.2%	-1.5%
1	EM07-Mn-04	Na2O	15.2661	14.8456	14.6940	0.5721	0.1516	3.9%	1.0%
1	EM07-Mn-04	Nd2O3	0.0642	0.0746	0.0690	-0.0048	0.0056	-7.0%	8.2%
1	EM07-Mn-04	NiO	0.8822	0.9579	0.9800	-0.0978	-0.0221	-10.0%	-2.3%
1	EM07-Mn-04	P2O5	0.8404	0.8404	1.2240	-0.3836	-0.3836	-31.3%	-31.3%
1	EM07-Mn-04	PbO	0.3275	0.3275	0.3620	-0.0345	-0.0345	-9.5%	-9.5%
1	EM07-Mn-04	SiO2	42.5721	42.8304	42.4440	0.1281	0.3864	0.3%	0.9%
1	EM07-Mn-04	TiO2	0.0434	0.0457	0.0390	0.0044	0.0067	11.2%	17.3%
1	EM07-Mn-04	ZnO	0.0585	0.0585	0.0590	-0.0005	-0.0005	-0.8%	-0.8%
1	EM07-Mn-04	ZrO2	1.7290	1.7290	2.4490	-0.7200	-0.7200	-29.4%	-29.4%
1	EM07-Mn-04	Sum	98.5904	98.5811	99.3430	-0.7526	-0.7619	-0.8%	-0.8%
1	EM07-Na-05	Al2O3	11.4173	11.4002	11.1760	0.2413	0.2242	2.2%	2.0%
1	EM07-Na-05	B2O3	11.2214	11.1003	11.1760	0.0454	-0.0757	0.4%	-0.7%
1	EM07-Na-05	BaO	0.0528	0.0555	0.0560	-0.0032	-0.0005	-5.8%	-0.9%
1	EM07-Na-05	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Na-05	CaO	0.0234	0.0250	0.0000	0.0234	0.0250		
1	EM07-Na-05	CdO	0.1471	0.1471	0.1560	-0.0089	-0.0089	-5.7%	-5.7%
1	EM07-Na-05	Ce2O3	0.0568	0.0568	0.0560	0.0008	0.0008	1.4%	1.4%
1	EM07-Na-05	Cr2O3	0.5338	0.5819	0.5590	-0.0252	0.0229	-4.5%	4.1%
1	EM07-Na-05	Fe2O3	10.8657	11.1187	11.1760	-0.3103	-0.0573	-2.8%	-0.5%
1	EM07-Na-05	K2O	0.0602	0.0639	0.0000	0.0602	0.0639		
1	EM07-Na-05	La2O3	0.0616	0.0616	0.0780	-0.0164	-0.0164	-21.1%	-21.1%
1	EM07-Na-05	Li2O	3.0679	3.0416	3.0740	-0.0061	-0.0324	-0.2%	-1.1%
1	EM07-Na-05	MgO	0.1472	0.1552	0.1680	-0.0208	-0.0128	-12.4%	-7.6%
1	EM07-Na-05	MnO	2.2596	2.2960	2.2350	0.0246	0.0610	1.1%	2.7%
1	EM07-Na-05	Na2O	5.4089	5.2596	5.0000	0.4089	0.2596	8.2%	5.2%
1	EM07-Na-05	Nd2O3	0.0729	0.0848	0.0780	-0.0051	0.0068	-6.5%	8.7%
1	EM07-Na-05	NiO	1.0342	1.1230	1.1180	-0.0838	0.0050	-7.5%	0.5%
1	EM07-Na-05	P2O5	1.0243	1.0243	1.3970	-0.3727	-0.3727	-26.7%	-26.7%
1	EM07-Na-05	PbO	0.3789	0.3789	0.4140	-0.0351	-0.0351	-8.5%	-8.5%
1	EM07-Na-05	SiO2	46.2624	47.4931	48.4290	-2.1666	-0.9359	-4.5%	-1.9%
1	EM07-Na-05	TiO2	0.0505	0.0532	0.0450	0.0055	0.0082	12.1%	18.3%
1	EM07-Na-05	ZnO	0.0688	0.0688	0.0670	0.0018	0.0018	2.6%	2.6%
1	EM07-Na-05	ZrO2	2.2896	2.2896	2.7940	-0.5044	-0.5044	-18.1%	-18.1%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-Na-05	Sum	96.5107	97.8846	99.2520	-2.7413	-1.3674	-2.8%	-1.4%
1	EM07-Na-10	Al2O3	10.6710	10.5876	10.5880	0.0830	-0.0004	0.8%	0.0%
1	EM07-Na-10	B2O3	10.9879	10.7602	10.5880	0.3999	0.1722	3.8%	1.6%
1	EM07-Na-10	BaO	0.0516	0.0541	0.0530	-0.0014	0.0011	-2.6%	2.1%
1	EM07-Na-10	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Na-10	CaO	0.0192	0.0199	0.0000	0.0192	0.0199		
1	EM07-Na-10	CdO	0.1328	0.1328	0.1480	-0.0152	-0.0152	-10.3%	-10.3%
1	EM07-Na-10	Ce2O3	0.0548	0.0548	0.0530	0.0018	0.0018	3.3%	3.3%
1	EM07-Na-10	Cr2O3	0.4516	0.5010	0.5290	-0.0774	-0.0280	-14.6%	-5.3%
1	EM07-Na-10	Fe2O3	9.9042	10.4273	10.5880	-0.6838	-0.1607	-6.5%	-1.5%
1	EM07-Na-10	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-Na-10	La2O3	0.0563	0.0563	0.0740	-0.0177	-0.0177	-23.9%	-23.9%
1	EM07-Na-10	Li2O	2.9495	2.8987	2.9120	0.0375	-0.0133	1.3%	-0.5%
1	EM07-Na-10	MgO	0.1360	0.1444	0.1590	-0.0230	-0.0146	-14.5%	-9.2%
1	EM07-Na-10	MnO	2.0950	2.1597	2.1180	-0.0230	0.0417	-1.1%	2.0%
1	EM07-Na-10	Na2O	10.4200	10.1202	10.0000	0.4200	0.1202	4.2%	1.2%
1	EM07-Na-10	Nd2O3	0.0682	0.0788	0.0740	-0.0058	0.0048	-7.8%	6.4%
1	EM07-Na-10	NiO	0.9331	1.0229	1.0590	-0.1259	-0.0361	-11.9%	-3.4%
1	EM07-Na-10	P2O5	0.9463	0.9463	1.3240	-0.3777	-0.3777	-28.5%	-28.5%
1	EM07-Na-10	PbO	0.3549	0.3549	0.3920	-0.0371	-0.0371	-9.5%	-9.5%
1	EM07-Na-10	SiO2	45.8880	46.1668	45.8780	0.0100	0.2888	0.0%	0.6%
1	EM07-Na-10	TiO2	0.0459	0.0482	0.0420	0.0039	0.0062	9.2%	14.7%
1	EM07-Na-10	ZnO	0.0632	0.0632	0.0640	-0.0008	-0.0008	-1.3%	-1.3%
1	EM07-Na-10	ZrO2	1.9553	1.9553	2.6470	-0.6917	-0.6917	-26.1%	-26.1%
1	EM07-Na-10	Sum	98.2506	98.6223	99.2900	-1.0394	-0.6677	-1.0%	-0.7%
1	EM07-Na-20	Al2O3	9.5278	9.4532	9.4120	0.1158	0.0412	1.2%	0.4%
1	EM07-Na-20	B2O3	9.5551	9.4531	9.4120	0.1431	0.0411	1.5%	0.4%
1	EM07-Na-20	BaO	0.0452	0.0474	0.0470	-0.0018	0.0004	-3.8%	0.9%
1	EM07-Na-20	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Na-20	CaO	0.0234	0.0243	0.0000	0.0234	0.0243		
1	EM07-Na-20	CdO	0.1179	0.1179	0.1320	-0.0141	-0.0141	-10.6%	-10.6%
1	EM07-Na-20	Ce2O3	0.0477	0.0477	0.0470	0.0007	0.0007	1.6%	1.6%
1	EM07-Na-20	Cr2O3	0.4535	0.5030	0.4710	-0.0175	0.0320	-3.7%	6.8%
1	EM07-Na-20	Fe2O3	9.0786	9.5615	9.4120	-0.3334	0.1495	-3.5%	1.6%
1	EM07-Na-20	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-Na-20	La2O3	0.0498	0.0498	0.0660	-0.0162	-0.0162	-24.5%	-24.5%
1	EM07-Na-20	Li2O	2.6212	2.5988	2.5880	0.0332	0.0108	1.3%	0.4%
1	EM07-Na-20	MgO	0.1356	0.1439	0.1410	-0.0054	0.0029	-3.9%	2.1%
1	EM07-Na-20	MnO	1.9142	1.9734	1.8820	0.0322	0.0914	1.7%	4.9%
1	EM07-Na-20	Na2O	20.0852	19.5073	20.0000	0.0852	-0.4927	0.4%	-2.5%
1	EM07-Na-20	Nd2O3	0.0607	0.0700	0.0660	-0.0053	0.0040	-8.1%	6.1%
1	EM07-Na-20	NiO	0.8771	0.9615	0.9410	-0.0639	0.0205	-6.8%	2.2%
1	EM07-Na-20	P2O5	0.7195	0.7195	1.1760	-0.4565	-0.4565	-38.8%	-38.8%
1	EM07-Na-20	PbO	0.3129	0.3129	0.3480	-0.0351	-0.0351	-10.1%	-10.1%
1	EM07-Na-20	SiO2	41.0746	42.1668	40.7820	0.2926	1.3848	0.7%	3.4%
1	EM07-Na-20	TiO2	0.0409	0.0429	0.0380	0.0029	0.0049	7.5%	12.9%
1	EM07-Na-20	ZnO	0.0576	0.0576	0.0560	0.0016	0.0016	2.8%	2.8%
1	EM07-Na-20	ZrO2	2.3200	2.3200	2.3530	-0.0330	-0.0330	-1.4%	-1.4%
1	EM07-Na-20	Sum	99.1842	100.2017	99.3700	-0.1858	0.8317	-0.2%	0.8%
1	EM07-P-0	Al2O3	10.1277	10.0480	10.1270	0.0007	-0.0790	0.0%	-0.8%
1	EM07-P-0	B2O3	10.0300	9.9213	10.1270	-0.0970	-0.2057	-1.0%	-2.0%
1	EM07-P-0	BaO	0.0497	0.0521	0.0510	-0.0013	0.0011	-2.6%	2.1%
1	EM07-P-0	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-P-0	CaO	0.0189	0.0195	0.0000	0.0189	0.0195		
1	EM07-P-0	CdO	0.1271	0.1271	0.1420	-0.0149	-0.0149	-10.5%	-10.5%
1	EM07-P-0	Ce2O3	0.0533	0.0533	0.0510	0.0023	0.0023	4.5%	4.5%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-P-0	Cr2O3	0.4535	0.5030	0.5060	-0.0525	-0.0030	-10.4%	-0.6%
1	EM07-P-0	Fe2O3	9.4539	9.9550	10.1270	-0.6731	-0.1720	-6.6%	-1.7%
1	EM07-P-0	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-P-0	La2O3	0.0539	0.0539	0.0710	-0.0171	-0.0171	-24.0%	-24.0%
1	EM07-P-0	Li2O	2.7449	2.7214	2.7850	-0.0401	-0.0636	-1.4%	-2.3%
1	EM07-P-0	MgO	0.1289	0.1369	0.1520	-0.0231	-0.0151	-15.2%	-9.9%
1	EM07-P-0	MnO	2.0466	2.1098	2.0250	0.0216	0.0848	1.1%	4.2%
1	EM07-P-0	Na2O	15.3335	14.8923	15.1900	0.1435	-0.2977	0.9%	-2.0%
1	EM07-P-0	Nd2O3	0.0671	0.0774	0.0710	-0.0039	0.0064	-5.5%	9.0%
1	EM07-P-0	NiO	0.9143	1.0023	1.0130	-0.0987	-0.0107	-9.7%	-1.1%
1	EM07-P-0	P2O5	0.0917	0.0917	0.0000	0.0917	0.0917		
1	EM07-P-0	PbO	0.3380	0.3380	0.3750	-0.0370	-0.0370	-9.9%	-9.9%
1	EM07-P-0	SiO2	42.2512	43.3749	43.8750	-1.6238	-0.5001	-3.7%	-1.1%
1	EM07-P-0	TiO2	0.0459	0.0482	0.0410	0.0049	0.0072	11.9%	17.5%
1	EM07-P-0	ZnO	0.0604	0.0604	0.0610	-0.0006	-0.0006	-1.0%	-1.0%
1	EM07-P-0	ZrO2	2.0333	2.0333	2.5320	-0.4987	-0.4987	-19.7%	-19.7%
1	EM07-P-0	Sum	96.4894	97.6888	99.3220	-2.8326	-1.6332	-2.9%	-1.6%
1	EM07-P-025	Al2O3	9.8112	9.7344	9.8730	-0.0618	-0.1386	-0.6%	-1.4%
1	EM07-P-025	B2O3	10.3198	10.1033	9.8730	0.4468	0.2303	4.5%	2.3%
1	EM07-P-025	BaO	0.0475	0.0497	0.0490	-0.0015	0.0007	-3.2%	1.5%
1	EM07-P-025	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-P-025	CaO	0.0171	0.0177	0.0000	0.0171	0.0177		
1	EM07-P-025	CdO	0.1234	0.1234	0.1380	-0.0146	-0.0146	-10.6%	-10.6%
1	EM07-P-025	Ce2O3	0.0504	0.0504	0.0490	0.0014	0.0014	2.8%	2.8%
1	EM07-P-025	Cr2O3	0.4436	0.4920	0.4940	-0.0504	-0.0020	-10.2%	-0.4%
1	EM07-P-025	Fe2O3	9.0822	9.5660	9.8730	-0.7908	-0.3070	-8.0%	-3.1%
1	EM07-P-025	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-P-025	La2O3	0.0534	0.0534	0.0690	-0.0156	-0.0156	-22.7%	-22.7%
1	EM07-P-025	Li2O	2.7719	2.7242	2.7150	0.0569	0.0092	2.1%	0.3%
1	EM07-P-025	MgO	0.1517	0.1611	0.1480	0.0037	0.0131	2.5%	8.8%
1	EM07-P-025	MnO	1.9077	1.9667	1.9750	-0.0673	-0.0083	-3.4%	-0.4%
1	EM07-P-025	Na2O	15.0639	14.6305	14.8100	0.2539	-0.1795	1.7%	-1.2%
1	EM07-P-025	Nd2O3	0.0624	0.0720	0.0690	-0.0066	0.0030	-9.6%	4.4%
1	EM07-P-025	NiO	0.8971	0.9835	0.9870	-0.0899	-0.0035	-9.1%	-0.4%
1	EM07-P-025	P2O5	0.8421	0.8421	2.5000	-1.6579	-1.6579	-66.3%	-66.3%
1	EM07-P-025	PbO	0.3288	0.3288	0.3650	-0.0362	-0.0362	-9.9%	-9.9%
1	EM07-P-025	SiO2	42.8930	43.1534	42.7850	0.1080	0.3684	0.3%	0.9%
1	EM07-P-025	TiO2	0.0363	0.0381	0.0390	-0.0027	-0.0009	-7.0%	-2.3%
1	EM07-P-025	ZnO	0.0579	0.0579	0.0590	-0.0011	-0.0011	-1.9%	-1.9%
1	EM07-P-025	ZrO2	0.4795	0.4795	2.4680	-1.9885	-1.9885	-80.6%	-80.6%
1	EM07-P-025	Sum	95.5066	95.6972	99.3380	-3.8314	-3.6408	-3.9%	-3.7%
1	EM07-Zr-001	Al2O3	10.2269	10.1471	10.2460	-0.0191	-0.0989	-0.2%	-1.0%
1	EM07-Zr-001	B2O3	10.8672	10.6362	10.2460	0.6212	0.3902	6.1%	3.8%
1	EM07-Zr-001	BaO	0.0488	0.0512	0.0510	-0.0022	0.0002	-4.2%	0.4%
1	EM07-Zr-001	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Zr-001	CaO	0.0234	0.0243	0.0000	0.0234	0.0243		
1	EM07-Zr-001	CdO	0.1245	0.1245	0.1430	-0.0185	-0.0185	-12.9%	-12.9%
1	EM07-Zr-001	Ce2O3	0.0524	0.0524	0.0510	0.0014	0.0014	2.8%	2.8%
1	EM07-Zr-001	Cr2O3	0.4790	0.5314	0.5120	-0.0330	0.0194	-6.4%	3.8%
1	EM07-Zr-001	Fe2O3	9.4539	9.9586	10.2460	-0.7921	-0.2874	-7.7%	-2.8%
1	EM07-Zr-001	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-Zr-001	La2O3	0.0551	0.0551	0.0720	-0.0169	-0.0169	-23.4%	-23.4%
1	EM07-Zr-001	Li2O	2.8687	2.8194	2.8180	0.0507	0.0014	1.8%	0.0%
1	EM07-Zr-001	MgO	0.1318	0.1400	0.1540	-0.0222	-0.0140	-14.4%	-9.1%
1	EM07-Zr-001	MnO	1.9788	2.0399	2.0490	-0.0702	-0.0091	-3.4%	-0.4%
1	EM07-Zr-001	Na2O	15.4683	15.0233	15.3690	0.0993	-0.3457	0.6%	-2.2%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
1	EM07-Zr-001	Nd2O3	0.1184	0.1367	0.0720	0.0464	0.0647	64.4%	89.8%
1	EM07-Zr-001	NiO	0.9350	1.0250	1.0250	-0.0900	0.0000	-8.8%	0.0%
1	EM07-Zr-001	P2O5	1.1153	1.1153	1.2810	-0.1657	-0.1657	-12.9%	-12.9%
1	EM07-Zr-001	PbO	0.3388	0.3388	0.3790	-0.0402	-0.0402	-10.6%	-10.6%
1	EM07-Zr-001	SiO2	44.8183	45.0900	44.3990	0.4193	0.6910	0.9%	1.6%
1	EM07-Zr-001	TiO2	0.0450	0.0473	0.0410	0.0040	0.0063	9.8%	15.4%
1	EM07-Zr-001	ZnO	0.0607	0.0607	0.0610	-0.0003	-0.0003	-0.5%	-0.5%
1	EM07-Zr-001	ZrO2	0.0567	0.0567	0.1000	-0.0433	-0.0433	-43.3%	-43.3%
1	EM07-Zr-001	Sum	99.3331	99.5429	99.3150	0.0181	0.2279	0.0%	0.2%
1	EM07-Zr-05	Al2O3	9.7168	9.6405	9.7440	-0.0272	-0.1035	-0.3%	-1.1%
1	EM07-Zr-05	B2O3	10.0783	9.8659	9.7440	0.3343	0.1219	3.4%	1.3%
1	EM07-Zr-05	BaO	0.0475	0.0497	0.0490	-0.0015	0.0007	-3.2%	1.5%
1	EM07-Zr-05	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
1	EM07-Zr-05	CaO	0.0178	0.0185	0.0000	0.0178	0.0185		
1	EM07-Zr-05	CdO	0.1217	0.1217	0.1360	-0.0143	-0.0143	-10.5%	-10.5%
1	EM07-Zr-05	Ce2O3	0.0510	0.0510	0.0490	0.0020	0.0020	4.0%	4.0%
1	EM07-Zr-05	Cr2O3	0.4166	0.4620	0.4870	-0.0704	-0.0250	-14.5%	-5.1%
1	EM07-Zr-05	Fe2O3	8.9499	9.4271	9.7440	-0.7941	-0.3169	-8.1%	-3.3%
1	EM07-Zr-05	K2O	0.0602	0.0635	0.0000	0.0602	0.0635		
1	EM07-Zr-05	La2O3	0.0507	0.0507	0.0680	-0.0173	-0.0173	-25.4%	-25.4%
1	EM07-Zr-05	Li2O	2.7449	2.6976	2.6790	0.0659	0.0186	2.5%	0.7%
1	EM07-Zr-05	MgO	0.1235	0.1312	0.1460	-0.0225	-0.0148	-15.4%	-10.2%
1	EM07-Zr-05	MnO	1.8690	1.9268	1.9490	-0.0800	-0.0222	-4.1%	-1.1%
1	EM07-Zr-05	Na2O	14.8617	14.4341	14.6150	0.2467	-0.1809	1.7%	-1.2%
1	EM07-Zr-05	Nd2O3	0.0688	0.0794	0.0680	0.0008	0.0114	1.2%	16.8%
1	EM07-Zr-05	NiO	0.8688	0.9525	0.9740	-0.1052	-0.0215	-10.8%	-2.2%
1	EM07-Zr-05	P2O5	1.0145	1.0145	1.2180	-0.2035	-0.2035	-16.7%	-16.7%
1	EM07-Zr-05	PbO	0.3275	0.3275	0.3610	-0.0335	-0.0335	-9.3%	-9.3%
1	EM07-Zr-05	SiO2	42.2512	42.5080	42.2190	0.0322	0.2890	0.1%	0.7%
1	EM07-Zr-05	TiO2	0.0421	0.0442	0.0390	0.0031	0.0052	8.0%	13.4%
1	EM07-Zr-05	ZnO	0.0557	0.0557	0.0580	-0.0023	-0.0023	-4.0%	-4.0%
1	EM07-Zr-05	ZrO2	3.5019	3.5019	5.0000	-1.4981	-1.4981	-30.0%	-30.0%
1	EM07-Zr-05	Sum	97.2457	97.4296	99.3470	-2.1013	-1.9174	-2.1%	-1.9%
1	LRM	F	0.7775	1.0000	1.0000	-0.2225	0.0000	-22.3%	0.0%
2	Batch 1	Al2O3	4.7253	4.8770	4.8770	-0.1517	0.0000	-3.1%	0.0%
2	Batch 1	B2O3	7.8431	7.7770	7.7770	0.0661	0.0000	0.9%	0.0%
2	Batch 1	BaO	0.1404	0.1510	0.1510	-0.0106	0.0000	-7.0%	0.0%
2	Batch 1	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	Batch 1	CaO	1.1752	1.2200	1.2200	-0.0448	0.0000	-3.7%	0.0%
2	Batch 1	CdO	0.0057	0.0057	0.0000	0.0057	0.0057		
2	Batch 1	Ce2O3	0.0059	0.0059	0.0000	0.0059	0.0059		
2	Batch 1	Cr2O3	0.1095	0.1070	0.1070	0.0025	0.0000	2.3%	0.0%
2	Batch 1	Fe2O3	12.5647	12.8390	12.8390	-0.2743	0.0000	-2.1%	0.0%
2	Batch 1	K2O	3.0727	3.3270	3.3270	-0.2543	0.0000	-7.6%	0.0%
2	Batch 1	La2O3	0.0059	0.0059	0.0000	0.0059	0.0059		
2	Batch 1	Li2O	4.4152	4.4290	4.4290	-0.0138	0.0000	-0.3%	0.0%
2	Batch 1	MgO	1.3507	1.4190	1.4190	-0.0683	0.0000	-4.8%	0.0%
2	Batch 1	MnO	1.7108	1.7260	1.7260	-0.0152	0.0000	-0.9%	0.0%
2	Batch 1	Na2O	9.0148	9.0030	9.0030	0.0117	0.0000	0.1%	0.0%
2	Batch 1	Nd2O3	0.1389	0.1470	0.1470	-0.0081	0.0000	-5.5%	0.0%
2	Batch 1	NiO	0.6887	0.7510	0.7510	-0.0623	0.0000	-8.3%	0.0%
2	Batch 1	P2O5	0.1146	0.1146	0.0000	0.1146	0.1146		
2	Batch 1	PbO	0.0539	0.0539	0.0000	0.0539	0.0539		
2	Batch 1	SiO2	46.7081	50.2200	50.2200	-3.5120	0.0000	-7.0%	0.0%
2	Batch 1	TiO2	0.6477	0.6770	0.6770	-0.0293	0.0000	-4.3%	0.0%
2	Batch 1	ZnO	0.0062	0.0062	0.0000	0.0062	0.0062		

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	Batch 1	ZrO2	0.0813	0.0813	0.0980	-0.0167	-0.0167	-17.1%	-17.1%
2	Batch 1	Sum	94.5849	98.9489	98.7680	-4.1831	0.1809	-4.2%	0.2%
2	EM07-Al-06	Al2O3	5.9897	6.1842	6.0000	-0.0103	0.1842	-0.2%	3.1%
2	EM07-Al-06	B2O3	10.5935	10.5670	10.4440	0.1495	0.1230	1.4%	1.2%
2	EM07-Al-06	BaO	0.0475	0.0509	0.0520	-0.0045	-0.0011	-8.7%	-2.0%
2	EM07-Al-06	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Al-06	CaO	0.0528	0.0550	0.0000	0.0528	0.0550		
2	EM07-Al-06	CdO	0.1325	0.1325	0.1460	-0.0135	-0.0135	-9.2%	-9.2%
2	EM07-Al-06	Ce2O3	0.0512	0.0512	0.0520	-0.0008	-0.0008	-1.5%	-1.5%
2	EM07-Al-06	Cr2O3	0.4940	0.4801	0.5220	-0.0280	-0.0419	-5.4%	-8.0%
2	EM07-Al-06	Fe2O3	10.0258	10.2640	10.4440	-0.4182	-0.1800	-4.0%	-1.7%
2	EM07-Al-06	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Al-06	La2O3	0.0616	0.0616	0.0730	-0.0114	-0.0114	-15.7%	-15.7%
2	EM07-Al-06	Li2O	2.7665	2.7740	2.8720	-0.1055	-0.0980	-3.7%	-3.4%
2	EM07-Al-06	MgO	0.1418	0.1494	0.1570	-0.0152	-0.0076	-9.7%	-4.8%
2	EM07-Al-06	MnO	2.0917	2.1153	2.0890	0.0027	0.0263	0.1%	1.3%
2	EM07-Al-06	Na2O	15.8053	15.8381	15.6670	0.1383	0.1711	0.9%	1.1%
2	EM07-Al-06	Nd2O3	0.0668	0.0703	0.0730	-0.0062	-0.0027	-8.5%	-3.7%
2	EM07-Al-06	NiO	0.9467	1.0360	1.0440	-0.0973	-0.0080	-9.3%	-0.8%
2	EM07-Al-06	P2O5	0.9315	0.9315	1.3060	-0.3745	-0.3745	-28.7%	-28.7%
2	EM07-Al-06	PbO	0.3490	0.3490	0.3860	-0.0370	-0.0370	-9.6%	-9.6%
2	EM07-Al-06	SiO2	43.1069	46.3475	45.2580	-2.1511	1.0895	-4.8%	2.4%
2	EM07-Al-06	TiO2	0.0488	0.0512	0.0420	0.0068	0.0092	16.2%	21.8%
2	EM07-Al-06	ZnO	0.0663	0.0663	0.0630	0.0033	0.0033	5.2%	5.2%
2	EM07-Al-06	ZrO2	1.9722	1.9722	2.6110	-0.6388	-0.6388	-24.5%	-24.5%
2	EM07-Al-06	Sum	95.8078	99.6179	99.3010	-3.4932	0.3169	-3.5%	0.3%
2	EM07-Al-15	Al2O3	14.7003	15.1774	15.0000	-0.2997	0.1774	-2.0%	1.2%
2	EM07-Al-15	B2O3	9.6436	9.6180	9.4440	0.1996	0.1740	2.1%	1.8%
2	EM07-Al-15	BaO	0.0427	0.0458	0.0470	-0.0043	-0.0012	-9.1%	-2.5%
2	EM07-Al-15	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Al-15	CaO	0.0154	0.0160	0.0000	0.0154	0.0160		
2	EM07-Al-15	CdO	0.1188	0.1188	0.1320	-0.0132	-0.0132	-10.0%	-10.0%
2	EM07-Al-15	Ce2O3	0.0471	0.0471	0.0470	0.0001	0.0001	0.3%	0.3%
2	EM07-Al-15	Cr2O3	0.3961	0.3849	0.4720	-0.0759	-0.0871	-16.1%	-18.4%
2	EM07-Al-15	Fe2O3	9.0393	9.2552	9.4440	-0.4047	-0.1888	-4.3%	-2.0%
2	EM07-Al-15	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Al-15	La2O3	0.0566	0.0566	0.0660	-0.0094	-0.0094	-14.3%	-14.3%
2	EM07-Al-15	Li2O	2.5297	2.5365	2.5970	-0.0673	-0.0605	-2.6%	-2.3%
2	EM07-Al-15	MgO	0.1244	0.1311	0.1420	-0.0176	-0.0109	-12.4%	-7.7%
2	EM07-Al-15	MnO	1.8819	1.9032	1.8890	-0.0071	0.0142	-0.4%	0.8%
2	EM07-Al-15	Na2O	13.9855	14.0145	14.1670	-0.1815	-0.1525	-1.3%	-1.1%
2	EM07-Al-15	Nd2O3	0.0598	0.0630	0.0660	-0.0062	-0.0030	-9.4%	-4.6%
2	EM07-Al-15	NiO	0.8122	0.8887	0.9440	-0.1318	-0.0553	-14.0%	-5.9%
2	EM07-Al-15	P2O5	0.6702	0.6702	1.1810	-0.5108	-0.5108	-43.2%	-43.2%
2	EM07-Al-15	PbO	0.3151	0.3151	0.3490	-0.0339	-0.0339	-9.7%	-9.7%
2	EM07-Al-15	SiO2	40.5932	43.6453	40.9240	-0.3308	2.7213	-0.8%	6.6%
2	EM07-Al-15	TiO2	0.0434	0.0455	0.0380	0.0054	0.0075	14.1%	19.7%
2	EM07-Al-15	ZnO	0.0563	0.0563	0.0570	-0.0007	-0.0007	-1.2%	-1.2%
2	EM07-Al-15	ZrO2	1.5399	1.5399	2.3610	-0.8211	-0.8211	-34.8%	-34.8%
2	EM07-Al-15	Sum	96.7373	100.6000	99.3670	-2.6297	1.2330	-2.6%	1.2%
2	EM07-Al-20	Al2O3	18.2573	18.8369	20.0000	-1.7427	-1.1631	-8.7%	-5.8%
2	EM07-Al-20	B2O3	9.3538	9.2219	8.8890	0.4648	0.3329	5.2%	3.7%
2	EM07-Al-20	BaO	0.0402	0.0433	0.0440	-0.0038	-0.0007	-8.6%	-1.6%
2	EM07-Al-20	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Al-20	CaO	0.0070	0.0072	0.0000	0.0070	0.0072		
2	EM07-Al-20	CdO	0.1145	0.1145	0.1240	-0.0095	-0.0095	-7.6%	-7.6%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Al-20	Ce2O3	0.0448	0.0448	0.0440	0.0008	0.0008	1.8%	1.8%
2	EM07-Al-20	Cr2O3	0.3574	0.3512	0.4440	-0.0866	-0.0928	-19.5%	-20.9%
2	EM07-Al-20	Fe2O3	8.5282	8.6974	8.8890	-0.3608	-0.1916	-4.1%	-2.2%
2	EM07-Al-20	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Al-20	La2O3	0.0522	0.0522	0.0620	-0.0098	-0.0098	-15.8%	-15.8%
2	EM07-Al-20	Li2O	2.4274	2.4359	2.4440	-0.0166	-0.0081	-0.7%	-0.3%
2	EM07-Al-20	MgO	0.1173	0.1229	0.1330	-0.0157	-0.0101	-11.8%	-7.6%
2	EM07-Al-20	MnO	1.7689	1.7802	1.7780	-0.0091	0.0022	-0.5%	0.1%
2	EM07-Al-20	Na2O	13.4800	13.4173	13.3330	0.1470	0.0843	1.1%	0.6%
2	EM07-Al-20	Nd2O3	0.0560	0.0595	0.0620	-0.0060	-0.0025	-9.7%	-4.0%
2	EM07-Al-20	NiO	0.7543	0.8196	0.8890	-0.1347	-0.0694	-15.2%	-7.8%
2	EM07-Al-20	P2O5	0.5740	0.5740	1.1110	-0.5370	-0.5370	-48.3%	-48.3%
2	EM07-Al-20	PbO	0.3016	0.3016	0.3290	-0.0274	-0.0274	-8.3%	-8.3%
2	EM07-Al-20	SiO2	38.4539	41.3458	38.5180	-0.0641	2.8278	-0.2%	7.3%
2	EM07-Al-20	TiO2	0.0384	0.0400	0.0360	0.0024	0.0040	6.6%	11.0%
2	EM07-Al-20	ZnO	0.0523	0.0523	0.0530	-0.0007	-0.0007	-1.4%	-1.4%
2	EM07-Al-20	ZrO2	1.3390	1.3390	2.2220	-0.8830	-0.8830	-39.7%	-39.7%
2	EM07-Al-20	Sum	96.1842	99.7283	99.4040	-3.2198	0.3243	-3.2%	0.3%
2	EM07-BL-1	Al2O3	9.9577	10.2808	10.0000	-0.0423	0.2808	-0.4%	2.8%
2	EM07-BL-1	B2O3	10.1105	10.0844	10.0000	0.1105	0.0844	1.1%	0.8%
2	EM07-BL-1	BaO	0.0461	0.0494	0.0500	-0.0039	-0.0006	-7.9%	-1.1%
2	EM07-BL-1	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-BL-1	CaO	0.0129	0.0135	0.0000	0.0129	0.0135		
2	EM07-BL-1	CdO	0.1297	0.1297	0.1400	-0.0103	-0.0103	-7.4%	-7.4%
2	EM07-BL-1	Ce2O3	0.0510	0.0510	0.0500	0.0010	0.0010	1.9%	1.9%
2	EM07-BL-1	Cr2O3	0.4695	0.4563	0.5000	-0.0305	-0.0437	-6.1%	-8.7%
2	EM07-BL-1	Fe2O3	9.5861	9.8151	10.0000	-0.4139	-0.1849	-4.1%	-1.8%
2	EM07-BL-1	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-BL-1	La2O3	0.0601	0.0601	0.0700	-0.0099	-0.0099	-14.1%	-14.1%
2	EM07-BL-1	Li2O	2.6965	2.7038	2.7500	-0.0535	-0.0462	-1.9%	-1.7%
2	EM07-BL-1	MgO	0.1322	0.1394	0.1500	-0.0178	-0.0106	-11.8%	-7.1%
2	EM07-BL-1	MnO	1.9852	2.0078	2.0000	-0.0148	0.0078	-0.7%	0.4%
2	EM07-BL-1	Na2O	15.3672	15.3990	15.0000	0.3672	0.3990	2.4%	2.7%
2	EM07-BL-1	Nd2O3	0.0653	0.0688	0.0700	-0.0047	-0.0012	-6.7%	-1.7%
2	EM07-BL-1	NiO	0.9159	1.0022	1.0000	-0.0841	0.0022	-8.4%	0.2%
2	EM07-BL-1	P2O5	0.8822	0.8822	1.2500	-0.3678	-0.3678	-29.4%	-29.4%
2	EM07-BL-1	PbO	0.3355	0.3355	0.3700	-0.0345	-0.0345	-9.3%	-9.3%
2	EM07-BL-1	SiO2	42.4116	45.6004	43.3300	-0.9184	2.2704	-2.1%	5.2%
2	EM07-BL-1	TiO2	0.0442	0.0464	0.0400	0.0042	0.0064	10.5%	15.9%
2	EM07-BL-1	ZnO	0.0601	0.0601	0.0600	0.0001	0.0001	0.1%	0.1%
2	EM07-BL-1	ZrO2	1.9148	1.9148	2.5000	-0.5852	-0.5852	-23.4%	-23.4%
2	EM07-BL-1	Sum	97.3001	101.1713	99.3300	-2.0299	1.8413	-2.0%	1.9%
2	EM07-BL-2	Al2O3	9.6034	9.9083	10.0000	-0.3966	-0.0917	-4.0%	-0.9%
2	EM07-BL-2	B2O3	10.1910	10.0455	10.0000	0.1910	0.0455	1.9%	0.5%
2	EM07-BL-2	BaO	0.0444	0.0478	0.0500	-0.0056	-0.0022	-11.2%	-4.4%
2	EM07-BL-2	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-BL-2	CaO	0.0129	0.0134	0.0000	0.0129	0.0134		
2	EM07-BL-2	CdO	0.1274	0.1274	0.1400	-0.0126	-0.0126	-9.0%	-9.0%
2	EM07-BL-2	Ce2O3	0.0489	0.0489	0.0500	-0.0011	-0.0011	-2.2%	-2.2%
2	EM07-BL-2	Cr2O3	0.4695	0.4614	0.5000	-0.0305	-0.0386	-6.1%	-7.7%
2	EM07-BL-2	Fe2O3	9.4861	9.6725	10.0000	-0.5139	-0.3275	-5.1%	-3.3%
2	EM07-BL-2	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-BL-2	La2O3	0.0569	0.0569	0.0700	-0.0131	-0.0131	-18.7%	-18.7%
2	EM07-BL-2	Li2O	2.6911	2.7006	2.7500	-0.0589	-0.0494	-2.1%	-1.8%
2	EM07-BL-2	MgO	0.1298	0.1359	0.1500	-0.0202	-0.0141	-13.5%	-9.4%
2	EM07-BL-2	MnO	1.9529	1.9652	2.0000	-0.0471	-0.0348	-2.4%	-1.7%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-BL-2	Na2O	14.4910	14.4237	15.0000	-0.5090	-0.5763	-3.4%	-3.8%
2	EM07-BL-2	Nd2O3	0.0609	0.0648	0.0700	-0.0091	-0.0052	-12.9%	-7.4%
2	EM07-BL-2	NiO	0.9108	0.9896	1.0000	-0.0892	-0.0104	-8.9%	-1.0%
2	EM07-BL-2	P2O5	0.9252	0.9252	1.2500	-0.3248	-0.3248	-26.0%	-26.0%
2	EM07-BL-2	PbO	0.3326	0.3326	0.3700	-0.0374	-0.0374	-10.1%	-10.1%
2	EM07-BL-2	SiO2	42.0372	45.1963	43.3300	-1.2928	1.8663	-3.0%	4.3%
2	EM07-BL-2	TiO2	0.0421	0.0439	0.0400	0.0021	0.0039	5.3%	9.7%
2	EM07-BL-2	ZnO	0.0601	0.0601	0.0600	0.0001	0.0001	0.1%	0.1%
2	EM07-BL-2	ZrO2	1.9587	1.9587	2.5000	-0.5413	-0.5413	-21.7%	-21.7%
2	EM07-BL-2	Sum	95.6986	99.2495	99.3300	-3.6314	-0.0805	-3.7%	-0.1%
2	EM07-Cr-001	Al2O3	9.8254	10.1374	10.0400	-0.2146	0.0974	-2.1%	1.0%
2	EM07-Cr-001	B2O3	10.3278	10.1806	10.0400	0.2878	0.1406	2.9%	1.4%
2	EM07-Cr-001	BaO	0.0455	0.0490	0.0500	-0.0045	-0.0010	-9.0%	-2.0%
2	EM07-Cr-001	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Cr-001	CaO	0.0070	0.0072	0.0000	0.0070	0.0072		
2	EM07-Cr-001	CdO	0.1308	0.1308	0.1410	-0.0102	-0.0102	-7.2%	-7.2%
2	EM07-Cr-001	Ce2O3	0.0501	0.0501	0.0500	0.0001	0.0001	0.1%	0.1%
2	EM07-Cr-001	Cr2O3	0.1107	0.1088	0.1000	0.0107	0.0088	10.7%	8.8%
2	EM07-Cr-001	Fe2O3	9.7434	9.9394	10.0400	-0.2966	-0.1006	-3.0%	-1.0%
2	EM07-Cr-001	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Cr-001	La2O3	0.0578	0.0578	0.0700	-0.0122	-0.0122	-17.5%	-17.5%
2	EM07-Cr-001	Li2O	2.6804	2.6898	2.7610	-0.0806	-0.0712	-2.9%	-2.6%
2	EM07-Cr-001	MgO	0.1335	0.1398	0.1510	-0.0175	-0.0112	-11.6%	-7.4%
2	EM07-Cr-001	MnO	1.9949	2.0077	2.0080	-0.0131	-0.0003	-0.7%	0.0%
2	EM07-Cr-001	Na2O	14.9965	14.9272	15.0600	-0.0635	-0.1328	-0.4%	-0.9%
2	EM07-Cr-001	Nd2O3	0.0618	0.0657	0.0700	-0.0082	-0.0043	-11.7%	-6.1%
2	EM07-Cr-001	NiO	0.9337	1.0145	1.0040	-0.0703	0.0105	-7.0%	1.0%
2	EM07-Cr-001	P2O5	0.8845	0.8845	1.2550	-0.3705	-0.3705	-29.5%	-29.5%
2	EM07-Cr-001	PbO	0.3377	0.3377	0.3710	-0.0333	-0.0333	-9.0%	-9.0%
2	EM07-Cr-001	SiO2	41.7698	44.9096	43.5070	-1.7372	1.4026	-4.0%	3.2%
2	EM07-Cr-001	TiO2	0.0442	0.0460	0.0400	0.0042	0.0060	10.5%	15.1%
2	EM07-Cr-001	ZnO	0.0598	0.0598	0.0600	-0.0002	-0.0002	-0.4%	-0.4%
2	EM07-Cr-001	ZrO2	1.9148	1.9148	2.5100	-0.5952	-0.5952	-23.7%	-23.7%
2	EM07-Cr-001	Sum	96.1758	99.7291	99.3280	-3.1522	0.4011	-3.2%	0.4%
2	EM07-Cr-012	Al2O3	9.7782	10.0885	9.9300	-0.1518	0.1585	-1.5%	1.6%
2	EM07-Cr-012	B2O3	10.1829	10.0380	9.9300	0.2529	0.1080	2.5%	1.1%
2	EM07-Cr-012	BaO	0.0455	0.0490	0.0500	-0.0045	-0.0010	-9.0%	-2.0%
2	EM07-Cr-012	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Cr-012	CaO	0.0070	0.0072	0.0000	0.0070	0.0072		
2	EM07-Cr-012	CdO	0.1285	0.1285	0.1390	-0.0105	-0.0105	-7.5%	-7.5%
2	EM07-Cr-012	Ce2O3	0.0501	0.0501	0.0500	0.0001	0.0001	0.1%	0.1%
2	EM07-Cr-012	Cr2O3	1.0597	1.0414	1.2000	-0.1403	-0.1586	-11.7%	-13.2%
2	EM07-Cr-012	Fe2O3	9.6362	9.8336	9.9300	-0.2938	-0.0964	-3.0%	-1.0%
2	EM07-Cr-012	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Cr-012	La2O3	0.0581	0.0581	0.0700	-0.0119	-0.0119	-17.1%	-17.1%
2	EM07-Cr-012	Li2O	2.6588	2.6682	2.7310	-0.0722	-0.0628	-2.6%	-2.3%
2	EM07-Cr-012	MgO	0.1322	0.1385	0.1490	-0.0168	-0.0105	-11.2%	-7.1%
2	EM07-Cr-012	MnO	1.9820	1.9949	1.9860	-0.0040	0.0089	-0.2%	0.4%
2	EM07-Cr-012	Na2O	14.9291	14.8588	14.8940	0.0351	-0.0352	0.2%	-0.2%
2	EM07-Cr-012	Nd2O3	0.0624	0.0664	0.0700	-0.0076	-0.0036	-10.9%	-5.2%
2	EM07-Cr-012	NiO	0.8990	0.9768	0.9930	-0.0940	-0.0162	-9.5%	-1.6%
2	EM07-Cr-012	P2O5	0.8020	0.8020	1.2410	-0.4390	-0.4390	-35.4%	-35.4%
2	EM07-Cr-012	PbO	0.3361	0.3361	0.3670	-0.0309	-0.0309	-8.4%	-8.4%
2	EM07-Cr-012	SiO2	41.6094	44.7379	43.0230	-1.4136	1.7149	-3.3%	4.0%
2	EM07-Cr-012	TiO2	0.0434	0.0452	0.0400	0.0034	0.0052	8.4%	12.9%
2	EM07-Cr-012	ZnO	0.0588	0.0588	0.0600	-0.0012	-0.0012	-2.0%	-2.0%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Cr-012	ZrO2	1.7831	1.7831	2.4820	-0.6989	-0.6989	-28.2%	-28.2%
2	EM07-Cr-012	Sum	96.3082	99.8317	99.3350	-3.0268	0.4967	-3.0%	0.5%
2	EM07-Cr-02	Al2O3	9.6648	9.9784	9.8490	-0.1842	0.1294	-1.9%	1.3%
2	EM07-Cr-02	B2O3	9.9897	9.9632	9.8490	0.1407	0.1142	1.4%	1.2%
2	EM07-Cr-02	BaO	0.0452	0.0485	0.0490	-0.0038	-0.0005	-7.7%	-0.9%
2	EM07-Cr-02	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Cr-02	CaO	0.0175	0.0182	0.0000	0.0175	0.0182		
2	EM07-Cr-02	CdO	0.1245	0.1245	0.1380	-0.0135	-0.0135	-9.8%	-9.8%
2	EM07-Cr-02	Ce2O3	0.0492	0.0492	0.0490	0.0002	0.0002	0.4%	0.4%
2	EM07-Cr-02	Cr2O3	1.5540	1.5101	2.0000	-0.4460	-0.4899	-22.3%	-24.5%
2	EM07-Cr-02	Fe2O3	9.1572	9.3760	9.8490	-0.6918	-0.4730	-7.0%	-4.8%
2	EM07-Cr-02	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Cr-02	La2O3	0.0583	0.0583	0.0690	-0.0107	-0.0107	-15.4%	-15.4%
2	EM07-Cr-02	Li2O	2.6158	2.6229	2.7090	-0.0932	-0.0861	-3.4%	-3.2%
2	EM07-Cr-02	MgO	0.1293	0.1363	0.1480	-0.0187	-0.0117	-12.6%	-7.9%
2	EM07-Cr-02	MnO	1.8787	1.9000	1.9700	-0.0913	-0.0700	-4.6%	-3.6%
2	EM07-Cr-02	Na2O	14.8617	14.8926	14.7740	0.0877	0.1186	0.6%	0.8%
2	EM07-Cr-02	Nd2O3	0.0633	0.0666	0.0690	-0.0057	-0.0024	-8.3%	-3.4%
2	EM07-Cr-02	NiO	0.8364	0.9152	0.9850	-0.1486	-0.0698	-15.1%	-7.1%
2	EM07-Cr-02	P2O5	0.8644	0.8644	1.2310	-0.3666	-0.3666	-29.8%	-29.8%
2	EM07-Cr-02	PbO	0.3312	0.3312	0.3640	-0.0328	-0.0328	-9.0%	-9.0%
2	EM07-Cr-02	SiO2	41.1280	44.2221	42.6790	-1.5510	1.5431	-3.6%	3.6%
2	EM07-Cr-02	TiO2	0.0463	0.0485	0.0390	0.0073	0.0095	18.7%	24.5%
2	EM07-Cr-02	ZnO	0.0554	0.0554	0.0590	-0.0036	-0.0036	-6.1%	-6.1%
2	EM07-Cr-02	ZrO2	1.8844	1.8844	2.4620	-0.5776	-0.5776	-23.5%	-23.5%
2	EM07-Cr-02	Sum	95.4213	99.1368	99.3410	-3.9197	-0.2042	-3.9%	-0.2%
2	EM07-Fe-05	Al2O3	10.3308	10.6663	10.5560	-0.2252	0.1103	-2.1%	1.0%
2	EM07-Fe-05	B2O3	10.7303	10.7026	10.5560	0.1743	0.1466	1.7%	1.4%
2	EM07-Fe-05	BaO	0.0497	0.0533	0.0530	-0.0033	0.0003	-6.3%	0.6%
2	EM07-Fe-05	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Fe-05	CaO	0.0154	0.0160	0.0000	0.0154	0.0160		
2	EM07-Fe-05	CdO	0.1356	0.1356	0.1480	-0.0124	-0.0124	-8.3%	-8.3%
2	EM07-Fe-05	Ce2O3	0.0533	0.0533	0.0530	0.0003	0.0003	0.6%	0.6%
2	EM07-Fe-05	Cr2O3	0.5053	0.4911	0.5280	-0.0227	-0.0369	-4.3%	-7.0%
2	EM07-Fe-05	Fe2O3	4.8753	4.9919	5.0000	-0.1247	-0.0081	-2.5%	-0.2%
2	EM07-Fe-05	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Fe-05	La2O3	0.0627	0.0627	0.0740	-0.0113	-0.0113	-15.2%	-15.2%
2	EM07-Fe-05	Li2O	2.8095	2.8172	2.9030	-0.0935	-0.0858	-3.2%	-3.0%
2	EM07-Fe-05	MgO	0.1397	0.1473	0.1580	-0.0183	-0.0107	-11.6%	-6.8%
2	EM07-Fe-05	MnO	2.0950	2.1187	2.1110	-0.0160	0.0077	-0.8%	0.4%
2	EM07-Fe-05	Na2O	15.7716	15.8054	15.8330	-0.0614	-0.0276	-0.4%	-0.2%
2	EM07-Fe-05	Nd2O3	0.0671	0.0706	0.0740	-0.0069	-0.0034	-9.4%	-4.5%
2	EM07-Fe-05	NiO	0.9792	1.0715	1.0560	-0.0768	0.0155	-7.3%	1.5%
2	EM07-Fe-05	P2O5	0.9630	0.9630	1.3190	-0.3560	-0.3560	-27.0%	-27.0%
2	EM07-Fe-05	PbO	0.3528	0.3528	0.3910	-0.0382	-0.0382	-9.8%	-9.8%
2	EM07-Fe-05	SiO2	44.0161	47.3259	45.7350	-1.7189	1.5909	-3.8%	3.5%
2	EM07-Fe-05	TiO2	0.0505	0.0529	0.0420	0.0085	0.0109	20.1%	26.0%
2	EM07-Fe-05	ZnO	0.0632	0.0632	0.0630	0.0002	0.0002	0.3%	0.3%
2	EM07-Fe-05	ZrO2	2.0566	2.0566	2.6390	-0.5824	-0.5824	-22.1%	-22.1%
2	EM07-Fe-05	Sum	96.1885	100.0886	99.2920	-3.1035	0.7966	-3.1%	0.8%
2	EM07-Fe-15	Al2O3	9.1263	9.4225	9.4440	-0.3177	-0.0215	-3.4%	-0.2%
2	EM07-Fe-15	B2O3	9.6275	9.4916	9.4440	0.1835	0.0476	1.9%	0.5%
2	EM07-Fe-15	BaO	0.0427	0.0458	0.0470	-0.0043	-0.0012	-9.1%	-2.5%
2	EM07-Fe-15	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Fe-15	CaO	0.0091	0.0095	0.0000	0.0091	0.0095		
2	EM07-Fe-15	CdO	0.1182	0.1182	0.1320	-0.0138	-0.0138	-10.4%	-10.4%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Fe-15	Ce2O3	0.0471	0.0471	0.0470	0.0001	0.0001	0.3%	0.3%
2	EM07-Fe-15	Cr2O3	0.4052	0.3938	0.4720	-0.0668	-0.0782	-14.1%	-16.6%
2	EM07-Fe-15	Fe2O3	13.9896	14.3244	15.0000	-1.0104	-0.6756	-6.7%	-4.5%
2	EM07-Fe-15	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Fe-15	La2O3	0.0560	0.0560	0.0660	-0.0100	-0.0100	-15.1%	-15.1%
2	EM07-Fe-15	Li2O	2.5189	2.5276	2.5970	-0.0781	-0.0694	-3.0%	-2.7%
2	EM07-Fe-15	MgO	0.1219	0.1285	0.1420	-0.0201	-0.0135	-14.2%	-9.5%
2	EM07-Fe-15	MnO	1.8561	1.8772	1.8890	-0.0329	-0.0118	-1.7%	-0.6%
2	EM07-Fe-15	Na2O	14.0866	14.1157	14.1670	-0.0804	-0.0513	-0.6%	-0.4%
2	EM07-Fe-15	Nd2O3	0.0598	0.0630	0.0660	-0.0062	-0.0030	-9.4%	-4.6%
2	EM07-Fe-15	NiO	0.8023	0.8780	0.9440	-0.1417	-0.0660	-15.0%	-7.0%
2	EM07-Fe-15	P2O5	0.7235	0.7235	1.1810	-0.4575	-0.4575	-38.7%	-38.7%
2	EM07-Fe-15	PbO	0.2997	0.2997	0.3490	-0.0493	-0.0493	-14.1%	-14.1%
2	EM07-Fe-15	SiO2	39.4701	42.4382	40.9240	-1.4539	1.5142	-3.6%	3.7%
2	EM07-Fe-15	TiO2	0.0442	0.0464	0.0380	0.0062	0.0084	16.3%	22.0%
2	EM07-Fe-15	ZnO	0.0563	0.0563	0.0570	-0.0007	-0.0007	-1.2%	-1.2%
2	EM07-Fe-15	ZrO2	1.6480	1.6480	2.3610	-0.7130	-0.7130	-30.2%	-30.2%
2	EM07-Fe-15	Sum	95.1750	98.7817	99.3670	-4.1920	-0.5853	-4.2%	-0.6%
2	EM07-Fe-20	Al2O3	8.8287	9.1152	8.8890	-0.0603	0.2262	-0.7%	2.5%
2	EM07-Fe-20	B2O3	8.9674	8.9440	8.8890	0.0784	0.0550	0.9%	0.6%
2	EM07-Fe-20	BaO	0.0402	0.0431	0.0440	-0.0038	-0.0009	-8.6%	-1.9%
2	EM07-Fe-20	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Fe-20	CaO	0.0255	0.0266	0.0000	0.0255	0.0266		
2	EM07-Fe-20	CdO	0.1102	0.1102	0.1240	-0.0138	-0.0138	-11.1%	-11.1%
2	EM07-Fe-20	Ce2O3	0.0451	0.0451	0.0440	0.0011	0.0011	2.5%	2.5%
2	EM07-Fe-20	Cr2O3	0.3965	0.3853	0.4440	-0.0475	-0.0587	-10.7%	-13.2%
2	EM07-Fe-20	Fe2O3	19.0508	19.5079	20.0000	-0.9492	-0.4921	-4.7%	-2.5%
2	EM07-Fe-20	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Fe-20	La2O3	0.0531	0.0531	0.0620	-0.0089	-0.0089	-14.4%	-14.4%
2	EM07-Fe-20	Li2O	2.3682	2.3746	2.4440	-0.0758	-0.0694	-3.1%	-2.8%
2	EM07-Fe-20	MgO	0.1153	0.1215	0.1330	-0.0177	-0.0115	-13.3%	-8.7%
2	EM07-Fe-20	MnO	1.7689	1.7891	1.7780	-0.0091	0.0111	-0.5%	0.6%
2	EM07-Fe-20	Na2O	13.4969	13.5252	13.3330	0.1639	0.1922	1.2%	1.4%
2	EM07-Fe-20	Nd2O3	0.0583	0.0614	0.0620	-0.0037	-0.0006	-5.9%	-0.9%
2	EM07-Fe-20	NiO	0.7610	0.8327	0.8890	-0.1280	-0.0563	-14.4%	-6.3%
2	EM07-Fe-20	P2O5	0.7344	0.7344	1.1110	-0.3766	-0.3766	-33.9%	-33.9%
2	EM07-Fe-20	PbO	0.2925	0.2925	0.3290	-0.0365	-0.0365	-11.1%	-11.1%
2	EM07-Fe-20	SiO2	37.8656	40.7127	38.5180	-0.6524	2.1947	-1.7%	5.7%
2	EM07-Fe-20	TiO2	0.0417	0.0437	0.0360	0.0057	0.0077	15.8%	21.5%
2	EM07-Fe-20	ZnO	0.0545	0.0545	0.0530	0.0015	0.0015	2.8%	2.8%
2	EM07-Fe-20	ZrO2	1.6412	1.6412	2.2220	-0.5808	-0.5808	-26.1%	-26.1%
2	EM07-Fe-20	Sum	96.7816	100.4848	99.4040	-2.6224	1.0808	-2.6%	1.1%
2	EM07-Li-015	Al2O3	10.0238	10.3420	10.1290	-0.1052	0.2130	-1.0%	2.1%
2	EM07-Li-015	B2O3	10.3842	10.3572	10.1290	0.2552	0.2282	2.5%	2.3%
2	EM07-Li-015	BaO	0.0458	0.0493	0.0510	-0.0052	-0.0017	-10.2%	-3.3%
2	EM07-Li-015	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Li-015	CaO	0.0070	0.0072	0.0000	0.0070	0.0072		
2	EM07-Li-015	CdO	0.1319	0.1319	0.1420	-0.0101	-0.0101	-7.1%	-7.1%
2	EM07-Li-015	Ce2O3	0.0507	0.0507	0.0510	-0.0003	-0.0003	-0.7%	-0.7%
2	EM07-Li-015	Cr2O3	0.4666	0.4586	0.5060	-0.0394	-0.0474	-7.8%	-9.4%
2	EM07-Li-015	Fe2O3	9.7506	9.9542	10.1290	-0.3784	-0.1748	-3.7%	-1.7%
2	EM07-Li-015	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Li-015	La2O3	0.0586	0.0586	0.0710	-0.0124	-0.0124	-17.4%	-17.4%
2	EM07-Li-015	Li2O	1.4855	1.4895	1.5000	-0.0145	-0.0105	-1.0%	-0.7%
2	EM07-Li-015	MgO	0.1352	0.1415	0.1520	-0.0168	-0.0105	-11.1%	-6.9%
2	EM07-Li-015	MnO	2.0078	2.0211	2.0260	-0.0182	-0.0049	-0.9%	-0.2%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Li-015	Na2O	15.1313	15.0614	15.1930	-0.0617	-0.1316	-0.4%	-0.9%
2	EM07-Li-015	Nd2O3	0.0636	0.0676	0.0710	-0.0074	-0.0034	-10.5%	-4.8%
2	EM07-Li-015	NiO	0.9216	1.0014	1.0130	-0.0914	-0.0116	-9.0%	-1.1%
2	EM07-Li-015	P2O5	0.8364	0.8364	1.2660	-0.4296	-0.4296	-33.9%	-33.9%
2	EM07-Li-015	PbO	0.3399	0.3399	0.3750	-0.0351	-0.0351	-9.4%	-9.4%
2	EM07-Li-015	SiO2	42.7860	46.0038	43.8840	-1.0980	2.1198	-2.5%	4.8%
2	EM07-Li-015	TiO2	0.0438	0.0456	0.0410	0.0028	0.0046	6.8%	11.2%
2	EM07-Li-015	ZnO	0.0610	0.0610	0.0610	0.0000	0.0000	0.0%	0.0%
2	EM07-Li-015	ZrO2	1.8371	1.8371	2.5320	-0.6949	-0.6949	-27.4%	-27.4%
2	EM07-Li-015	Sum	96.6340	100.3870	99.3220	-2.6880	1.0650	-2.7%	1.1%
2	EM07-Li-04	Al2O3	9.6034	9.9083	9.8710	-0.2676	0.0373	-2.7%	0.4%
2	EM07-Li-04	B2O3	10.0863	9.9425	9.8710	0.2153	0.0715	2.2%	0.7%
2	EM07-Li-04	BaO	0.0449	0.0484	0.0490	-0.0041	-0.0006	-8.3%	-1.2%
2	EM07-Li-04	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Li-04	CaO	0.0189	0.0196	0.0000	0.0189	0.0196		
2	EM07-Li-04	CdO	0.1285	0.1285	0.1380	-0.0095	-0.0095	-6.9%	-6.9%
2	EM07-Li-04	Ce2O3	0.0483	0.0483	0.0490	-0.0007	-0.0007	-1.4%	-1.4%
2	EM07-Li-04	Cr2O3	0.4677	0.4596	0.4940	-0.0263	-0.0344	-5.3%	-7.0%
2	EM07-Li-04	Fe2O3	9.3252	9.5116	9.8710	-0.5458	-0.3594	-5.5%	-3.6%
2	EM07-Li-04	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Li-04	La2O3	0.0569	0.0569	0.0690	-0.0121	-0.0121	-17.6%	-17.6%
2	EM07-Li-04	Li2O	3.8537	3.8673	4.0000	-0.1463	-0.1327	-3.7%	-3.3%
2	EM07-Li-04	MgO	0.1347	0.1411	0.1480	-0.0133	-0.0069	-9.0%	-4.7%
2	EM07-Li-04	MnO	1.9207	1.9329	1.9740	-0.0533	-0.0411	-2.7%	-2.1%
2	EM07-Li-04	Na2O	14.6258	14.5572	14.8070	-0.1812	-0.2498	-1.2%	-1.7%
2	EM07-Li-04	Nd2O3	0.0612	0.0651	0.0690	-0.0078	-0.0039	-11.3%	-5.6%
2	EM07-Li-04	NiO	0.9111	0.9900	0.9870	-0.0759	0.0030	-7.7%	0.3%
2	EM07-Li-04	P2O5	0.8295	0.8295	1.2340	-0.4045	-0.4045	-32.8%	-32.8%
2	EM07-Li-04	PbO	0.3334	0.3334	0.3650	-0.0316	-0.0316	-8.7%	-8.7%
2	EM07-Li-04	SiO2	41.0211	44.1040	42.7760	-1.7549	1.3280	-4.1%	3.1%
2	EM07-Li-04	TiO2	0.0421	0.0439	0.0390	0.0031	0.0049	8.0%	12.5%
2	EM07-Li-04	ZnO	0.0591	0.0591	0.0590	0.0001	0.0001	0.2%	0.2%
2	EM07-Li-04	ZrO2	1.8067	1.8067	2.4680	-0.6613	-0.6613	-26.8%	-26.8%
2	EM07-Li-04	Sum	95.4451	98.9247	99.3380	-3.8929	-0.4133	-3.9%	-0.4%
2	EM07-Ni-001	Al2O3	9.8963	10.2105	10.0910	-0.1947	0.1195	-1.9%	1.2%
2	EM07-Ni-001	B2O3	10.2232	10.1980	10.0910	0.1322	0.1070	1.3%	1.1%
2	EM07-Ni-001	BaO	0.0449	0.0484	0.0500	-0.0051	-0.0016	-10.1%	-3.2%
2	EM07-Ni-001	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Ni-001	CaO	0.0087	0.0091	0.0000	0.0087	0.0091		
2	EM07-Ni-001	CdO	0.1305	0.1305	0.1410	-0.0105	-0.0105	-7.4%	-7.4%
2	EM07-Ni-001	Ce2O3	0.0495	0.0495	0.0500	-0.0005	-0.0005	-1.0%	-1.0%
2	EM07-Ni-001	Cr2O3	0.4820	0.4737	0.5050	-0.0230	-0.0313	-4.6%	-6.2%
2	EM07-Ni-001	Fe2O3	9.6326	9.8242	10.0910	-0.4584	-0.2668	-4.5%	-2.6%
2	EM07-Ni-001	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Ni-001	La2O3	0.0583	0.0583	0.0710	-0.0127	-0.0127	-17.8%	-17.8%
2	EM07-Ni-001	Li2O	2.6750	2.6822	2.7750	-0.1000	-0.0928	-3.6%	-3.3%
2	EM07-Ni-001	MgO	0.1314	0.1376	0.1510	-0.0196	-0.0134	-13.0%	-8.9%
2	EM07-Ni-001	MnO	1.9755	1.9881	2.0180	-0.0425	-0.0299	-2.1%	-1.5%
2	EM07-Ni-001	Na2O	15.1313	15.0621	15.1360	-0.0047	-0.0739	0.0%	-0.5%
2	EM07-Ni-001	Nd2O3	0.0621	0.0661	0.0710	-0.0089	-0.0049	-12.5%	-7.0%
2	EM07-Ni-001	NiO	0.0929	0.1009	0.1000	-0.0071	0.0009	-7.1%	0.9%
2	EM07-Ni-001	P2O5	0.7688	0.7688	1.2610	-0.4922	-0.4922	-39.0%	-39.0%
2	EM07-Ni-001	PbO	0.3382	0.3382	0.3730	-0.0348	-0.0348	-9.3%	-9.3%
2	EM07-Ni-001	SiO2	42.6790	45.8878	43.7250	-1.0460	2.1628	-2.4%	4.9%
2	EM07-Ni-001	TiO2	0.0434	0.0452	0.0400	0.0034	0.0052	8.4%	12.9%
2	EM07-Ni-001	ZnO	0.0569	0.0569	0.0610	-0.0041	-0.0041	-6.6%	-6.6%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Ni-001	ZrO2	1.7493	1.7493	2.5230	-0.7737	-0.7737	-30.7%	-30.7%
2	EM07-Ni-001	Sum	96.2957	99.9562	99.3240	-3.0283	0.6322	-3.0%	0.6%
2	EM07-Ni-02	Al2O3	9.5373	9.8403	9.8990	-0.3617	-0.0587	-3.7%	-0.6%
2	EM07-Ni-02	B2O3	10.1990	10.0531	9.8990	0.3000	0.1541	3.0%	1.6%
2	EM07-Ni-02	BaO	0.0433	0.0466	0.0490	-0.0057	-0.0024	-11.7%	-4.9%
2	EM07-Ni-02	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Ni-02	CaO	0.0070	0.0072	0.0000	0.0070	0.0072		
2	EM07-Ni-02	CdO	0.1274	0.1274	0.1390	-0.0116	-0.0116	-8.4%	-8.4%
2	EM07-Ni-02	Ce2O3	0.0477	0.0477	0.0490	-0.0013	-0.0013	-2.6%	-2.6%
2	EM07-Ni-02	Cr2O3	0.4462	0.4385	0.4950	-0.0488	-0.0565	-9.9%	-11.4%
2	EM07-Ni-02	Fe2O3	9.8077	10.0034	9.8990	-0.0913	0.1044	-0.9%	1.1%
2	EM07-Ni-02	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-Ni-02	La2O3	0.0560	0.0560	0.0690	-0.0130	-0.0130	-18.8%	-18.8%
2	EM07-Ni-02	Li2O	2.6427	2.6520	2.7220	-0.0793	-0.0700	-2.9%	-2.6%
2	EM07-Ni-02	MgO	0.1277	0.1337	0.1480	-0.0203	-0.0143	-13.7%	-9.7%
2	EM07-Ni-02	MnO	1.9626	1.9745	1.9800	-0.0174	-0.0055	-0.9%	-0.3%
2	EM07-Ni-02	Na2O	14.5584	14.4908	14.8480	-0.2896	-0.3572	-2.0%	-2.4%
2	EM07-Ni-02	Nd2O3	0.0607	0.0645	0.0690	-0.0083	-0.0045	-12.1%	-6.5%
2	EM07-Ni-02	NiO	1.7818	1.9361	2.0000	-0.2182	-0.0639	-10.9%	-3.2%
2	EM07-Ni-02	P2O5	0.8272	0.8272	1.2370	-0.4098	-0.4098	-33.1%	-33.1%
2	EM07-Ni-02	PbO	0.3288	0.3288	0.3660	-0.0372	-0.0372	-10.2%	-10.2%
2	EM07-Ni-02	SiO2	41.6094	44.7368	42.8940	-1.2846	1.8428	-3.0%	4.3%
2	EM07-Ni-02	TiO2	0.0421	0.0439	0.0400	0.0021	0.0039	5.3%	9.7%
2	EM07-Ni-02	ZnO	0.0619	0.0619	0.0590	0.0029	0.0029	5.0%	5.0%
2	EM07-Ni-02	ZrO2	1.7763	1.7763	2.4750	-0.6987	-0.6987	-28.2%	-28.2%
2	EM07-Ni-02	Sum	96.1170	99.7175	99.3360	-3.2190	0.3815	-3.2%	0.4%
2	EM07-NM-0025	Al2O3	9.7687	10.0788	9.9790	-0.2103	0.0998	-2.1%	1.0%
2	EM07-NM-0025	B2O3	10.2473	10.1031	9.9790	0.2683	0.1241	2.7%	1.2%
2	EM07-NM-0025	BaO	0.0441	0.0475	0.0500	-0.0059	-0.0025	-11.8%	-5.0%
2	EM07-NM-0025	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-NM-0025	CaO	0.0143	0.0149	0.0000	0.0143	0.0149		
2	EM07-NM-0025	CdO	0.1291	0.1291	0.1400	-0.0109	-0.0109	-7.8%	-7.8%
2	EM07-NM-0025	Ce2O3	0.0498	0.0498	0.0500	-0.0002	-0.0002	-0.4%	-0.4%
2	EM07-NM-0025	Cr2O3	0.4673	0.4593	0.4990	-0.0317	-0.0397	-6.3%	-8.0%
2	EM07-NM-0025	Fe2O3	9.5897	9.7773	9.9790	-0.3893	-0.2017	-3.9%	-2.0%
2	EM07-NM-0025	K2O	0.0602	0.0653	0.0000	0.0602	0.0653		
2	EM07-NM-0025	La2O3	0.0578	0.0578	0.0700	-0.0122	-0.0122	-17.5%	-17.5%
2	EM07-NM-0025	Li2O	2.6588	2.6682	2.7440	-0.0852	-0.0758	-3.1%	-2.8%
2	EM07-NM-0025	MgO	0.1322	0.1385	0.1500	-0.0178	-0.0115	-11.8%	-7.7%
2	EM07-NM-0025	MnO	1.9723	1.9847	1.9960	-0.0237	-0.0113	-1.2%	-0.6%
2	EM07-NM-0025	Na2O	14.8280	14.7591	14.9680	-0.1400	-0.2089	-0.9%	-1.4%
2	EM07-NM-0025	Nd2O3	0.0618	0.0657	0.0700	-0.0082	-0.0043	-11.7%	-6.1%
2	EM07-NM-0025	NiO	0.9133	0.9924	0.9980	-0.0847	-0.0056	-8.5%	-0.6%
2	EM07-NM-0025	P2O5	0.7670	0.7670	1.2470	-0.4800	-0.4800	-38.5%	-38.5%
2	EM07-NM-0025	PbO	0.3329	0.3329	0.3690	-0.0361	-0.0361	-9.8%	-9.8%
2	EM07-NM-0025	SiO2	41.6629	44.7956	43.2390	-1.5761	1.5566	-3.6%	3.6%
2	EM07-NM-0025	TiO2	0.0421	0.0439	0.0400	0.0021	0.0039	5.3%	9.7%
2	EM07-NM-0025	ZnO	0.0601	0.0601	0.0600	0.0001	0.0001	0.1%	0.1%
2	EM07-NM-0025	ZrO2	1.7290	1.7290	2.4950	-0.7660	-0.7660	-30.7%	-30.7%
2	EM07-NM-0025	Sum	95.5945	99.1255	99.1220	-3.5275	0.0035	-3.6%	0.0%
2	EM07-Si-30	Al2O3	12.1542	12.5486	12.3520	-0.1978	0.1966	-1.6%	1.6%
2	EM07-Si-30	B2O3	12.7347	12.5535	12.3520	0.3827	0.2015	3.1%	1.6%
2	EM07-Si-30	BaO	0.0586	0.0629	0.0620	-0.0034	0.0009	-5.5%	1.5%
2	EM07-Si-30	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Si-30	CaO	0.0087	0.0091	0.0000	0.0087	0.0091		
2	EM07-Si-30	CdO	0.1611	0.1611	0.1730	-0.0119	-0.0119	-6.9%	-6.9%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

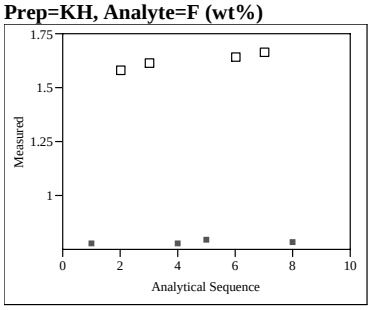
				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Si-30	Ce2O3	0.0606	0.0606	0.0620	-0.0014	-0.0014	-2.2%	-2.2%
2	EM07-Si-30	Cr2O3	0.5547	0.5390	0.6180	-0.0633	-0.0790	-10.2%	-12.8%
2	EM07-Si-30	Fe2O3	12.1703	12.4617	12.3520	-0.1817	0.1097	-1.5%	0.9%
2	EM07-Si-30	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Si-30	La2O3	0.0730	0.0730	0.0860	-0.0130	-0.0130	-15.1%	-15.1%
2	EM07-Si-30	Li2O	3.2939	3.3055	3.3970	-0.1031	-0.0915	-3.0%	-2.7%
2	EM07-Si-30	MgO	0.1633	0.1722	0.1850	-0.0217	-0.0128	-11.7%	-6.9%
2	EM07-Si-30	MnO	2.4694	2.4975	2.4700	-0.0006	0.0275	0.0%	1.1%
2	EM07-Si-30	Na2O	18.5013	18.5398	18.5300	-0.0287	0.0098	-0.2%	0.1%
2	EM07-Si-30	Nd2O3	0.0790	0.0832	0.0860	-0.0070	-0.0028	-8.1%	-3.2%
2	EM07-Si-30	NiO	1.1013	1.2052	1.2350	-0.1337	-0.0298	-10.8%	-2.4%
2	EM07-Si-30	P2O5	0.4262	0.4262	1.5440	-1.1178	-1.1178	-72.4%	-72.4%
2	EM07-Si-30	PbO	0.4163	0.4163	0.4570	-0.0407	-0.0407	-8.9%	-8.9%
2	EM07-Si-30	SiO2	29.6293	31.8562	30.0000	-0.3707	1.8562	-1.2%	6.2%
2	EM07-Si-30	TiO2	0.0517	0.0542	0.0490	0.0027	0.0052	5.5%	10.7%
2	EM07-Si-30	ZnO	0.0762	0.0762	0.0740	0.0022	0.0022	3.0%	3.0%
2	EM07-Si-30	ZrO2	1.3164	1.3164	3.0880	-1.7716	-1.7716	-57.4%	-57.4%
2	EM07-Si-30	Sum	95.5663	98.4892	99.1720	-3.6057	-0.6828	-3.6%	-0.7%
2	EM07-Si-37	Al2O3	10.8221	11.1733	11.1170	-0.2949	0.0563	-2.7%	0.5%
2	EM07-Si-37	B2O3	11.1328	11.1036	11.1170	0.0158	-0.0134	0.1%	-0.1%
2	EM07-Si-37	BaO	0.0511	0.0548	0.0560	-0.0049	-0.0012	-8.8%	-2.1%
2	EM07-Si-37	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Si-37	CaO	0.0112	0.0116	0.0000	0.0112	0.0116		
2	EM07-Si-37	CdO	0.1408	0.1408	0.1560	-0.0152	-0.0152	-9.8%	-9.8%
2	EM07-Si-37	Ce2O3	0.0553	0.0553	0.0560	-0.0007	-0.0007	-1.2%	-1.2%
2	EM07-Si-37	Cr2O3	0.5138	0.4993	0.5560	-0.0422	-0.0567	-7.6%	-10.2%
2	EM07-Si-37	Fe2O3	10.6477	10.9031	11.1170	-0.4693	-0.2139	-4.2%	-1.9%
2	EM07-Si-37	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Si-37	La2O3	0.0657	0.0657	0.0780	-0.0123	-0.0123	-15.8%	-15.8%
2	EM07-Si-37	Li2O	2.9226	2.9305	3.0570	-0.1344	-0.1265	-4.4%	-4.1%
2	EM07-Si-37	MgO	0.1459	0.1538	0.1670	-0.0211	-0.0132	-12.6%	-7.9%
2	EM07-Si-37	MnO	2.2144	2.2397	2.2230	-0.0086	0.0167	-0.4%	0.8%
2	EM07-Si-37	Na2O	16.4793	16.5138	16.6740	-0.1947	-0.1602	-1.2%	-1.0%
2	EM07-Si-37	Nd2O3	0.0712	0.0749	0.0780	-0.0068	-0.0031	-8.8%	-3.9%
2	EM07-Si-37	NiO	0.9973	1.0914	1.1120	-0.1147	-0.0206	-10.3%	-1.9%
2	EM07-Si-37	P2O5	0.4491	0.4491	1.3900	-0.9409	-0.9409	-67.7%	-67.7%
2	EM07-Si-37	PbO	0.3692	0.3692	0.4110	-0.0418	-0.0418	-10.2%	-10.2%
2	EM07-Si-37	SiO2	36.1007	38.8160	37.0000	-0.8993	1.8160	-2.4%	4.9%
2	EM07-Si-37	TiO2	0.0492	0.0516	0.0440	0.0052	0.0076	11.8%	17.3%
2	EM07-Si-37	ZnO	0.0688	0.0688	0.0670	0.0018	0.0018	2.6%	2.6%
2	EM07-Si-37	ZrO2	1.2755	1.2755	2.7790	-1.5035	-1.5035	-54.1%	-54.1%
2	EM07-Si-37	Sum	94.6494	98.1125	99.2550	-4.6056	-1.1425	-4.6%	-1.2%
2	EM07-Si-50	Al2O3	8.6067	8.8859	8.8230	-0.2163	0.0629	-2.5%	0.7%
2	EM07-Si-50	B2O3	8.9191	8.8968	8.8230	0.0961	0.0738	1.1%	0.8%
2	EM07-Si-50	BaO	0.0399	0.0429	0.0440	-0.0041	-0.0011	-9.3%	-2.6%
2	EM07-Si-50	Bi2O3	0.0056	0.0056	0.0000	0.0056	0.0056		
2	EM07-Si-50	CaO	0.0108	0.0113	0.0000	0.0108	0.0113		
2	EM07-Si-50	CdO	0.1114	0.1114	0.1240	-0.0126	-0.0126	-10.2%	-10.2%
2	EM07-Si-50	Ce2O3	0.0448	0.0448	0.0440	0.0008	0.0008	1.8%	1.8%
2	EM07-Si-50	Cr2O3	0.4261	0.4140	0.4410	-0.0149	-0.0270	-3.4%	-6.1%
2	EM07-Si-50	Fe2O3	8.3280	8.5270	8.8230	-0.4950	-0.2960	-5.6%	-3.4%
2	EM07-Si-50	K2O	0.0602	0.0651	0.0000	0.0602	0.0651		
2	EM07-Si-50	La2O3	0.0522	0.0522	0.0620	-0.0098	-0.0098	-15.8%	-15.8%
2	EM07-Si-50	Li2O	2.3413	2.3476	2.4260	-0.0847	-0.0784	-3.5%	-3.2%
2	EM07-Si-50	MgO	0.1148	0.1210	0.1320	-0.0172	-0.0110	-13.0%	-8.3%
2	EM07-Si-50	MnO	1.7205	1.7400	1.7650	-0.0445	-0.0250	-2.5%	-1.4%

Table A5. Average Measured and Bias-Corrected Chemical Compositions Versus Targeted Compositions for the Test Matrix 1 Study Glasses

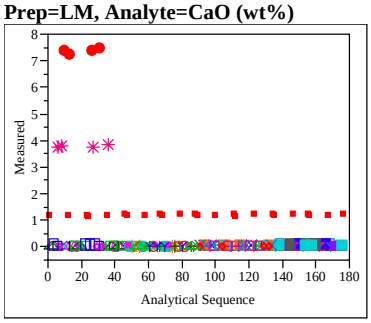
				Measured					
			Measured	Bias-Corrected	Targeted	Diff of	Diff of	% Diff of	% Diff of
Set	Glass ID	Oxide	(wt%)	(wt%)	(wt%)	Measured	Meas BC	Measured	Meas BC
2	EM07-Si-50	Na2O	13.4025	13.4298	13.2340	0.1685	0.1958	1.3%	1.5%
2	EM07-Si-50	Nd2O3	0.0560	0.0590	0.0620	-0.0060	-0.0030	-9.7%	-4.9%
2	EM07-Si-50	NiO	0.8087	0.8849	0.8820	-0.0733	0.0029	-8.3%	0.3%
2	EM07-Si-50	P2O5	0.9286	0.9286	1.1030	-0.1744	-0.1744	-15.8%	-15.8%
2	EM07-Si-50	PbO	0.2914	0.2914	0.3260	-0.0346	-0.0346	-10.6%	-10.6%
2	EM07-Si-50	SiO2	47.1716	50.7188	50.0000	-2.8284	0.7188	-5.7%	1.4%
2	EM07-Si-50	TiO2	0.0430	0.0450	0.0350	0.0080	0.0100	22.7%	28.7%
2	EM07-Si-50	ZnO	0.0532	0.0532	0.0530	0.0002	0.0002	0.4%	0.4%
2	EM07-Si-50	ZrO2	1.9283	1.9283	2.2060	-0.2777	-0.2777	-12.6%	-12.6%
2	EM07-Si-50	Sum	95.4645	99.6046	99.4080	-3.9435	0.1966	-4.0%	0.2%

Figure A1. Measurements in Analytical Sequence by Analyte Grouped by Preparation Method

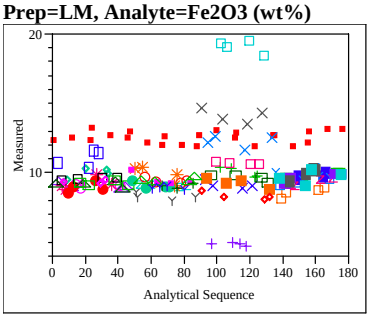
Measured By Analytical Sequence
Prep=KH, Analyte=F (wt%)



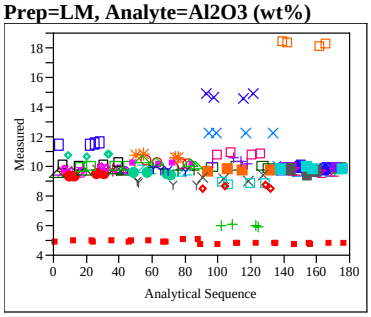
Measured By Analytical Sequence
Prep=LM, Analyte=CaO (wt%)



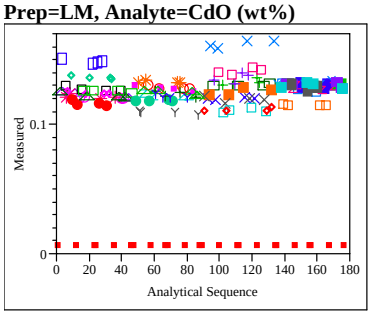
Measured By Analytical Sequence
Prep=LM, Analyte=Fe2O3 (wt%)



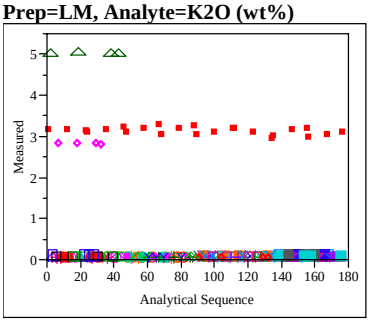
Measured By Analytical Sequence
Prep=LM, Analyte=Al2O3 (wt%)



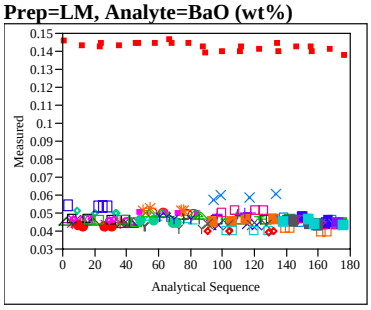
Measured By Analytical Sequence
Prep=LM, Analyte=CdO (wt%)



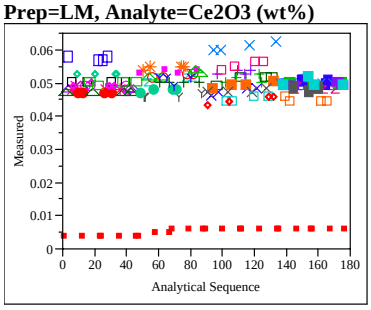
Measured By Analytical Sequence
Prep=LM, Analyte=K2O (wt%)



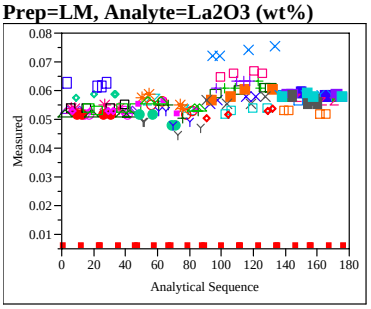
Measured By Analytical Sequence
Prep=LM, Analyte=BaO (wt%)



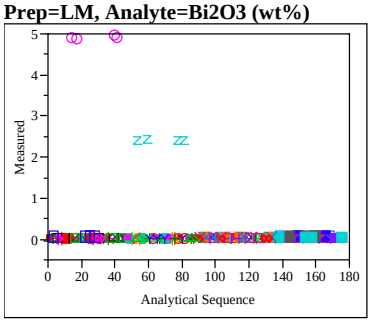
Measured By Analytical Sequence
Prep=LM, Analyte=Ce2O3 (wt%)



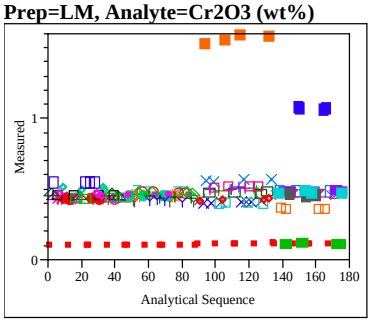
Measured By Analytical Sequence
Prep=LM, Analyte=La2O3 (wt%)



Measured By Analytical Sequence
Prep=LM, Analyte=Bi2O3 (wt%)



Measured By Analytical Sequence
Prep=LM, Analyte=Cr2O3 (wt%)



Measured By Analytical Sequence
Prep=LM, Analyte=MgO (wt%)

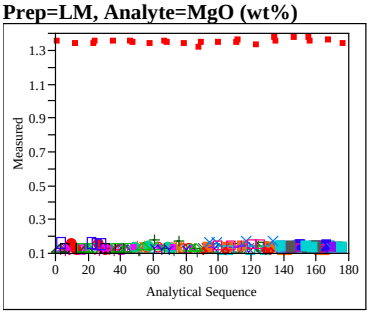
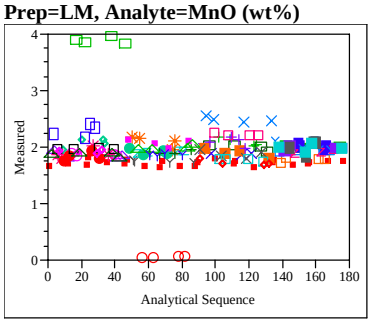
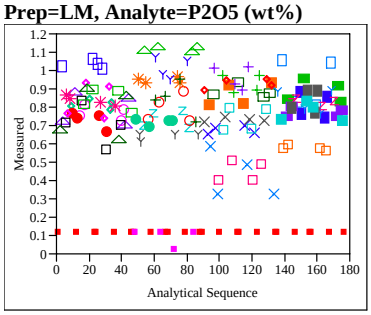


Figure A1. Measurements in Analytical Sequence by Analyte Grouped by Preparation Method

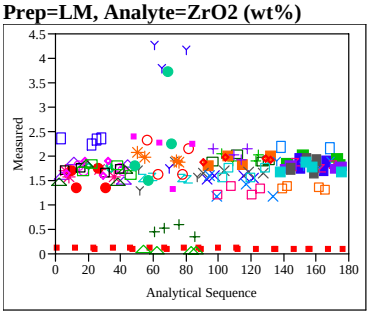
Measured By Analytical Sequence
Prep=LM, Analyte=MnO (wt%)



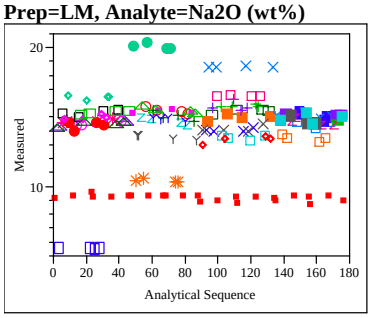
Measured By Analytical Sequence
Prep=LM, Analyte=P2O5 (wt%)



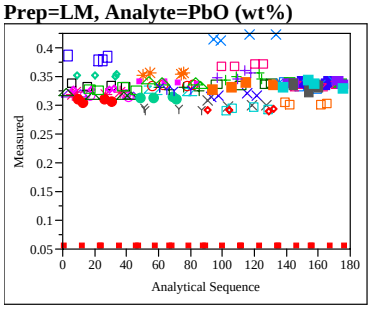
Measured By Analytical Sequence
Prep=LM, Analyte=ZrO2 (wt%)



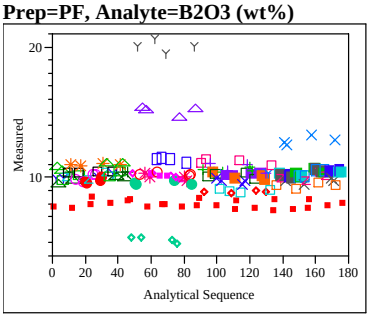
Measured By Analytical Sequence
Prep=LM, Analyte=Na2O (wt%)



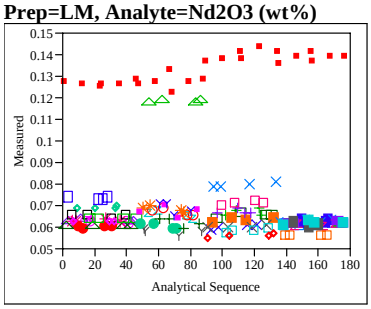
Measured By Analytical Sequence
Prep=LM, Analyte=PbO (wt%)



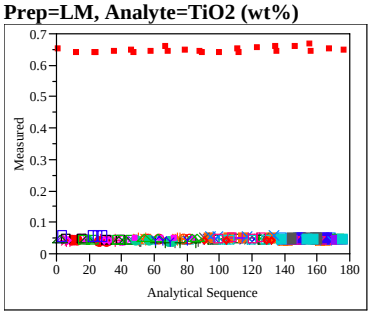
Measured By Analytical Sequence
Prep=PF, Analyte=B2O3 (wt%)



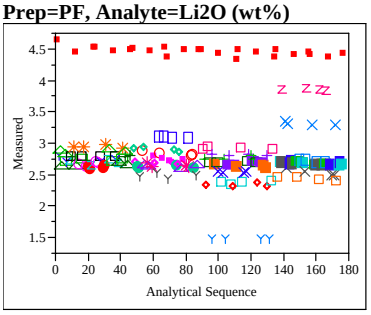
Measured By Analytical Sequence
Prep=LM, Analyte=Nd2O3 (wt%)



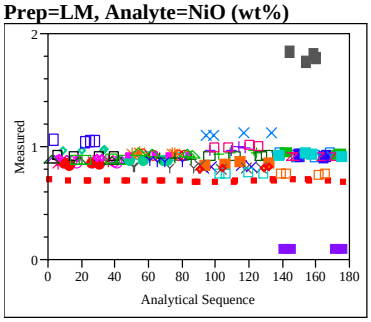
Measured By Analytical Sequence
Prep=LM, Analyte=TiO2 (wt%)



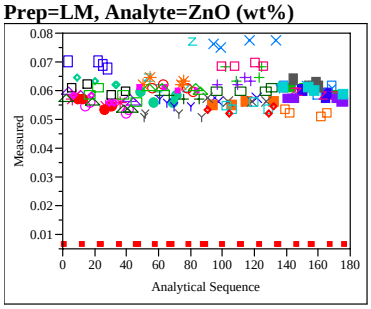
Measured By Analytical Sequence
Prep=PF, Analyte=Li2O (wt%)



Measured By Analytical Sequence
Prep=LM, Analyte=NiO (wt%)



Measured By Analytical Sequence
Prep=LM, Analyte=ZnO (wt%)



Measured By Analytical Sequence
Prep=PF, Analyte=SiO2 (wt%)

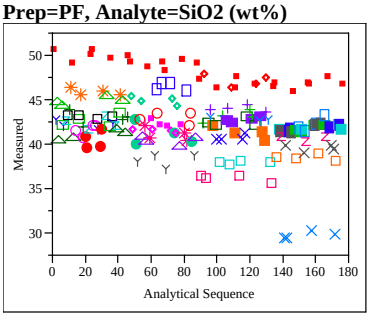
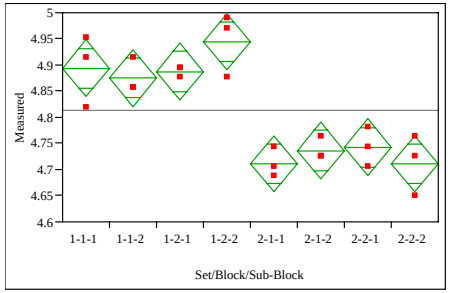


Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Al2O3 (wt%)
Reference Value = 4.877 wt%



Oneway Anova
Summary of Fit

Rsquare	0.861586
Adj Rsquare	0.80103
Root Mean Square Error	0.044145
Mean of Response	4.812714
Observations (or Sum Wgts)	24

Analysis of Variance

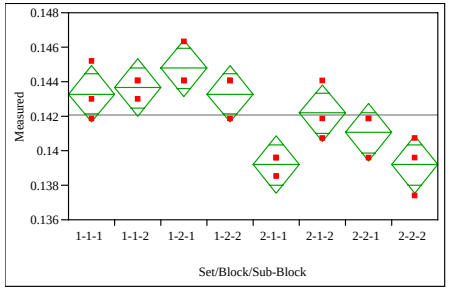
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.19408555	0.027727	14.2279	<.0001
Error	16	0.03117984	0.001949		
C. Total	23	0.22526539			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	4.89381	0.02549	4.8398	4.9478
1-1-2	3	4.87491	0.02549	4.8209	4.9289
1-2-1	3	4.88751	0.02549	4.8335	4.9415
1-2-2	3	4.94419	0.02549	4.8902	4.9982
2-1-1	3	4.71115	0.02549	4.6571	4.7652
2-1-2	3	4.73635	0.02549	4.6823	4.7904
2-2-1	3	4.74265	0.02549	4.6886	4.7967
2-2-2	3	4.71115	0.02549	4.6571	4.7652

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=BaO (wt%)
Reference Value = 0.151 wt%



Oneway Anova
Summary of Fit

Rsquare	0.758204
Adj Rsquare	0.652418
Root Mean Square Error	0.001348
Mean of Response	0.142075
Observations (or Sum Wgts)	24

Analysis of Variance

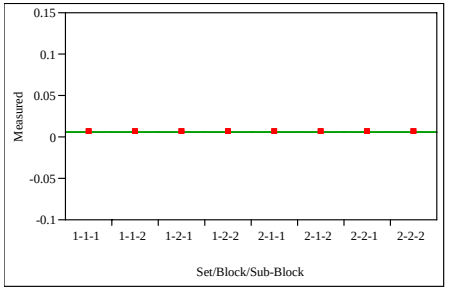
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00009121	0.000013	7.1673	0.0006
Error	16	0.00002909	1.818e-6		
C. Total	23	0.00012029			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.143284	0.00078	0.14163	0.14493
1-1-2	3	0.143656	0.00078	0.14201	0.14531
1-2-1	3	0.144773	0.00078	0.14312	0.14642
1-2-2	3	0.143284	0.00078	0.14163	0.14493
2-1-1	3	0.139190	0.00078	0.13754	0.14084
2-1-2	3	0.142168	0.00078	0.14052	0.14382
2-2-1	3	0.141051	0.00078	0.13940	0.14270
2-2-2	3	0.139190	0.00078	0.13754	0.14084

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Bi2O3 (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	.
Adj Rsquare	.
Root Mean Square Error	0
Mean of Response	0.005574
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0	0	.	.
Error	16	0	0		
C. Total	23	0			

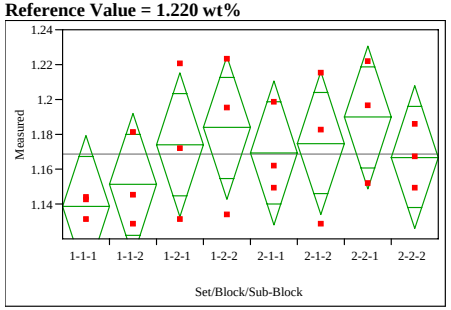
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.005574	0	0.00557	0.00557
1-1-2	3	0.005574	0	0.00557	0.00557
1-2-1	3	0.005574	0	0.00557	0.00557
1-2-2	3	0.005574	0	0.00557	0.00557
2-1-1	3	0.005574	0	0.00557	0.00557
2-1-2	3	0.005574	0	0.00557	0.00557
2-2-1	3	0.005574	0	0.00557	0.00557
2-2-2	3	0.005574	0	0.00557	0.00557

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=CaO (wt%)
Reference Value = 1.220 wt%



Oneway Anova
Summary of Fit

Rsquare	0.245401
Adj Rsquare	-0.08474
Root Mean Square Error	0.033638
Mean of Response	1.168507
Observations (or Sum Wgts)	24

Analysis of Variance

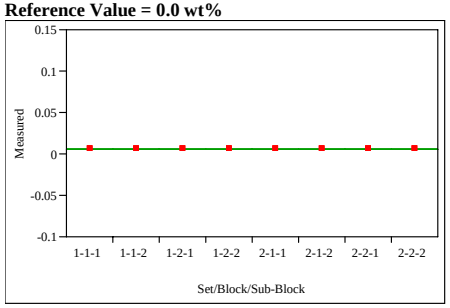
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00588756	0.000841	0.7433	0.6400
Error	16	0.01810407	0.001132		
C. Total	23	0.02399162			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	1.13848	0.01942	1.0973	1.1797
1-1-2	3	1.15108	0.01942	1.1099	1.1922
1-2-1	3	1.17393	0.01942	1.1328	1.2151
1-2-2	3	1.18372	0.01942	1.1426	1.2249
2-1-1	3	1.16926	0.01942	1.1281	1.2104
2-1-2	3	1.17486	0.01942	1.1337	1.2160
2-2-1	3	1.18979	0.01942	1.1486	1.2310
2-2-2	3	1.16693	0.01942	1.1258	1.2081

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=CdO (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	.
Adj Rsquare	.
Root Mean Square Error	0
Mean of Response	0.005712
Observations (or Sum Wgts)	24

Analysis of Variance

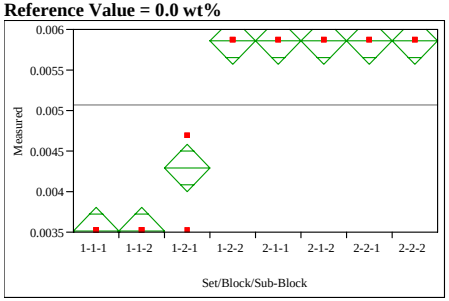
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0	0	.	.
Error	16	0	0		
C. Total	23	0			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.005712	0	0.00571	0.00571
1-1-2	3	0.005712	0	0.00571	0.00571
1-2-1	3	0.005712	0	0.00571	0.00571
1-2-2	3	0.005712	0	0.00571	0.00571
2-1-1	3	0.005712	0	0.00571	0.00571
2-1-2	3	0.005712	0	0.00571	0.00571
2-2-1	3	0.005712	0	0.00571	0.00571
2-2-2	3	0.005712	0	0.00571	0.00571

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Ce2O3 (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	0.965517
Adj Rsquare	0.950431
Root Mean Square Error	0.000239
Mean of Response	0.005076
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00002561	3.6585e-6	64.0000	<.0001
Error	16	0.00000091	5.7164e-8		
C. Total	23	0.00002652			

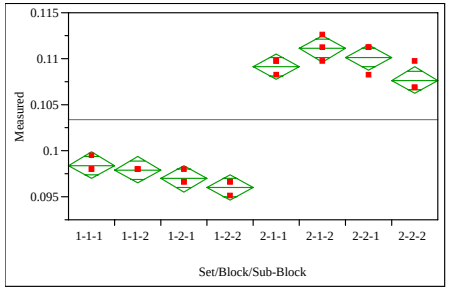
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.003514	0.00014	0.00322	0.00381
1-1-2	3	0.003514	0.00014	0.00322	0.00381
1-2-1	3	0.004295	0.00014	0.00400	0.00459
1-2-2	3	0.005857	0.00014	0.00556	0.00615
2-1-1	3	0.005857	0.00014	0.00556	0.00615
2-1-2	3	0.005857	0.00014	0.00556	0.00615
2-2-1	3	0.005857	0.00014	0.00556	0.00615
2-2-2	3	0.005857	0.00014	0.00556	0.00615

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Cr2O3 (wt%)
Reference Value = 0.107 wt%



Oneway Anova
Summary of Fit

Rsquare	0.977299
Adj Rsquare	0.967367
Root Mean Square Error	0.001155
Mean of Response	0.103408
Observations (or Sum Wgts)	24

Analysis of Variance

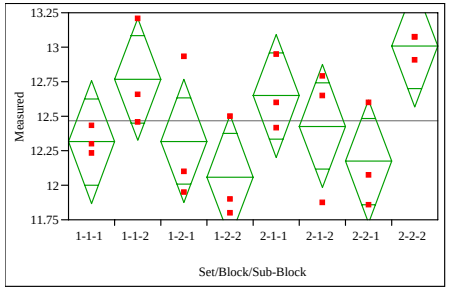
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00091967	0.000131	98.4000	<.0001
Error	16	0.00002136	1.335e-6		
C. Total	23	0.00094103			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.098414	0.00067	0.09700	0.09983
1-1-2	3	0.097927	0.00067	0.09651	0.09934
1-2-1	3	0.096953	0.00067	0.09554	0.09837
1-2-2	3	0.095978	0.00067	0.09456	0.09739
2-1-1	3	0.109133	0.00067	0.10772	0.11055
2-1-2	3	0.111082	0.00067	0.10967	0.11250
2-2-1	3	0.110107	0.00067	0.10869	0.11152
2-2-2	3	0.107671	0.00067	0.10626	0.10909

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Fe2O3 (wt%)
Reference Value = 12.839 wt%



Oneway Anova
Summary of Fit

Rsquare	0.504867
Adj Rsquare	0.288247
Root Mean Square Error	0.362852
Mean of Response	12.4652
Observations (or Sum Wgts)	24

Analysis of Variance

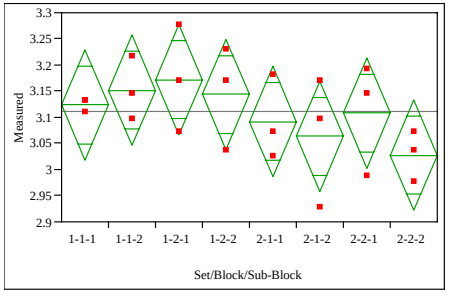
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	2.1480072	0.306858	2.3307	0.0764
Error	16	2.1065898	0.131662		
C. Total	23	4.2545970			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	12.3145	0.20949	11.870	12.759
1-1-2	3	12.7672	0.20949	12.323	13.211
1-2-1	3	12.3192	0.20949	11.875	12.763
1-2-2	3	12.0619	0.20949	11.618	12.506
2-1-1	3	12.6481	0.20949	12.204	13.092
2-1-2	3	12.4289	0.20949	11.985	12.873
2-2-1	3	12.1715	0.20949	11.727	12.616
2-2-2	3	13.0103	0.20949	12.566	13.454

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=K2O (wt%)
Reference Value = 3.327 wt%



Oneway Anova
Summary of Fit

Rsquare	0.29013
Adj Rsquare	-0.02044
Root Mean Square Error	0.086341
Mean of Response	3.110378
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.04874961	0.006964	0.9342	0.5074
Error	16	0.11927723	0.007455		
C. Total	23	0.16802684			

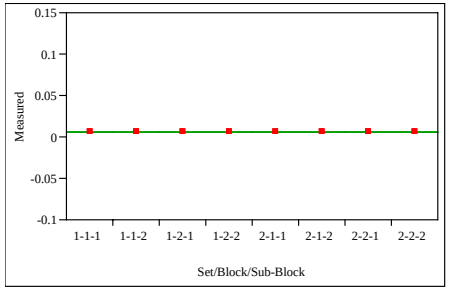
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	3.12393	0.04985	3.0183	3.2296
1-1-2	3	3.15204	0.04985	3.0464	3.2577
1-2-1	3	3.17211	0.04985	3.0664	3.2778
1-2-2	3	3.14401	0.04985	3.0383	3.2497
2-1-1	3	3.09181	0.04985	2.9861	3.1975
2-1-2	3	3.06370	0.04985	2.9580	3.1694
2-2-1	3	3.10787	0.04985	3.0022	3.2135
2-2-2	3	3.02756	0.04985	2.9219	3.1332

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=La2O3 (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	.
Adj Rsquare	.
Root Mean Square Error	0
Mean of Response	0.005864
Observations (or Sum Wgts)	24

Analysis of Variance

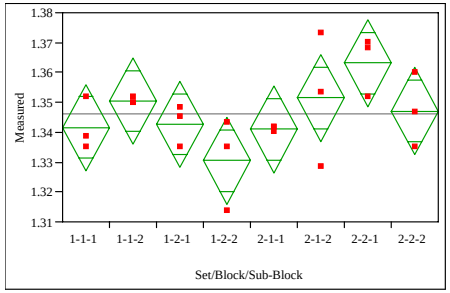
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0	0	.	.
Error	16	0	0		
C. Total	23	0			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.005864	0	0.00586	0.00586
1-1-2	3	0.005864	0	0.00586	0.00586
1-2-1	3	0.005864	0	0.00586	0.00586
1-2-2	3	0.005864	0	0.00586	0.00586
2-1-1	3	0.005864	0	0.00586	0.00586
2-1-2	3	0.005864	0	0.00586	0.00586
2-2-1	3	0.005864	0	0.00586	0.00586
2-2-2	3	0.005864	0	0.00586	0.00586

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=MgO (wt%)
Reference Value = 1.419 wt%



Oneway Anova
Summary of Fit

Rsquare	0.460625
Adj Rsquare	0.224648
Root Mean Square Error	0.011852
Mean of Response	1.345987
Observations (or Sum Wgts)	24

Analysis of Variance

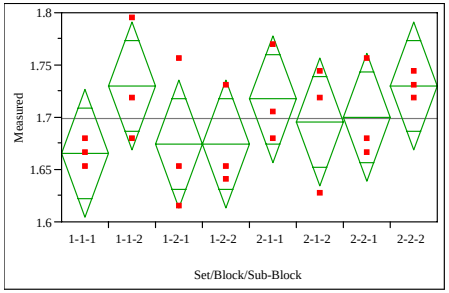
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00191947	0.000274	1.9520	0.1269
Error	16	0.00224763	0.000140		
C. Total	23	0.00416710			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	1.34156	0.00684	1.3271	1.3561
1-1-2	3	1.35041	0.00684	1.3359	1.3649
1-2-1	3	1.34267	0.00684	1.3282	1.3572
1-2-2	3	1.33051	0.00684	1.3160	1.3450
2-1-1	3	1.34101	0.00684	1.3265	1.3555
2-1-2	3	1.35151	0.00684	1.3370	1.3660
2-2-1	3	1.36312	0.00684	1.3486	1.3776
2-2-2	3	1.34709	0.00684	1.3326	1.3616

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=MnO (wt%)
Reference Value = 1.726 wt%



Oneway Anova
Summary of Fit

Rsquare	0.258703
Adj Rsquare	-0.06561
Root Mean Square Error	0.049869
Mean of Response	1.698466
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.01388637	0.001984	0.7977	0.6005
Error	16	0.03979045	0.002487		
C. Total	23	0.05367681			

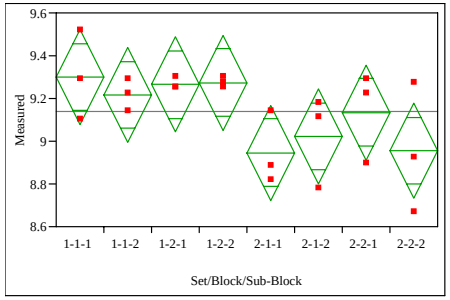
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	1.66565	0.02879	1.6046	1.7267
1-1-2	3	1.73021	0.02879	1.6692	1.7912
1-2-1	3	1.67426	0.02879	1.6132	1.7353
1-2-2	3	1.67426	0.02879	1.6132	1.7353
2-1-1	3	1.71730	0.02879	1.6563	1.7783
2-1-2	3	1.69578	0.02879	1.6347	1.7568
2-2-1	3	1.70008	0.02879	1.6390	1.7611
2-2-2	3	1.73021	0.02879	1.6692	1.7912

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Na2O (wt%)
Reference Value = 9.003 wt%



Oneway Anova
Summary of Fit

Rsquare	0.462166
Adj Rsquare	0.226864
Root Mean Square Error	0.18148
Mean of Response	9.13944
Observations (or Sum Wgts)	24

Analysis of Variance

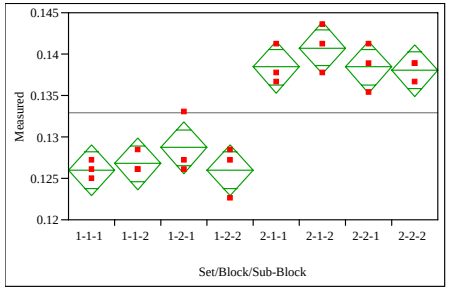
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.45282232	0.064689	1.9641	0.1248
Error	16	0.52696016	0.032935		
C. Total	23	0.97978248			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	9.30120	0.10478	9.0791	9.5233
1-1-2	3	9.21583	0.10478	8.9937	9.4379
1-2-1	3	9.26525	0.10478	9.0431	9.4874
1-2-2	3	9.27424	0.10478	9.0521	9.4964
2-1-1	3	8.94623	0.10478	8.7241	9.1683
2-1-2	3	9.02261	0.10478	8.8005	9.2447
2-2-1	3	9.13495	0.10478	8.9128	9.3571
2-2-2	3	8.95521	0.10478	8.7331	9.1773

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=Nd2O3 (wt%)
Reference Value = 0.147 wt%



Oneway Anova
Summary of Fit

Rsquare	0.896996
Adj Rsquare	0.851931
Root Mean Square Error	0.002542
Mean of Response	0.132872
Observations (or Sum Wgts)	24

Analysis of Variance

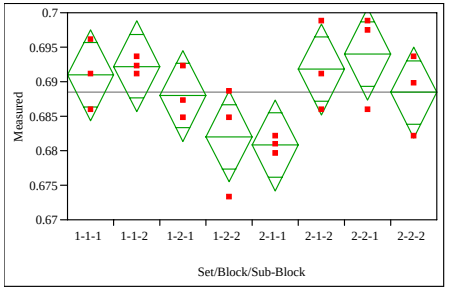
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00090042	0.000129	19.9048	<.0001
Error	16	0.00010340	6.462e-6		
C. Total	23	0.00100381			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.125971	0.00147	0.12286	0.12908
1-1-2	3	0.126749	0.00147	0.12364	0.12986
1-2-1	3	0.128693	0.00147	0.12558	0.13180
1-2-2	3	0.125971	0.00147	0.12286	0.12908
2-1-1	3	0.138413	0.00147	0.13530	0.14152
2-1-2	3	0.140746	0.00147	0.13763	0.14386
2-2-1	3	0.138413	0.00147	0.13530	0.14152
2-2-2	3	0.138024	0.00147	0.13491	0.14114

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=NiO (wt%)
Reference Value = 0.751 wt%



Oneway Anova
Summary of Fit

Rsquare	0.511807
Adj Rsquare	0.298222
Root Mean Square Error	0.00538
Mean of Response	0.688529
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00048551	0.000069	2.3963	0.0700
Error	16	0.00046311	0.000029		
C. Total	23	0.00094861			

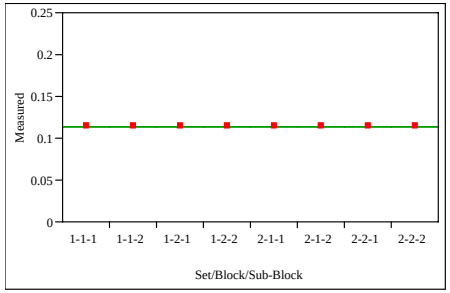
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.690968	0.00311	0.68438	0.69755
1-1-2	3	0.692240	0.00311	0.68566	0.69882
1-2-1	3	0.687998	0.00311	0.68141	0.69458
1-2-2	3	0.682060	0.00311	0.67548	0.68864
2-1-1	3	0.680788	0.00311	0.67420	0.68737
2-1-2	3	0.691816	0.00311	0.68523	0.69840
2-2-1	3	0.693937	0.00311	0.68735	0.70052
2-2-2	3	0.688423	0.00311	0.68184	0.69501

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=P2O5 (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	1
Adj Rsquare	1
Root Mean Square Error	0
Mean of Response	0.11457
Observations (or Sum Wgts)	24

Analysis of Variance

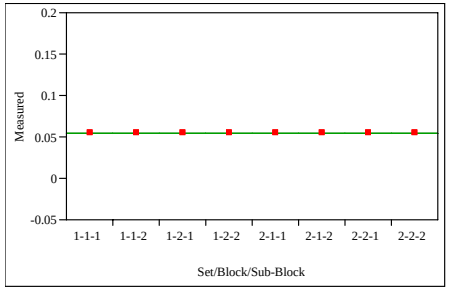
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	4.6222e-33	6.603e-34	.	.
Error	16	0	0		
C. Total	23	4.6222e-33			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.114570	0	0.11457	0.11457
1-1-2	3	0.114570	0	0.11457	0.11457
1-2-1	3	0.114570	0	0.11457	0.11457
1-2-2	3	0.114570	0	0.11457	0.11457
2-1-1	3	0.114570	0	0.11457	0.11457
2-1-2	3	0.114570	0	0.11457	0.11457
2-2-1	3	0.114570	0	0.11457	0.11457
2-2-2	3	0.114570	0	0.11457	0.11457

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=PbO (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	1
Adj Rsquare	1
Root Mean Square Error	0
Mean of Response	0.05386
Observations (or Sum Wgts)	24

Analysis of Variance

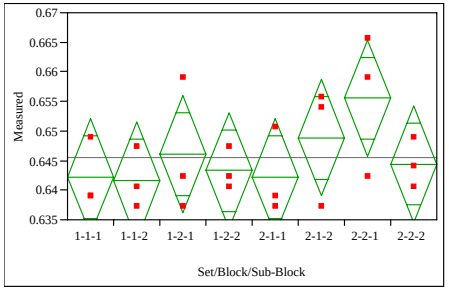
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	4.6222e-33	6.603e-34	.	.
Error	16	0	0		
C. Total	23	4.6222e-33			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.053860	0	0.05386	0.05386
1-1-2	3	0.053860	0	0.05386	0.05386
1-2-1	3	0.053860	0	0.05386	0.05386
1-2-2	3	0.053860	0	0.05386	0.05386
2-1-1	3	0.053860	0	0.05386	0.05386
2-1-2	3	0.053860	0	0.05386	0.05386
2-2-1	3	0.053860	0	0.05386	0.05386
2-2-2	3	0.053860	0	0.05386	0.05386

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=TiO2 (wt%)
Reference Value = 0.677 wt%



Oneway Anova
Summary of Fit

Rsquare	0.309877
Adj Rsquare	0.007948
Root Mean Square Error	0.00805
Mean of Response	0.645516
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00046556	0.000067	1.0263	0.4505
Error	16	0.00103684	0.000065		
C. Total	23	0.00150240			

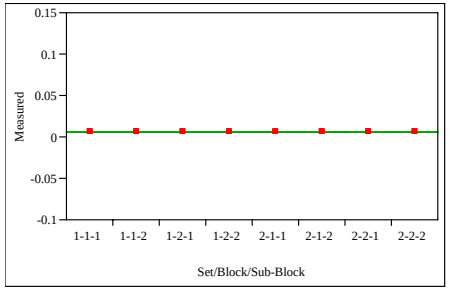
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.642180	0.00465	0.63233	0.65203
1-1-2	3	0.641624	0.00465	0.63177	0.65148
1-2-1	3	0.646072	0.00465	0.63622	0.65592
1-2-2	3	0.643292	0.00465	0.63344	0.65314
2-1-1	3	0.642180	0.00465	0.63233	0.65203
2-1-2	3	0.648852	0.00465	0.63900	0.65870
2-2-1	3	0.655524	0.00465	0.64567	0.66538
2-2-2	3	0.644404	0.00465	0.63455	0.65426

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=ZnO (wt%)
Reference Value = 0.0 wt%



Oneway Anova
Summary of Fit

Rsquare	.
Adj Rsquare	.
Root Mean Square Error	0
Mean of Response	0.006224
Observations (or Sum Wgts)	24

Analysis of Variance

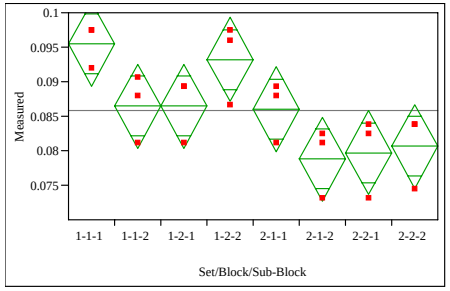
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0	0	.	.
Error	16	0	0		
C. Total	23	0			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.006224	0	0.00622	0.00622
1-1-2	3	0.006224	0	0.00622	0.00622
1-2-1	3	0.006224	0	0.00622	0.00622
1-2-2	3	0.006224	0	0.00622	0.00622
2-1-1	3	0.006224	0	0.00622	0.00622
2-1-2	3	0.006224	0	0.00622	0.00622
2-2-1	3	0.006224	0	0.00622	0.00622
2-2-2	3	0.006224	0	0.00622	0.00622

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=LM, Analyte=ZrO2 (wt%)
Reference Value = 0.098 wt%



Oneway Anova
Summary of Fit

Rsquare	0.663568
Adj Rsquare	0.516379
Root Mean Square Error	0.004994
Mean of Response	0.085832
Observations (or Sum Wgts)	24

Analysis of Variance

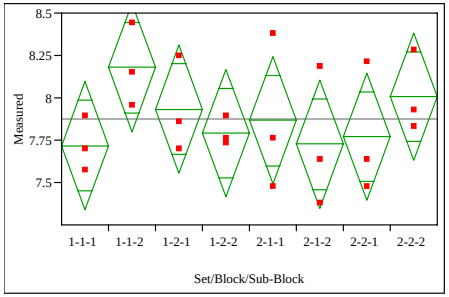
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.00078696	0.000112	4.5083	0.0060
Error	16	0.00039899	0.000025		
C. Total	23	0.00118595			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	0.095457	0.00288	0.08934	0.10157
1-1-2	3	0.086451	0.00288	0.08034	0.09256
1-2-1	3	0.086451	0.00288	0.08034	0.09256
1-2-2	3	0.093205	0.00288	0.08709	0.09932
2-1-1	3	0.086001	0.00288	0.07989	0.09211
2-1-2	3	0.078797	0.00288	0.07268	0.08491
2-2-1	3	0.079697	0.00288	0.07359	0.08581
2-2-2	3	0.080598	0.00288	0.07449	0.08671

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=PF, Analyte=B2O3 (wt%)
Reference Value = 7.777 wt%



Oneway Anova
Summary of Fit

Rsquare	0.258907
Adj Rsquare	-0.06532
Root Mean Square Error	0.308352
Mean of Response	7.873997
Observations (or Sum Wgts)	24

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.5314771	0.075925	0.7985	0.5999
Error	16	1.5212954	0.095081		
C. Total	23	2.0527725			

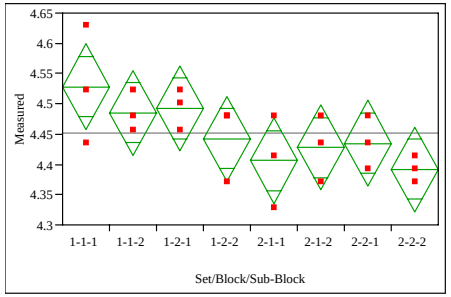
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	7.71703	0.17803	7.3396	8.0944
1-1-2	3	8.17855	0.17803	7.8011	8.5559
1-2-1	3	7.93169	0.17803	7.5543	8.3091
1-2-2	3	7.79216	0.17803	7.4148	8.1696
2-1-1	3	7.86729	0.17803	7.4899	8.2447
2-1-2	3	7.72776	0.17803	7.3504	8.1052
2-2-1	3	7.77069	0.17803	7.3933	8.1481
2-2-2	3	8.00682	0.17803	7.6294	8.3842

Std Error uses a pooled estimate of error variance

Figure A2. PSAL Measurements for Each Analyte by Analytical Block for Samples of the Batch 1 and LRM Standards Grouped by Preparation Method

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=PF, Analyte=Li2O (wt%)
Reference Value = 4.429 wt%



Oneway Anova
Summary of Fit

Rsquare	0.463529
Adj Rsquare	0.228824
Root Mean Square Error	0.057467
Mean of Response	4.451121
Observations (or Sum Wgts)	24

Analysis of Variance

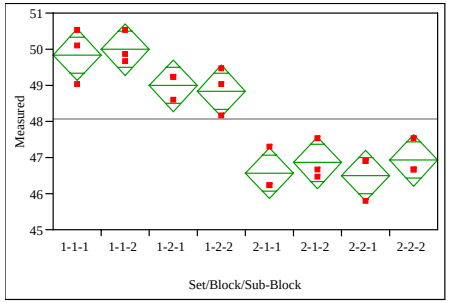
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	0.04565454	0.006522	1.9749	0.1230
Error	16	0.05283875	0.003302		
C. Total	23	0.09849329			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	4.52827	0.03318	4.4579	4.5986
1-1-2	3	4.48521	0.03318	4.4149	4.5555
1-2-1	3	4.49238	0.03318	4.4220	4.5627
1-2-2	3	4.44215	0.03318	4.3718	4.5125
2-1-1	3	4.40627	0.03318	4.3359	4.4766
2-1-2	3	4.42780	0.03318	4.3575	4.4981
2-2-1	3	4.43497	0.03318	4.3646	4.5053
2-2-2	3	4.39192	0.03318	4.3216	4.4623

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=Batch 1, Prep=PF, Analyte=SiO2 (wt%)
Reference Value = 50.22 wt%



Oneway Anova
Summary of Fit

Rsquare	0.898442
Adj Rsquare	0.85401
Root Mean Square Error	0.579325
Mean of Response	48.06294
Observations (or Sum Wgts)	24

Analysis of Variance

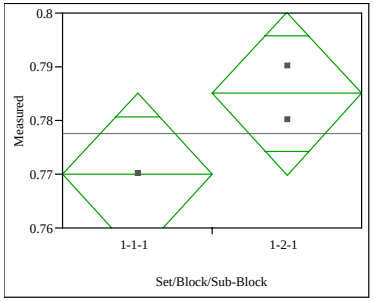
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	7	47.505155	6.78645	20.2208	<.0001
Error	16	5.369883	0.33562		
C. Total	23	52.875037			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	3	49.8457	0.33447	49.137	50.555
1-1-2	3	49.9883	0.33447	49.279	50.697
1-2-1	3	48.9900	0.33447	48.281	49.699
1-2-2	3	48.8474	0.33447	48.138	49.556
2-1-1	3	46.5654	0.33447	45.856	47.274
2-1-2	3	46.8507	0.33447	46.142	47.560
2-2-1	3	46.4941	0.33447	45.785	47.203
2-2-2	3	46.9220	0.33447	46.213	47.631

Std Error uses a pooled estimate of error variance

Oneway Analysis of Measured By Set/Block/Sub-Block Glass ID=LRM, Prep=KH, Analyte=F (wt%)
Reference Value = 1.0 wt%



Oneway Anova
Summary of Fit

Rsquare	0.818182
Adj Rsquare	0.727273
Root Mean Square Error	0.005
Mean of Response	0.7775
Observations (or Sum Wgts)	4

t Test
1-2-1-1-1-1
Assuming equal variances

Difference	0.01500	t Ratio	3
Std Err Dif	0.00500	DF	2
Upper CL Dif	0.03651	Prob > |t|	0.0955
Lower CL Dif	-0.00651	Prob > t	0.0477
Confidence	0.95	Prob < t	0.9523

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block/Sub-Block	1	0.00022500	0.000225	9.0000	0.0955
Error	2	0.00005000	0.000025		
C. Total	3	0.00027500			

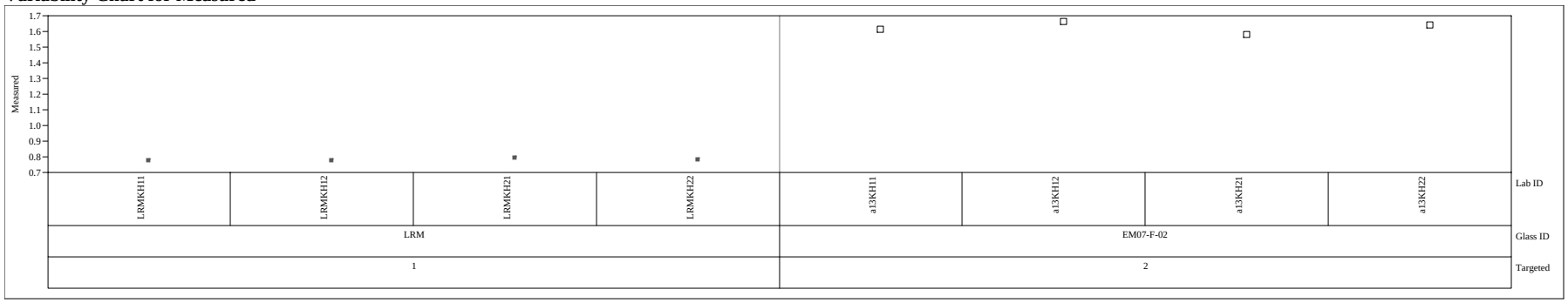
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1-1-1	2	0.770000	0.00354	0.75479	0.78521
1-2-1	2	0.785000	0.00354	0.76979	0.80021

Std Error uses a pooled estimate of error variance

Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=KH, Analyte=F (wt%)
Variability Chart for Measured



Variability Gage Prep=KH, Analyte=F (wt%)
Variability Chart for Measured bc

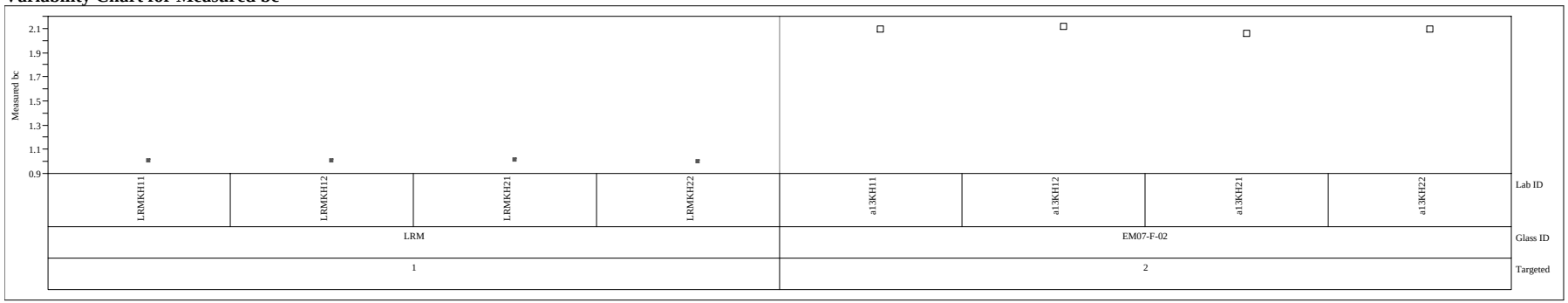
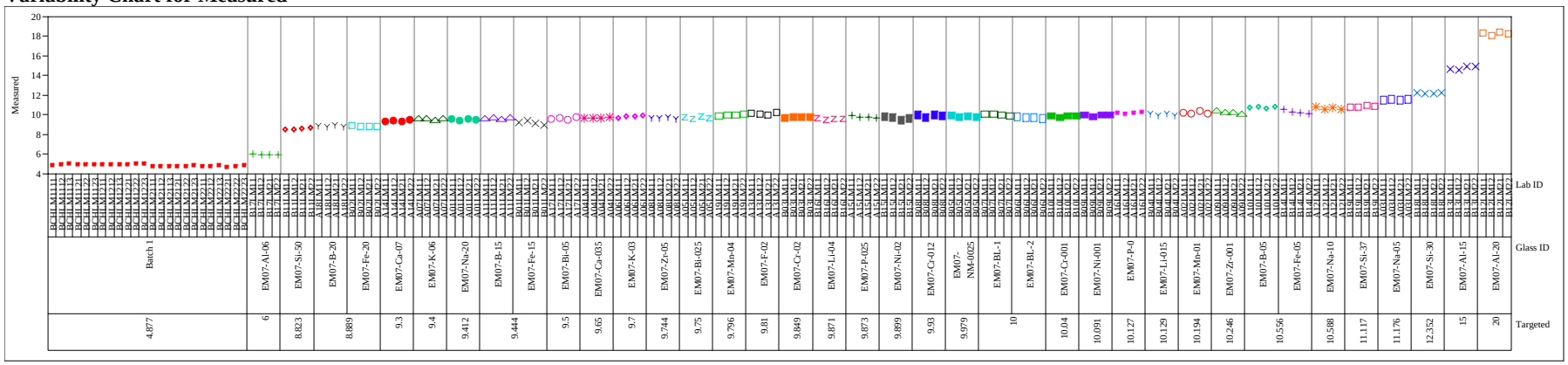


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Al2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Al2O3 (wt%)
Variability Chart for Measured bc

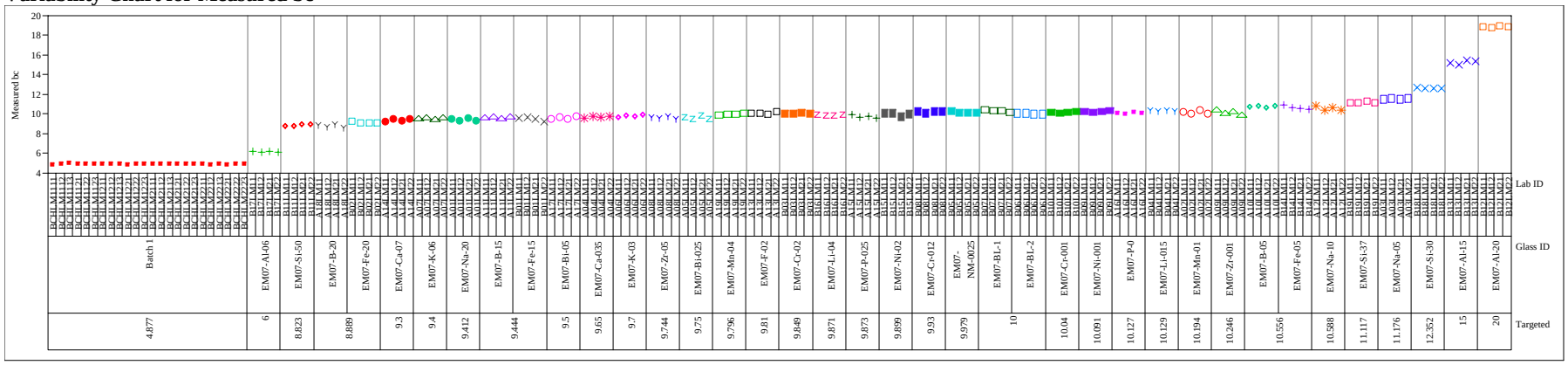
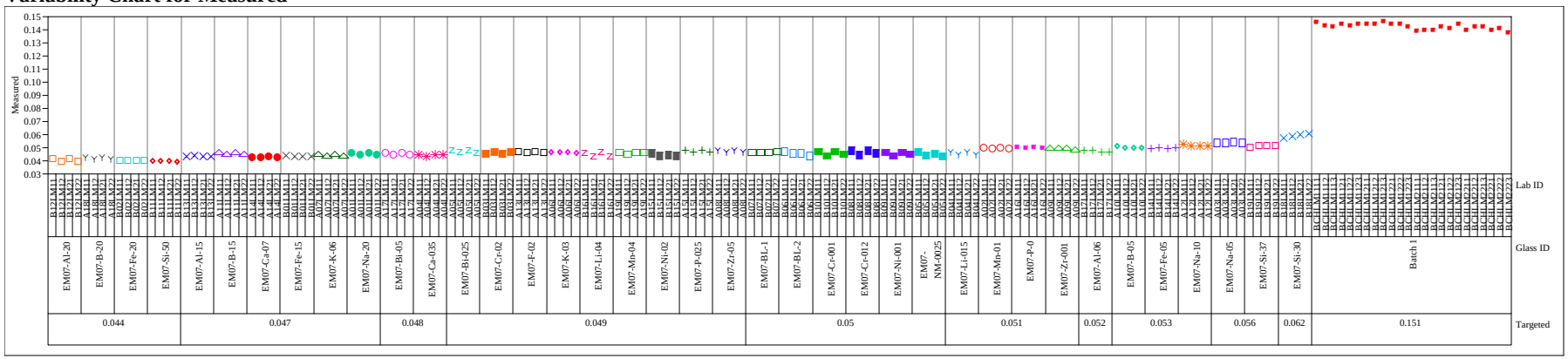


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=BaO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=BaO (wt%)
Variability Chart for Measured bc

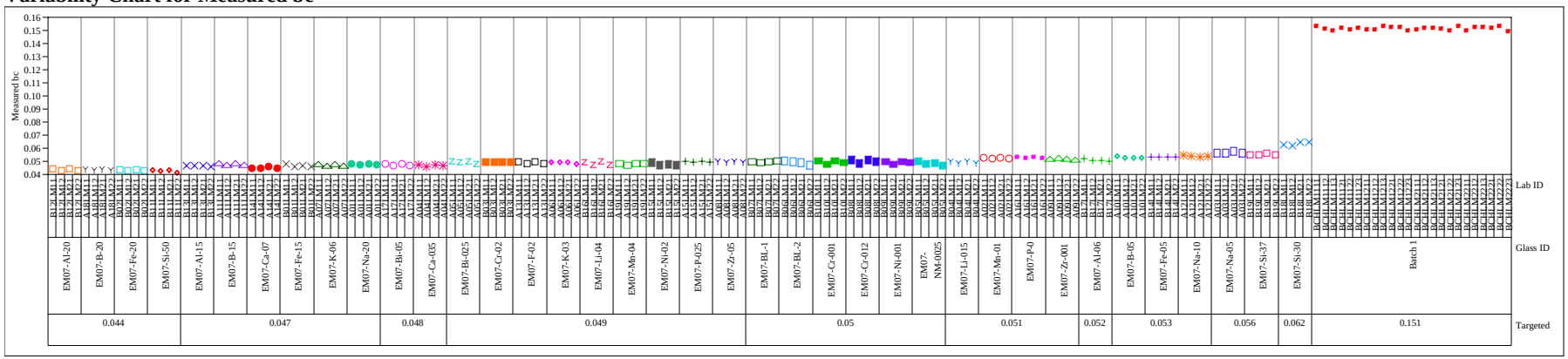
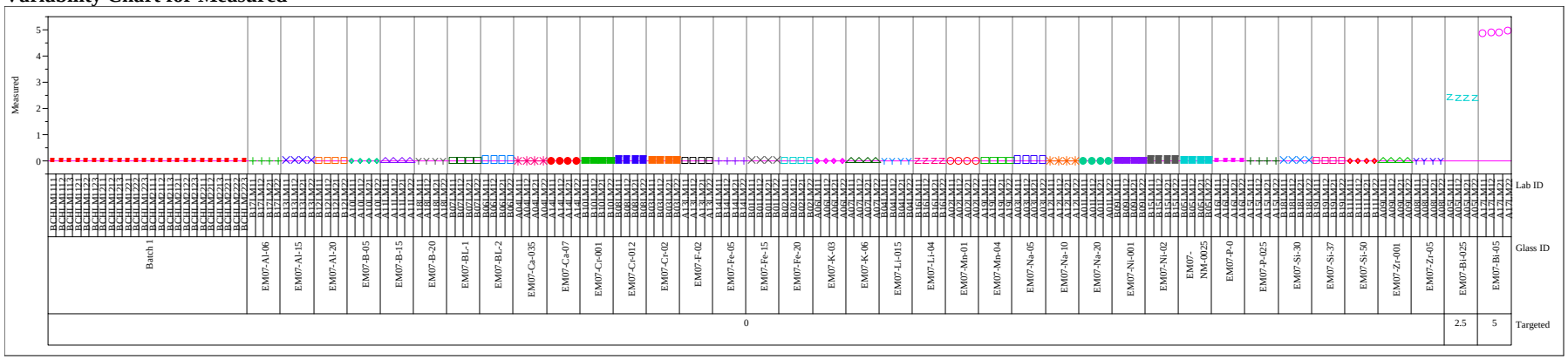


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Bi2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Bi2O3 (wt%)
Variability Chart for Measured bc

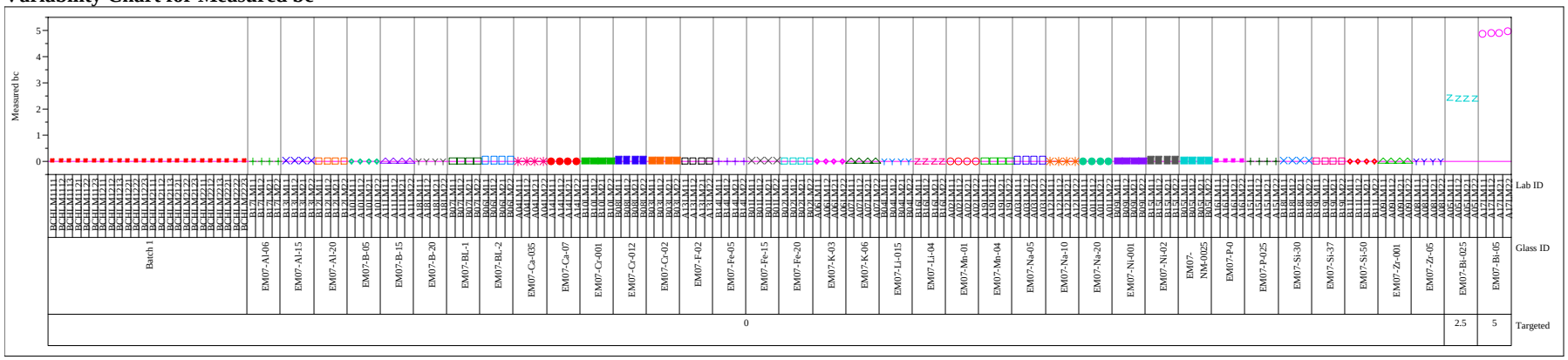
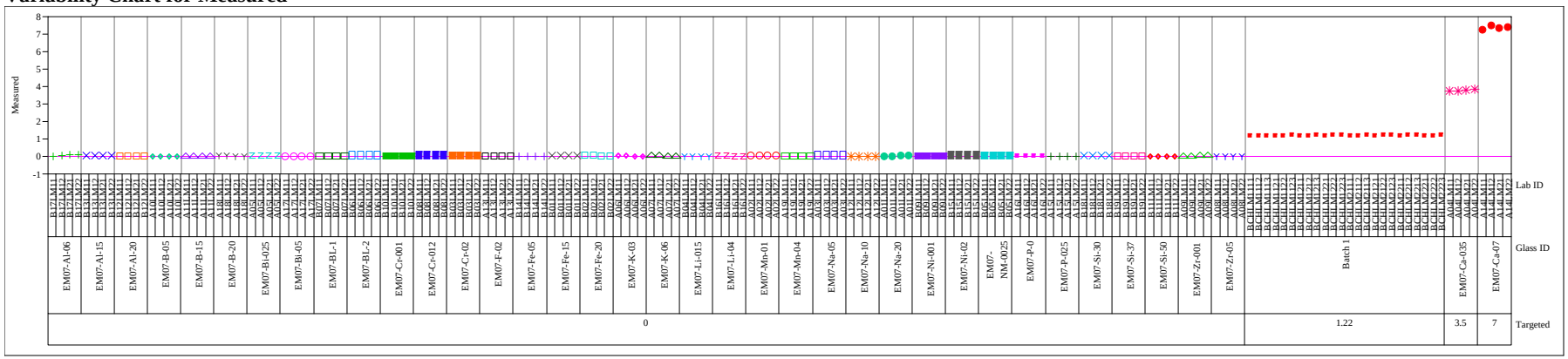


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=CaO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=CaO (wt%)
Variability Chart for Measured bc

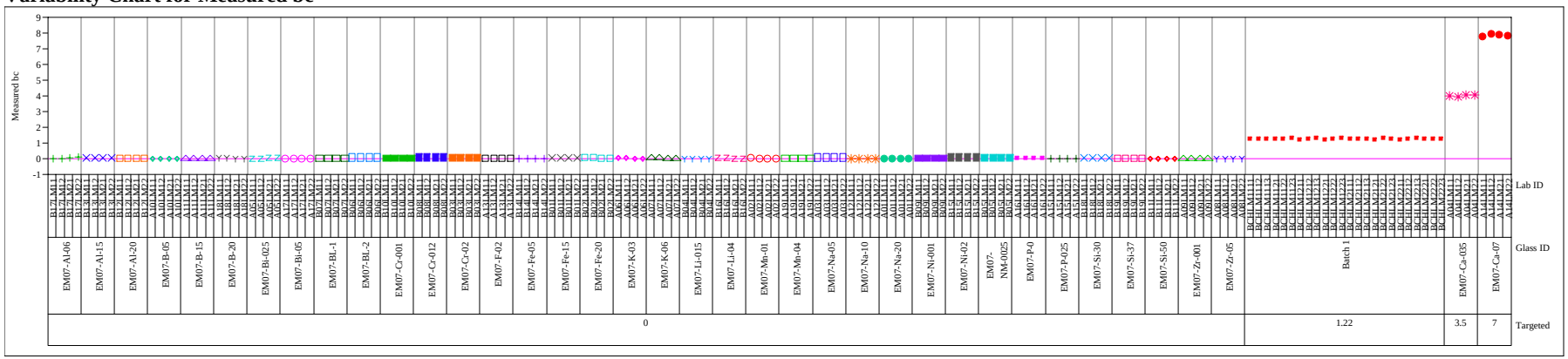
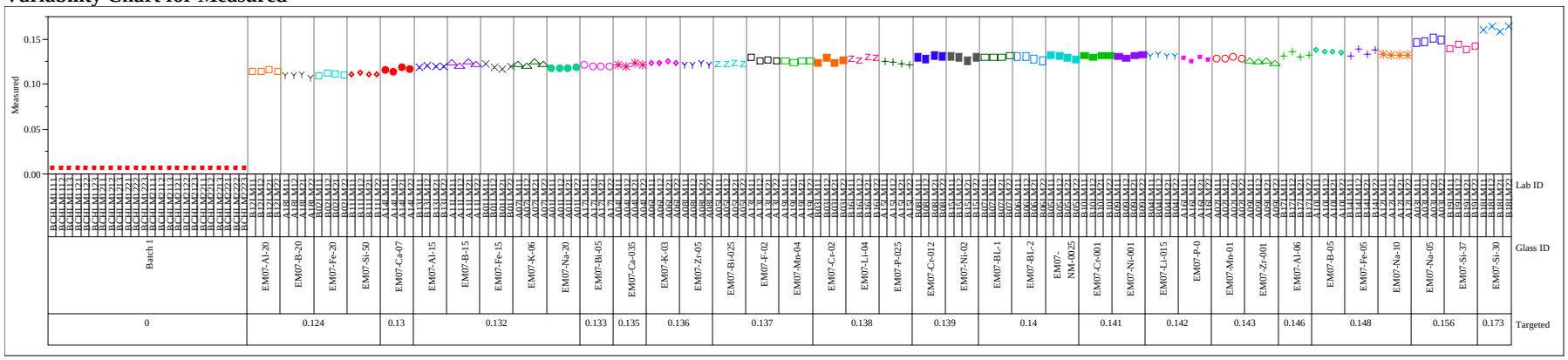


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=CdO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=CdO (wt%)
Variability Chart for Measured bc

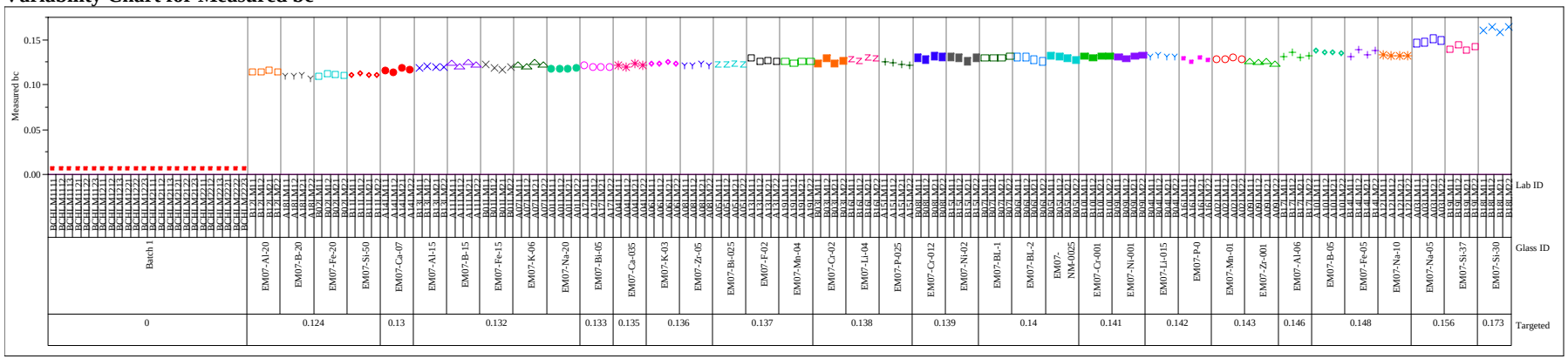
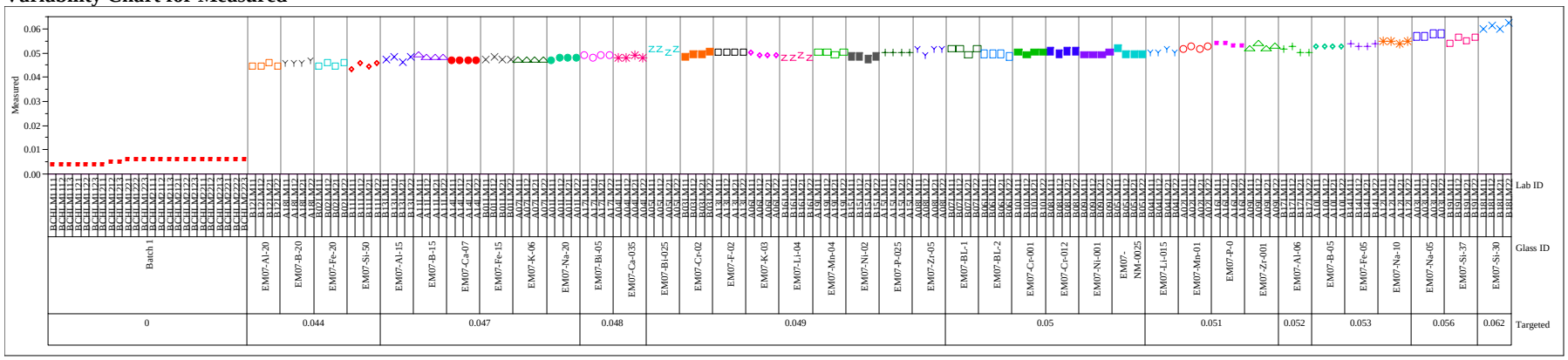


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Ce2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Ce2O3 (wt%)
Variability Chart for Measured bc

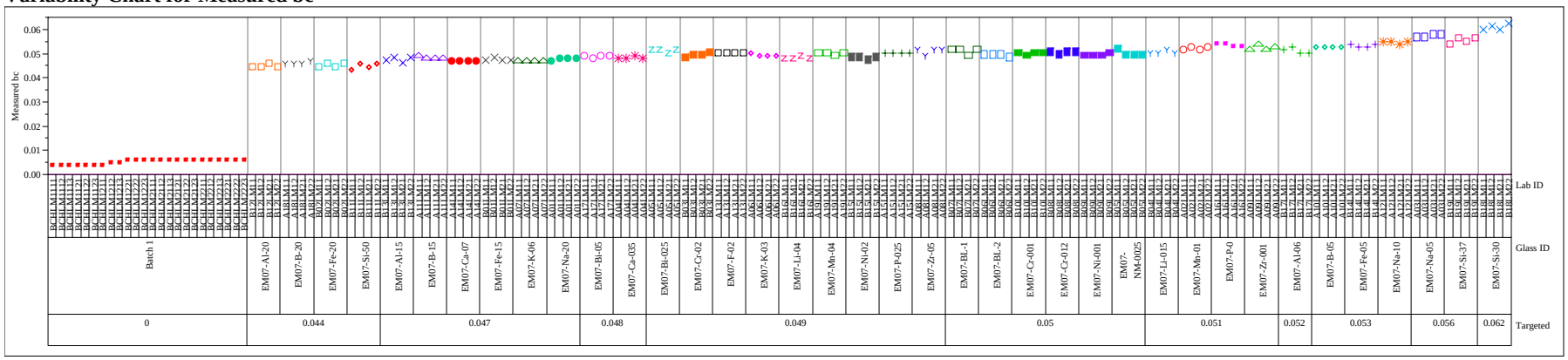
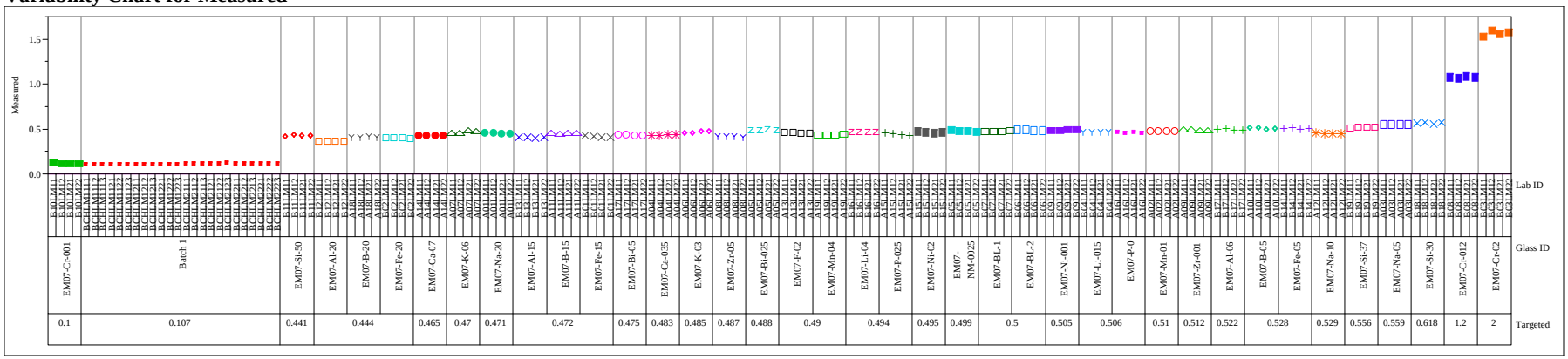


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Cr2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Cr2O3 (wt%)
Variability Chart for Measured bc

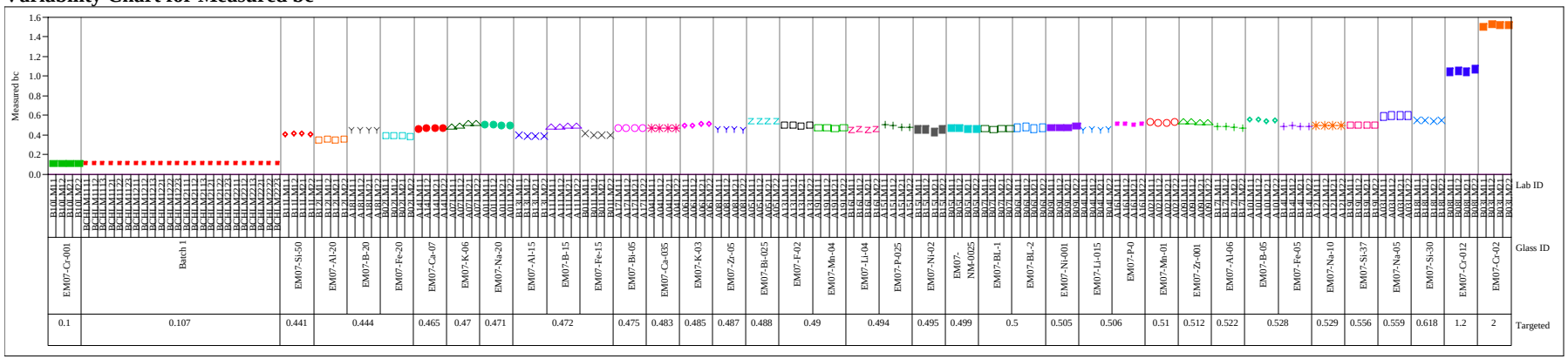
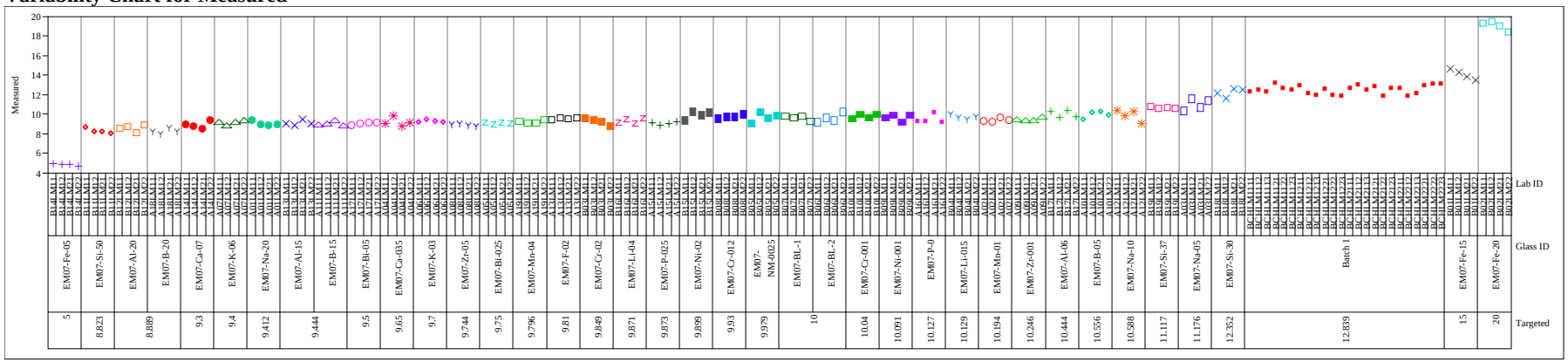


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Fe2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Fe2O3 (wt%)
Variability Chart for Measured bc

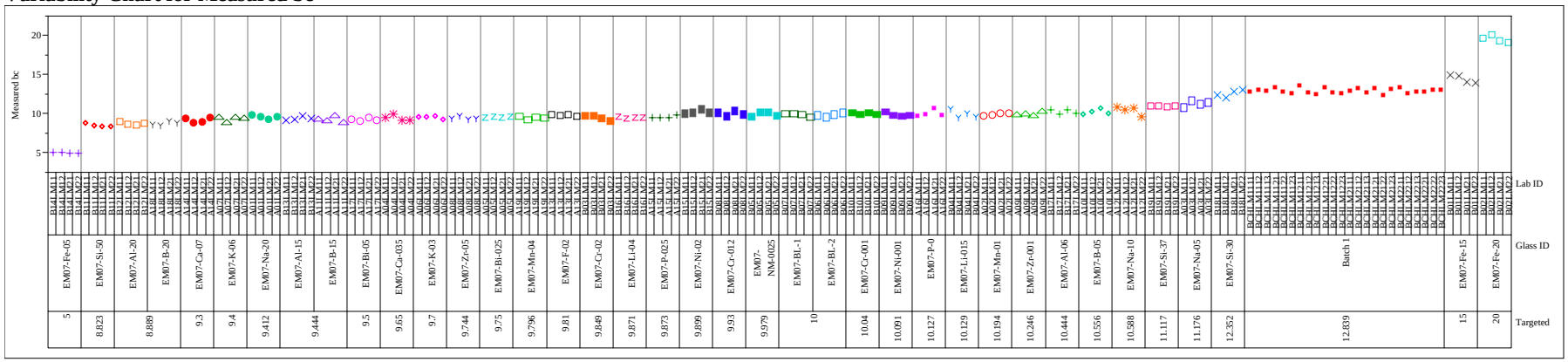
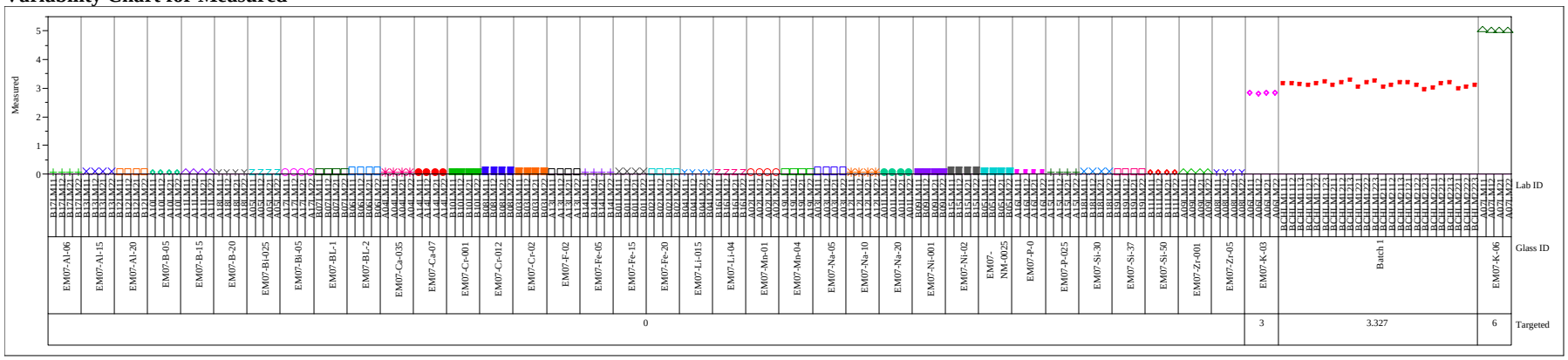


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=K2O (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=K2O (wt%)
Variability Chart for Measured bc

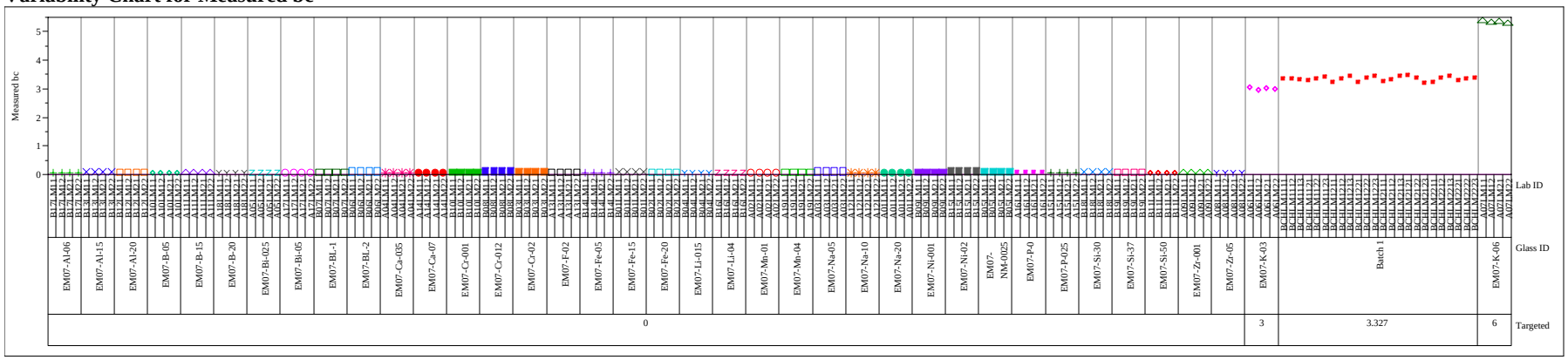
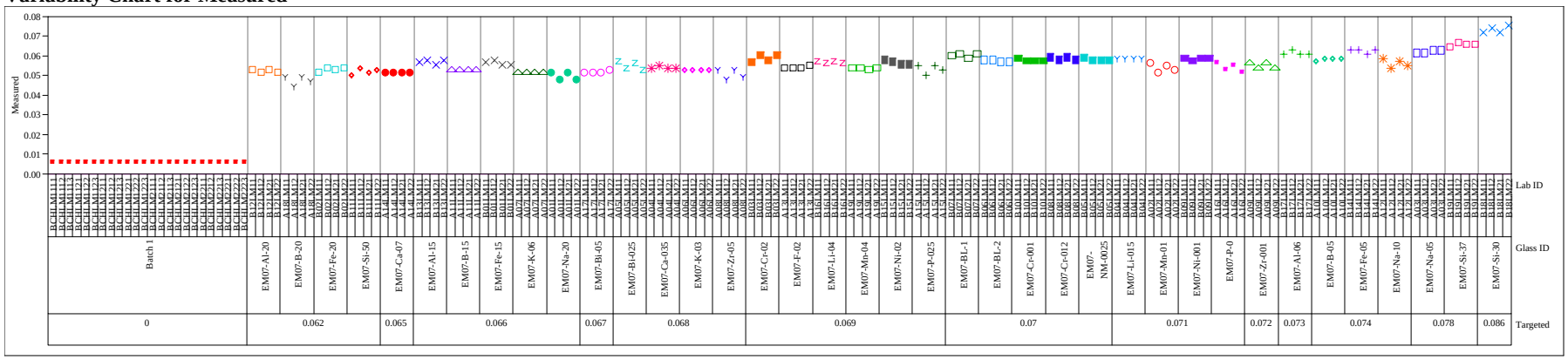


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=La2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=La2O3 (wt%)
Variability Chart for Measured bc

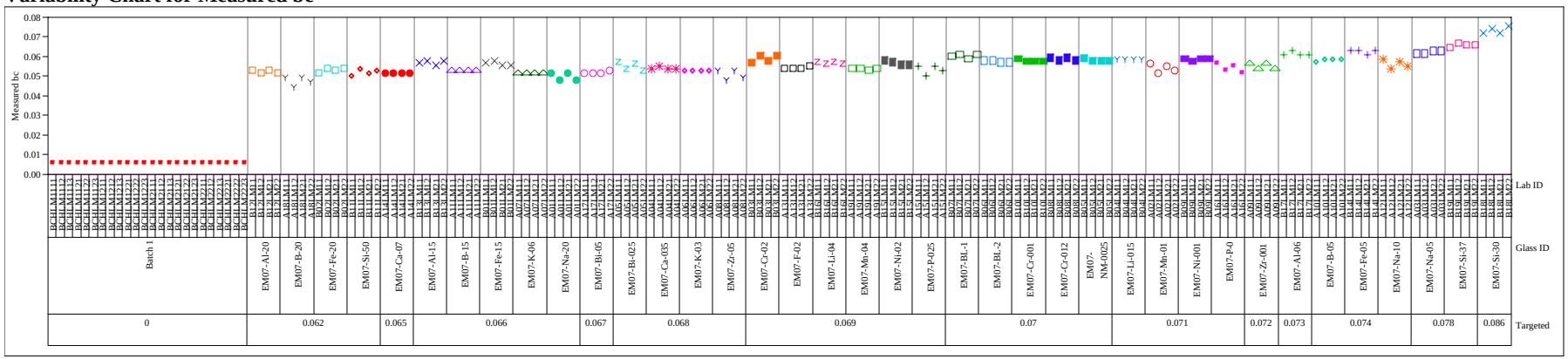
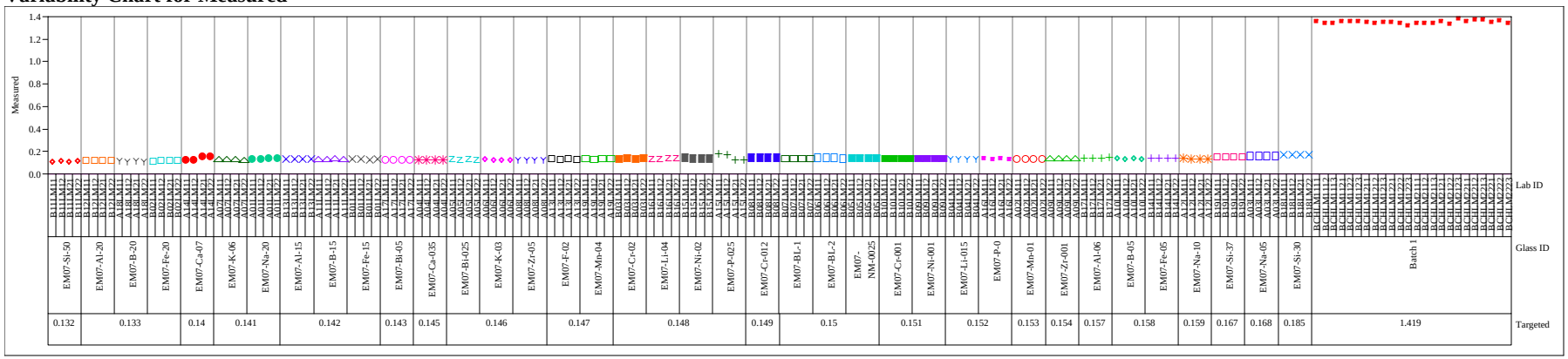


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=MgO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=MgO (wt%)
Variability Chart for Measured bc

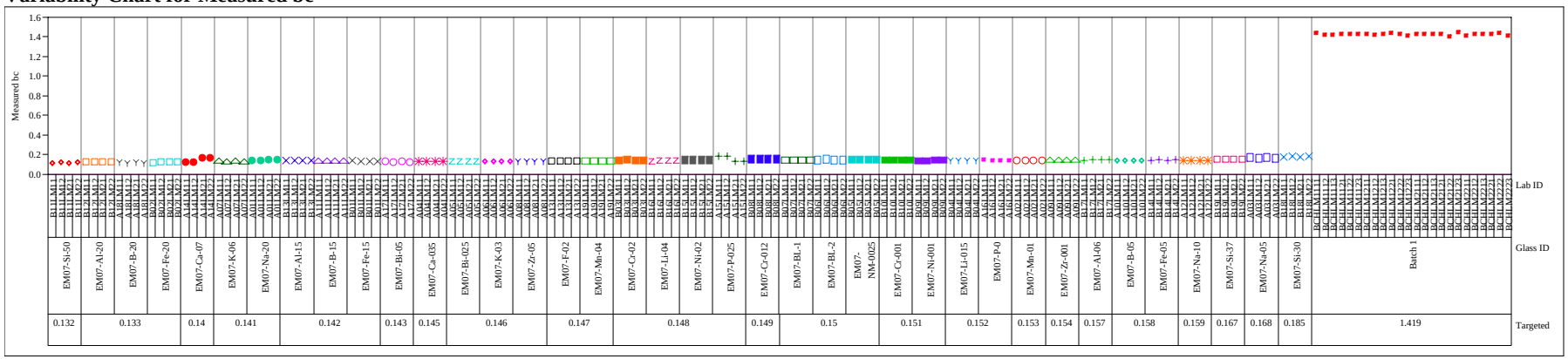
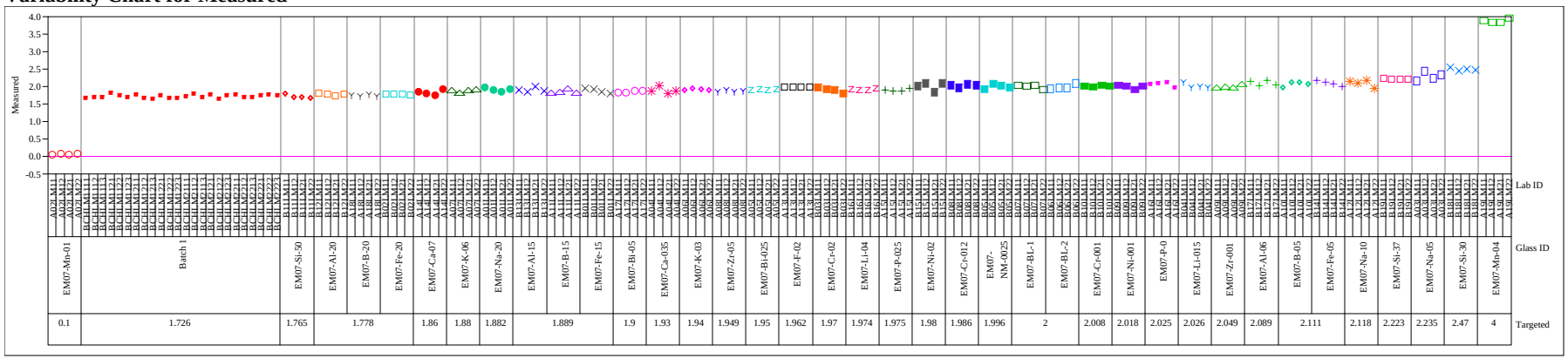


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=MnO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=MnO (wt%)
Variability Chart for Measured bc

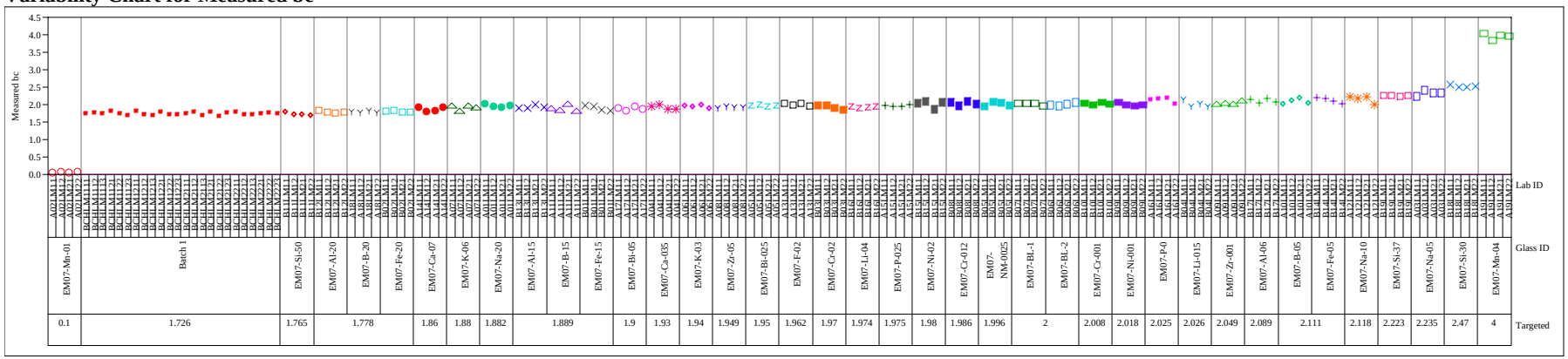
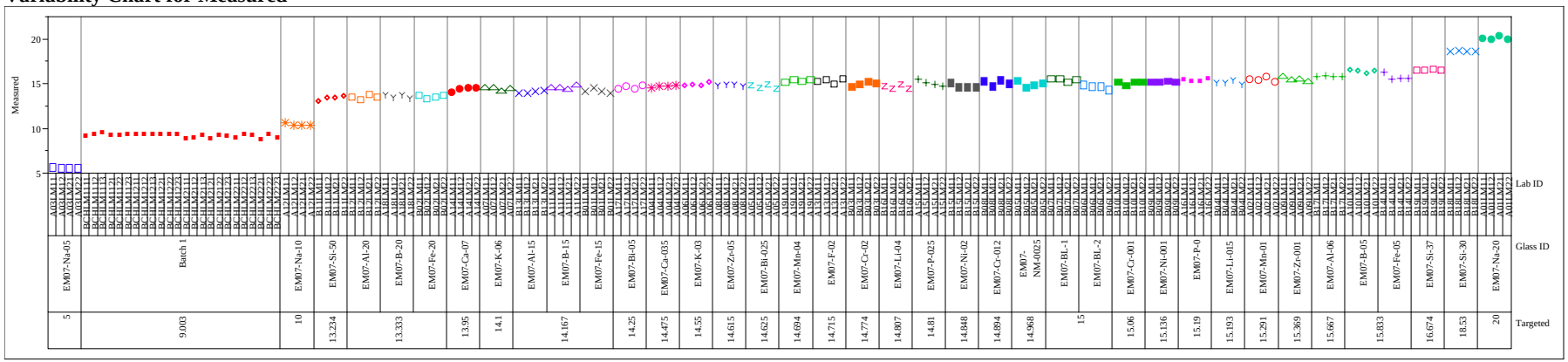


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Na2O (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Na2O (wt%)
Variability Chart for Measured bc

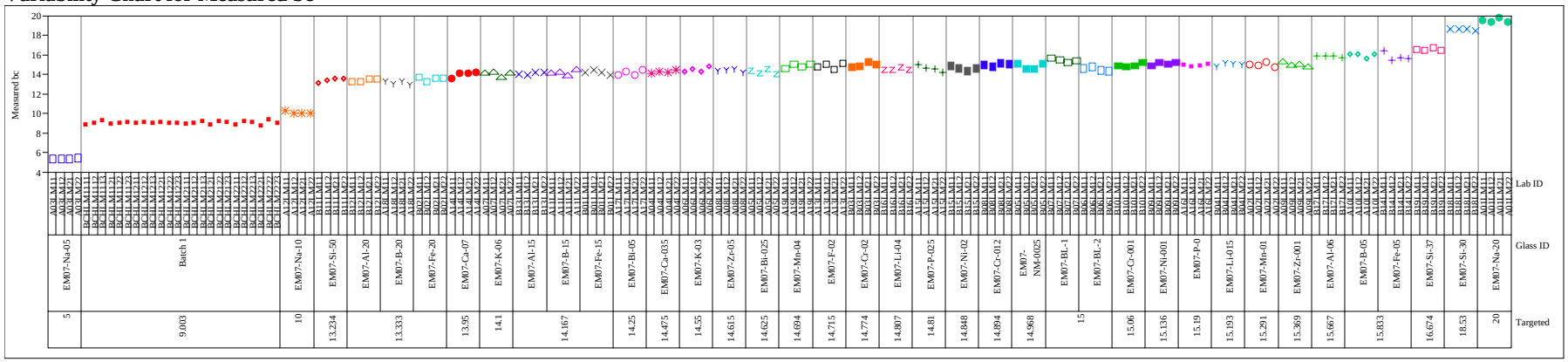
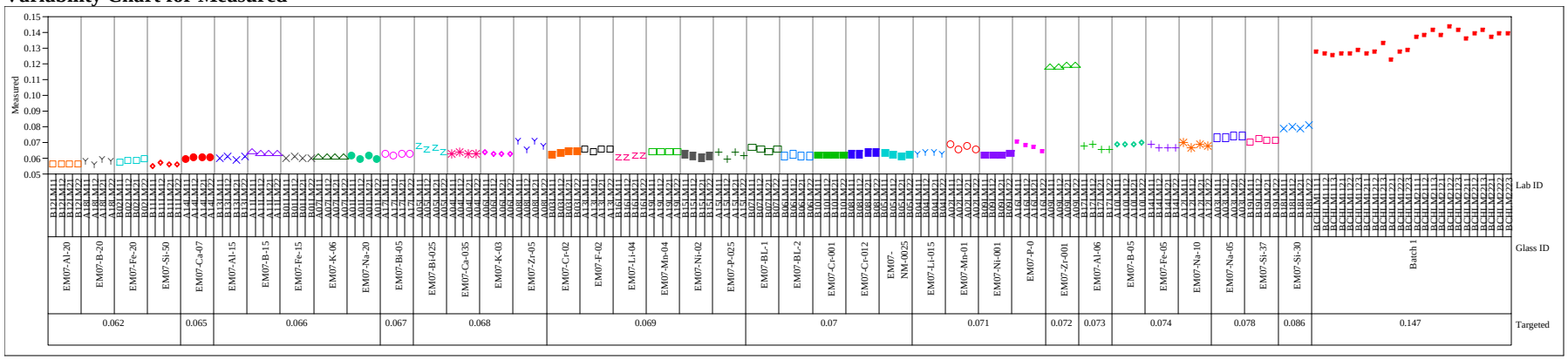


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=Nd2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=Nd2O3 (wt%)
Variability Chart for Measured bc

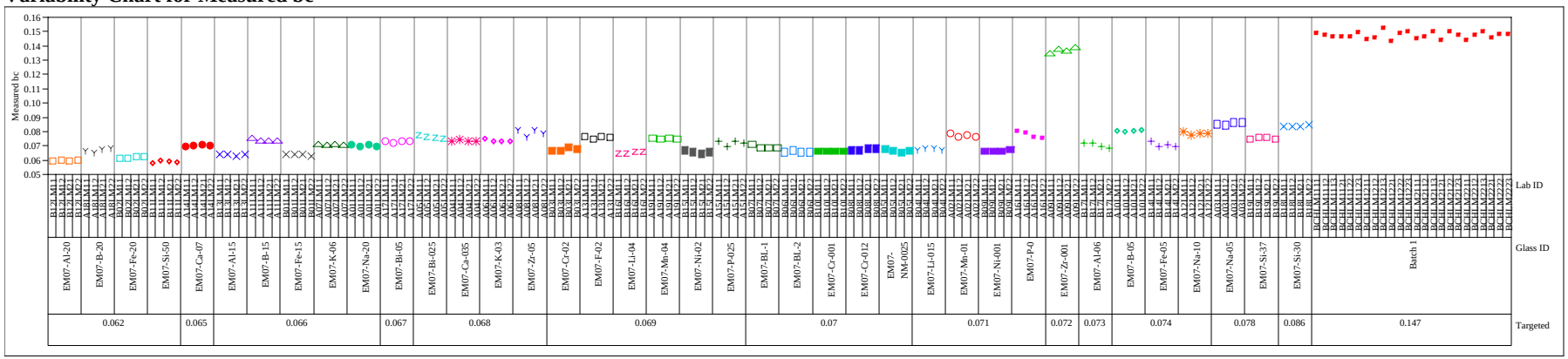
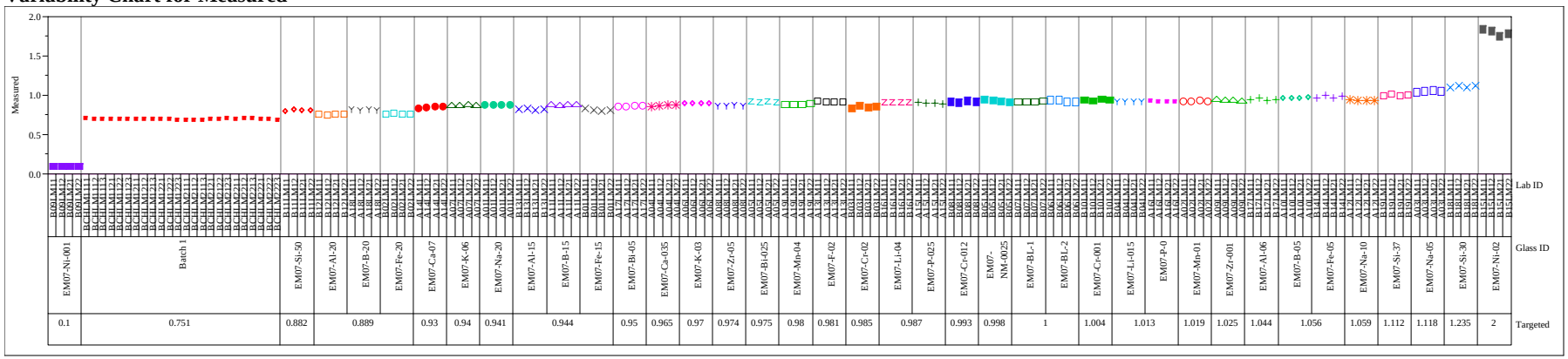


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=NiO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=NiO (wt%)
Variability Chart for Measured bc

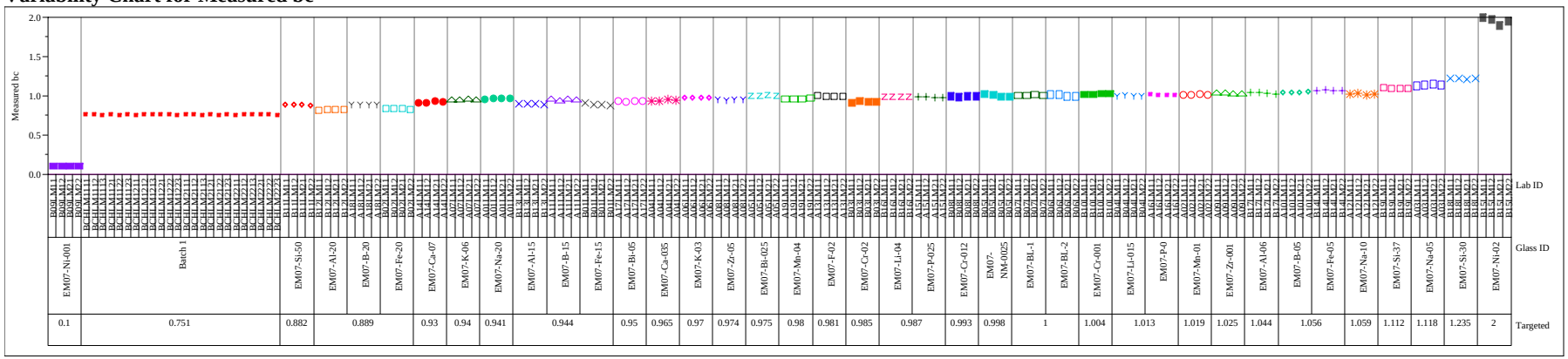
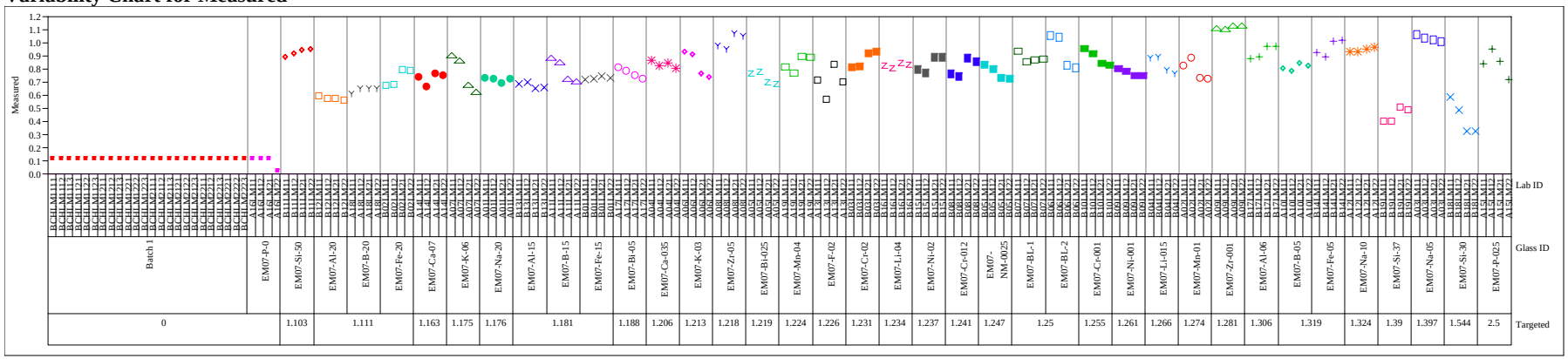


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=P2O5 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=P2O5 (wt%)
Variability Chart for Measured bc

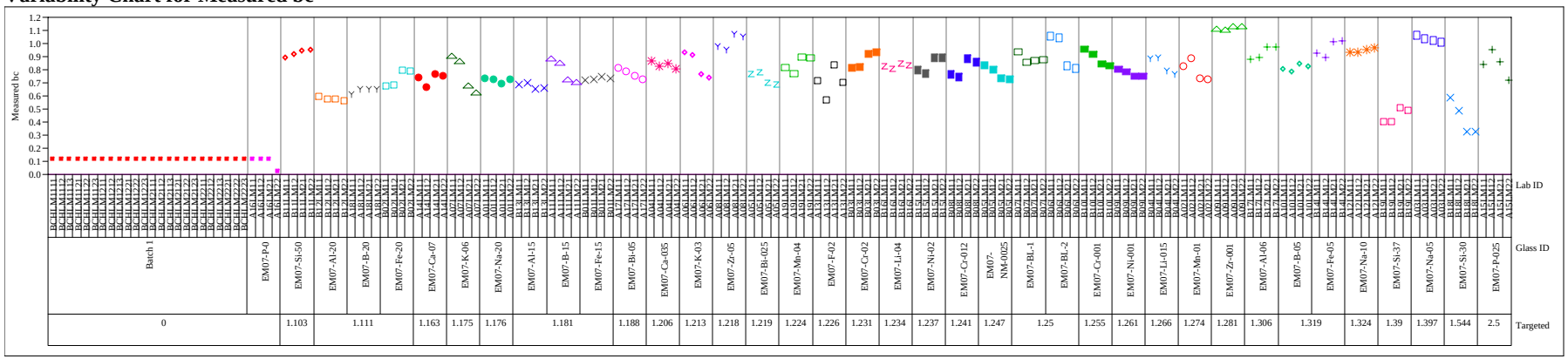
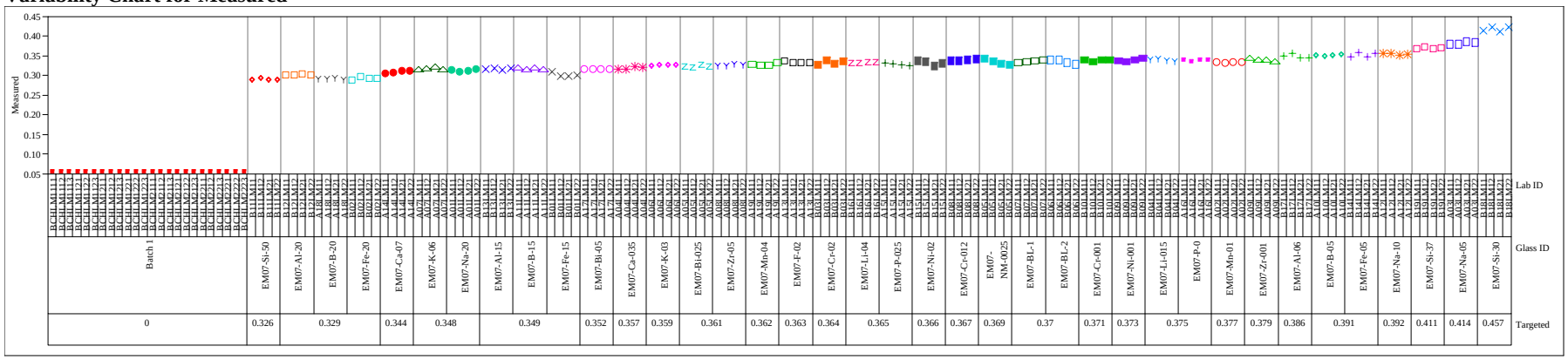


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=PbO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=PbO (wt%)
Variability Chart for Measured bc

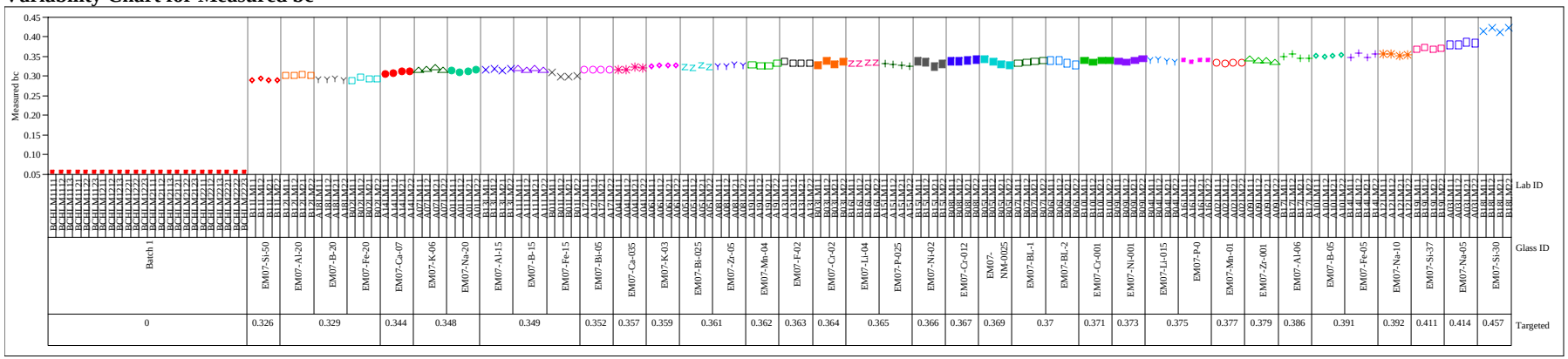
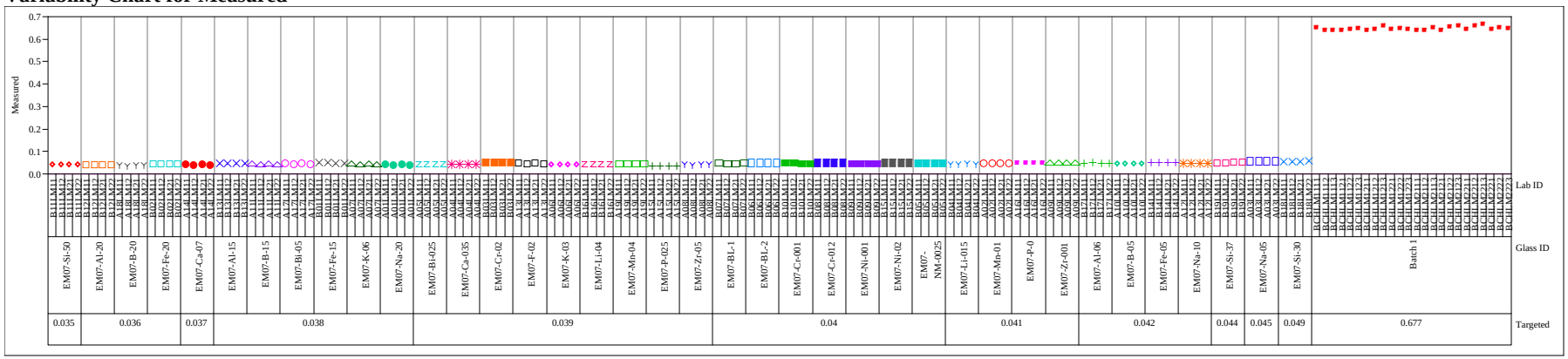


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=TiO2 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=TiO2 (wt%)
Variability Chart for Measured bc

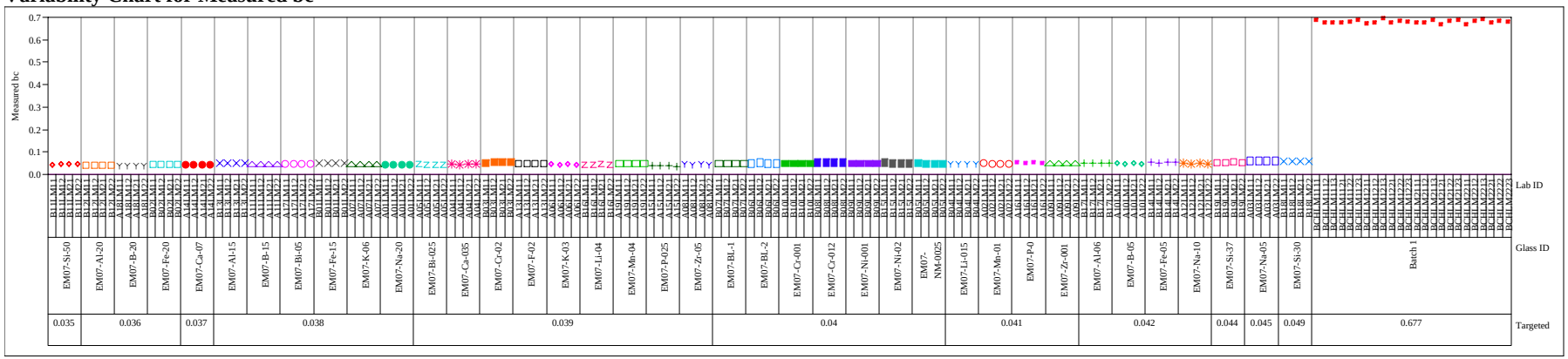
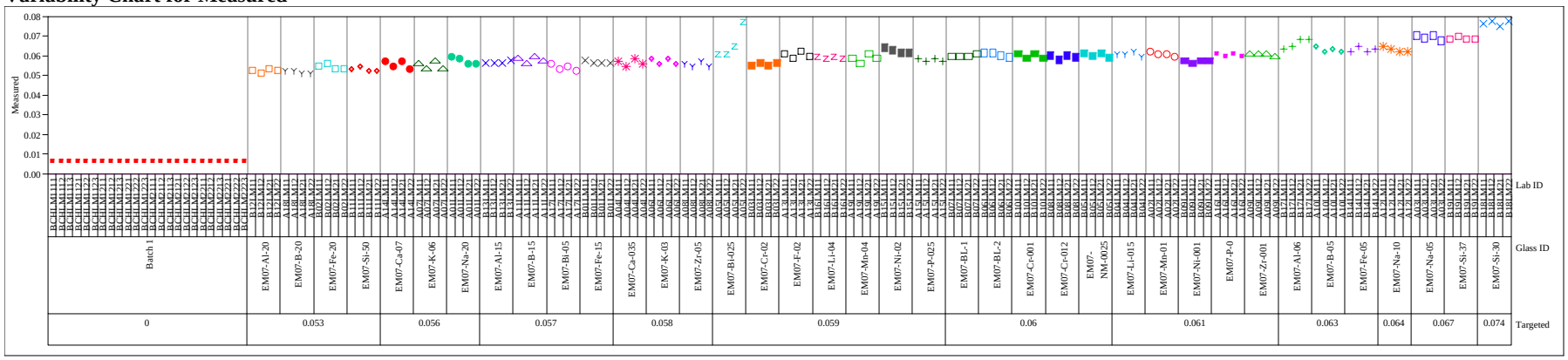


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=ZnO (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=ZnO (wt%)
Variability Chart for Measured bc

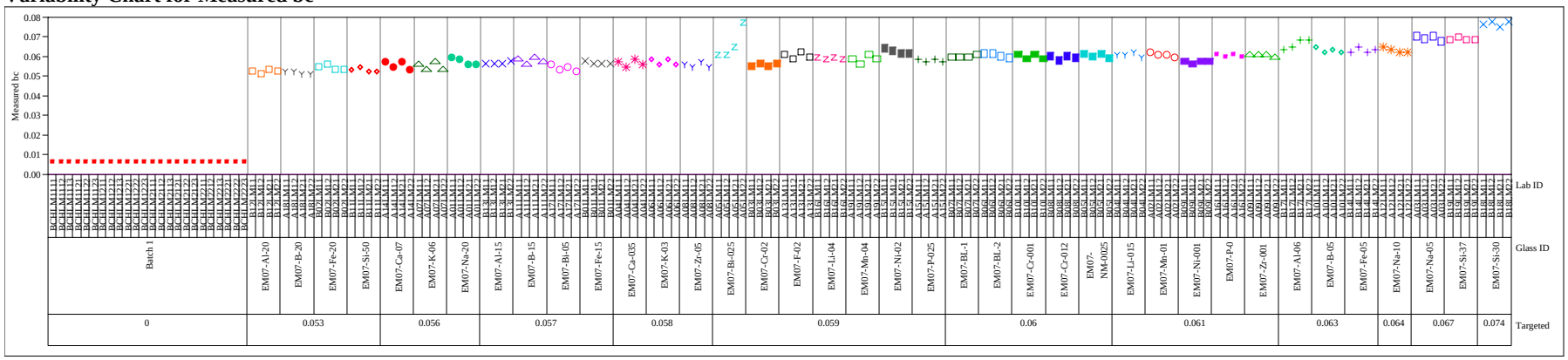
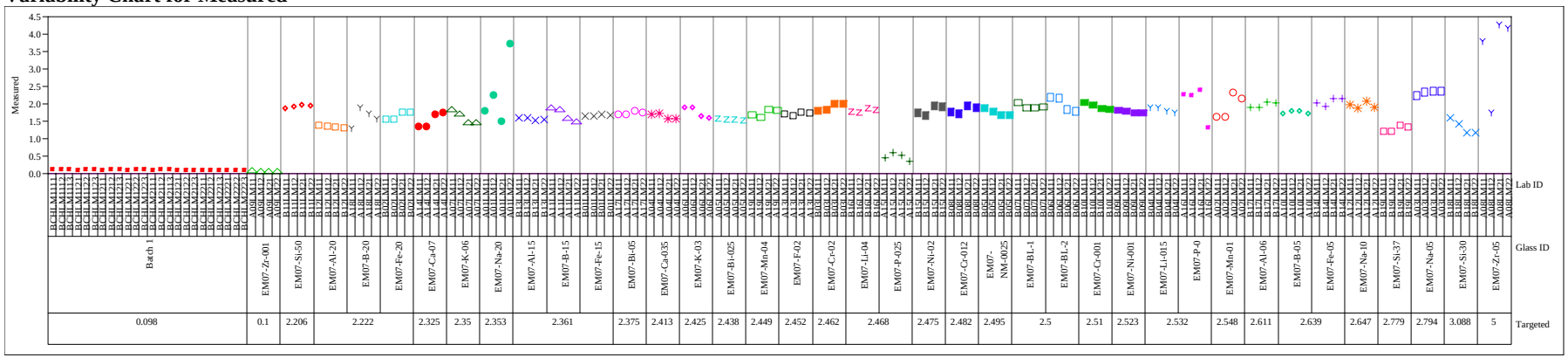


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=LM, Analyte=ZrO2 (wt%)
Variability Chart for Measured



Variability Gage Prep=LM, Analyte=ZrO2 (wt%)
Variability Chart for Measured bc

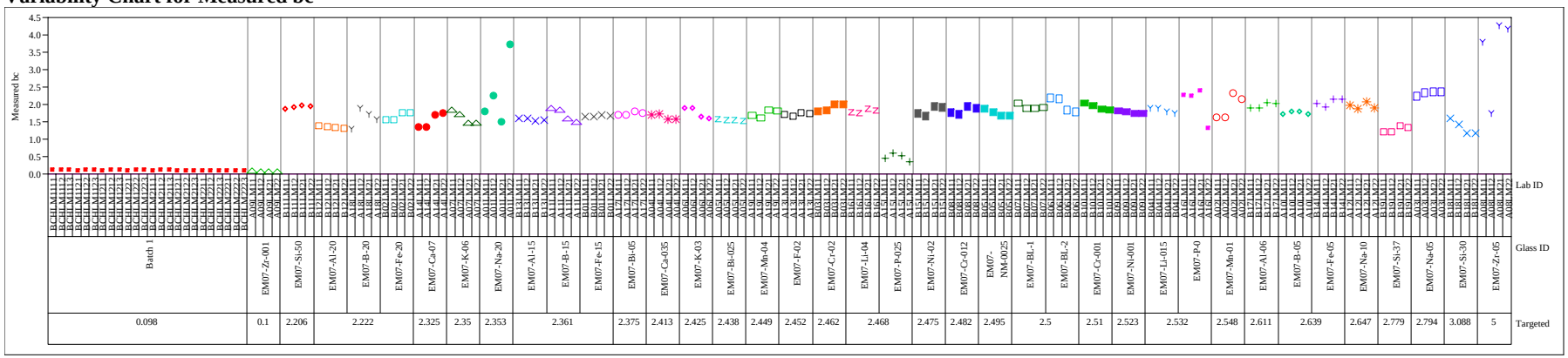
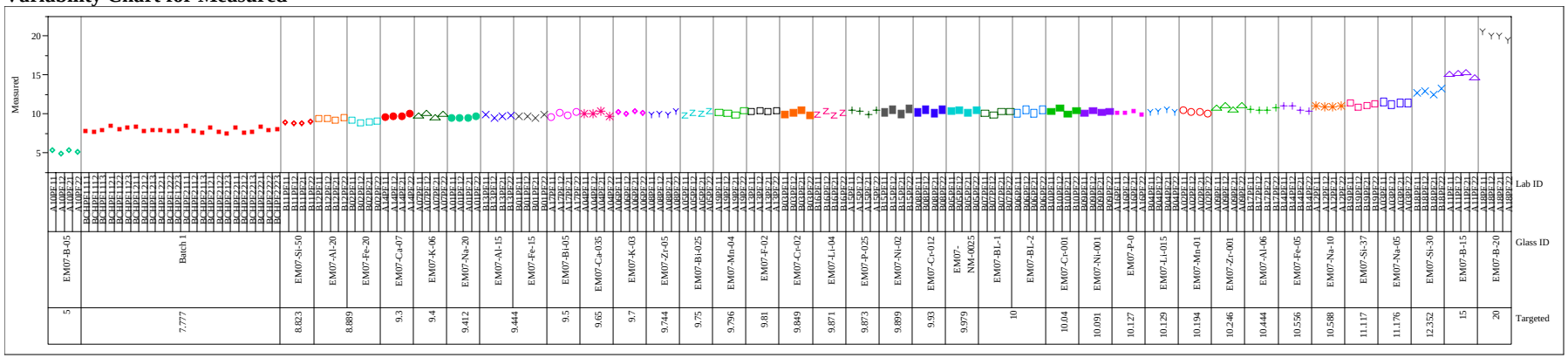


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=PF, Analyte=B2O3 (wt%)
Variability Chart for Measured



Variability Gage Prep=PF, Analyte=B2O3 (wt%)
Variability Chart for Measured bc

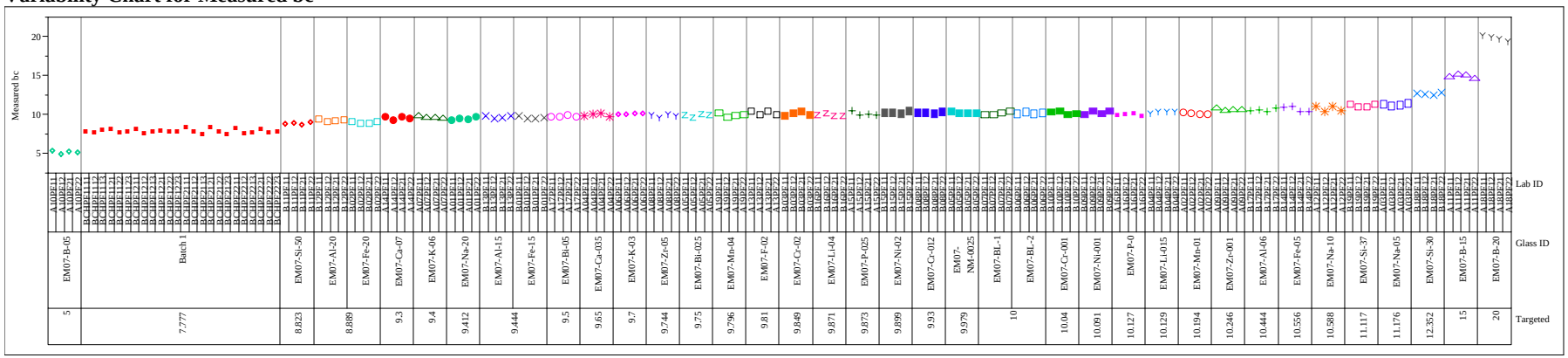
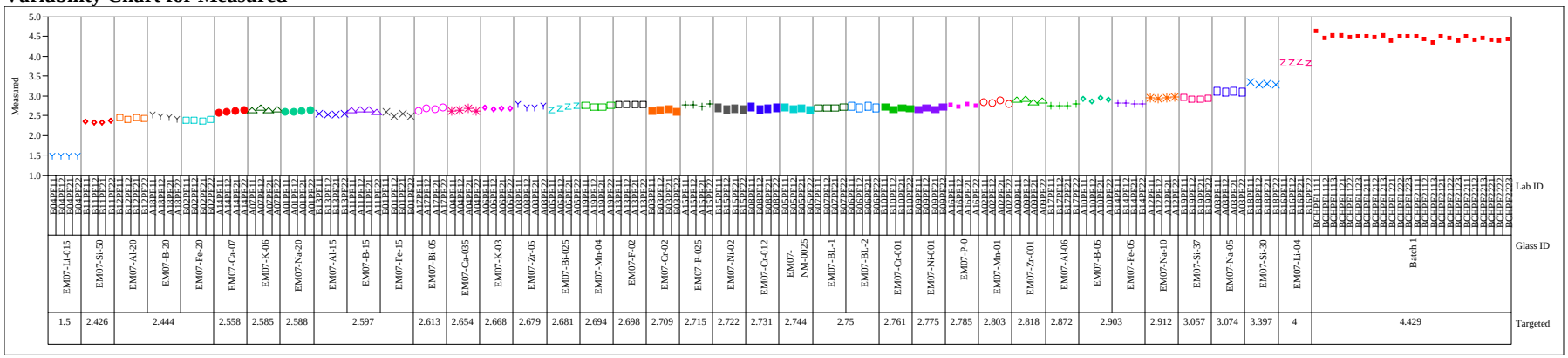


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=PF, Analyte=Li2O (wt%)
Variability Chart for Measured



Variability Gage Prep=PF, Analyte=Li2O (wt%)
Variability Chart for Measured bc

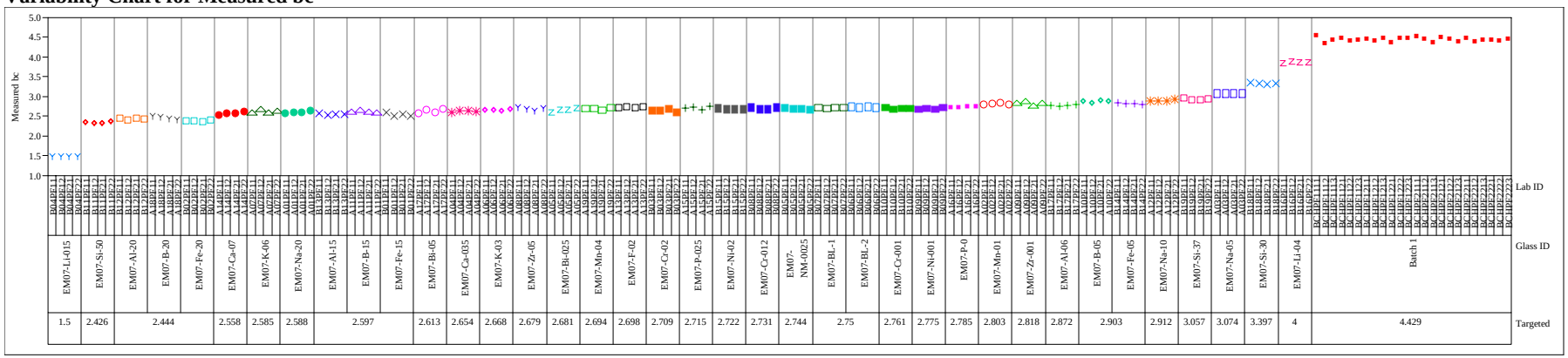
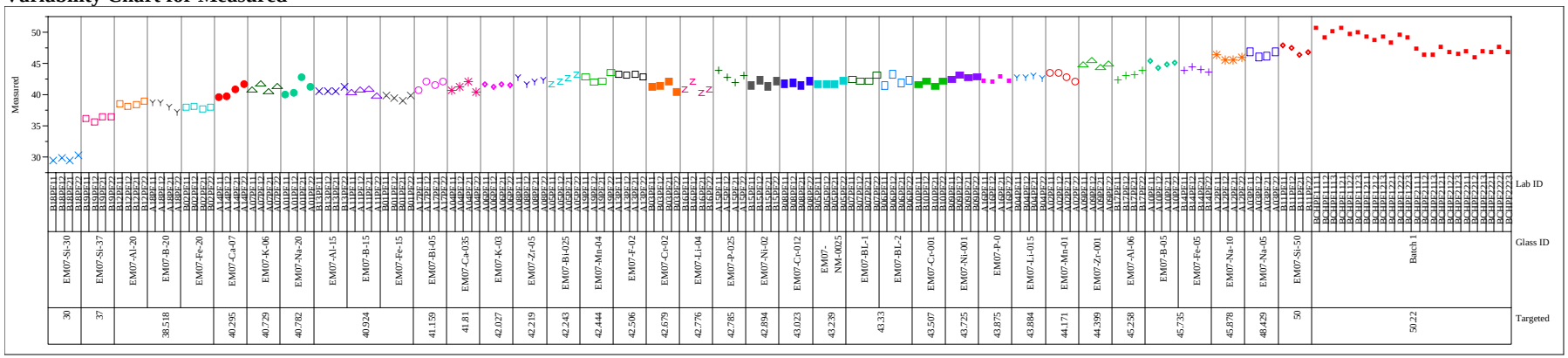


Figure A3. Measured and Measured Bias-Corrected Weight Percents for Each Analyte Grouped by Preparation Method by Lab ID within Glass ID

Variability Gage Prep=PF, Analyte=SiO2 (wt%)
Variability Chart for Measured



Variability Gage Prep=PF, Analyte=SiO2 (wt%)
Variability Chart for Measured bc

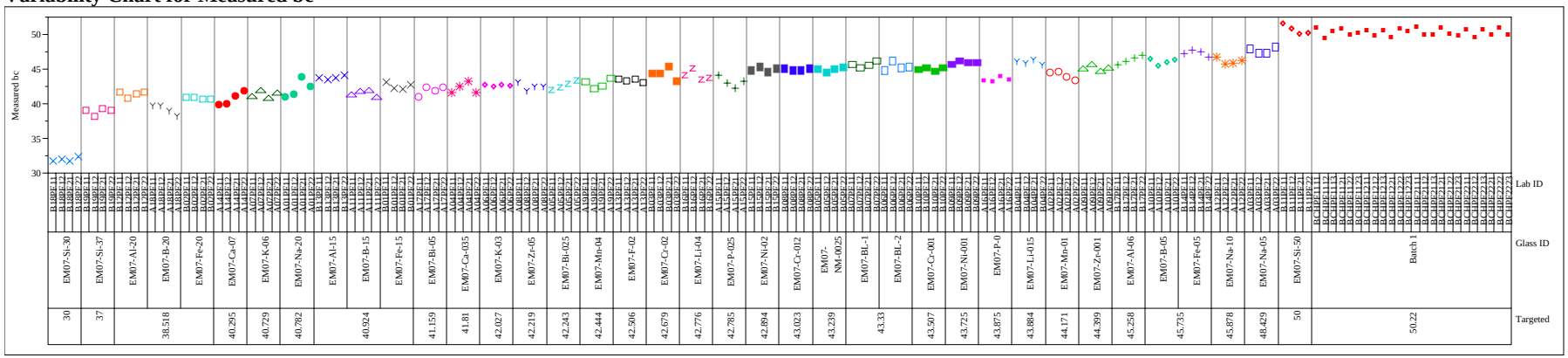


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

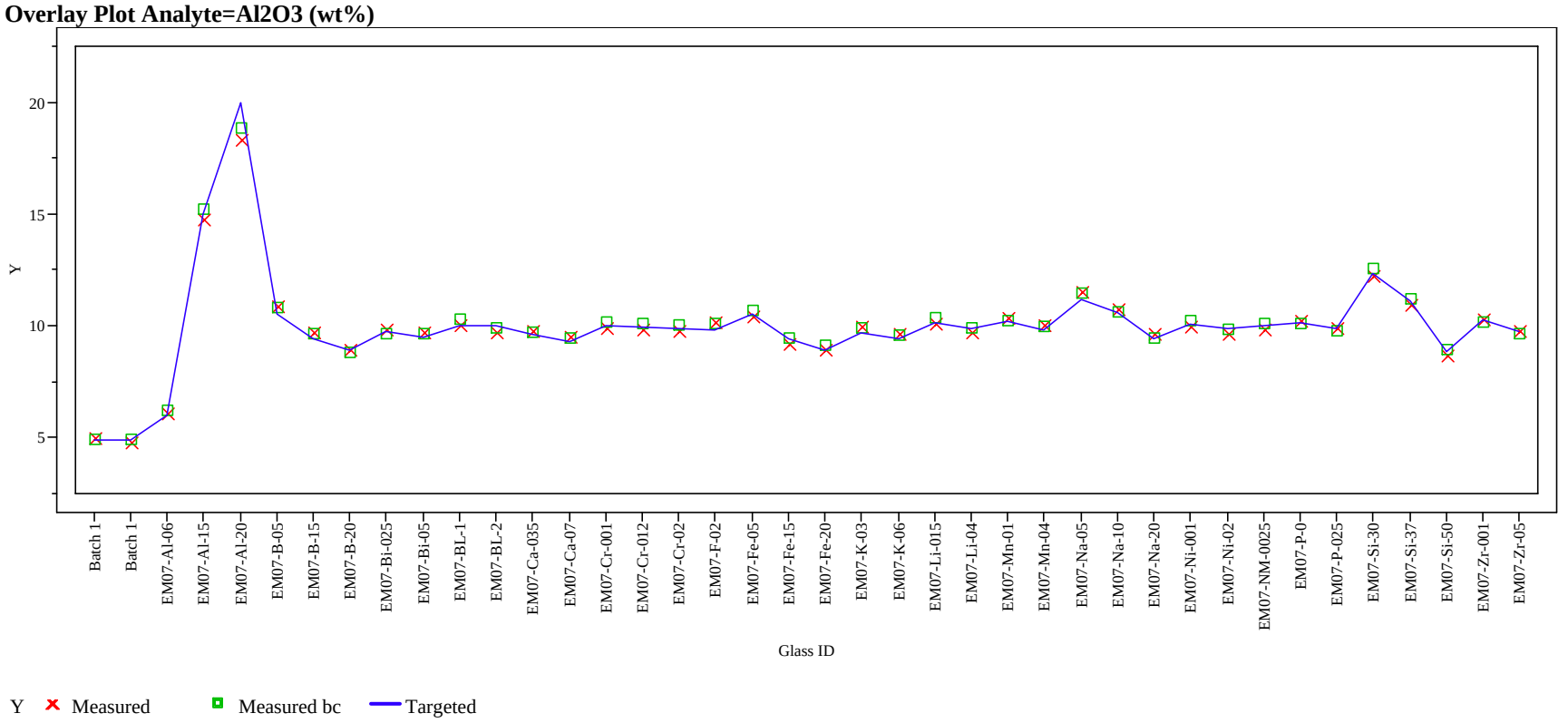


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

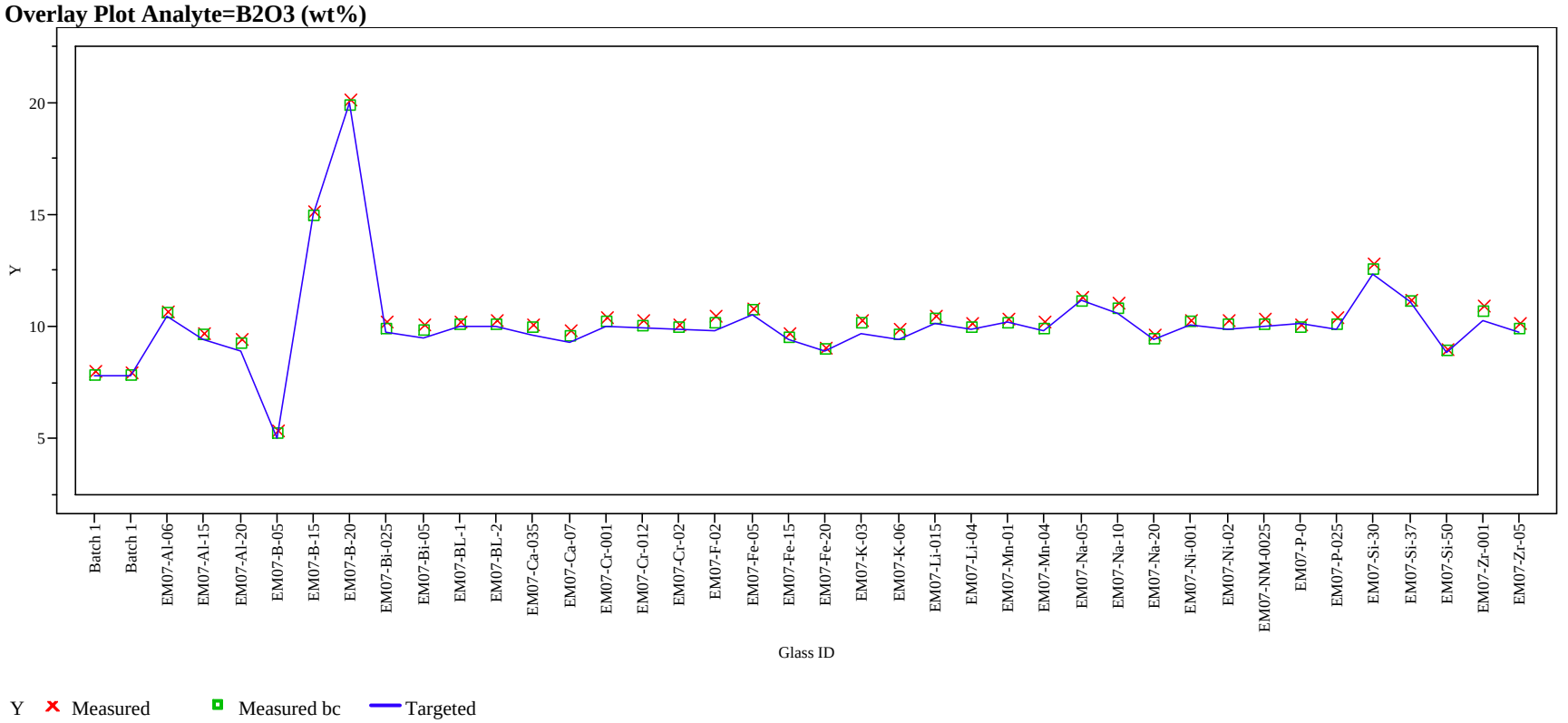


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

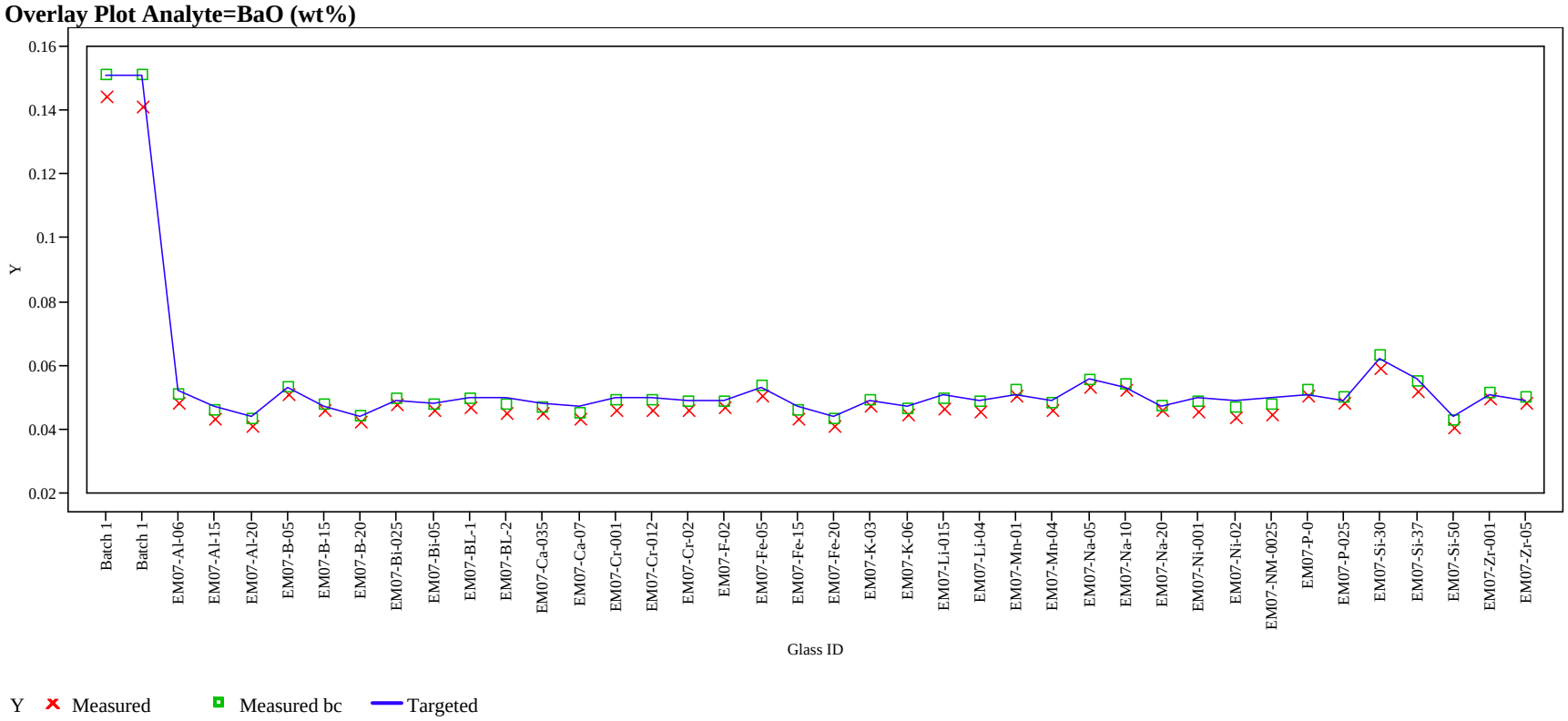


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

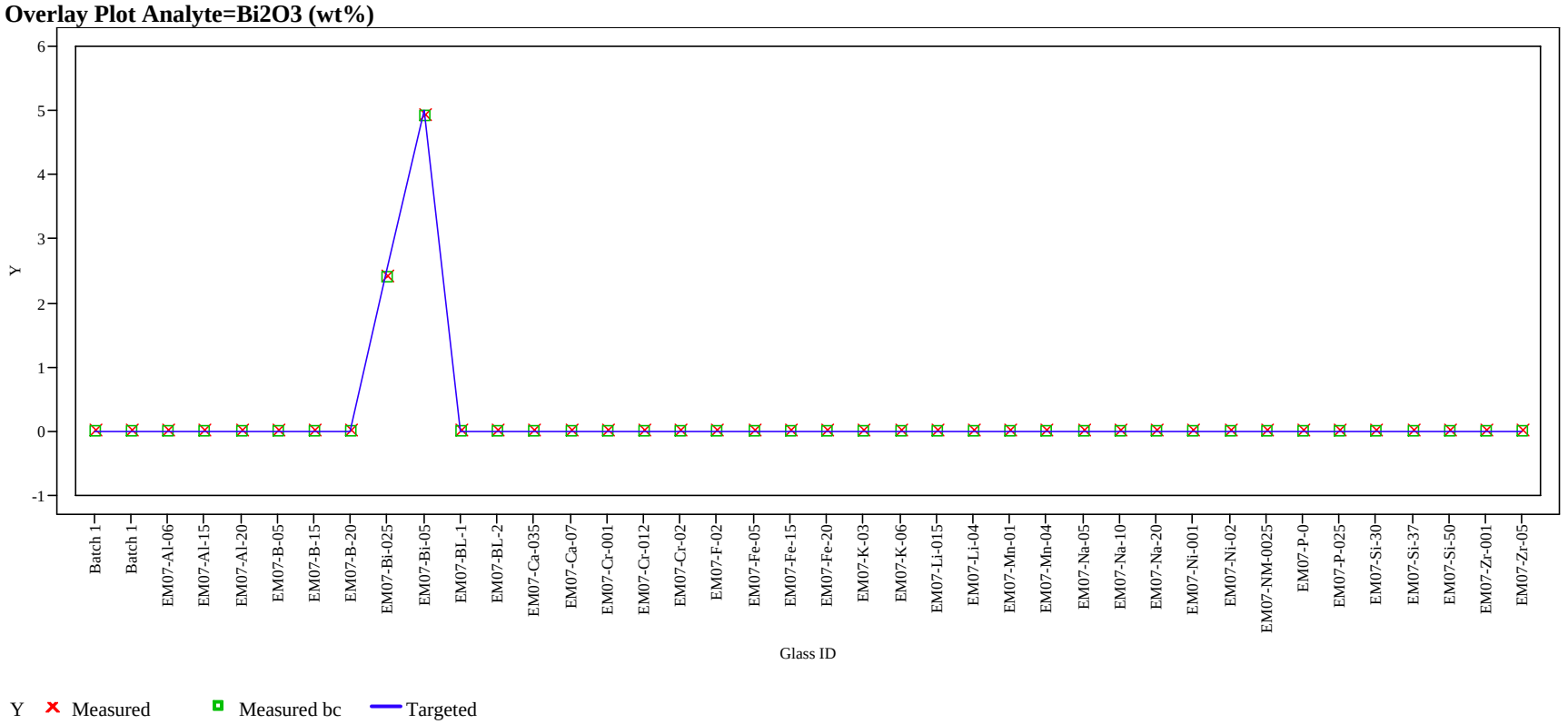


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

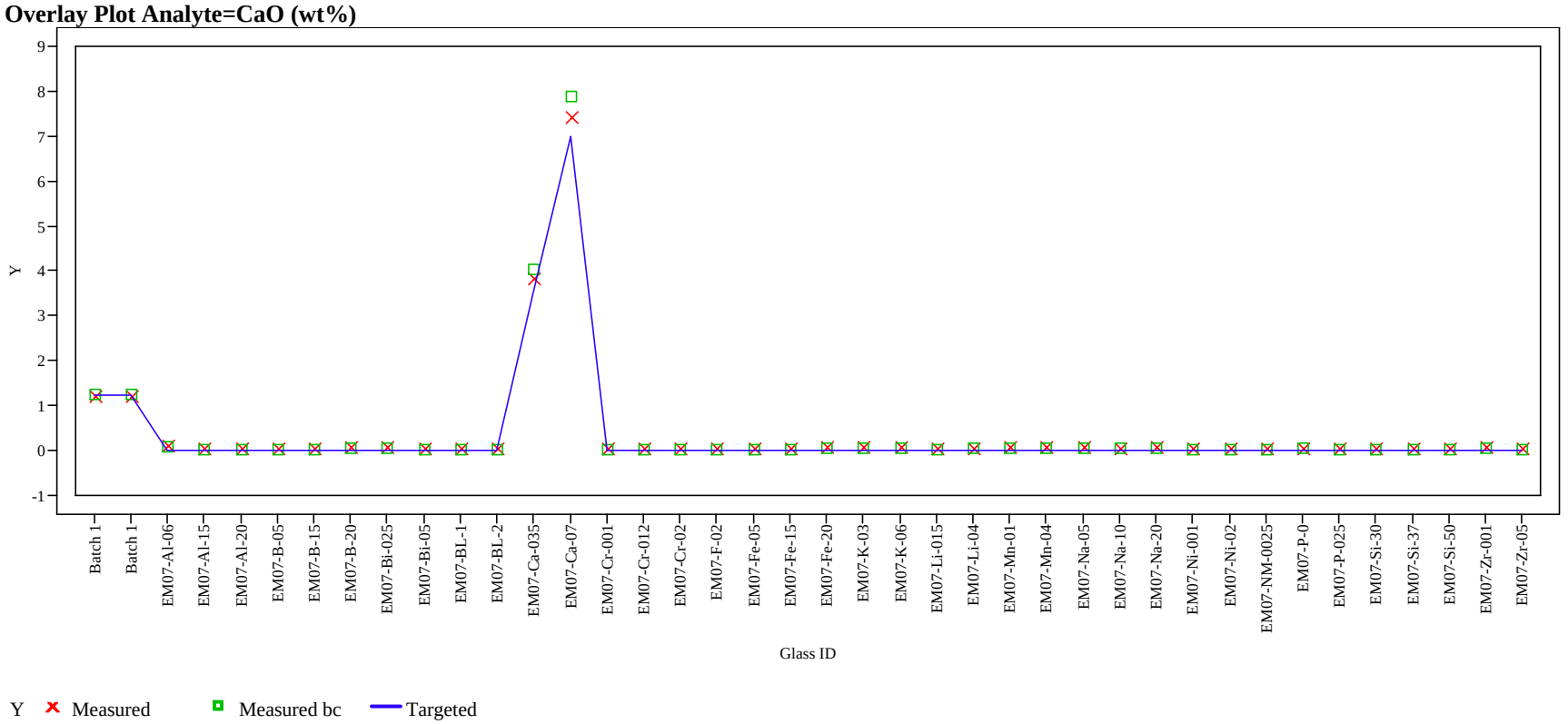


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

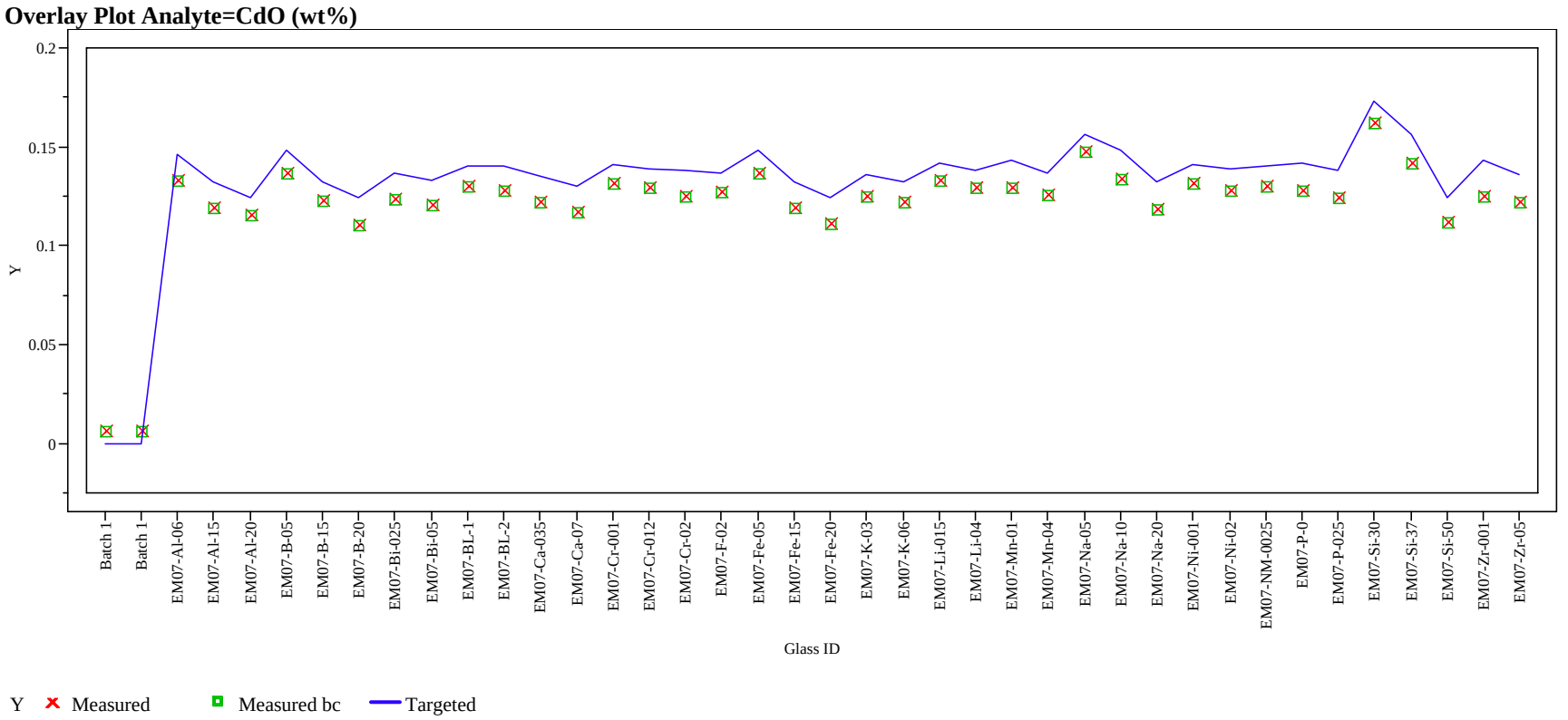


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

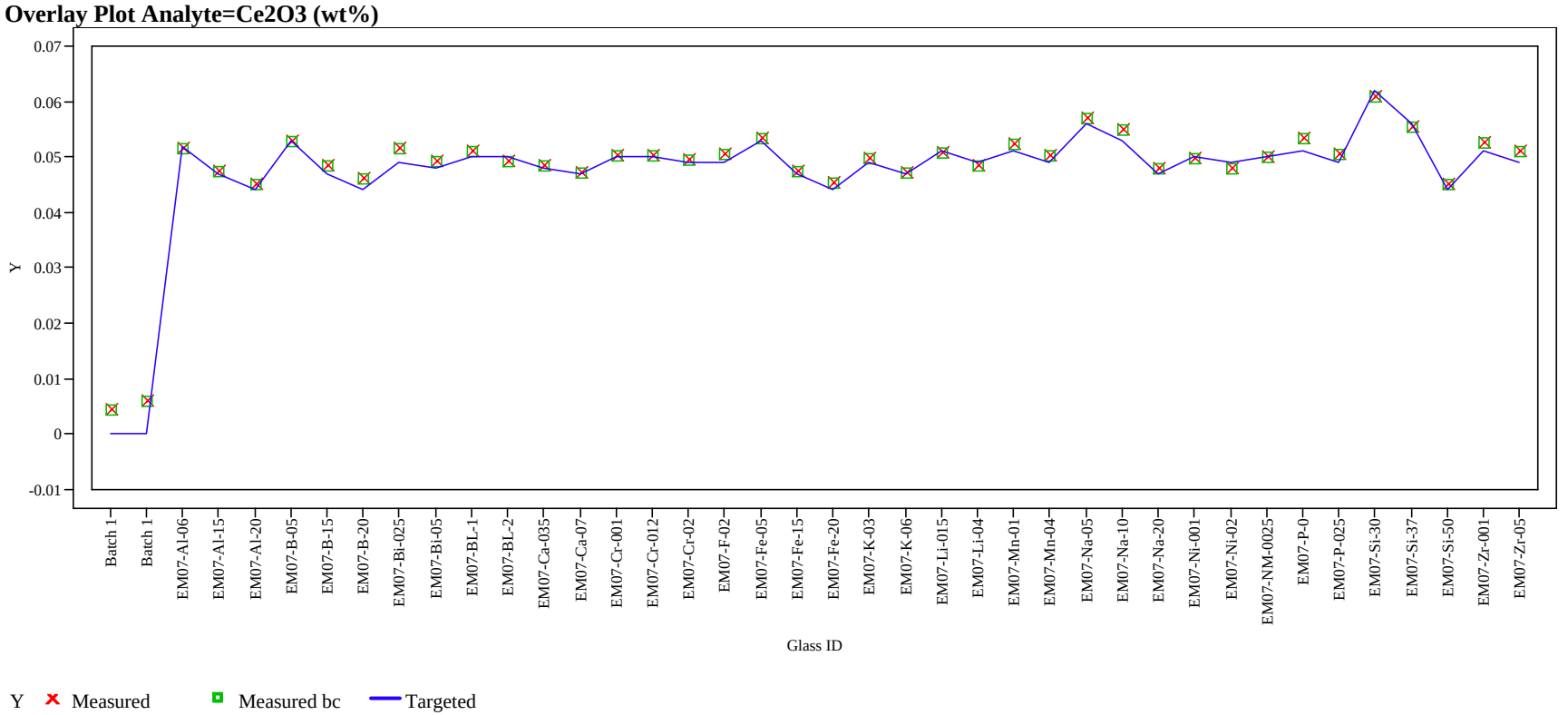


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

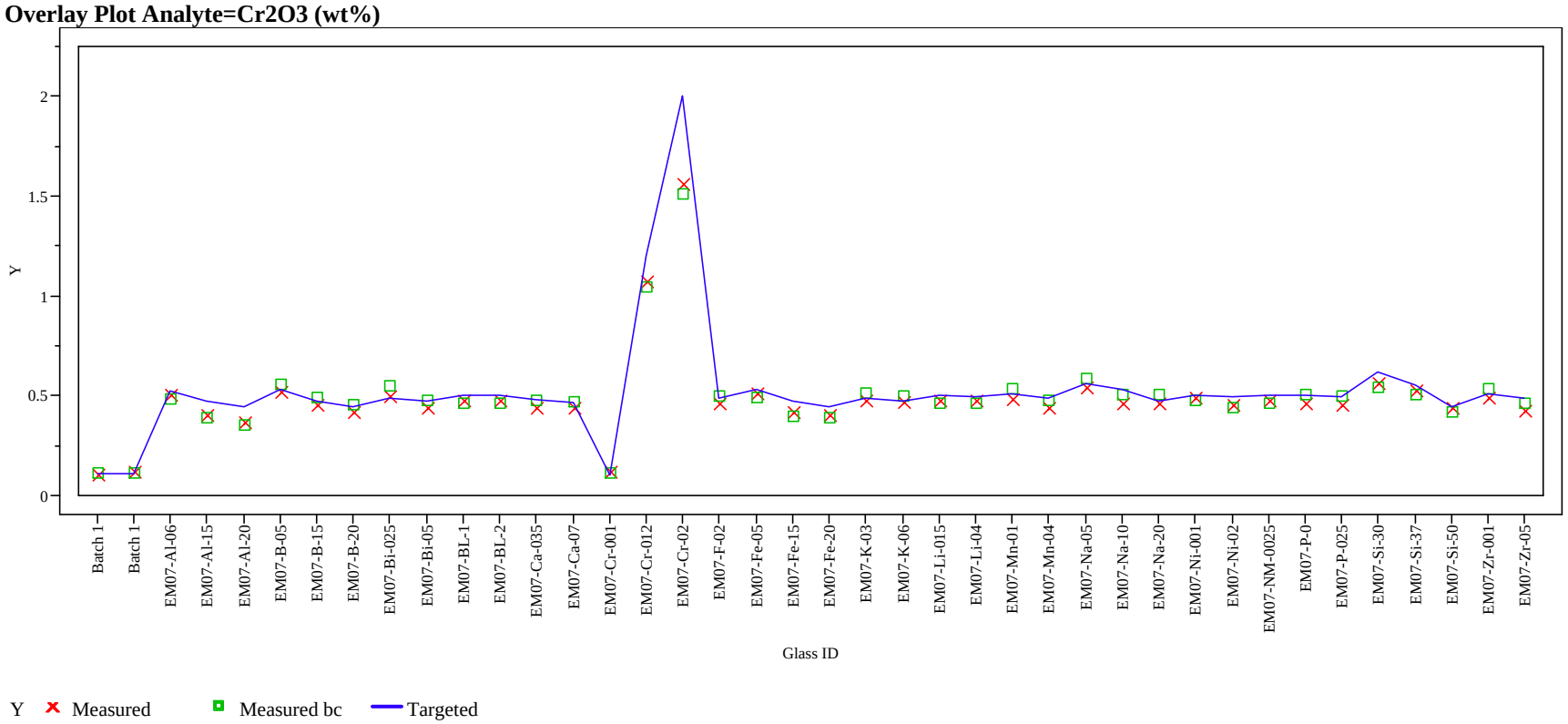


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

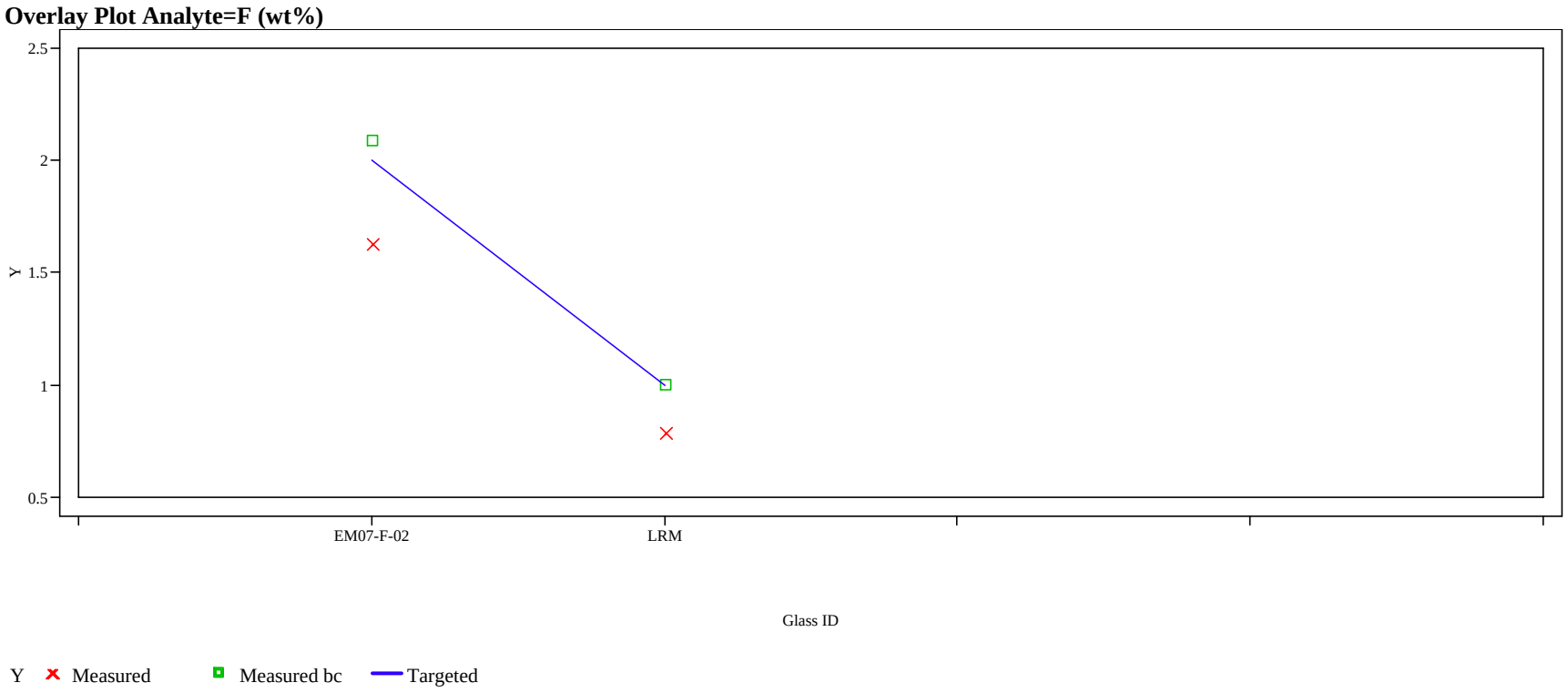


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

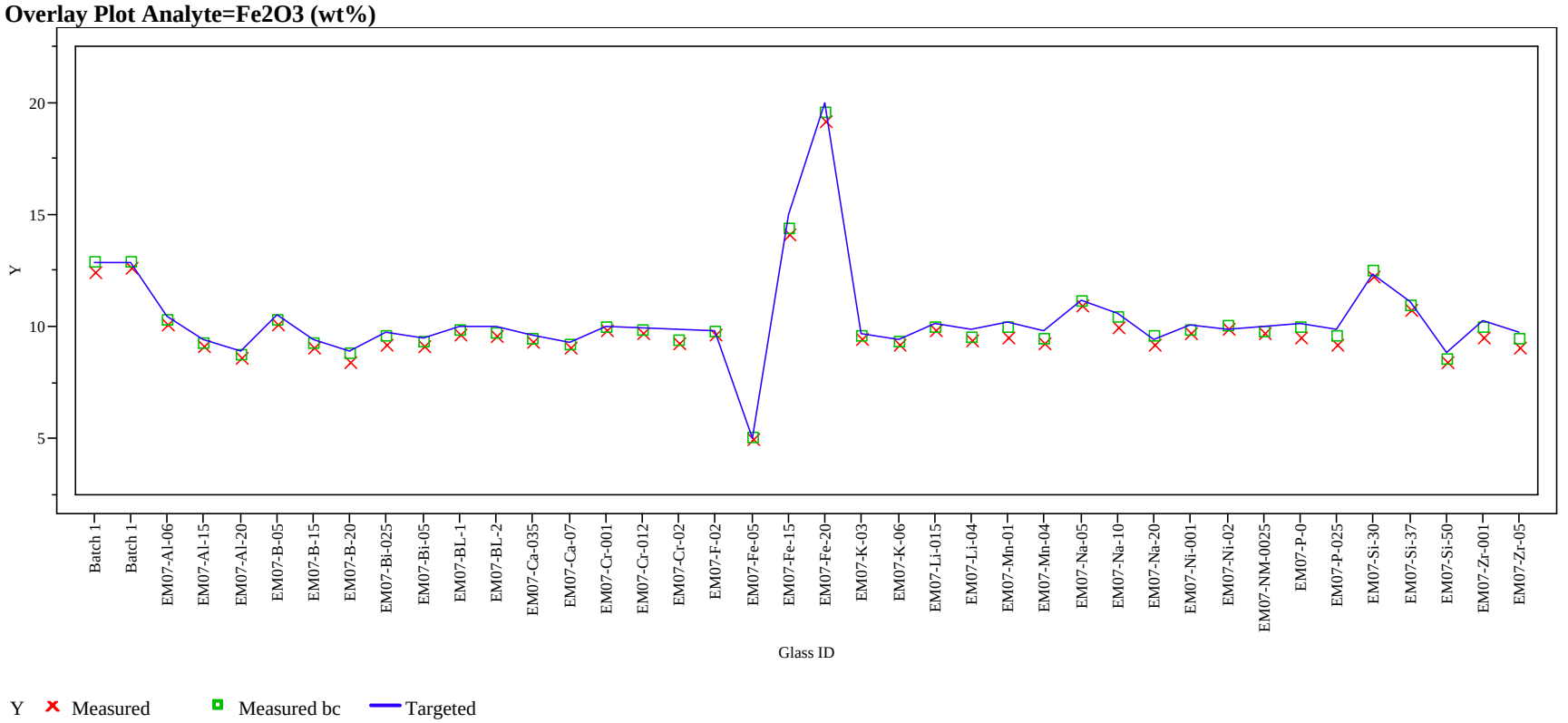


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

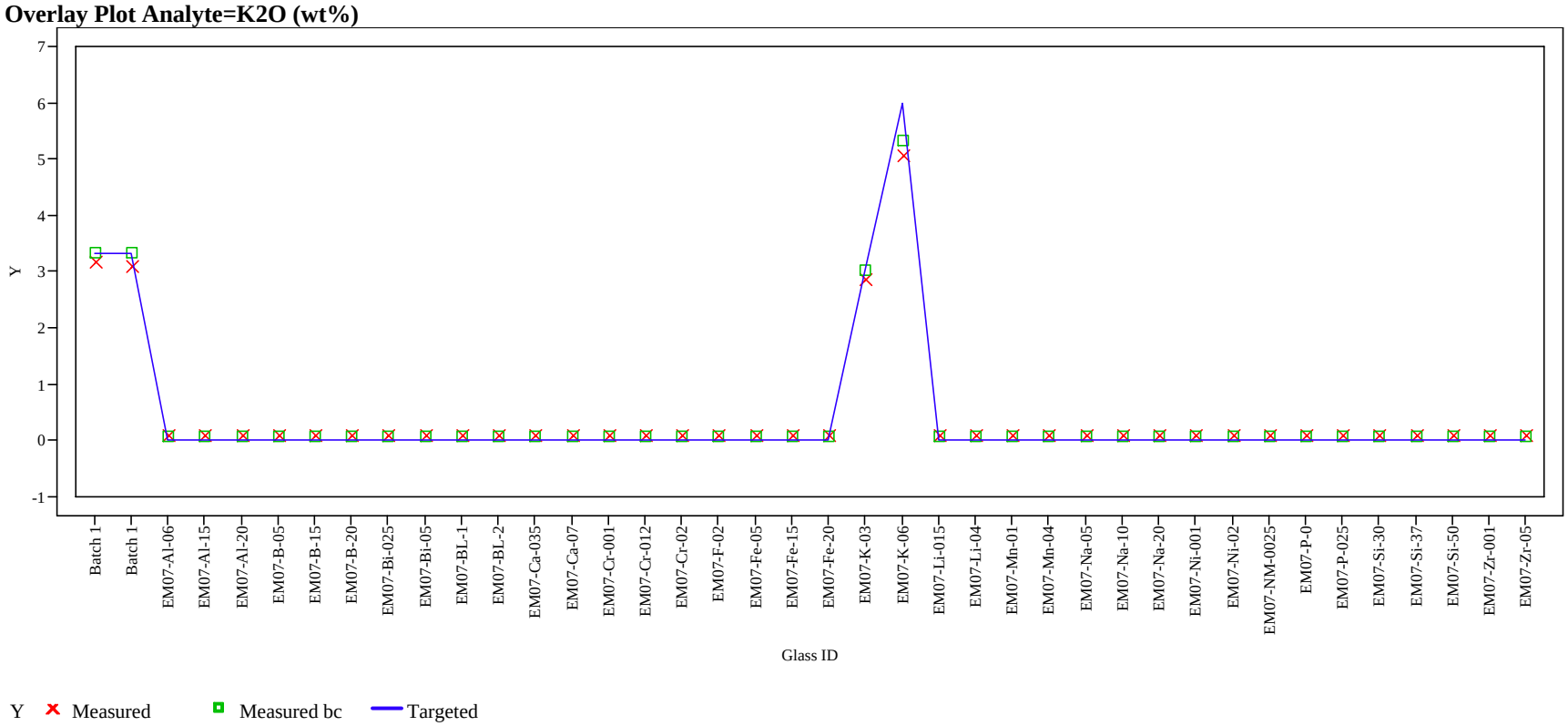


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

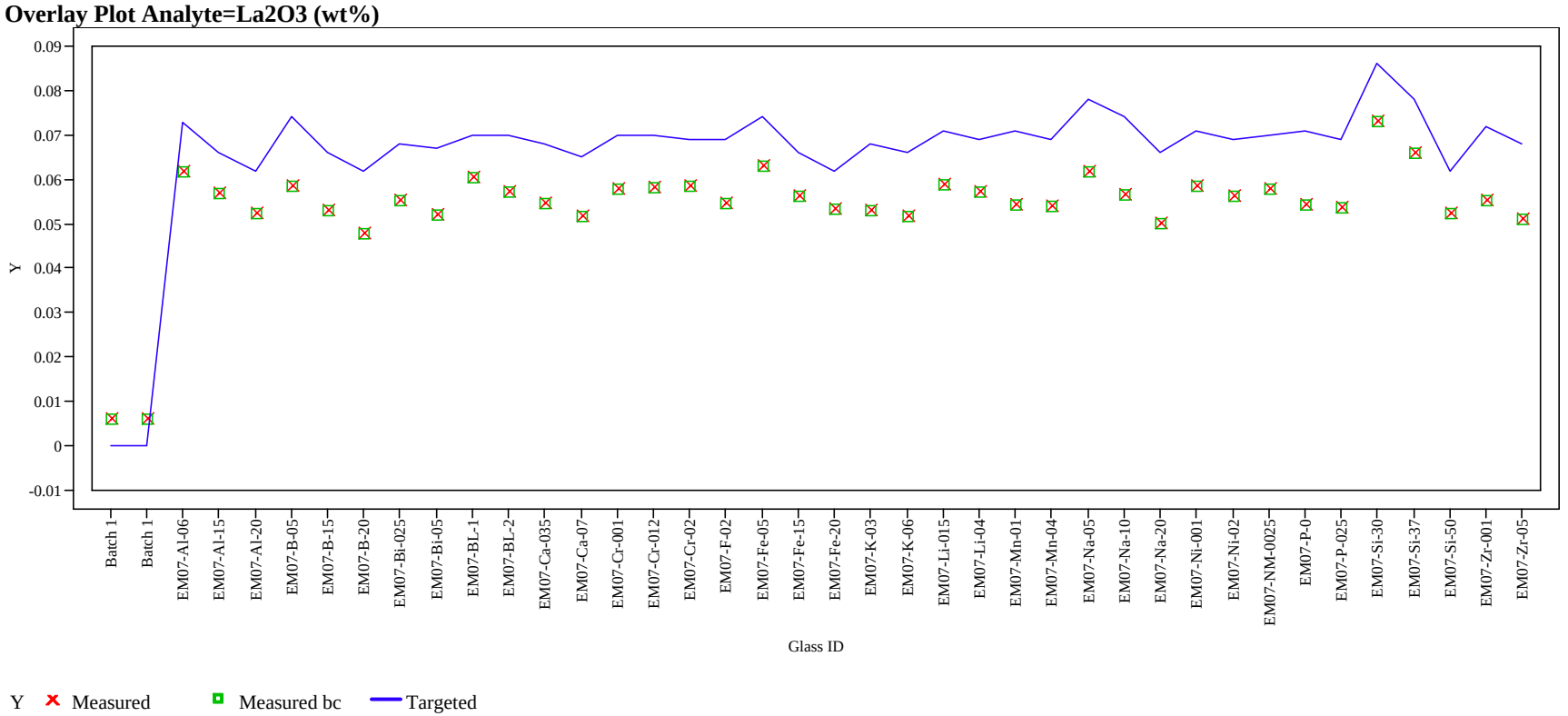


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

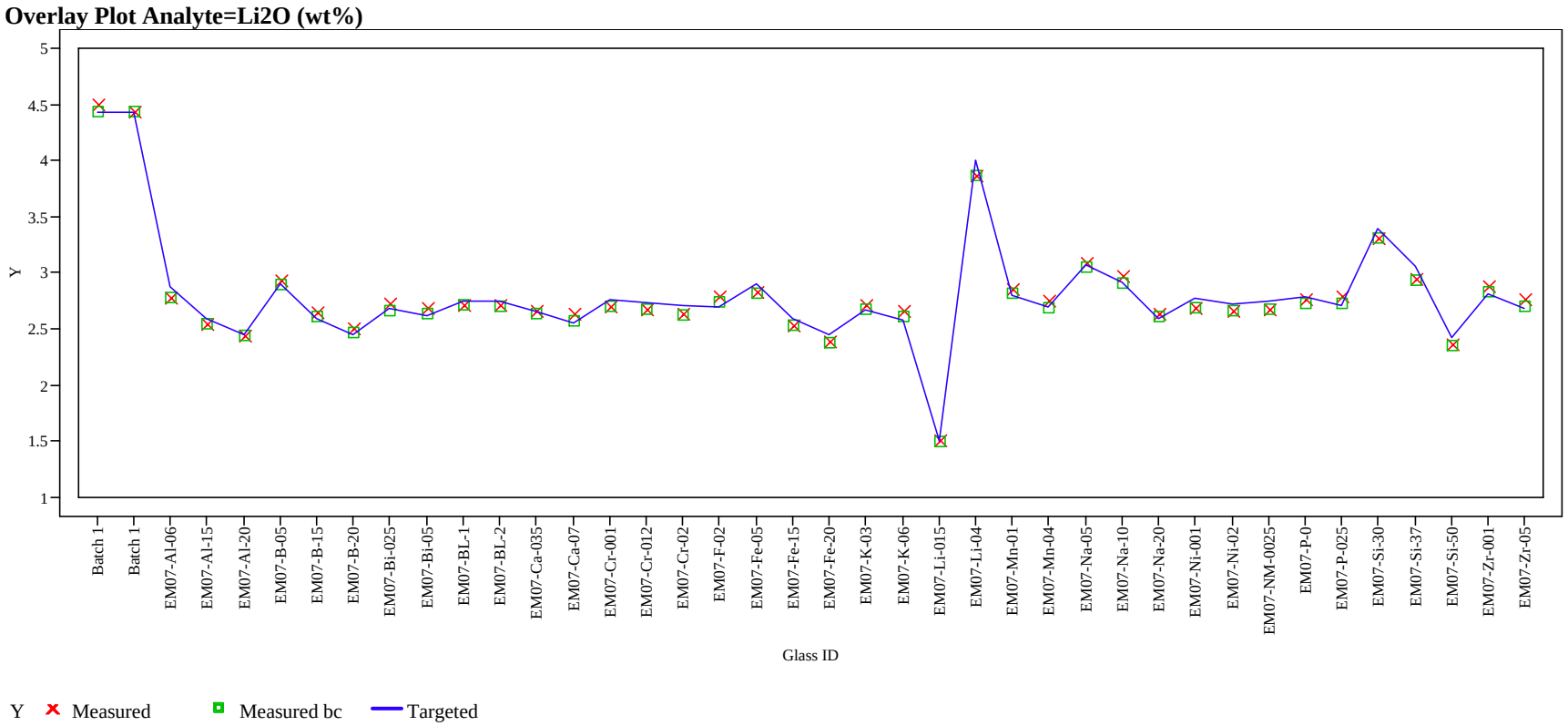


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

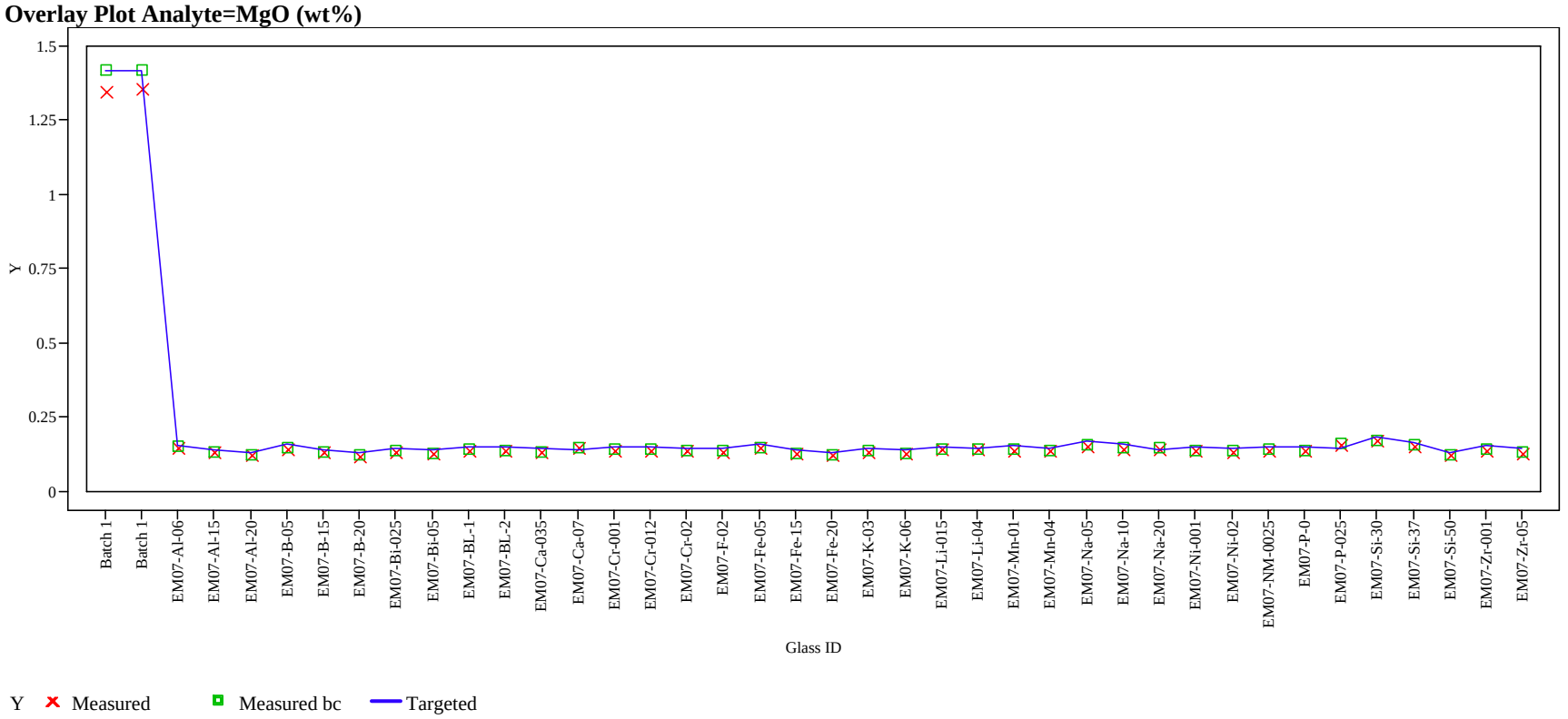


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

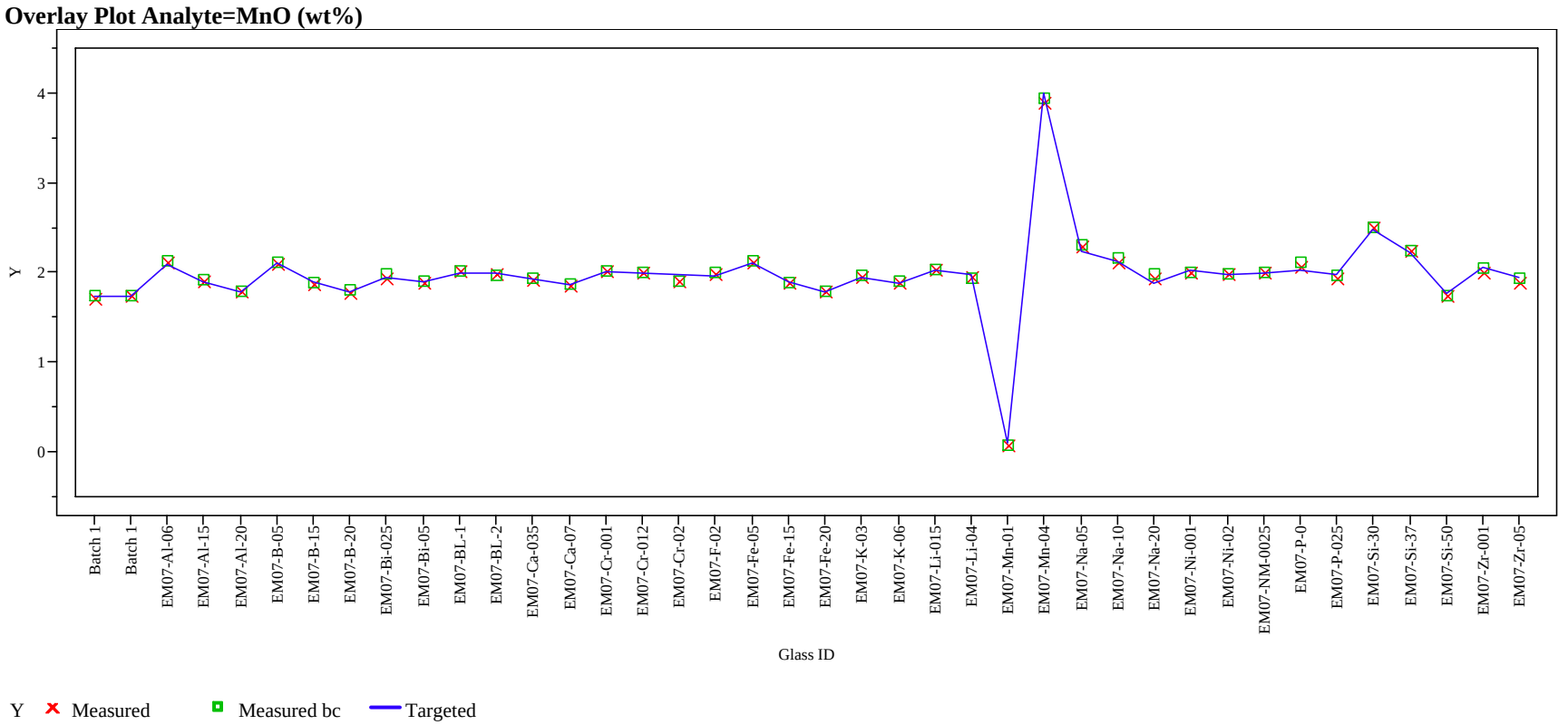


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

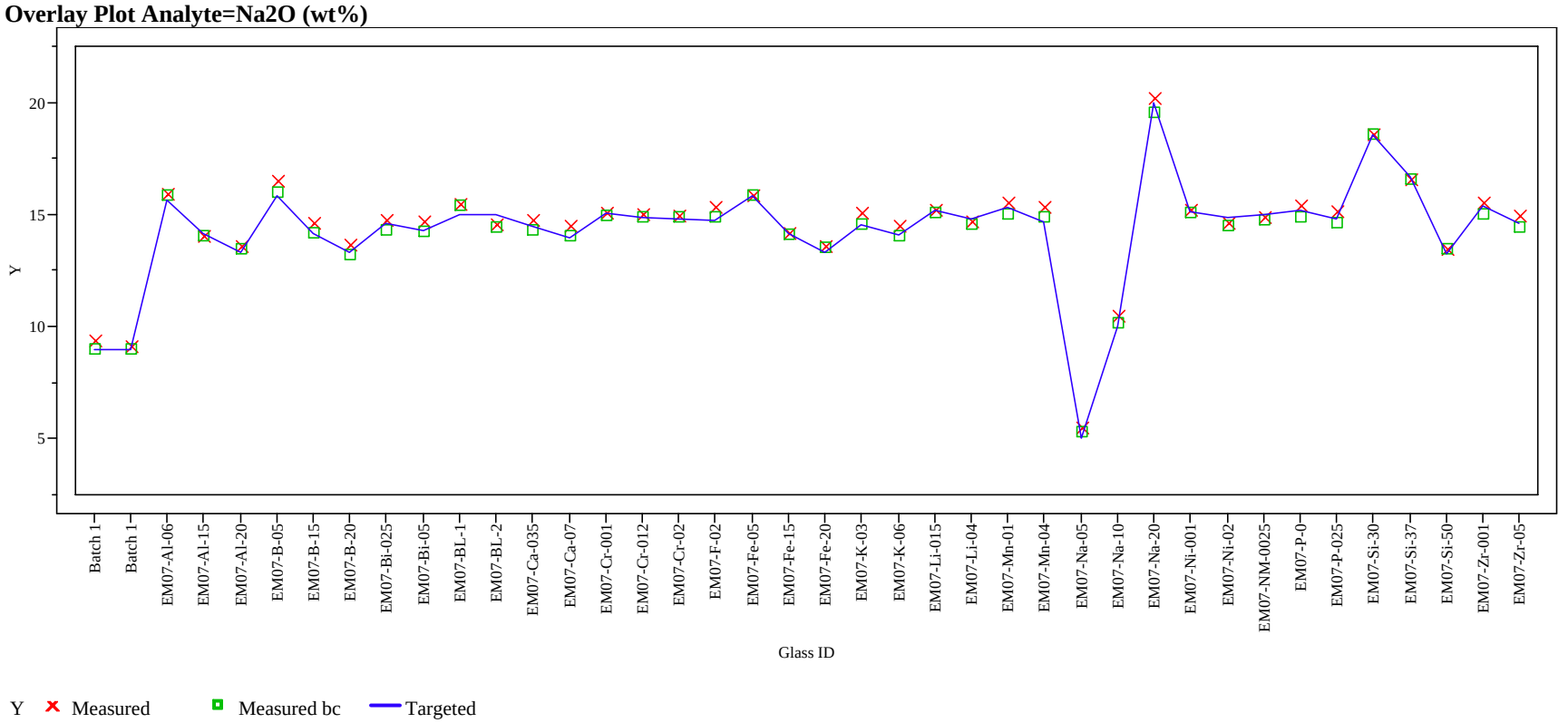


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

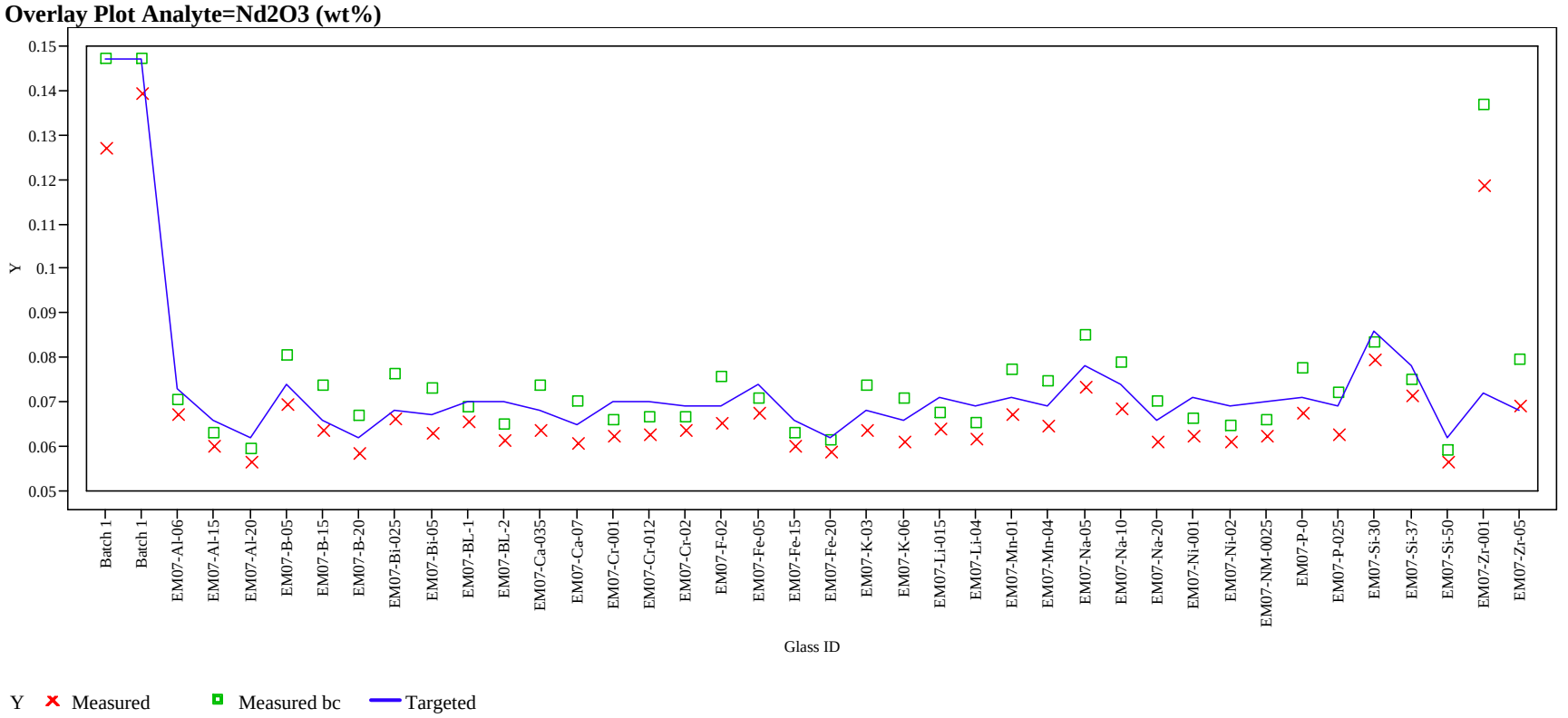


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

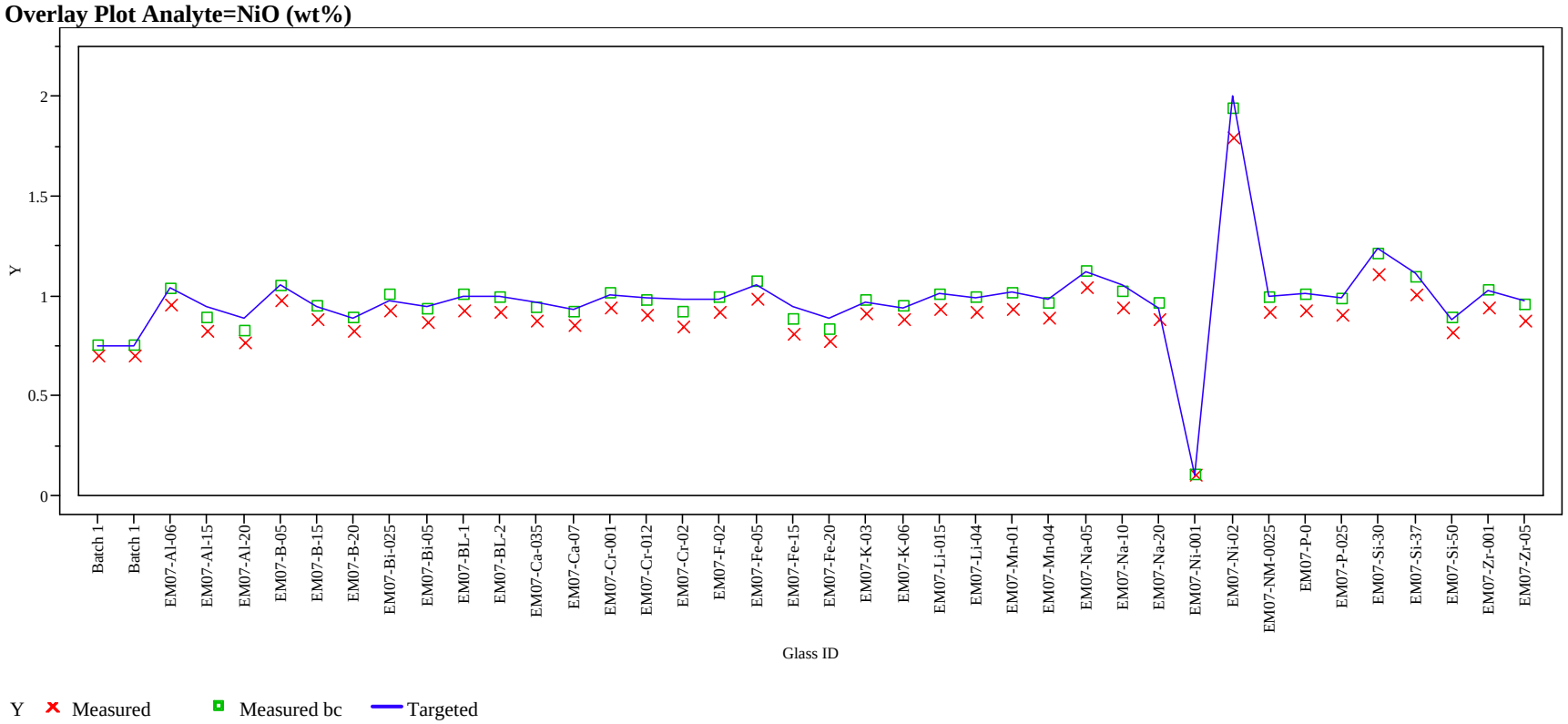


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

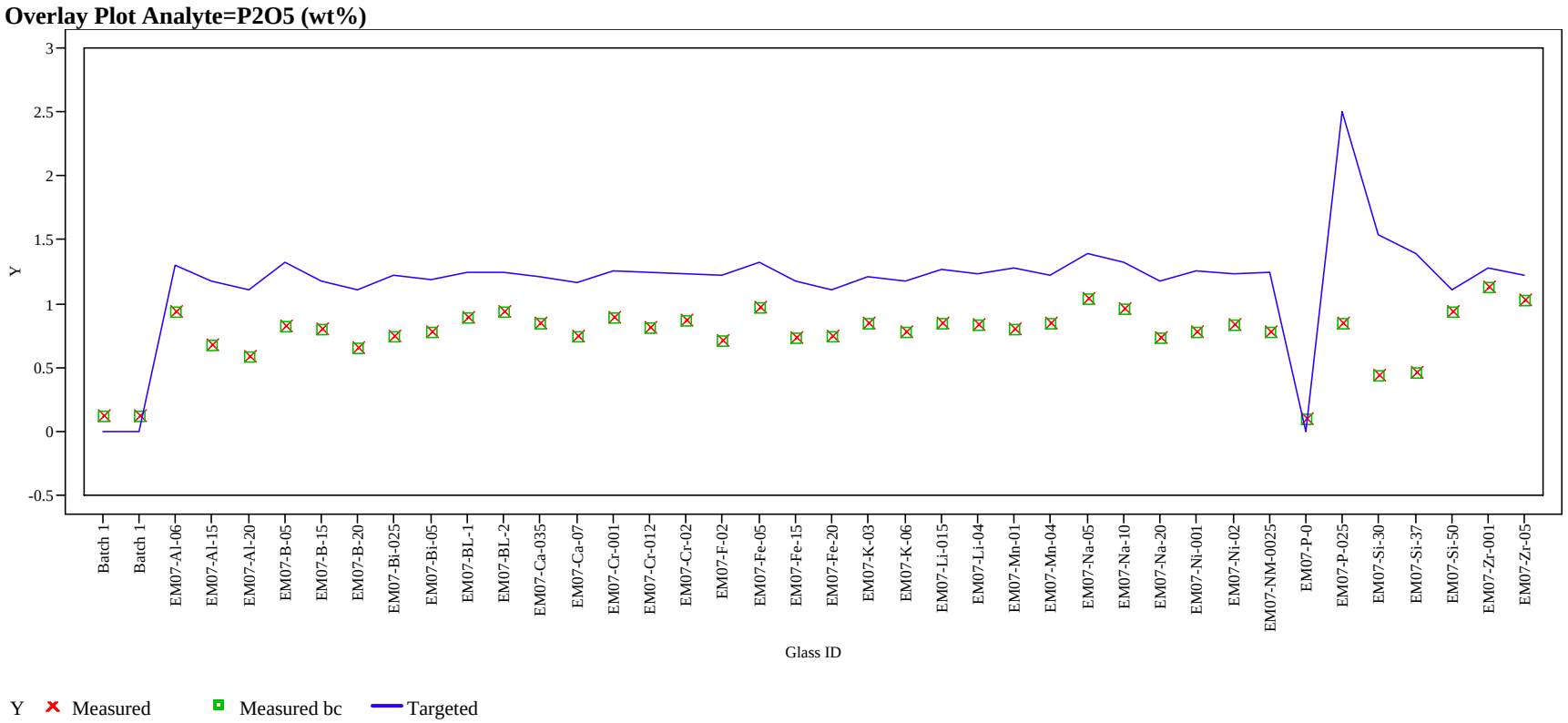


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

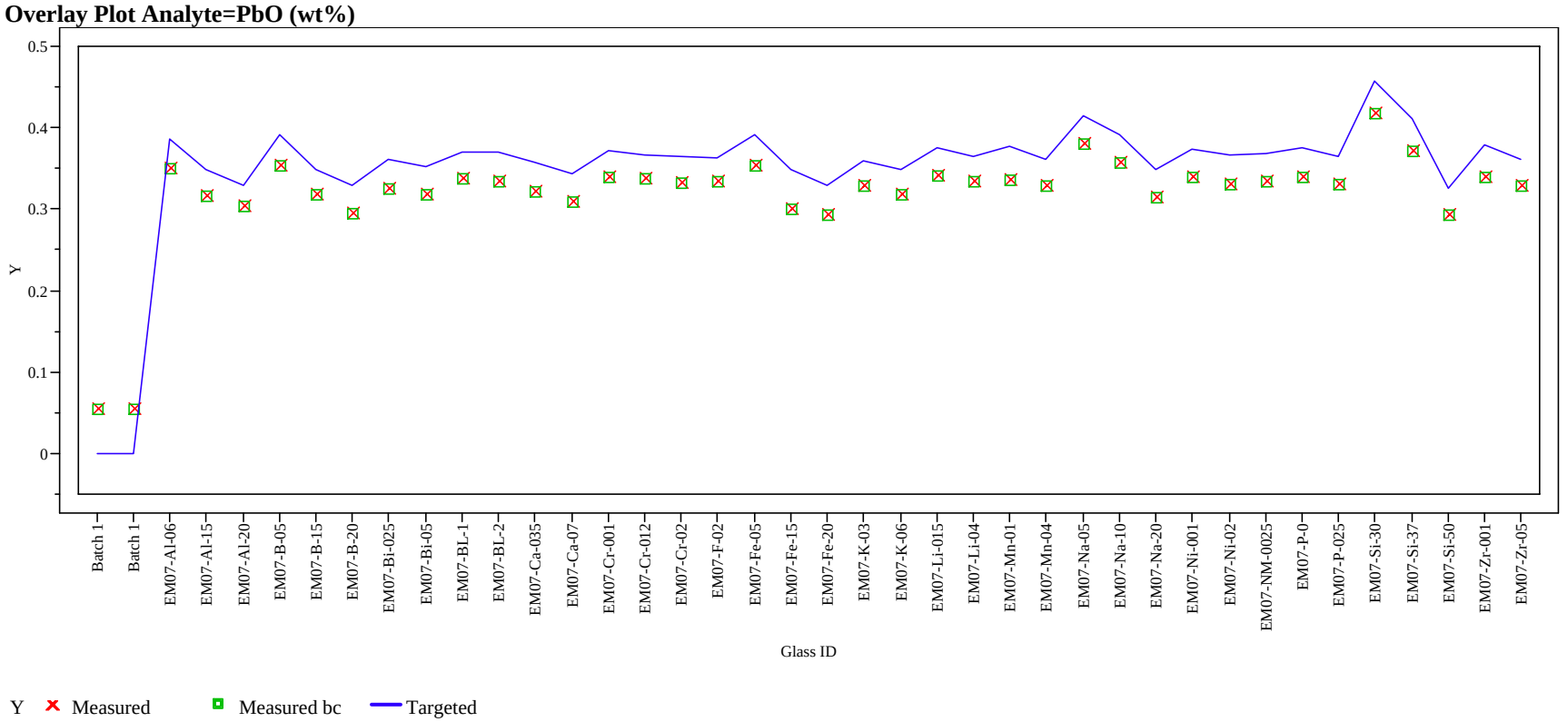


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

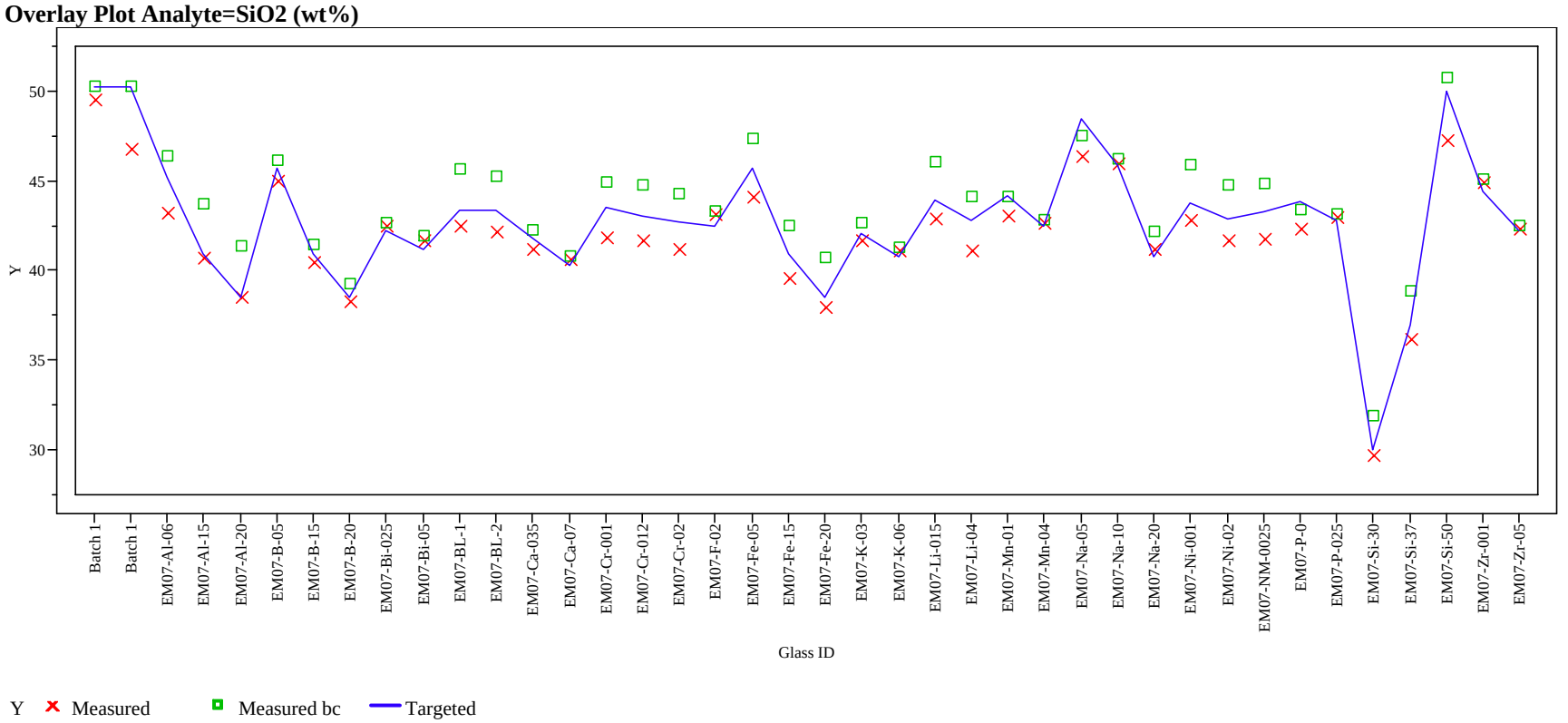


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

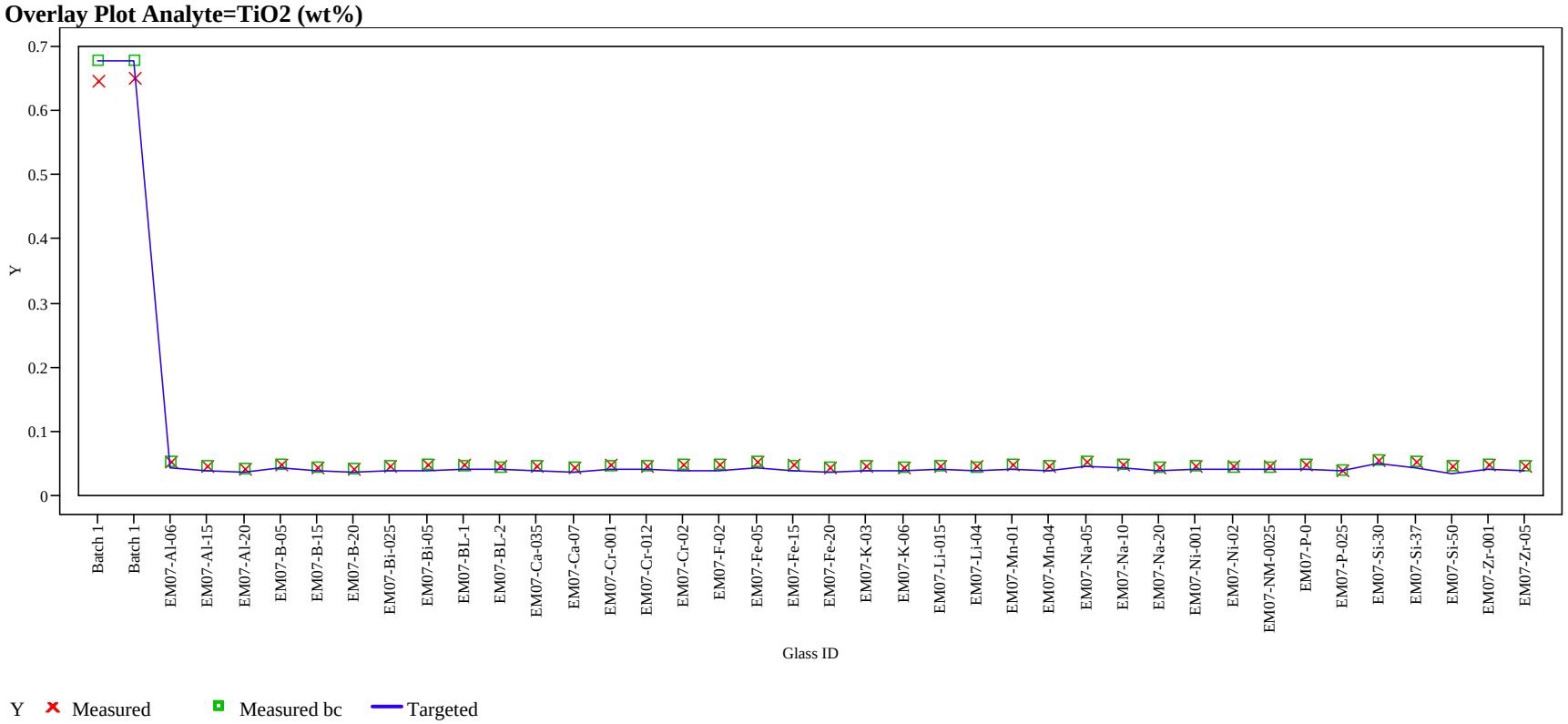


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

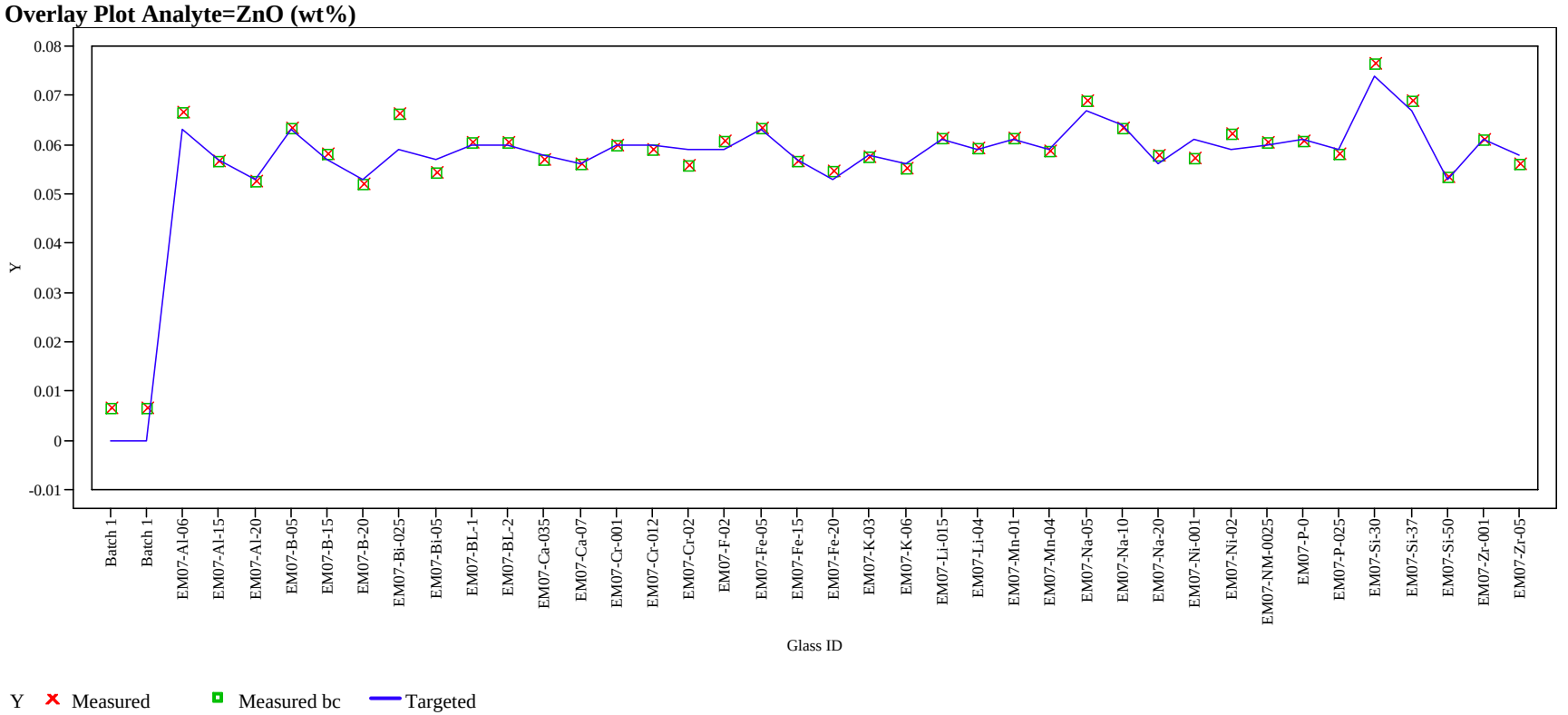


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte

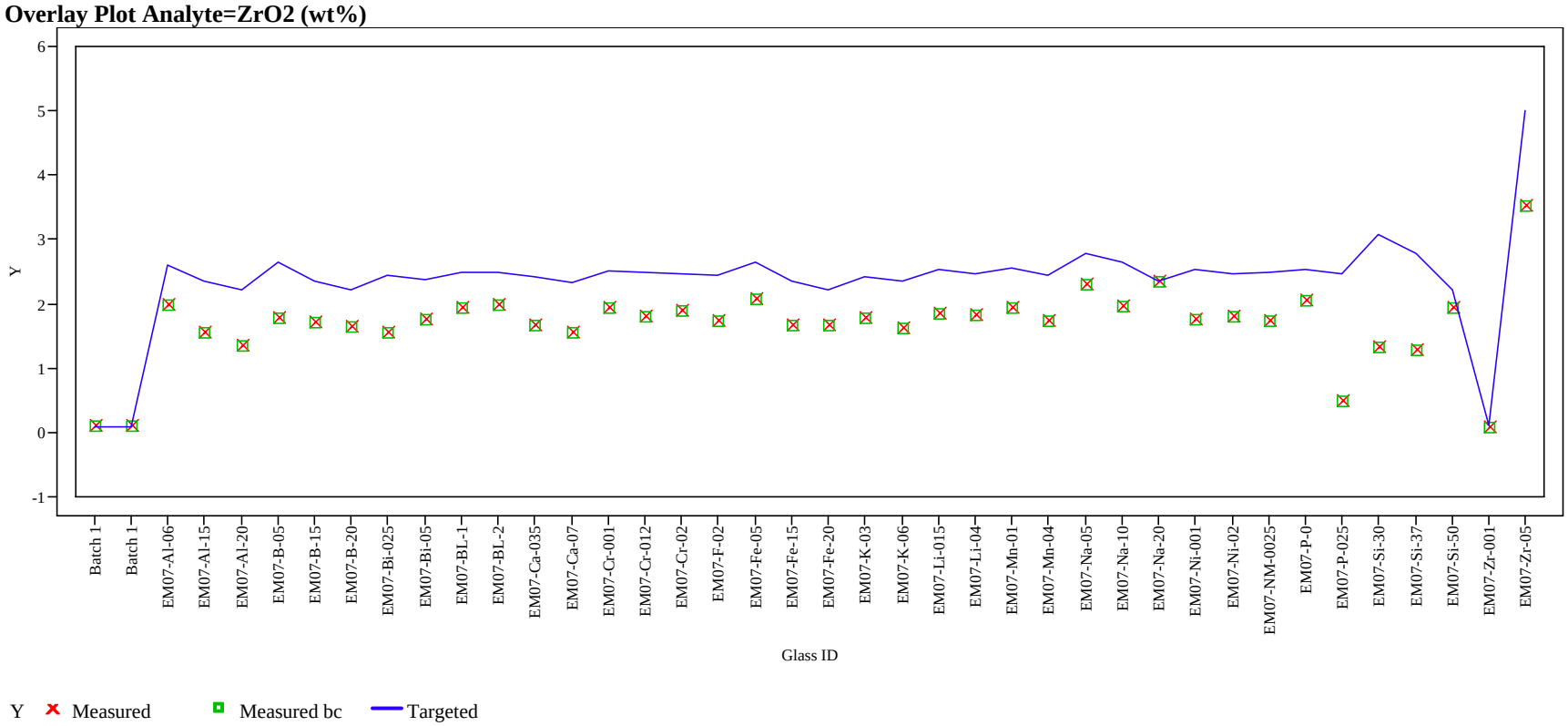
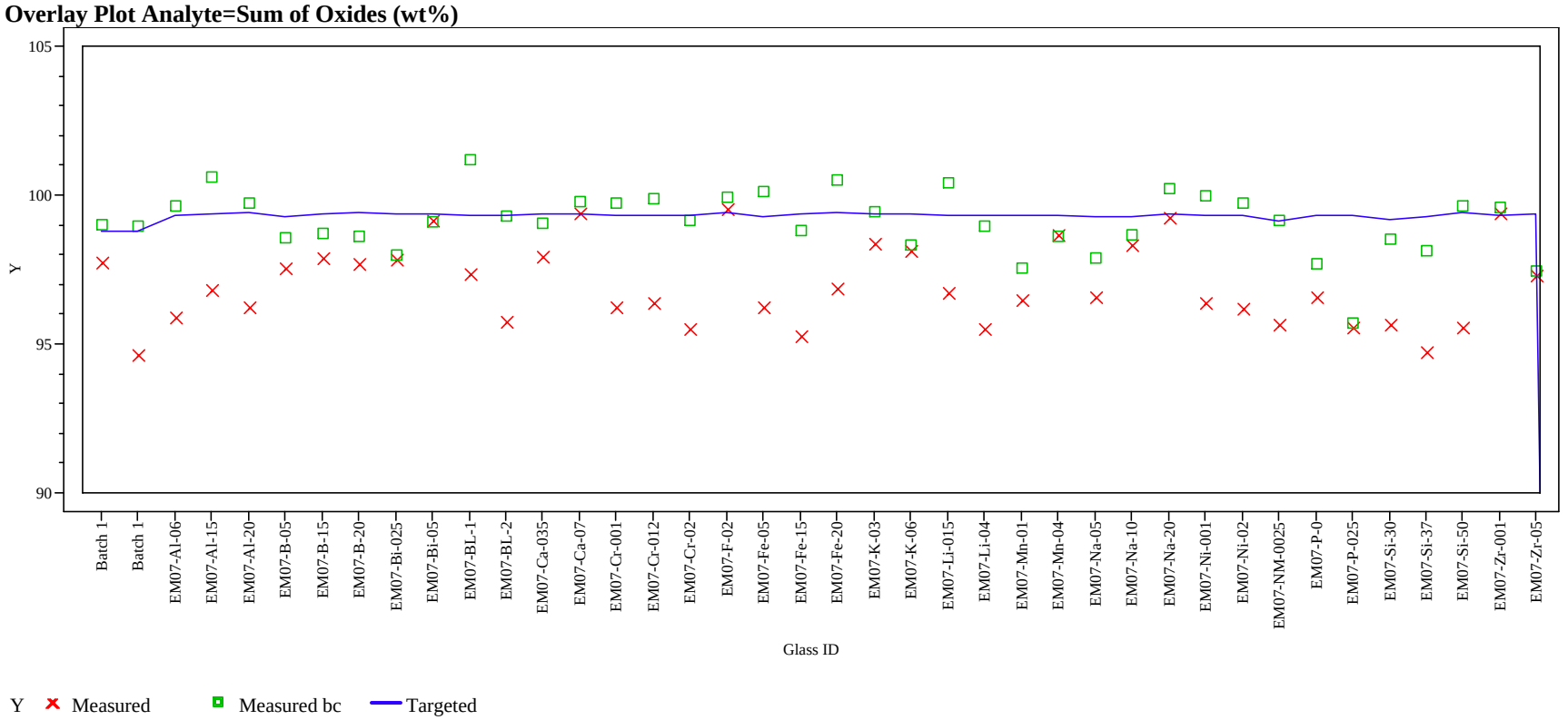


Figure A4. Average Measured and Bias-Corrected (bc) Versus Targeted Compositions by Glass # by Analyte



Appendix B:

Tables and Figures Supporting the Analysis of the PCT Results for the Test Matrix 1 Study Glasses

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Table B1. PSAL Measurements of the Test Matrix 1 PCT Solutions

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B ar	Li ar	Na ar	Si ar
1	Soln Std	ref	1	1	STD-11-1	20.3	9.73	82	49.2
1	EM07-Na-05	ccc	1	2	C01	6.43	5.54	0.861	35.2
1	EM07-Zr-05	ccc	1	3	C10	6.9	3.42	26.7	30.5
1	blank	ref	1	4	C08	<0.100	<1.00	<0.100	<0.100
1	EM07-Li-015	quenched	1	5	C58	7.1	1.97	28.6	30.9
1	EM07-F-02	ccc	1	6	C62	7.2	3.23	27.7	33.1
1	EM07-Ni-001	quenched	1	7	C32	7.61	3.62	32.1	33.5
1	EM07-Zr-001	ccc	1	8	C50	8.7	3.82	32.7	42.6
1	EM07-Li-04	quenched	1	9	C06	9.28	5.78	36.7	37.5
1	EM07-Ni-001	ccc	1	10	C22	7.58	3.62	30.7	36.2
1	EM07-Ni-02	ccc	1	11	C35	7.9	3.69	30.6	36.3
1	EM07-F-02	quenched	1	12	C17	7.19	3.45	29.6	31.2
1	Soln Std	ref	1	13	STD-11-2	19.7	10	82.6	50.7
1	EM07-Na-20	quenched	1	14	C36	15.2	3.55	84.7	42.8
1	EM07-Zr-001	quenched	1	15	C47	9.16	3.79	36	40.7
1	EM07-Li-04	ccc	1	16	C18	9.09	5.8	35.4	39.8
1	EM07-Na-10	quenched	1	17	C54	7.05	5.5	10	35.3
1	ARM-1	ref	1	18	C40	9.52	7.93	22.7	35.3
1	EM07-Zr-05	quenched	1	19	C04	7.1	3.65	30.6	30.4
1	EM07-Na-05	quenched	1	20	C11	6.24	5.47	1.22	36.9
1	EM07-Na-20	ccc	1	21	C21	17.9	4.69	89	46.5
1	EM07-Ni-02	quenched	1	22	C46	8.25	3.78	33.2	35.5
1	EA	ref	1	23	C33	38.3	11.7	102.6	55.3
1	EM07-Li-015	ccc	1	24	C45	7.33	2.1	28.4	35.6
1	EM07-Na-10	ccc	1	25	C65	6.24	4.62	10.5	36.9
1	Soln Std	ref	1	26	STD-11-3	19.8	10.1	83.6	50.8
1	Soln Std	ref	2	1	STD-12-1	20.7	9.78	81.6	49.7
1	EM07-Ni-001	quenched	2	2	C34	8.58	3.59	30.9	33.2
1	EA	ref	2	3	C68	38.1	11.3	103	52.7
1	EM07-Na-05	quenched	2	4	C57	6.46	4.97	<0.100	32.2
1	ARM-1	ref	2	5	C56	10.4	7.93	22.2	35
1	EM07-Li-015	ccc	2	6	C20	7.85	2.02	30.3	34.8
1	EM07-Na-05	ccc	2	7	C41	5.98	5.18	0.778	32.7
1	EM07-Na-10	quenched	2	8	C23	7.59	5.41	10.6	35
1	EM07-Na-10	ccc	2	9	C53	6.68	4.5	10.7	36.1
1	EM07-F-02	quenched	2	10	C63	8.23	3.63	31.9	32.9
1	EM07-Li-015	quenched	2	11	C24	7.62	1.93	29	31.6
1	EM07-Li-04	quenched	2	12	C52	9.81	5.71	37.2	37.5
1	Soln Std	ref	2	13	STD-12-2	20.3	9.89	81.8	50.2
1	EM07-Zr-05	quenched	2	14	C14	7.73	3.51	28.4	29.2
1	EM07-Zr-001	ccc	2	15	C12	9.25	3.78	34.6	42.2
1	EM07-F-02	ccc	2	16	C07	7.64	3.19	28.3	33.6
1	EM07-Na-20	quenched	2	17	C60	15.8	3.54	88.4	43.1
1	EM07-Ni-02	ccc	2	18	C38	8.29	3.6	31.5	35.8
1	EM07-Ni-001	ccc	2	19	C25	8.05	3.56	31	36.1
1	EM07-Li-04	ccc	2	20	C59	9.42	5.71	35.6	39.5
1	EM07-Na-20	ccc	2	21	C15	17.8	4.53	89.8	44.8
1	EM07-Zr-001	quenched	2	22	C13	9.28	3.71	35.4	39.3
1	EM07-Ni-02	quenched	2	23	C31	8.44	3.65	35.7	34.1
1	EM07-Zr-05	ccc	2	24	C48	6.83	3.36	26.9	30.3
1	Soln Std	ref	2	25	STD-12-3	19.9	9.86	82.5	49.9
1	Soln Std	ref	3	1	STD-13-1	19.8	9.67	82.8	48.1
1	EM07-Li-015	quenched	3	2	C39	7.73	1.94	31.9	30.4
1	EM07-F-02	quenched	3	3	C44	8.5	3.66	31.8	33
1	blank	ref	3	4	C26	<0.100	<1.00	<0.100	<0.100
1	EM07-Li-04	quenched	3	5	C64	9.32	5.65	37.9	36
1	EM07-Na-10	quenched	3	6	C49	7.28	5.44	10.7	34.7
1	EM07-Ni-02	ccc	3	7	C30	8.02	3.62	33.9	35.5
1	ARM-1	ref	3	8	C43	9.56	7.75	22.7	34
1	EM07-Li-04	ccc	3	9	C09	9.15	5.71	35.6	39.1

Table B1. PSAL Measurements of the Test Matrix 1 PCT Solutions

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B ar	Li ar	Na ar	Si ar
1	EM07-Zr-05	quenched	3	10	C51	7.18	3.5	28.7	28.9
1	EM07-Ni-001	quenched	3	11	C03	7.5	3.56	31	32.6
1	EM07-F-02	ccc	3	12	C19	7.09	3.2	28.5	32.7
1	Soln Std	ref	3	13	STD-13-2	19.5	9.72	81.9	49
1	EM07-Na-20	quenched	3	14	C67	15.5	3.52	88.9	42
1	EA	ref	3	15	C28	37.3	11.3	105	52.4
1	EM07-Zr-001	ccc	3	16	C37	9.41	3.89	35.2	42.8
1	EM07-Zr-05	ccc	3	17	C66	6.9	3.39	28.4	30.2
1	EM07-Na-10	ccc	3	18	C27	6.51	4.55	10.7	36
1	EM07-Li-015	ccc	3	19	C61	6.89	1.91	28.3	32.5
1	EM07-Na-05	ccc	3	20	C05	5.8	5.28	0.141	33.3
1	EM07-Na-20	ccc	3	21	C16	17.5	4.54	90.2	44.3
1	EM07-Na-05	quenched	3	22	C42	6.25	5.33	<0.100	34.8
1	EM07-Ni-02	quenched	3	23	C29	7.93	3.57	31.8	33.2
1	EM07-Zr-001	quenched	3	24	C55	8.99	3.69	34.4	39.1
1	EM07-Ni-001	ccc	3	25	C02	7.57	3.52	29.3	35.1
1	Soln Std	ref	3	26	STD-13-3	19.6	9.83	82.3	49.4
2	Soln Std	ref	1	1	STD-21-1	20.3	9.7	77.8	49.3
2	EM07-B-05	quenched	1	2	D32	4.14	3.78	40.5	42.1
2	EM07-Bi-05	quenched	1	3	D34	8.86	3.85	32.5	34.4
2	EM07-Bi-025	quenched	1	4	D41	9.1	4.05	34	36.3
2	EM07-Si-50	quenched	1	5	D51	5.99	3.48	21.7	37.5
2	EM07-P-0	ccc	1	6	D05	8.38	3.72	31.1	38.5
2	EM07-Bi-05	ccc	1	7	D37	8.83	3.98	32.2	36.5
2	ARM-1	ref	1	8	D43	9.8	7.92	19.8	35.3
2	EM07-Si-37	quenched	1	9	D24	15.4	5.02	52.5	32.1
2	EM07-P-025	ccc	1	10	D56	8.87	7.78	38.1	39
2	EA	ref	1	11	D29	36.8	11.2	101	53
2	EM07-B-20	quenched	1	12	D10	243	39.4	217	20.3
2	Soln Std	ref	1	13	STD-21-2	20.8	9.68	80.9	48.3
2	EM07-P-0	quenched	1	14	D13	9.32	3.71	32.4	35
2	blank	ref	1	15	D48	0.557	<1.00	<0.100	<0.100
2	EM07-Si-30	quenched	1	16	D20	63.2	16.8	154	36.1
2	EM07-Si-37	ccc	1	17	D16	25	7.27	66.8	36.8
2	EM07-Si-50	ccc	1	18	D01	6.27	3.37	20.2	40.2
2	EM07-B-20	ccc	1	19	D63	368	58.6	322	20.2
2	EM07-B-05	ccc	1	20	D38	5.68	3.79	39	42.4
2	EM07-Si-30	ccc	1	21	D31	1310	270	2170	92.1
2	EM07-B-15	ccc	1	22	D33	55.2	10.5	65.6	31.6
2	EM07-Bi-025	ccc	1	23	D28	14.4	3.88	30.7	37.2
2	EM07-B-15	quenched	1	24	D58	41.2	8.48	56	29.4
2	EM07-P-025	quenched	1	25	D53	11.1	3.81	32	34
2	Soln Std	ref	1	26	STD-21-3	21.8	9.66	81.3	47.9
2	Soln Std	ref	2	1	STD-22-1	19.7	9.82	79.5	48.4
2	ARM-1	ref	2	2	D42	9.3	7.93	19.9	34.2
2	EM07-Bi-05	quenched	2	3	D04	8.05	4.01	33.6	33.6
2	EM07-Bi-025	ccc	2	4	D44	7.32	3.89	31.2	35.1
2	EM07-P-0	ccc	2	5	D25	7.47	3.83	31.6	36.8
2	EM07-B-20	ccc	2	6	D21	384	58.9	317	20.8
2	EM07-Si-50	ccc	2	7	D55	6.69	3.47	20.8	38.9
2	EM07-B-20	quenched	2	8	D22	255	39.5	219	20.6
2	EM07-Si-37	ccc	2	9	D23	24.9	7.28	66.8	35.4
2	EM07-Si-30	ccc	2	10	D39	1300	306	2110	90.8
2	EM07-Si-30	quenched	2	11	D03	66.1	16.4	155	34.5
2	EM07-Si-37	quenched	2	12	D19	20.6	5.07	52.1	31.3
2	Soln Std	ref	2	13	STD-22-2	21.2	9.7	80.4	47.6
2	EM07-P-0	quenched	2	14	D09	11.3	3.88	32.2	35.3
2	EM07-B-05	ccc	2	15	D35	6.23	4.03	39.5	43
2	EM07-P-025	quenched	2	16	D06	9.54	3.98	32.6	34.2
2	EM07-B-15	ccc	2	17	D64	45.4	10.3	65.3	30.7

Table B1. PSAL Measurements of the Test Matrix 1 PCT Solutions

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B ar	Li ar	Na ar	Si ar
2	EM07-B-15	quenched	2	18	D36	35.7	8.37	54.7	28.4
2	EA	ref	2	19	D57	35.9	11.2	101	51.4
2	EM07-Bi-025	quenched	2	20	D67	9.12	4.04	35.2	34.2
2	EM07-Si-50	quenched	2	21	D49	6.32	3.62	20.6	35.9
2	EM07-Bi-05	ccc	2	22	D26	8.93	3.97	31	34.7
2	EM07-B-05	quenched	2	23	D18	3.94	3.96	42.5	40.8
2	EM07-P-025	ccc	2	24	D62	8.81	7.8	38.3	38.5
2	Soln Std	ref	2	25	STD-22-3	19.1	9.71	79	47.6
2	Soln Std	ref	3	1	STD-23-1	19.4	9.58	78.2	48.1
2	blank	ref	3	2	D02	<0.100	<1.00	0.72	<0.100
2	EM07-P-025	ccc	3	3	D59	8.32	7.63	37.8	37.9
2	EM07-Bi-05	quenched	3	4	D45	7.81	3.75	32.9	32.4
2	ARM-1	ref	3	5	D66	9.59	8.02	20.5	35.4
2	EM07-Si-37	ccc	3	6	D46	23.7	7.27	66.9	36.7
2	EM07-Si-30	ccc	3	7	D68	1290	307	2310	92.7
2	EM07-Si-30	quenched	3	8	D54	64.8	16.5	153	34.8
2	EM07-B-05	quenched	3	9	D15	8.05	3.78	41.4	40.9
2	EM07-P-0	ccc	3	10	D30	11.1	3.68	31.6	36.4
2	EM07-P-0	quenched	3	11	D50	10.6	3.67	33.3	34
2	EM07-B-15	quenched	3	12	D08	37.4	8.23	56.8	28.7
2	Soln Std	ref	3	13	STD-23-2	21.4	9.69	77.6	48.9
2	EM07-Si-50	quenched	3	14	D40	7.36	3.49	20.1	36.6
2	EM07-B-20	quenched	3	15	D12	246	38.7	228	20.3
2	EA	ref	3	16	D27	37.3	10.8	95.4	51.3
2	EM07-Si-37	quenched	3	17	D65	16.1	4.9	51.8	31
2	EM07-B-20	ccc	3	18	D61	361	56.7	330	19.7
2	EM07-Bi-025	quenched	3	19	D11	11	3.86	33.2	34.4
2	EM07-P-025	quenched	3	20	D14	10.7	4.01	33.9	36.4
2	EM07-Si-50	ccc	3	21	D52	7.3	3.33	19.6	39.5
2	EM07-B-15	ccc	3	22	D47	46.4	10.1	62.7	31.1
2	EM07-B-05	ccc	3	23	D17	4.51	3.81	39.1	43
2	EM07-Bi-025	ccc	3	24	D60	8.74	3.75	30.5	36
2	EM07-Bi-05	ccc	3	25	D07	8.56	3.75	31.7	34.1
2	Soln Std	ref	3	26	STD-23-3	19.4	9.52	77.4	47.9
3	Soln Std	ref	1	1	STD-31-1	21	9.93	82.2	51.4
3	EM07-Ca-07	ccc	1	2	E35	8.52	4.17	36.9	24.1
3	EM07-Mn-04	ccc	1	3	E23	9	3.74	31.7	36.6
3	EM07-BL-2	quenched	1	4	E52	9.05	3.74	31.6	35.4
3	EM07-Mn-01	ccc	1	5	E45	8.58	3.73	31	38.2
3	EM07-Ca-07	quenched	1	6	E34	12.2	5.06	47	28.7
3	EA	ref	1	7	E30	40.3	12	103	57.2
3	EM07-BL-2	ccc	1	8	E14	9.03	3.59	28.9	36.4
3	ARM-1	ref	1	9	E26	13.9	10	25.7	42.9
3	EM07-Mn-01	quenched	1	10	E32	8.85	3.7	31.9	36.7
3	EM07-K-06	quenched	1	11	E21	17.7	6.37	53	37
3	EM07-BL-1	quenched	1	12	E06	9.3	3.78	32.9	36.7
3	Soln Std	ref	1	13	STD-31-2	21.4	10.2	80.8	51.8
3	EM07-K-03	quenched	1	14	E13	9.91	3.66	34	33.1
3	blank	ref	1	15	E60	0.496	<1.00	<0.100	<0.100
3	EM07-Mn-04	quenched	1	16	E56	9.62	3.91	33	36.8
3	EM07-NM-0025	ccc	1	17	E43	8.92	3.65	29.9	38.9
3	EM07-K-03	ccc	1	18	E01	11.2	4.13	35.3	35.9
3	EM07-Ca-035	quenched	1	19	E59	0.399	<1.00	<0.100	<0.100
3	EM07-K-06	ccc	1	20	E09	27.9	10.2	84.3	64.6
3	EM07-Ca-035	ccc	1	21	E04	8.79	3.77	31.7	30.2
3	EM07-NM-0025	quenched	1	22	E27	9.57	3.89	31.2	36.9
3	EM07-BL-1	ccc	1	23	E31	8.77	3.7	29.5	39.1
3	Soln Std	ref	1	24	STD-31-3	21.6	10.3	79.5	53.4
3	Soln Std	ref	2	1	STD-32-1	21.1	9.9	83	51.9
3	EM07-BL-2	ccc	2	2	E16	8.72	3.46	30	36.7

Table B1. PSAL Measurements of the Test Matrix 1 PCT Solutions

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B ar	Li ar	Na ar	Si ar
3	EM07-K-06	ccc	2	3	E33	20	7.11	61.2	36.7
3	EM07-Ca-07	quenched	2	4	E57	11.8	4.9	48.7	28.8
3	EM07-Ca-035	ccc	2	5	E49	8.04	3.57	33.7	28.9
3	EM07-K-03	ccc	2	6	E42	11.1	4.24	39	36.3
3	EM07-Ca-035	quenched	2	7	E17	9.66	3.86	37.9	30.1
3	ARM-1	ref	2	8	E50	13.1	9.88	26.8	42
3	EM07-Mn-01	ccc	2	9	E24	7.98	3.53	31	37.3
3	EA	ref	2	10	E11	40.1	11.7	107	56.8
3	EM07-BL-2	quenched	2	11	E02	8.73	3.59	32.3	35.2
3	EM07-K-06	quenched	2	12	E28	16	5.85	52	34.8
3	Soln Std	ref	2	13	STD-32-2	20.3	9.86	82.6	50.7
3	EM07-NM-0025	quenched	2	14	E40	8.89	3.62	32.1	34.8
3	EM07-Ca-07	ccc	2	15	E20	8.43	4.16	37.8	24.8
3	EM07-Mn-04	quenched	2	16	E62	9.27	3.83	35.3	37
3	EM07-Mn-04	ccc	2	17	E58	8.34	3.61	32.1	36.9
3	EM07-K-03	quenched	2	18	E36	9.01	3.46	35.3	31.3
3	EM07-Mn-01	quenched	2	19	E08	8.04	3.57	33.3	36.5
3	EM07-BL-1	quenched	2	20	E39	8.22	3.52	33.1	35.2
3	EM07-NM-0025	ccc	2	21	E54	8.22	3.51	30.9	38.6
3	EM07-BL-1	ccc	2	22	E03	7.93	3.53	31.2	37.6
3	Soln Std	ref	2	23	STD-32-3	20.1	9.89	83.4	50.6
3	Soln Std	ref	3	1	STD-33-1	21	9.89	82.1	51.8
3	EM07-Ca-07	quenched	3	2	E44	12.4	4.9	47.8	29.4
3	EM07-K-06	ccc	3	3	E15	20	7.04	59.4	37.8
3	EM07-NM-0025	quenched	3	4	E51	9.07	3.64	32.5	35.3
3	EA	ref	3	5	E41	39.7	11.6	104	56.6
3	EM07-Ca-035	ccc	3	6	E47	8.41	3.5	32.4	29.5
3	EM07-Ca-07	ccc	3	7	E29	8.73	4.23	37.9	25.6
3	EM07-BL-2	ccc	3	8	E46	8.5	3.47	30.1	37
3	ARM-1	ref	3	9	E19	13.3	9.68	25.9	43
3	EM07-Mn-01	quenched	3	10	E18	8.44	3.57	32.7	37.7
3	EM07-Ca-035	quenched	3	11	E10	9.7	3.8	36.6	31.1
3	EM07-K-03	quenched	3	12	E25	9.54	3.54	35.1	33.3
3	Soln Std	ref	3	13	STD-33-2	21.5	10.2	81.4	54.8
3	blank	ref	3	14	E22	0.54	<1.00	<0.100	<0.100
3	EM07-BL-1	quenched	3	15	E48	8.95	3.59	32.4	38.3
3	EM07-BL-1	ccc	3	16	E37	8.41	3.55	30.9	39.6
3	EM07-Mn-04	ccc	3	17	E53	8.75	3.65	32	38.8
3	EM07-K-06	quenched	3	18	E61	15.7	5.74	50	35.9
3	EM07-Mn-01	ccc	3	19	E07	8.51	3.63	31.7	39.6
3	EM07-Mn-04	quenched	3	20	E05	9.63	3.9	35	39.3
3	EM07-BL-2	quenched	3	21	E12	8.83	3.59	31.9	36.4
3	EM07-K-03	ccc	3	22	E38	10.6	3.97	36	36.3
3	EM07-NM-0025	ccc	3	23	E55	8.43	3.5	30.4	39.4
3	Soln Std	ref	3	24	STD-23-2	20.4	9.89	80.9	52.6
4	Soln Std	ref	1	1	STD-31-1	21.1	10	82.4	52.1
4	EM07-Fe-15	ccc	1	2	F18	9.07	3.62	30.1	39.7
4	EM07-Al-20	ccc	1	3	F03	8.34	4.44	22.9	37.5
4	EM07-Fe-05	ccc	1	4	F33	9.18	3.66	32.2	38.8
4	EM07-Fe-20	ccc	1	5	F34	8.05	3.14	28.1	37.8
4	EM07-Cr-012	quenched	1	6	F52	9.17	3.88	33.5	37.5
4	blank	ref	1	7	F32	0.289	<1.00	<0.100	0.916
4	ARM-1	ref	1	8	F04	12.8	9.49	25.5	41.6
4	EM07-Cr-001	quenched	1	9	F02	9.49	3.92	33.3	37.7
4	EM07-Al-15	ccc	1	10	F24	7.18	3.51	24.9	37.2
4	EM07-Cr-012	ccc	1	11	F44	9.64	4.05	33.2	42.4
4	EM07-Fe-15	quenched	1	12	F56	9.26	4.08	31.1	36.2
4	Soln Std	ref	1	13	STD-31-2	20.8	10	80.7	52.6
4	EM07-Fe-20	quenched	1	14	F62	9.51	4.1	29.1	34.7
4	EM07-Al-06	quenched	1	15	F37	13.6	4.65	44.9	41.4

Table B1. PSAL Measurements of the Test Matrix 1 PCT Solutions

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B ar	Li ar	Na ar	Si ar
4	EM07-Al-06	ccc	1	16	F11	11.8	4.2	35.6	32.2
4	EA	ref	1	17	F31	33	10	87.7	50.4
4	EM07-Cr-02	quenched	1	18	F14	9.51	3.86	32.7	39.2
4	EM07-Cr-001	ccc	1	19	F50	9.85	4.02	31.8	41.8
4	EM07-Al-20	quenched	1	20	F05	7.62	4.5	22.2	38.3
4	EM07-Cr-02	ccc	1	21	F13	8.71	3.6	29	39.8
4	EM07-Al-15	quenched	1	22	F40	7.91	3.9	25.5	34.6
4	EM07-Fe-05	quenched	1	23	F51	9.68	3.6	34.6	37.1
4	Soln Std	ref	1	24	STD-31-3	20.5	9.89	79.8	52.4
4	Soln Std	ref	2	1	STD-32-1	20.7	9.8	83.3	51.3
4	EM07-Fe-15	quenched	2	2	F10	9.06	3.96	31.7	34.5
4	EM07-Al-06	ccc	2	3	F16	11.5	4.21	36.5	31.9
4	EM07-Al-20	quenched	2	4	F57	11.8	7.22	38.1	60.6
4	EM07-Cr-001	quenched	2	5	F01	9.12	3.87	32.8	37.7
4	EM07-Al-20	ccc	2	6	F17	7.85	4.43	23.4	37.5
4	EM07-Fe-05	ccc	2	7	F47	8.91	3.72	32.8	39.3
4	EM07-Cr-02	quenched	2	8	F42	8.47	3.69	32.4	36.6
4	EM07-Cr-012	quenched	2	9	F08	8.31	3.63	32	34.8
4	EM07-Cr-012	ccc	2	10	F43	8.56	3.78	32	39.6
4	ARM-1	ref	2	11	F61	12.5	9.46	26.2	41.2
4	EM07-Cr-02	ccc	2	12	F21	7.98	3.53	29.6	38.1
4	Soln Std	ref	2	13	STD-32-2	20.3	9.92	81.7	52
4	EM07-Al-15	quenched	2	14	F53	8.04	3.96	32.5	35
4	EM07-Al-15	ccc	2	15	F29	7.11	3.53	25	37.4
4	EM07-Fe-20	quenched	2	16	F49	9.16	4.24	30.6	35.5
4	EM07-Fe-05	quenched	2	17	F06	9.27	3.55	33.6	36.5
4	EA	ref	2	18	F35	32.3	9.95	88.9	50.5
4	EM07-Fe-15	ccc	2	19	F38	9.51	3.98	33	43.4
4	EM07-Al-06	quenched	2	20	F23	13.6	4.77	44.5	43.1
4	EM07-Cr-001	ccc	2	21	F45	9.7	4.14	32.5	41.7
4	EM07-Fe-20	ccc	2	22	F07	7.85	3.17	28.2	38.2
4	Soln Std	ref	2	23	STD-32-3	20.1	9.84	80.4	51.9
4	Soln Std	ref	3	1	STD-33-1	20.5	9.8	83.4	51
4	EM07-Fe-05	quenched	3	2	F39	9.41	3.42	35	35.8
4	EM07-Cr-012	ccc	3	3	F26	9.09	3.83	33.6	40.2
4	EM07-Al-15	ccc	3	4	F09	6.99	3.38	25	36.5
4	EM07-Al-20	quenched	3	5	F59	6.89	4.27	22.9	35.5
4	EM07-Cr-02	quenched	3	6	F46	8.66	3.69	33.1	37.7
4	EM07-Fe-20	ccc	3	7	F30	7.79	3.08	29.4	37.7
4	EM07-Fe-20	quenched	3	8	F55	9	4.1	31.5	34.8
4	EM07-Al-06	quenched	3	9	F15	12.9	4.5	44.8	40.4
4	EM07-Fe-05	ccc	3	10	F48	8.7	3.52	31.9	38.1
4	EA	ref	3	11	F58	29.9	9.22	83.7	47.6
4	EM07-Cr-02	ccc	3	12	F25	8.25	3.4	29.3	38.1
4	Soln Std	ref	3	13	STD-33-2	20.3	10	81.6	53.5
4	blank	ref	3	14	F19	0.477	<1.00	<0.100	<0.100
4	EM07-Fe-15	ccc	3	15	F54	8.34	3.46	29.4	38.5
4	EM07-Al-06	ccc	3	16	F36	11.3	4.05	35.1	31.4
4	EM07-Fe-15	quenched	3	17	F12	8.93	3.9	32.2	35.5
4	ARM-1	ref	3	18	F28	12.5	9.32	26.1	42.6
4	EM07-Cr-001	quenched	3	19	F41	9.19	3.81	32.7	37.9
4	EM07-Al-20	ccc	3	20	F60	7.93	4.3	22	37.9
4	EM07-Cr-001	ccc	3	21	F22	9.45	4	32.3	41.3
4	EM07-Cr-012	quenched	3	22	F20	8.87	3.67	31.5	37.2
4	EM07-Al-15	quenched	3	23	F27	7.63	3.83	25.9	34.6
4	Soln Std	ref	3	24	STD-23-2	20.1	9.72	79.7	52.2

Table B2. PSAL Measurements of the Test Matrix 1 PCT Solutions After Appropriate Adjustments

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B (ppm)	Li (ppm)	Na (ppm)	Si (ppm)
1	Soln Std	ref	1	1	STD-11-1	20.3	9.73	82	49.2
1	EM07-Na-05	ccc	1	2	C01	6.43	5.54	0.861	35.2
1	EM07-Zr-05	ccc	1	3	C10	6.9	3.42	26.7	30.5
1	blank	ref	1	4	C08	<0.100	<1.00	<0.100	<0.100
1	EM07-Li-015	quenched	1	5	C58	7.1	1.97	28.6	30.9
1	EM07-F-02	ccc	1	6	C62	7.2	3.23	27.7	33.1
1	EM07-Ni-001	quenched	1	7	C32	7.61	3.62	32.1	33.5
1	EM07-Zr-001	ccc	1	8	C50	8.7	3.82	32.7	42.6
1	EM07-Li-04	quenched	1	9	C06	9.28	5.78	36.7	37.5
1	EM07-Ni-001	ccc	1	10	C22	7.58	3.62	30.7	36.2
1	EM07-Ni-02	ccc	1	11	C35	7.9	3.69	30.6	36.3
1	EM07-F-02	quenched	1	12	C17	7.19	3.45	29.6	31.2
1	Soln Std	ref	1	13	STD-11-2	19.7	10	82.6	50.7
1	EM07-Na-20	quenched	1	14	C36	15.2	3.55	84.7	42.8
1	EM07-Zr-001	quenched	1	15	C47	9.16	3.79	36	40.7
1	EM07-Li-04	ccc	1	16	C18	9.09	5.8	35.4	39.8
1	EM07-Na-10	quenched	1	17	C54	7.05	5.5	10	35.3
1	ARM-1	ref	1	18	C40	9.52	7.93	22.7	35.3
1	EM07-Zr-05	quenched	1	19	C04	7.1	3.65	30.6	30.4
1	EM07-Na-05	quenched	1	20	C11	6.24	5.47	1.22	36.9
1	EM07-Na-20	ccc	1	21	C21	17.9	4.69	89	46.5
1	EM07-Ni-02	quenched	1	22	C46	8.25	3.78	33.2	35.5
1	EA	ref	1	23	C33	38.3	11.7	102.6	55.3
1	EM07-Li-015	ccc	1	24	C45	7.33	2.1	28.4	35.6
1	EM07-Na-10	ccc	1	25	C65	6.24	4.62	10.5	36.9
1	Soln Std	ref	1	26	STD-11-3	19.8	10.1	83.6	50.8
1	Soln Std	ref	2	1	STD-12-1	20.7	9.78	81.6	49.7
1	EM07-Ni-001	quenched	2	2	C34	8.58	3.59	30.9	33.2
1	EA	ref	2	3	C68	38.1	11.3	103	52.7
1	EM07-Na-05	quenched	2	4	C57	6.46	4.97	<0.100	32.2
1	ARM-1	ref	2	5	C56	10.4	7.93	22.2	35
1	EM07-Li-015	ccc	2	6	C20	7.85	2.02	30.3	34.8
1	EM07-Na-05	ccc	2	7	C41	5.98	5.18	0.778	32.7
1	EM07-Na-10	quenched	2	8	C23	7.59	5.41	10.6	35
1	EM07-Na-10	ccc	2	9	C53	6.68	4.5	10.7	36.1
1	EM07-F-02	quenched	2	10	C63	8.23	3.63	31.9	32.9
1	EM07-Li-015	quenched	2	11	C24	7.62	1.93	29	31.6
1	EM07-Li-04	quenched	2	12	C52	9.81	5.71	37.2	37.5
1	Soln Std	ref	2	13	STD-12-2	20.3	9.89	81.8	50.2
1	EM07-Zr-05	quenched	2	14	C14	7.73	3.51	28.4	29.2
1	EM07-Zr-001	ccc	2	15	C12	9.25	3.78	34.6	42.2
1	EM07-F-02	ccc	2	16	C07	7.64	3.19	28.3	33.6
1	EM07-Na-20	quenched	2	17	C60	15.8	3.54	88.4	43.1
1	EM07-Ni-02	ccc	2	18	C38	8.29	3.6	31.5	35.8
1	EM07-Ni-001	ccc	2	19	C25	8.05	3.56	31	36.1
1	EM07-Li-04	ccc	2	20	C59	9.42	5.71	35.6	39.5
1	EM07-Na-20	ccc	2	21	C15	17.8	4.53	89.8	44.8
1	EM07-Zr-001	quenched	2	22	C13	9.28	3.71	35.4	39.3
1	EM07-Ni-02	quenched	2	23	C31	8.44	3.65	35.7	34.1
1	EM07-Zr-05	ccc	2	24	C48	6.83	3.36	26.9	30.3
1	Soln Std	ref	2	25	STD-12-3	19.9	9.86	82.5	49.9
1	Soln Std	ref	3	1	STD-13-1	19.8	9.67	82.8	48.1
1	EM07-Li-015	quenched	3	2	C39	7.73	1.94	31.9	30.4
1	EM07-F-02	quenched	3	3	C44	8.5	3.66	31.8	33
1	blank	ref	3	4	C26	<0.100	<1.00	<0.100	<0.100
1	EM07-Li-04	quenched	3	5	C64	9.32	5.65	37.9	36
1	EM07-Na-10	quenched	3	6	C49	7.28	5.44	10.7	34.7
1	EM07-Ni-02	ccc	3	7	C30	8.02	3.62	33.9	35.5

Table B2. PSAL Measurements of the Test Matrix 1 PCT Solutions After Appropriate Adjustments

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B (ppm)	Li (ppm)	Na (ppm)	Si (ppm)
1	ARM-1	ref	3	8	C43	9.56	7.75	22.7	34
1	EM07-Li-04	ccc	3	9	C09	9.15	5.71	35.6	39.1
1	EM07-Zr-05	quenched	3	10	C51	7.18	3.5	28.7	28.9
1	EM07-Ni-001	quenched	3	11	C03	7.5	3.56	31	32.6
1	EM07-F-02	ccc	3	12	C19	7.09	3.2	28.5	32.7
1	Soln Std	ref	3	13	STD-13-2	19.5	9.72	81.9	49
1	EM07-Na-20	quenched	3	14	C67	15.5	3.52	88.9	42
1	EA	ref	3	15	C28	37.3	11.3	105	52.4
1	EM07-Zr-001	ccc	3	16	C37	9.41	3.89	35.2	42.8
1	EM07-Zr-05	ccc	3	17	C66	6.9	3.39	28.4	30.2
1	EM07-Na-10	ccc	3	18	C27	6.51	4.55	10.7	36
1	EM07-Li-015	ccc	3	19	C61	6.89	1.91	28.3	32.5
1	EM07-Na-05	ccc	3	20	C05	5.8	5.28	0.141	33.3
1	EM07-Na-20	ccc	3	21	C16	17.5	4.54	90.2	44.3
1	EM07-Na-05	quenched	3	22	C42	6.25	5.33	<0.100	34.8
1	EM07-Ni-02	quenched	3	23	C29	7.93	3.57	31.8	33.2
1	EM07-Zr-001	quenched	3	24	C55	8.99	3.69	34.4	39.1
1	EM07-Ni-001	ccc	3	25	C02	7.57	3.52	29.3	35.1
1	Soln Std	ref	3	26	STD-13-3	19.6	9.83	82.3	49.4
2	Soln Std	ref	1	1	STD-21-1	20.3	9.7	77.8	49.3
2	EM07-B-05	quenched	1	2	D32	4.14	3.78	40.5	42.1
2	EM07-Bi-05	quenched	1	3	D34	8.86	3.85	32.5	34.4
2	EM07-Bi-025	quenched	1	4	D41	9.1	4.05	34	36.3
2	EM07-Si-50	quenched	1	5	D51	5.99	3.48	21.7	37.5
2	EM07-P-0	ccc	1	6	D05	8.38	3.72	31.1	38.5
2	EM07-Bi-05	ccc	1	7	D37	8.83	3.98	32.2	36.5
2	ARM-1	ref	1	8	D43	9.8	7.92	19.8	35.3
2	EM07-Si-37	quenched	1	9	D24	15.4	5.02	52.5	32.1
2	EM07-P-025	ccc	1	10	D56	8.87	7.78	38.1	39
2	EA	ref	1	11	D29	36.8	11.2	101	53
2	EM07-B-20	quenched	1	12	D10	243	39.4	217	20.3
2	Soln Std	ref	1	13	STD-21-2	20.8	9.68	80.9	48.3
2	EM07-P-0	quenched	1	14	D13	9.32	3.71	32.4	35
2	blank	ref	1	15	D48	0.557	<1.00	<0.100	<0.100
2	EM07-Si-30	quenched	1	16	D20	63.2	16.8	154	36.1
2	EM07-Si-37	ccc	1	17	D16	25	7.27	66.8	36.8
2	EM07-Si-50	ccc	1	18	D01	6.27	3.37	20.2	40.2
2	EM07-B-20	ccc	1	19	D63	368	58.6	322	20.2
2	EM07-B-05	ccc	1	20	D38	5.68	3.79	39	42.4
2	EM07-Si-30	ccc	1	21	D31	1310	270	2170	92.1
2	EM07-B-15	ccc	1	22	D33	55.2	10.5	65.6	31.6
2	EM07-Bi-025	ccc	1	23	D28	14.4	3.88	30.7	37.2
2	EM07-B-15	quenched	1	24	D58	41.2	8.48	56	29.4
2	EM07-P-025	quenched	1	25	D53	11.1	3.81	32	34
2	Soln Std	ref	1	26	STD-21-3	21.8	9.66	81.3	47.9
2	Soln Std	ref	2	1	STD-22-1	19.7	9.82	79.5	48.4
2	ARM-1	ref	2	2	D42	9.3	7.93	19.9	34.2
2	EM07-Bi-05	quenched	2	3	D04	8.05	4.01	33.6	33.6
2	EM07-Bi-025	ccc	2	4	D44	7.32	3.89	31.2	35.1
2	EM07-P-0	ccc	2	5	D25	7.47	3.83	31.6	36.8
2	EM07-B-20	ccc	2	6	D21	384	58.9	317	20.8
2	EM07-Si-50	ccc	2	7	D55	6.69	3.47	20.8	38.9
2	EM07-B-20	quenched	2	8	D22	255	39.5	219	20.6
2	EM07-Si-37	ccc	2	9	D23	24.9	7.28	66.8	35.4
2	EM07-Si-30	ccc	2	10	D39	1300	306	2110	90.8
2	EM07-Si-30	quenched	2	11	D03	66.1	16.4	155	34.5
2	EM07-Si-37	quenched	2	12	D19	20.6	5.07	52.1	31.3
2	Soln Std	ref	2	13	STD-22-2	21.2	9.7	80.4	47.6

Table B2. PSAL Measurements of the Test Matrix 1 PCT Solutions After Appropriate Adjustments

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B (ppm)	Li (ppm)	Na (ppm)	Si (ppm)
2	EM07-P-0	quenched	2	14	D09	11.3	3.88	32.2	35.3
2	EM07-B-05	ccc	2	15	D35	6.23	4.03	39.5	43
2	EM07-P-025	quenched	2	16	D06	9.54	3.98	32.6	34.2
2	EM07-B-15	ccc	2	17	D64	45.4	10.3	65.3	30.7
2	EM07-B-15	quenched	2	18	D36	35.7	8.37	54.7	28.4
2	EA	ref	2	19	D57	35.9	11.2	101	51.4
2	EM07-Bi-025	quenched	2	20	D67	9.12	4.04	35.2	34.2
2	EM07-Si-50	quenched	2	21	D49	6.32	3.62	20.6	35.9
2	EM07-Bi-05	ccc	2	22	D26	8.93	3.97	31	34.7
2	EM07-B-05	quenched	2	23	D18	3.94	3.96	42.5	40.8
2	EM07-P-025	ccc	2	24	D62	8.81	7.8	38.3	38.5
2	Soln Std	ref	2	25	STD-22-3	19.1	9.71	79	47.6
2	Soln Std	ref	3	1	STD-23-1	19.4	9.58	78.2	48.1
2	blank	ref	3	2	D02	<0.100	<1.00	0.72	<0.100
2	EM07-P-025	ccc	3	3	D59	8.32	7.63	37.8	37.9
2	EM07-Bi-05	quenched	3	4	D45	7.81	3.75	32.9	32.4
2	ARM-1	ref	3	5	D66	9.59	8.02	20.5	35.4
2	EM07-Si-37	ccc	3	6	D46	23.7	7.27	66.9	36.7
2	EM07-Si-30	ccc	3	7	D68	1290	307	2310	92.7
2	EM07-Si-30	quenched	3	8	D54	64.8	16.5	153	34.8
2	EM07-B-05	quenched	3	9	D15	8.05	3.78	41.4	40.9
2	EM07-P-0	ccc	3	10	D30	11.1	3.68	31.6	36.4
2	EM07-P-0	quenched	3	11	D50	10.6	3.67	33.3	34
2	EM07-B-15	quenched	3	12	D08	37.4	8.23	56.8	28.7
2	Soln Std	ref	3	13	STD-23-2	21.4	9.69	77.6	48.9
2	EM07-Si-50	quenched	3	14	D40	7.36	3.49	20.1	36.6
2	EM07-B-20	quenched	3	15	D12	246	38.7	228	20.3
2	EA	ref	3	16	D27	37.3	10.8	95.4	51.3
2	EM07-Si-37	quenched	3	17	D65	16.1	4.9	51.8	31
2	EM07-B-20	ccc	3	18	D61	361	56.7	330	19.7
2	EM07-Bi-025	quenched	3	19	D11	11	3.86	33.2	34.4
2	EM07-P-025	quenched	3	20	D14	10.7	4.01	33.9	36.4
2	EM07-Si-50	ccc	3	21	D52	7.3	3.33	19.6	39.5
2	EM07-B-15	ccc	3	22	D47	46.4	10.1	62.7	31.1
2	EM07-B-05	ccc	3	23	D17	4.51	3.81	39.1	43
2	EM07-Bi-025	ccc	3	24	D60	8.74	3.75	30.5	36
2	EM07-Bi-05	ccc	3	25	D07	8.56	3.75	31.7	34.1
2	Soln Std	ref	3	26	STD-23-3	19.4	9.52	77.4	47.9
3	Soln Std	ref	1	1	STD-31-1	21	9.93	82.2	51.4
3	EM07-Ca-07	ccc	1	2	E35	8.52	4.17	36.9	24.1
3	EM07-Mn-04	ccc	1	3	E23	9	3.74	31.7	36.6
3	EM07-BL-2	quenched	1	4	E52	9.05	3.74	31.6	35.4
3	EM07-Mn-01	ccc	1	5	E45	8.58	3.73	31	38.2
3	EM07-Ca-07	quenched	1	6	E34	12.2	5.06	47	28.7
3	EA	ref	1	7	E30	40.3	12	103	57.2
3	EM07-BL-2	ccc	1	8	E14	9.03	3.59	28.9	36.4
3	ARM-1	ref	1	9	E26	13.9	10	25.7	42.9
3	EM07-Mn-01	quenched	1	10	E32	8.85	3.7	31.9	36.7
3	EM07-K-06	quenched	1	11	E21	17.7	6.37	53	37
3	EM07-BL-1	quenched	1	12	E06	9.3	3.78	32.9	36.7
3	Soln Std	ref	1	13	STD-31-2	21.4	10.2	80.8	51.8
3	EM07-K-03	quenched	1	14	E13	9.91	3.66	34	33.1
3	blank	ref	1	15	E60	0.496	<1.00	<0.100	<0.100
3	EM07-Mn-04	quenched	1	16	E56	9.62	3.91	33	36.8
3	EM07-NM-0025	ccc	1	17	E43	8.92	3.65	29.9	38.9
3	EM07-K-03	ccc	1	18	E01	11.2	4.13	35.3	35.9
3	EM07-Ca-035	quenched	1	19	E59	0.399	<1.00	<0.100	<0.100
3	EM07-K-06	ccc	1	20	E09	27.9	10.2	84.3	64.6

Table B2. PSAL Measurements of the Test Matrix 1 PCT Solutions After Appropriate Adjustments

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B (ppm)	Li (ppm)	Na (ppm)	Si (ppm)
3	EM07-Ca-035	ccc	1	21	E04	8.79	3.77	31.7	30.2
3	EM07-NM-0025	quenched	1	22	E27	9.57	3.89	31.2	36.9
3	EM07-BL-1	ccc	1	23	E31	8.77	3.7	29.5	39.1
3	Soln Std	ref	1	24	STD-31-3	21.6	10.3	79.5	53.4
3	Soln Std	ref	2	1	STD-32-1	21.1	9.9	83	51.9
3	EM07-BL-2	ccc	2	2	E16	8.72	3.46	30	36.7
3	EM07-K-06	ccc	2	3	E33	20	7.11	61.2	36.7
3	EM07-Ca-07	quenched	2	4	E57	11.8	4.9	48.7	28.8
3	EM07-Ca-035	ccc	2	5	E49	8.04	3.57	33.7	28.9
3	EM07-K-03	ccc	2	6	E42	11.1	4.24	39	36.3
3	EM07-Ca-035	quenched	2	7	E17	9.66	3.86	37.9	30.1
3	ARM-1	ref	2	8	E50	13.1	9.88	26.8	42
3	EM07-Mn-01	ccc	2	9	E24	7.98	3.53	31	37.3
3	EA	ref	2	10	E11	40.1	11.7	107	56.8
3	EM07-BL-2	quenched	2	11	E02	8.73	3.59	32.3	35.2
3	EM07-K-06	quenched	2	12	E28	16	5.85	52	34.8
3	Soln Std	ref	2	13	STD-32-2	20.3	9.86	82.6	50.7
3	EM07-NM-0025	quenched	2	14	E40	8.89	3.62	32.1	34.8
3	EM07-Ca-07	ccc	2	15	E20	8.43	4.16	37.8	24.8
3	EM07-Mn-04	quenched	2	16	E62	9.27	3.83	35.3	37
3	EM07-Mn-04	ccc	2	17	E58	8.34	3.61	32.1	36.9
3	EM07-K-03	quenched	2	18	E36	9.01	3.46	35.3	31.3
3	EM07-Mn-01	quenched	2	19	E08	8.04	3.57	33.3	36.5
3	EM07-BL-1	quenched	2	20	E39	8.22	3.52	33.1	35.2
3	EM07-NM-0025	ccc	2	21	E54	8.22	3.51	30.9	38.6
3	EM07-BL-1	ccc	2	22	E03	7.93	3.53	31.2	37.6
3	Soln Std	ref	2	23	STD-32-3	20.1	9.89	83.4	50.6
3	Soln Std	ref	3	1	STD-33-1	21	9.89	82.1	51.8
3	EM07-Ca-07	quenched	3	2	E44	12.4	4.9	47.8	29.4
3	EM07-K-06	ccc	3	3	E15	20	7.04	59.4	37.8
3	EM07-NM-0025	quenched	3	4	E51	9.07	3.64	32.5	35.3
3	EA	ref	3	5	E41	39.7	11.6	104	56.6
3	EM07-Ca-035	ccc	3	6	E47	8.41	3.5	32.4	29.5
3	EM07-Ca-07	ccc	3	7	E29	8.73	4.23	37.9	25.6
3	EM07-BL-2	ccc	3	8	E46	8.5	3.47	30.1	37
3	ARM-1	ref	3	9	E19	13.3	9.68	25.9	43
3	EM07-Mn-01	quenched	3	10	E18	8.44	3.57	32.7	37.7
3	EM07-Ca-035	quenched	3	11	E10	9.7	3.8	36.6	31.1
3	EM07-K-03	quenched	3	12	E25	9.54	3.54	35.1	33.3
3	Soln Std	ref	3	13	STD-33-2	21.5	10.2	81.4	54.8
3	blank	ref	3	14	E22	0.54	<1.00	<0.100	<0.100
3	EM07-BL-1	quenched	3	15	E48	8.95	3.59	32.4	38.3
3	EM07-BL-1	ccc	3	16	E37	8.41	3.55	30.9	39.6
3	EM07-Mn-04	ccc	3	17	E53	8.75	3.65	32	38.8
3	EM07-K-06	quenched	3	18	E61	15.7	5.74	50	35.9
3	EM07-Mn-01	ccc	3	19	E07	8.51	3.63	31.7	39.6
3	EM07-Mn-04	quenched	3	20	E05	9.63	3.9	35	39.3
3	EM07-BL-2	quenched	3	21	E12	8.83	3.59	31.9	36.4
3	EM07-K-03	ccc	3	22	E38	10.6	3.97	36	36.3
3	EM07-NM-0025	ccc	3	23	E55	8.43	3.5	30.4	39.4
3	Soln Std	ref	3	24	STD-23-2	20.4	9.89	80.9	52.6
4	Soln Std	ref	1	1	STD-31-1	21.1	10	82.4	52.1
4	EM07-Fe-15	ccc	1	2	F18	9.07	3.62	30.1	39.7
4	EM07-Al-20	ccc	1	3	F03	8.34	4.44	22.9	37.5
4	EM07-Fe-05	ccc	1	4	F33	9.18	3.66	32.2	38.8
4	EM07-Fe-20	ccc	1	5	F34	8.05	3.14	28.1	37.8
4	EM07-Cr-012	quenched	1	6	F52	9.17	3.88	33.5	37.5
4	blank	ref	1	7	F32	0.289	<1.00	<0.100	0.916

Table B2. PSAL Measurements of the Test Matrix 1 PCT Solutions After Appropriate Adjustments

Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B (ppm)	Li (ppm)	Na (ppm)	Si (ppm)
4	ARM-1	ref	1	8	F04	12.8	9.49	25.5	41.6
4	EM07-Cr-001	quenched	1	9	F02	9.49	3.92	33.3	37.7
4	EM07-Al-15	ccc	1	10	F24	7.18	3.51	24.9	37.2
4	EM07-Cr-012	ccc	1	11	F44	9.64	4.05	33.2	42.4
4	EM07-Fe-15	quenched	1	12	F56	9.26	4.08	31.1	36.2
4	Soln Std	ref	1	13	STD-31-2	20.8	10	80.7	52.6
4	EM07-Fe-20	quenched	1	14	F62	9.51	4.1	29.1	34.7
4	EM07-Al-06	quenched	1	15	F37	13.6	4.65	44.9	41.4
4	EM07-Al-06	ccc	1	16	F11	11.8	4.2	35.6	32.2
4	EA	ref	1	17	F31	33	10	87.7	50.4
4	EM07-Cr-02	quenched	1	18	F14	9.51	3.86	32.7	39.2
4	EM07-Cr-001	ccc	1	19	F50	9.85	4.02	31.8	41.8
4	EM07-Al-20	quenched	1	20	F05	7.62	4.5	22.2	38.3
4	EM07-Cr-02	ccc	1	21	F13	8.71	3.6	29	39.8
4	EM07-Al-15	quenched	1	22	F40	7.91	3.9	25.5	34.6
4	EM07-Fe-05	quenched	1	23	F51	9.68	3.6	34.6	37.1
4	Soln Std	ref	1	24	STD-31-3	20.5	9.89	79.8	52.4
4	Soln Std	ref	2	1	STD-32-1	20.7	9.8	83.3	51.3
4	EM07-Fe-15	quenched	2	2	F10	9.06	3.96	31.7	34.5
4	EM07-Al-06	ccc	2	3	F16	11.5	4.21	36.5	31.9
4	EM07-Al-20	quenched	2	4	F57	11.8	7.22	38.1	60.6
4	EM07-Cr-001	quenched	2	5	F01	9.12	3.87	32.8	37.7
4	EM07-Al-20	ccc	2	6	F17	7.85	4.43	23.4	37.5
4	EM07-Fe-05	ccc	2	7	F47	8.91	3.72	32.8	39.3
4	EM07-Cr-02	quenched	2	8	F42	8.47	3.69	32.4	36.6
4	EM07-Cr-012	quenched	2	9	F08	8.31	3.63	32	34.8
4	EM07-Cr-012	ccc	2	10	F43	8.56	3.78	32	39.6
4	ARM-1	ref	2	11	F61	12.5	9.46	26.2	41.2
4	EM07-Cr-02	ccc	2	12	F21	7.98	3.53	29.6	38.1
4	Soln Std	ref	2	13	STD-32-2	20.3	9.92	81.7	52
4	EM07-Al-15	quenched	2	14	F53	8.04	3.96	32.5	35
4	EM07-Al-15	ccc	2	15	F29	7.11	3.53	25	37.4
4	EM07-Fe-20	quenched	2	16	F49	9.16	4.24	30.6	35.5
4	EM07-Fe-05	quenched	2	17	F06	9.27	3.55	33.6	36.5
4	EA	ref	2	18	F35	32.3	9.95	88.9	50.5
4	EM07-Fe-15	ccc	2	19	F38	9.51	3.98	33	43.4
4	EM07-Al-06	quenched	2	20	F23	13.6	4.77	44.5	43.1
4	EM07-Cr-001	ccc	2	21	F45	9.7	4.14	32.5	41.7
4	EM07-Fe-20	ccc	2	22	F07	7.85	3.17	28.2	38.2
4	Soln Std	ref	2	23	STD-32-3	20.1	9.84	80.4	51.9
4	Soln Std	ref	3	1	STD-33-1	20.5	9.8	83.4	51
4	EM07-Fe-05	quenched	3	2	F39	9.41	3.42	35	35.8
4	EM07-Cr-012	ccc	3	3	F26	9.09	3.83	33.6	40.2
4	EM07-Al-15	ccc	3	4	F09	6.99	3.38	25	36.5
4	EM07-Al-20	quenched	3	5	F59	6.89	4.27	22.9	35.5
4	EM07-Cr-02	quenched	3	6	F46	8.66	3.69	33.1	37.7
4	EM07-Fe-20	ccc	3	7	F30	7.79	3.08	29.4	37.7
4	EM07-Fe-20	quenched	3	8	F55	9	4.1	31.5	34.8
4	EM07-Al-06	quenched	3	9	F15	12.9	4.5	44.8	40.4
4	EM07-Fe-05	ccc	3	10	F48	8.7	3.52	31.9	38.1
4	EA	ref	3	11	F58	29.9	9.22	83.7	47.6
4	EM07-Cr-02	ccc	3	12	F25	8.25	3.4	29.3	38.1
4	Soln Std	ref	3	13	STD-33-2	20.3	10	81.6	53.5
4	blank	ref	3	14	F19	0.477	<1.00	<0.100	<0.100
4	EM07-Fe-15	ccc	3	15	F54	8.34	3.46	29.4	38.5
4	EM07-Al-06	ccc	3	16	F36	11.3	4.05	35.1	31.4
4	EM07-Fe-15	quenched	3	17	F12	8.93	3.9	32.2	35.5
4	ARM-1	ref	3	18	F28	12.5	9.32	26.1	42.6

Table B2. PSAL Measurements of the Test Matrix 1 PCT Solutions After Appropriate Adjustments

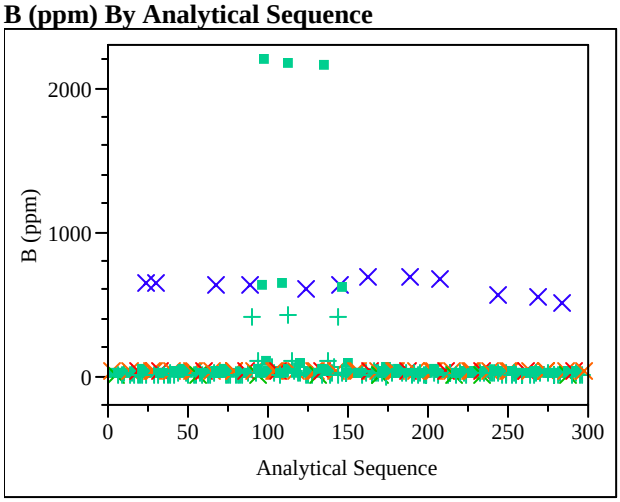
Set	Glass ID	Heat Treatment	Block	Seq	Lab ID	B (ppm)	Li (ppm)	Na (ppm)	Si (ppm)
4	EM07-Cr-001	quenched	3	19	F41	9.19	3.81	32.7	37.9
4	EM07-Al-20	ccc	3	20	F60	7.93	4.3	22	37.9
4	EM07-Cr-001	ccc	3	21	F22	9.45	4	32.3	41.3
4	EM07-Cr-012	quenched	3	22	F20	8.87	3.67	31.5	37.2
4	EM07-Al-15	quenched	3	23	F27	7.63	3.83	25.9	34.6
4	Soln Std	ref	3	24	STD-23-2	20.1	9.72	79.7	52.2

Figure B1. Laboratory PCT Measurements in Analytical Sequence for Test Matrix 1 (TM1) Glasses, EA, ARM, Blanks, and Solution Standards

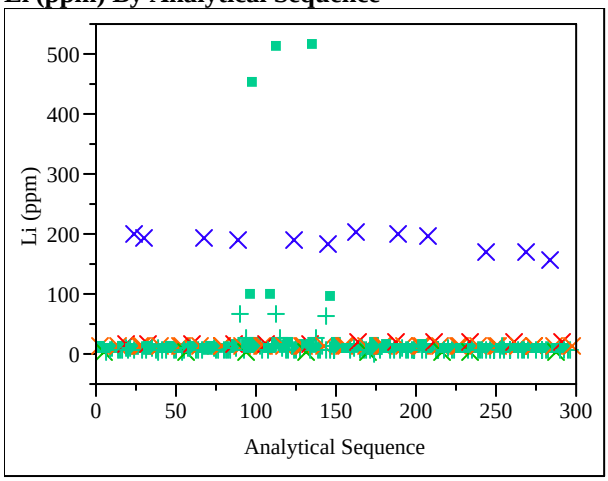
LEGEND

	Type	Heat Treatment
1	ARM	ref
2	blank	ref
3	EA	ref
4	Soln Std	ref
5	TM1	ccc
6	TM1	quenched

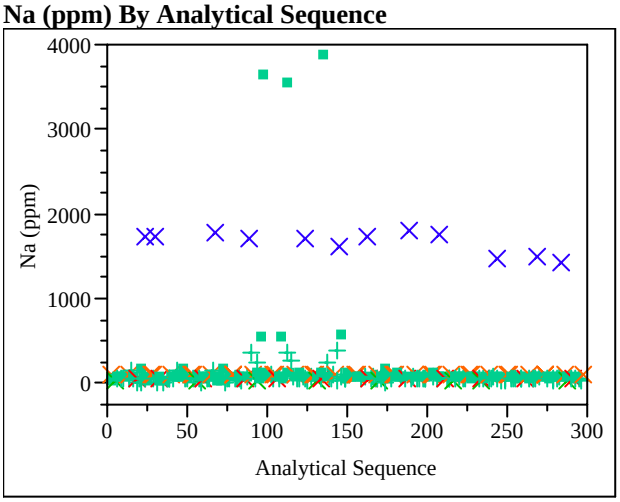
B (ppm) By Analytical Sequence



Li (ppm) By Analytical Sequence



Na (ppm) By Analytical Sequence



Si (ppm) By Analytical Sequence

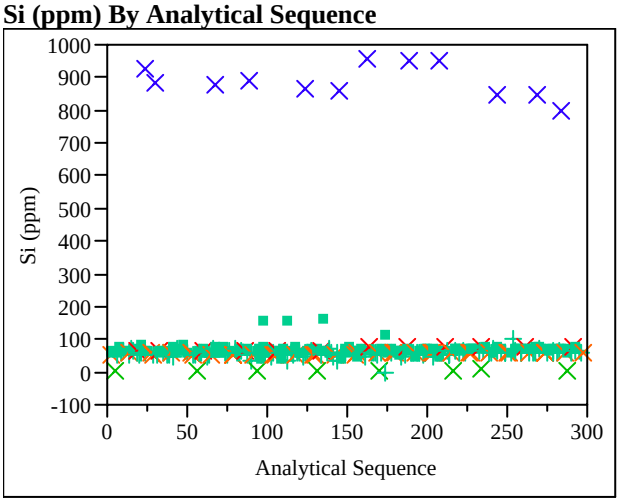
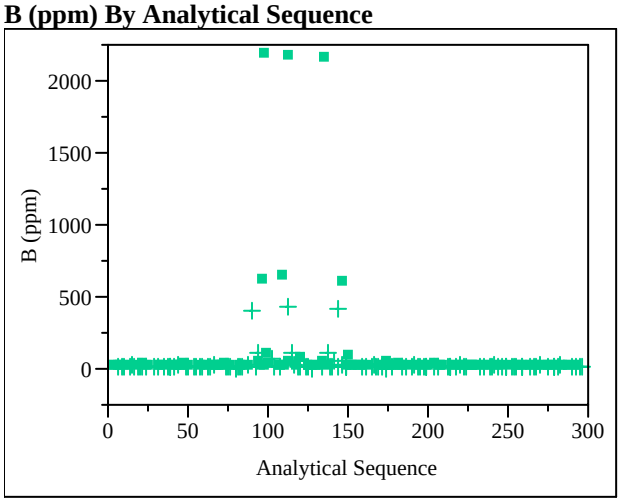
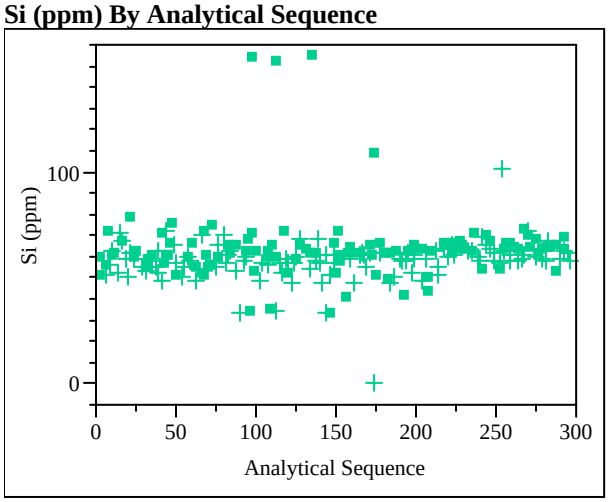


Figure B2. Laboratory PCT Measurements in Analytical Sequence for Test Matrix 1 Glasses

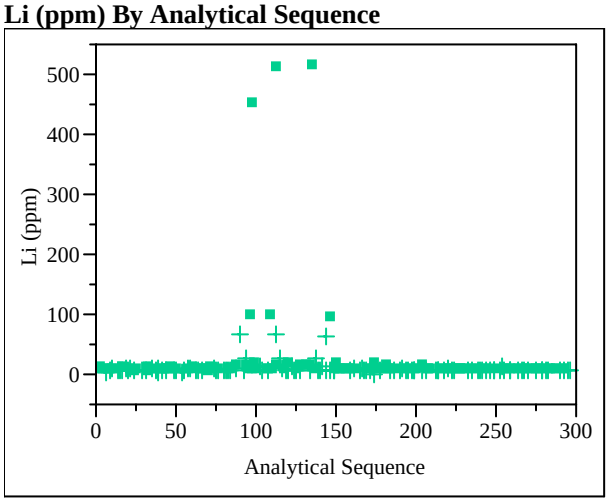
B (ppm) By Analytical Sequence



Si (ppm) By Analytical Sequence



Li (ppm) By Analytical Sequence



Na (ppm) By Analytical Sequence

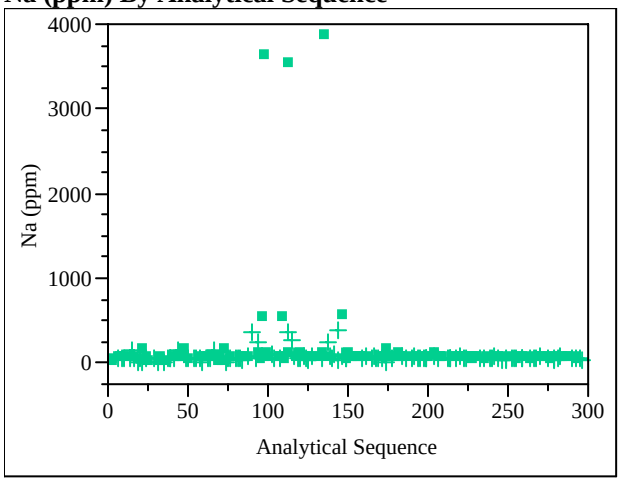
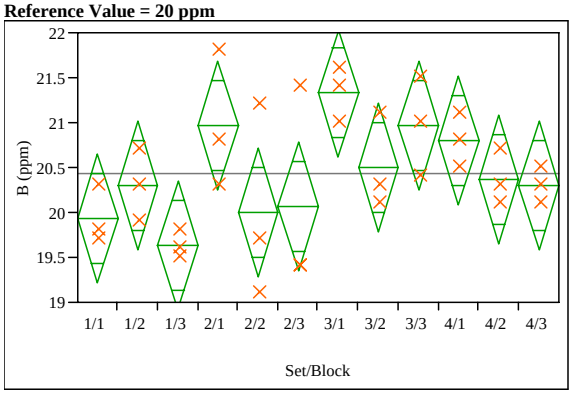


Figure B3. Measurements of the Multi-Element Solution Standard by ICP Block

Oneway Analysis of B (ppm) By Set/Block
Reference Value = 20 ppm



Oneway Anova
Summary of Fit

Rsquare	0.492972
Adj Rsquare	0.260584
Root Mean Square Error	0.59675
Mean of Response	20.43056
Observations (or Sum Wgts)	36

Analysis of Variance

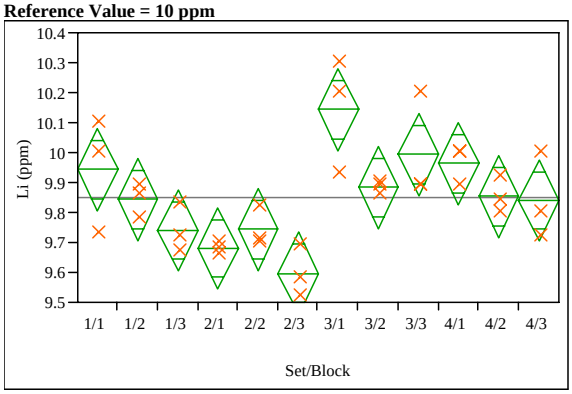
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block	11	8.309722	0.755429	2.1213	0.0599
Error	24	8.546667	0.356111		
C. Total	35	16.856389			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1/1	3	19.9333	0.34453	19.222	20.644
1/2	3	20.3000	0.34453	19.589	21.011
1/3	3	19.6333	0.34453	18.922	20.344
2/1	3	20.9667	0.34453	20.256	21.678
2/2	3	20.0000	0.34453	19.289	20.711
2/3	3	20.0667	0.34453	19.356	20.778
3/1	3	21.3333	0.34453	20.622	22.044
3/2	3	20.5000	0.34453	19.789	21.211
3/3	3	20.9667	0.34453	20.256	21.678
4/1	3	20.8000	0.34453	20.089	21.511
4/2	3	20.3667	0.34453	19.656	21.078
4/3	3	20.3000	0.34453	19.589	21.011

Std Error uses a pooled estimate of error variance

Oneway Analysis of Li (ppm) By Set/Block
Reference Value = 10 ppm



Oneway Anova
Summary of Fit

Rsquare	0.702121
Adj Rsquare	0.565594
Root Mean Square Error	0.1142
Mean of Response	9.851944
Observations (or Sum Wgts)	36

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block	11	0.7377639	0.067069	5.1427	0.0004
Error	24	0.3130000	0.013042		
C. Total	35	1.0507639			

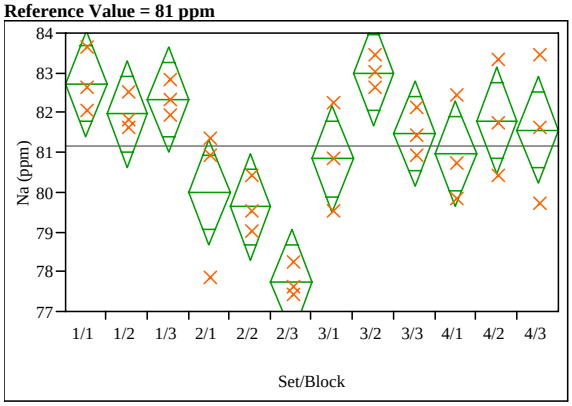
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1/1	3	9.9433	0.06593	9.807	10.079
1/2	3	9.8433	0.06593	9.707	9.979
1/3	3	9.7400	0.06593	9.604	9.876
2/1	3	9.6800	0.06593	9.544	9.816
2/2	3	9.7433	0.06593	9.607	9.879
2/3	3	9.5967	0.06593	9.461	9.733
3/1	3	10.1433	0.06593	10.007	10.279
3/2	3	9.8833	0.06593	9.747	10.019
3/3	3	9.9933	0.06593	9.857	10.129
4/1	3	9.9633	0.06593	9.827	10.099
4/2	3	9.8533	0.06593	9.717	9.989
4/3	3	9.8400	0.06593	9.704	9.976

Std Error uses a pooled estimate of error variance

Figure B3. Measurements of the Multi-Element Solution Standard by ICP Block

Oneway Analysis of Na (ppm) By Set/Block
Reference Value = 81 ppm



Oneway Anova
Summary of Fit

Rsquare	0.706216
Adj Rsquare	0.571566
Root Mean Square Error	1.119896
Mean of Response	81.16944
Observations (or Sum Wgts)	36

Analysis of Variance

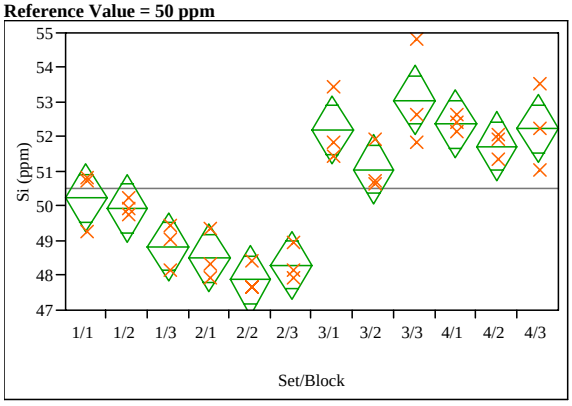
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block	11	72.35639	6.57785	5.2448	0.0003
Error	24	30.10000	1.25417		
C. Total	35	102.45639			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1/1	3	82.7333	0.64657	81.399	84.068
1/2	3	81.9667	0.64657	80.632	83.301
1/3	3	82.3333	0.64657	80.999	83.668
2/1	3	80.0000	0.64657	78.666	81.334
2/2	3	79.6333	0.64657	78.299	80.968
2/3	3	77.7333	0.64657	76.399	79.068
3/1	3	80.8333	0.64657	79.499	82.168
3/2	3	83.0000	0.64657	81.666	84.334
3/3	3	81.4667	0.64657	80.132	82.801
4/1	3	80.9667	0.64657	79.632	82.301
4/2	3	81.8000	0.64657	80.466	83.134
4/3	3	81.5667	0.64657	80.232	82.901

Std Error uses a pooled estimate of error variance

Oneway Analysis of Si (ppm) By Set/Block
Reference Value = 50 ppm



Oneway Anova
Summary of Fit

Rsquare	0.871179
Adj Rsquare	0.812136
Root Mean Square Error	0.824116
Mean of Response	50.52778
Observations (or Sum Wgts)	36

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Set/Block	11	110.23222	10.0211	14.7550	<.0001
Error	24	16.30000	0.6792		
C. Total	35	126.53222			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
1/1	3	50.2333	0.47580	49.251	51.215
1/2	3	49.9333	0.47580	48.951	50.915
1/3	3	48.8333	0.47580	47.851	49.815
2/1	3	48.5000	0.47580	47.518	49.482
2/2	3	47.8667	0.47580	46.885	48.849
2/3	3	48.3000	0.47580	47.318	49.282
3/1	3	52.2000	0.47580	51.218	53.182
3/2	3	51.0667	0.47580	50.085	52.049
3/3	3	53.0667	0.47580	52.085	54.049
4/1	3	52.3667	0.47580	51.385	53.349
4/2	3	51.7333	0.47580	50.751	52.715
4/3	3	52.2333	0.47580	51.251	53.215

Std Error uses a pooled estimate of error variance

Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for B (ppm)

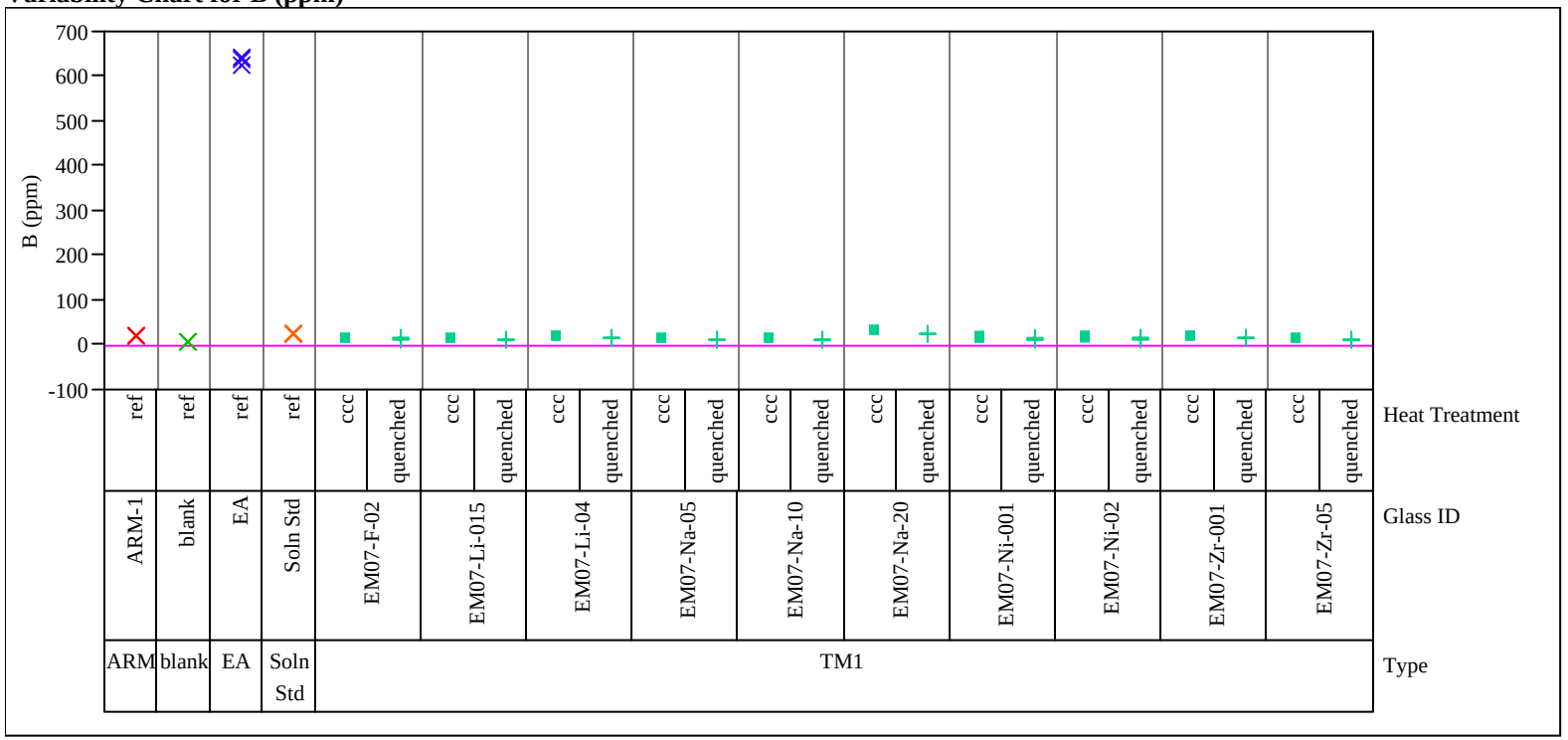


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for Li (ppm)

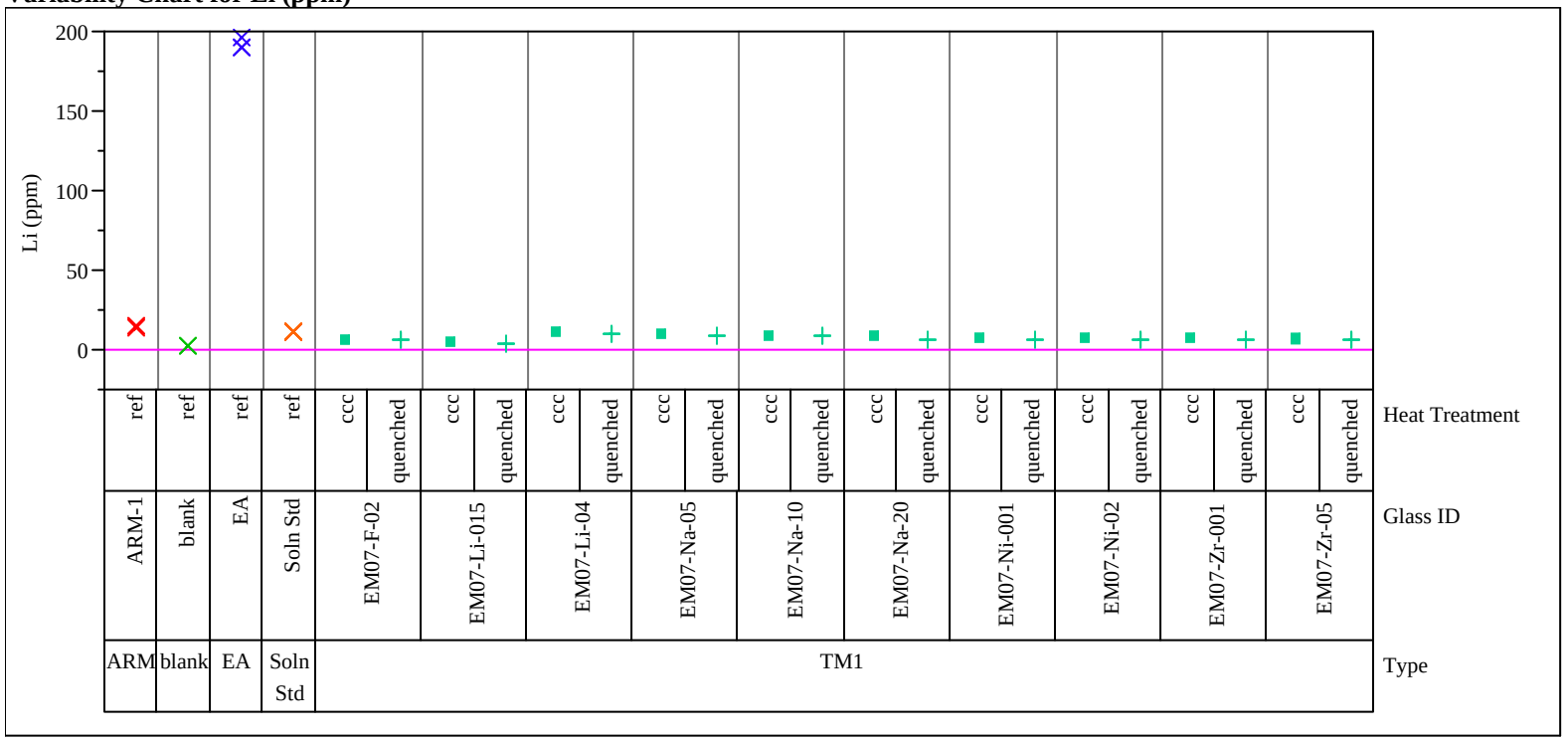


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for Na (ppm)

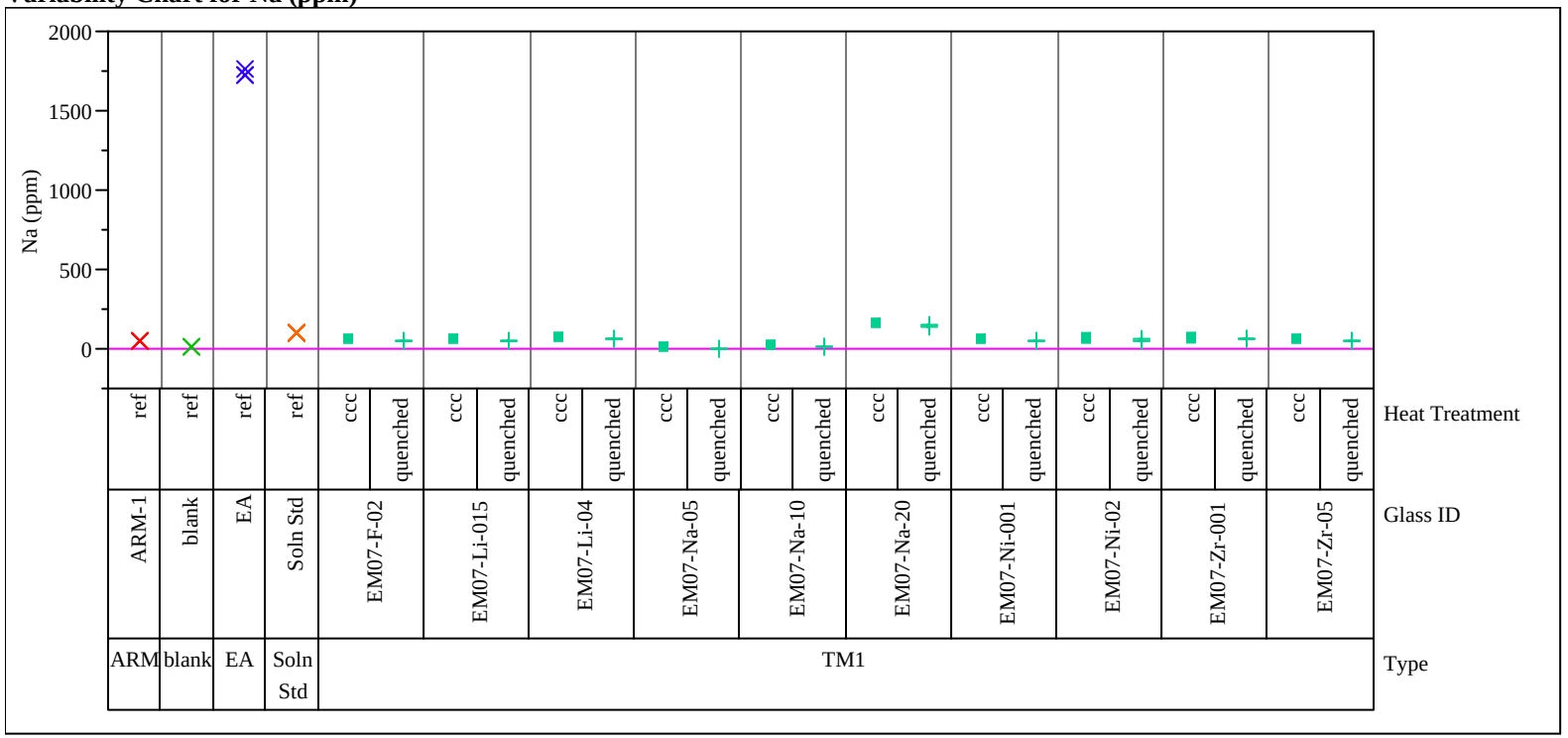


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for Si (ppm)

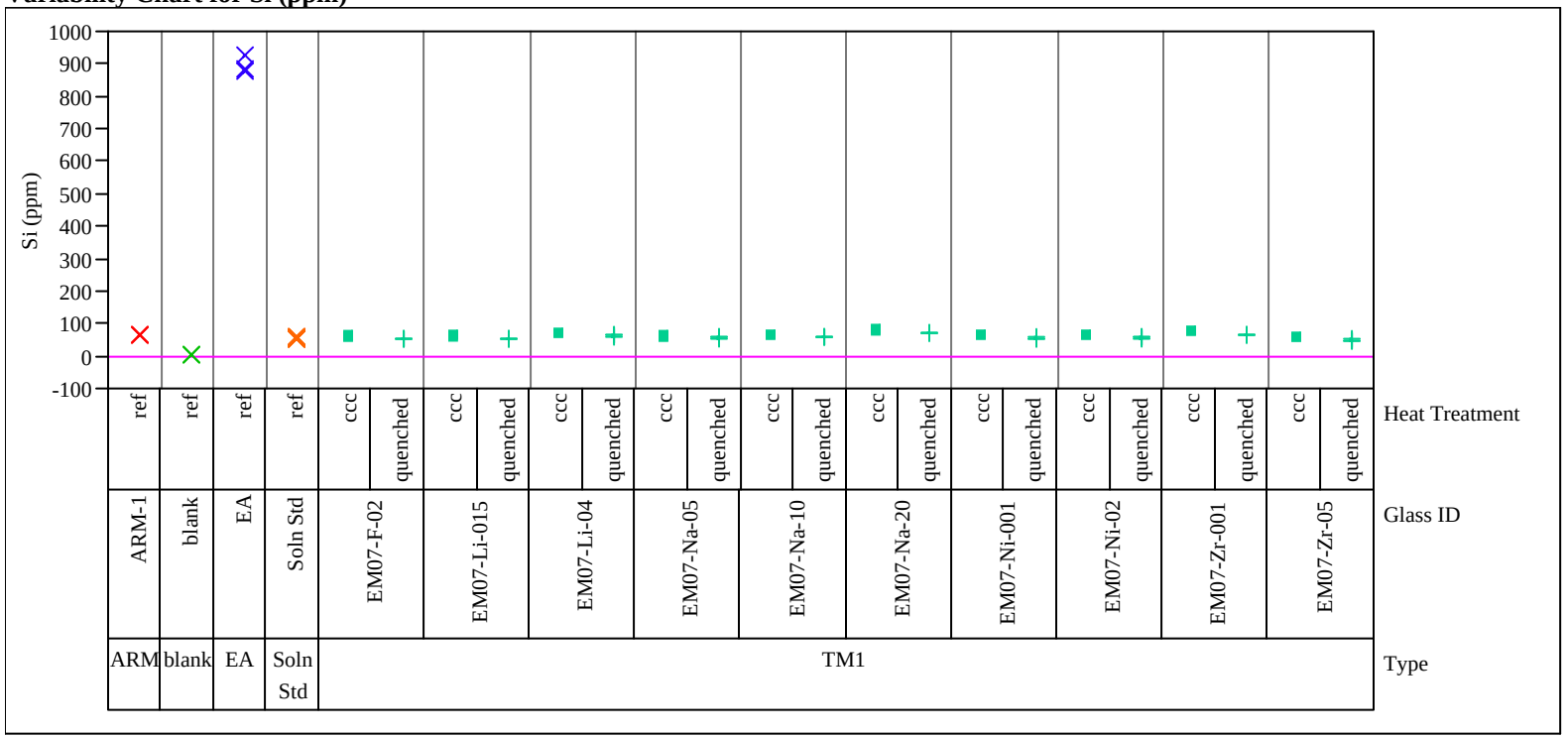


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for log[B ppm]

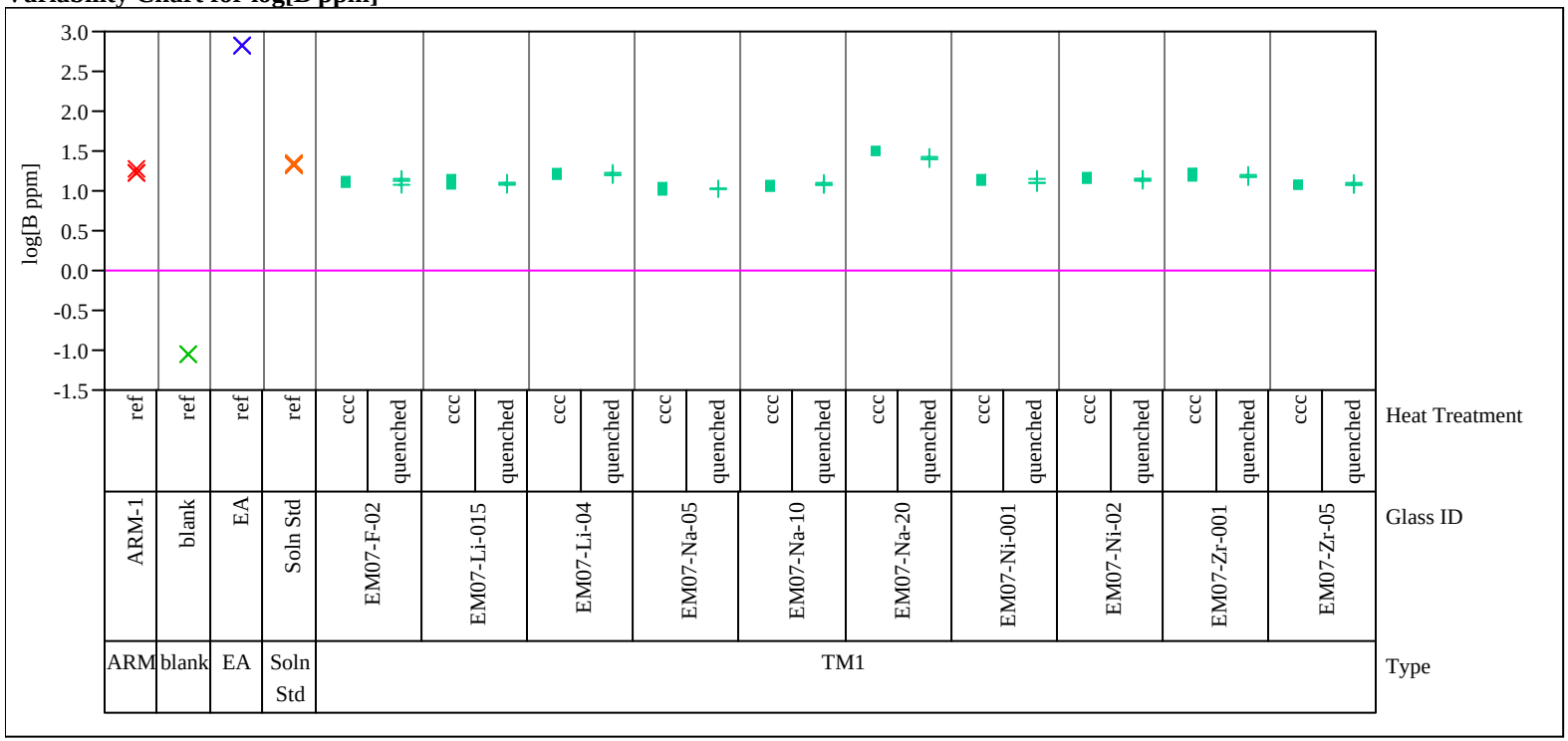


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for log[Li ppm]

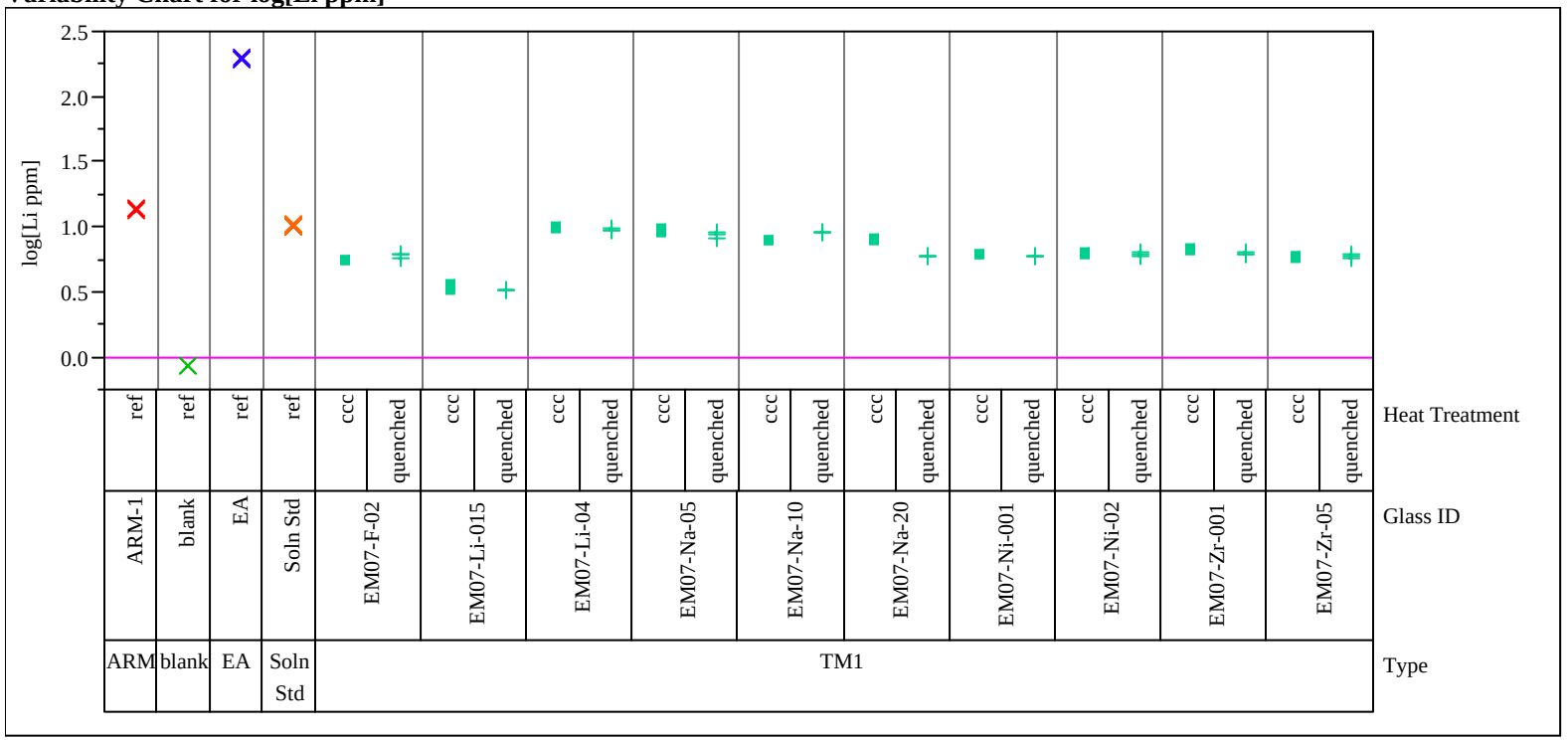


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for log[Na ppm]

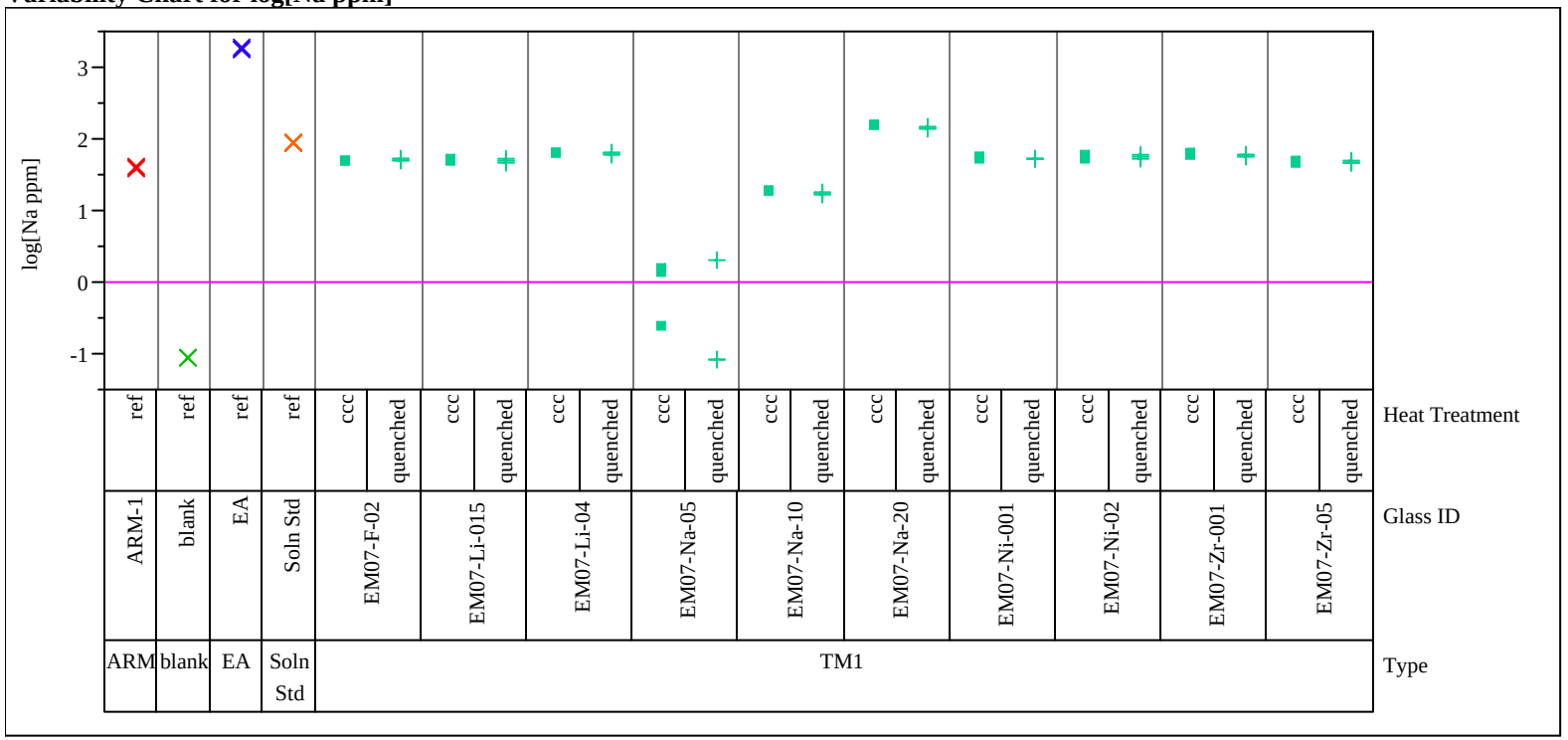


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=1
Variability Chart for log[Si ppm]

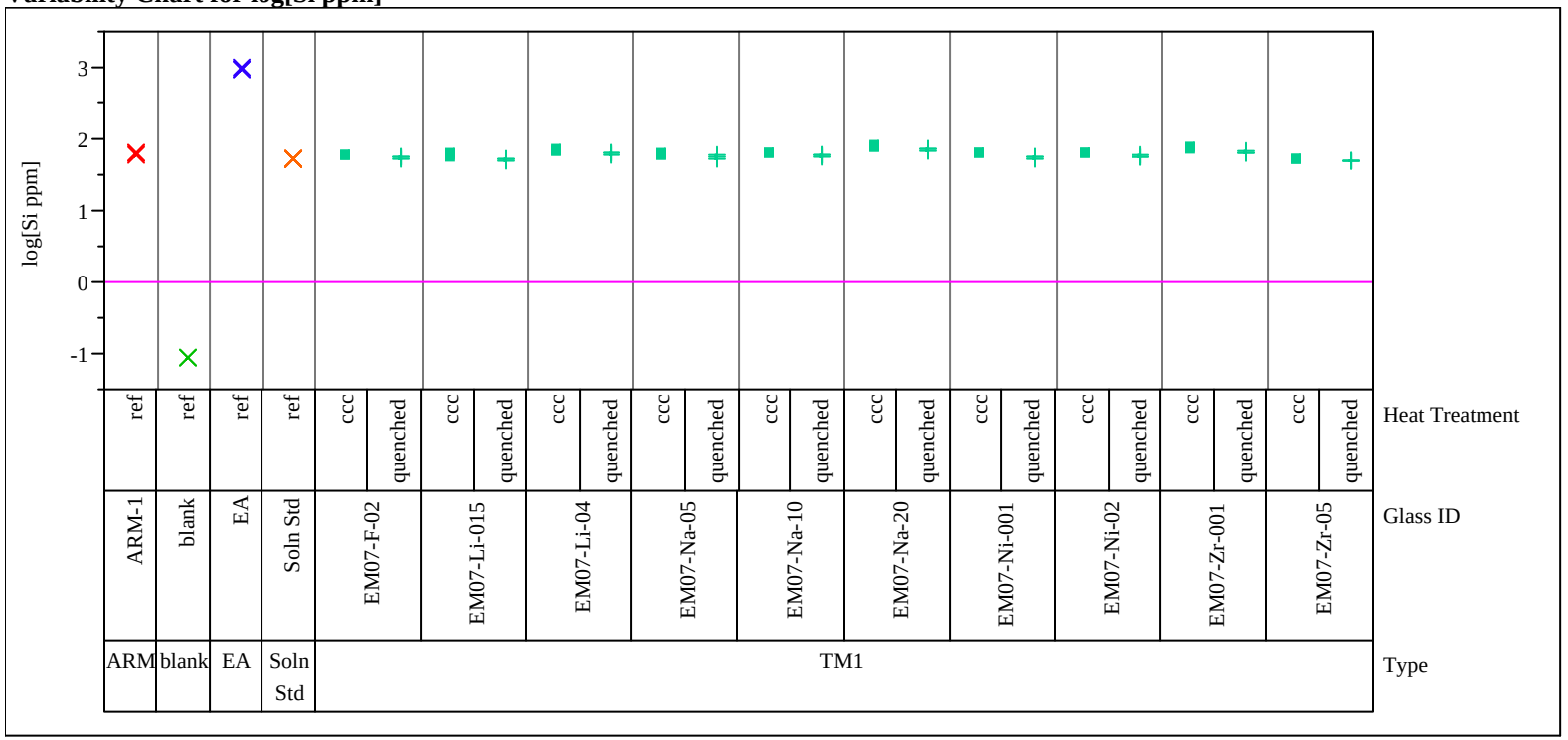


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for B (ppm)

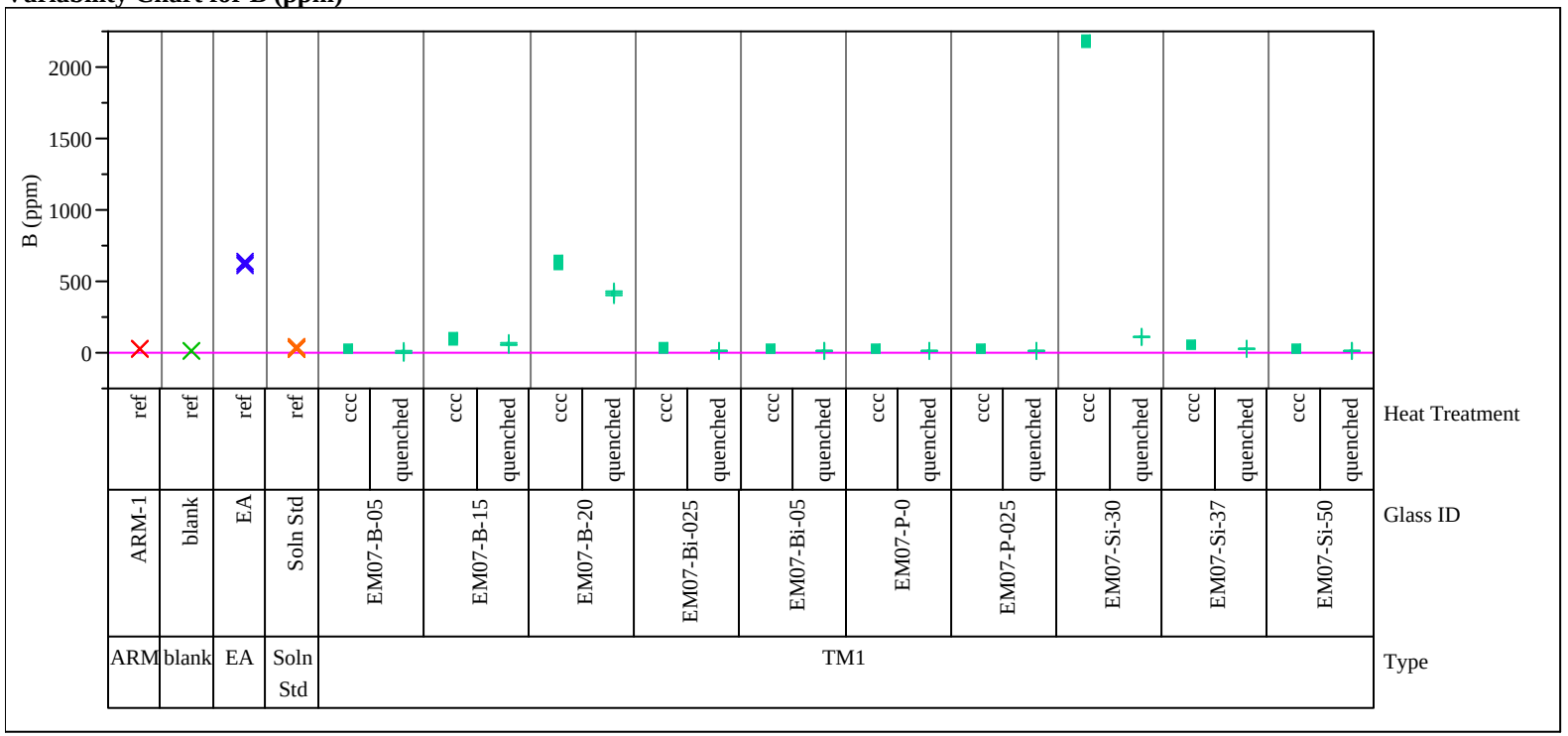


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for Li (ppm)

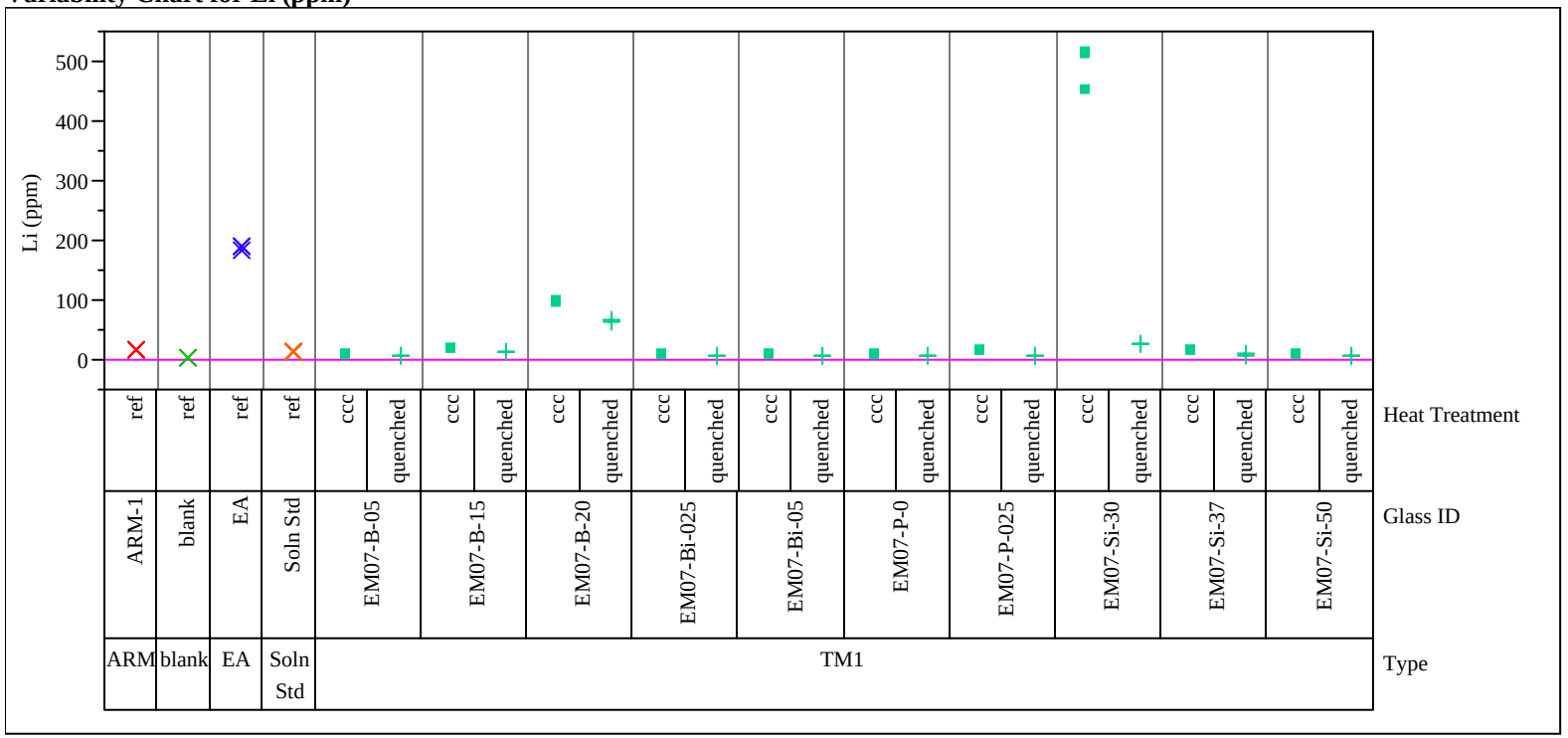


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for Na (ppm)

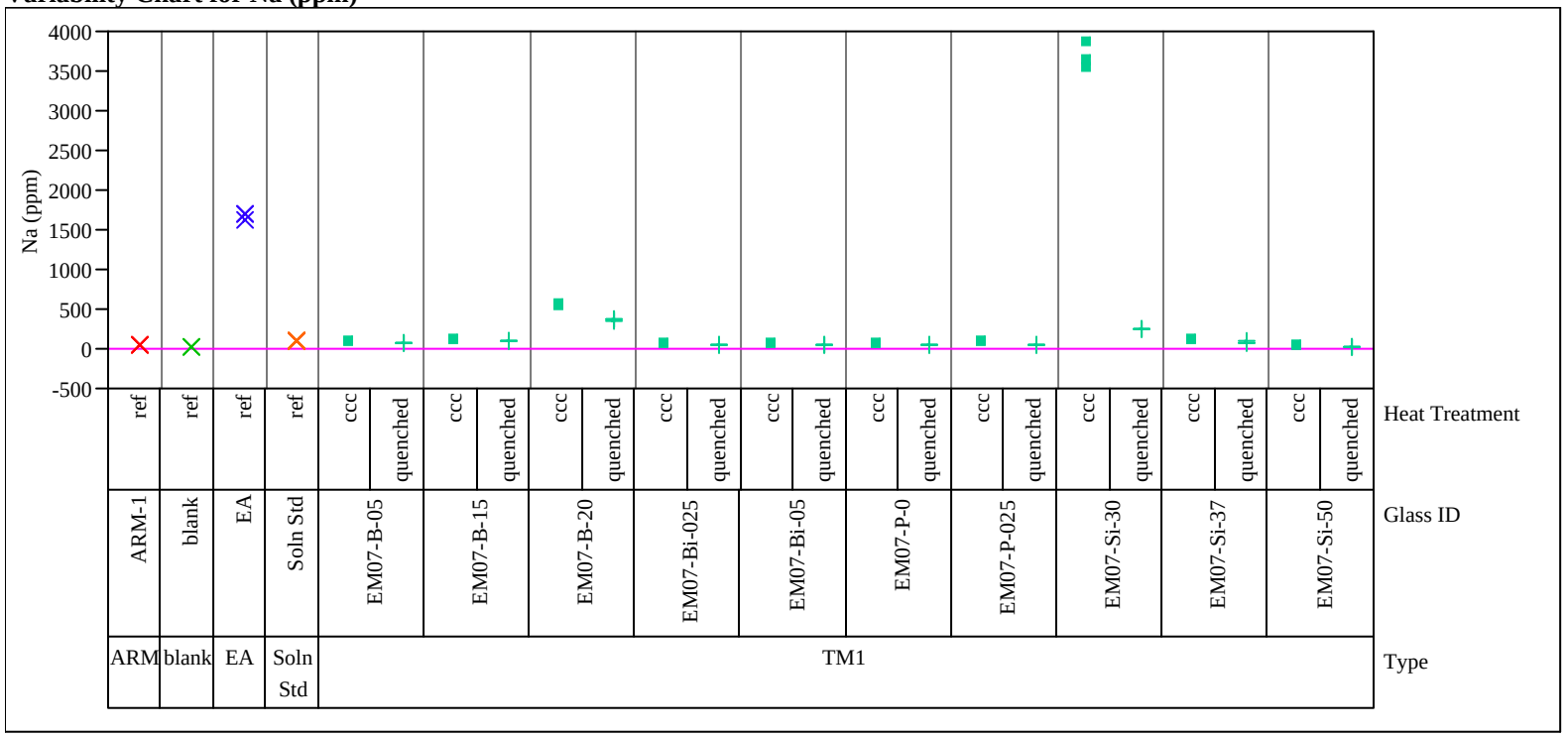


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for Si (ppm)

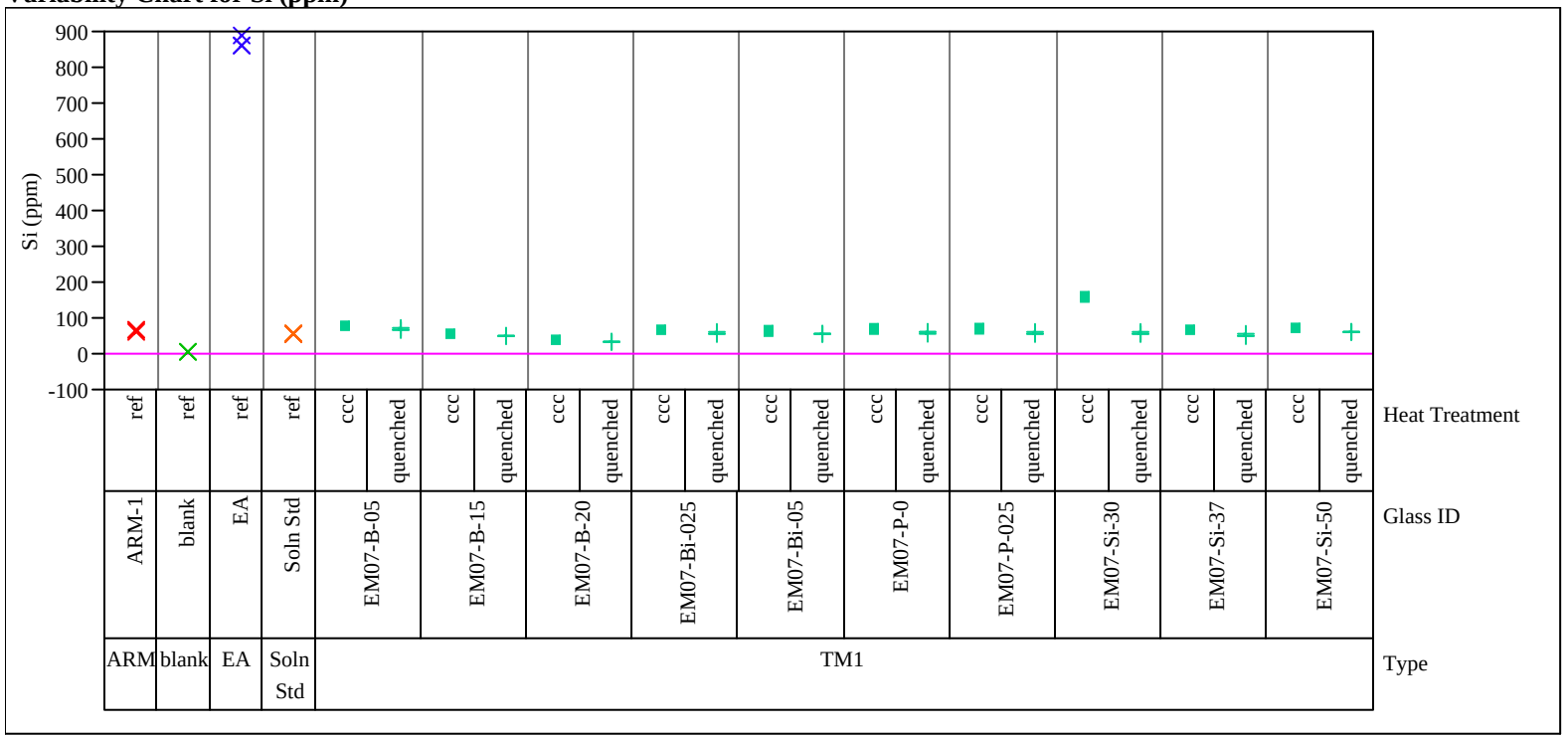


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for log[B ppm]

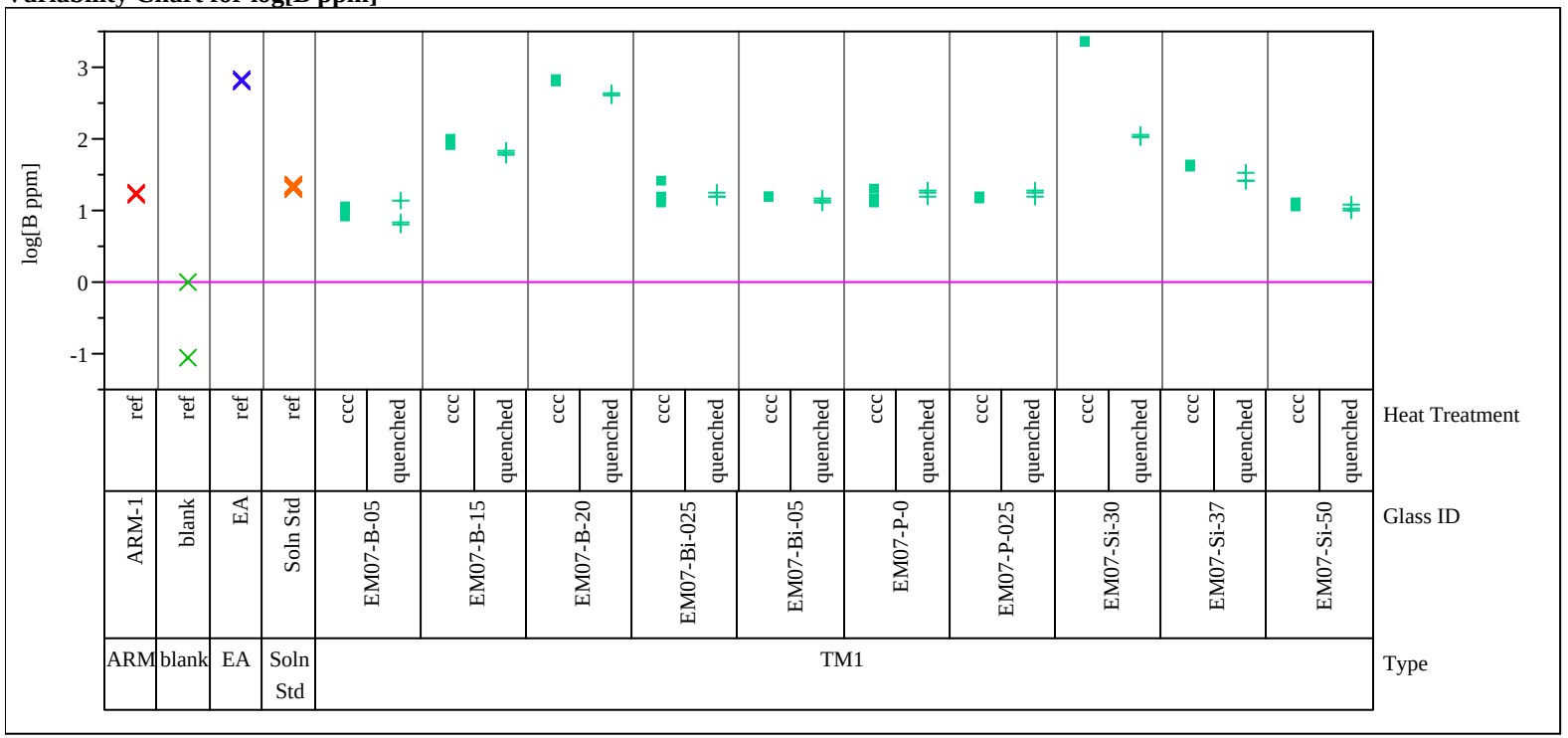


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for log[Li ppm]

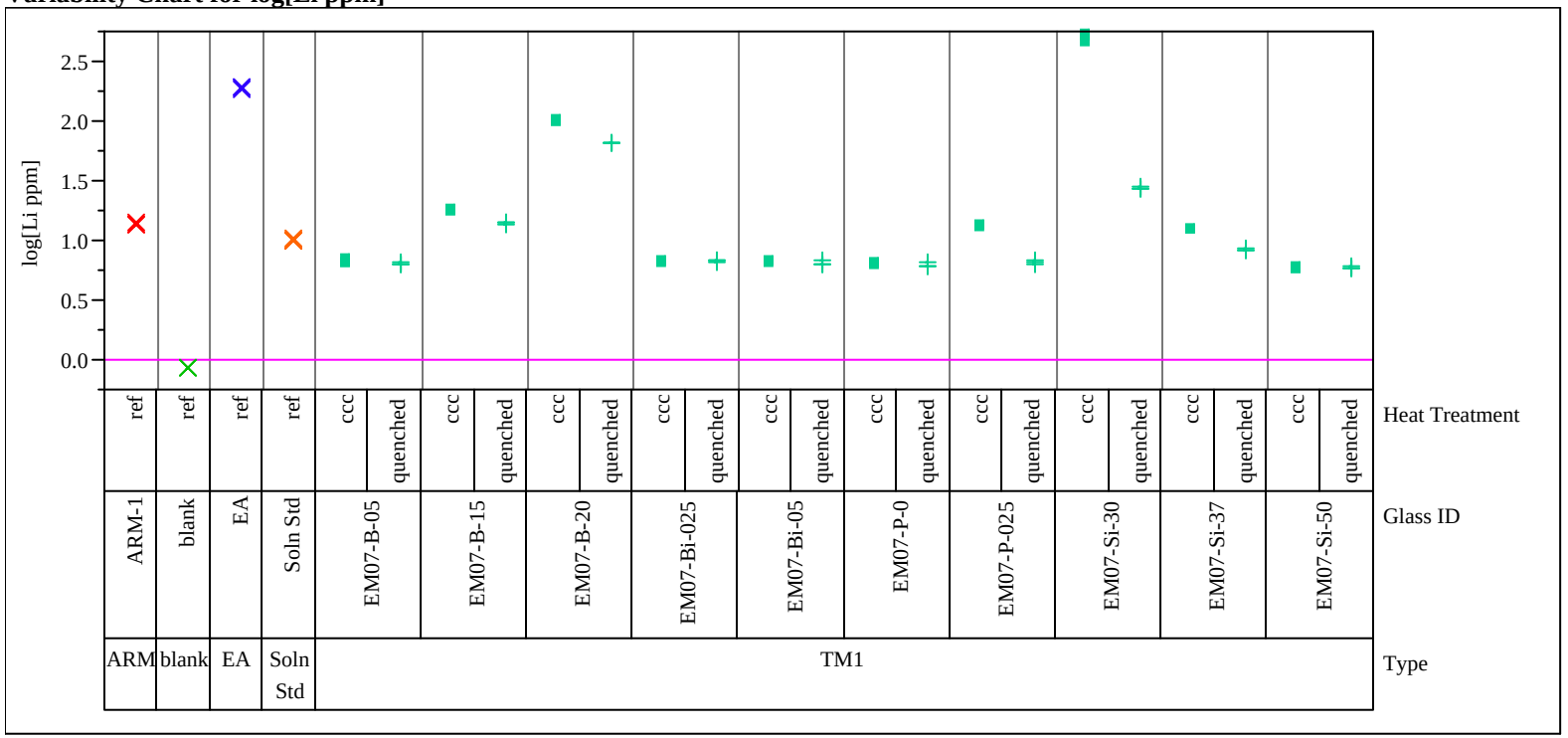


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for log[Na ppm]

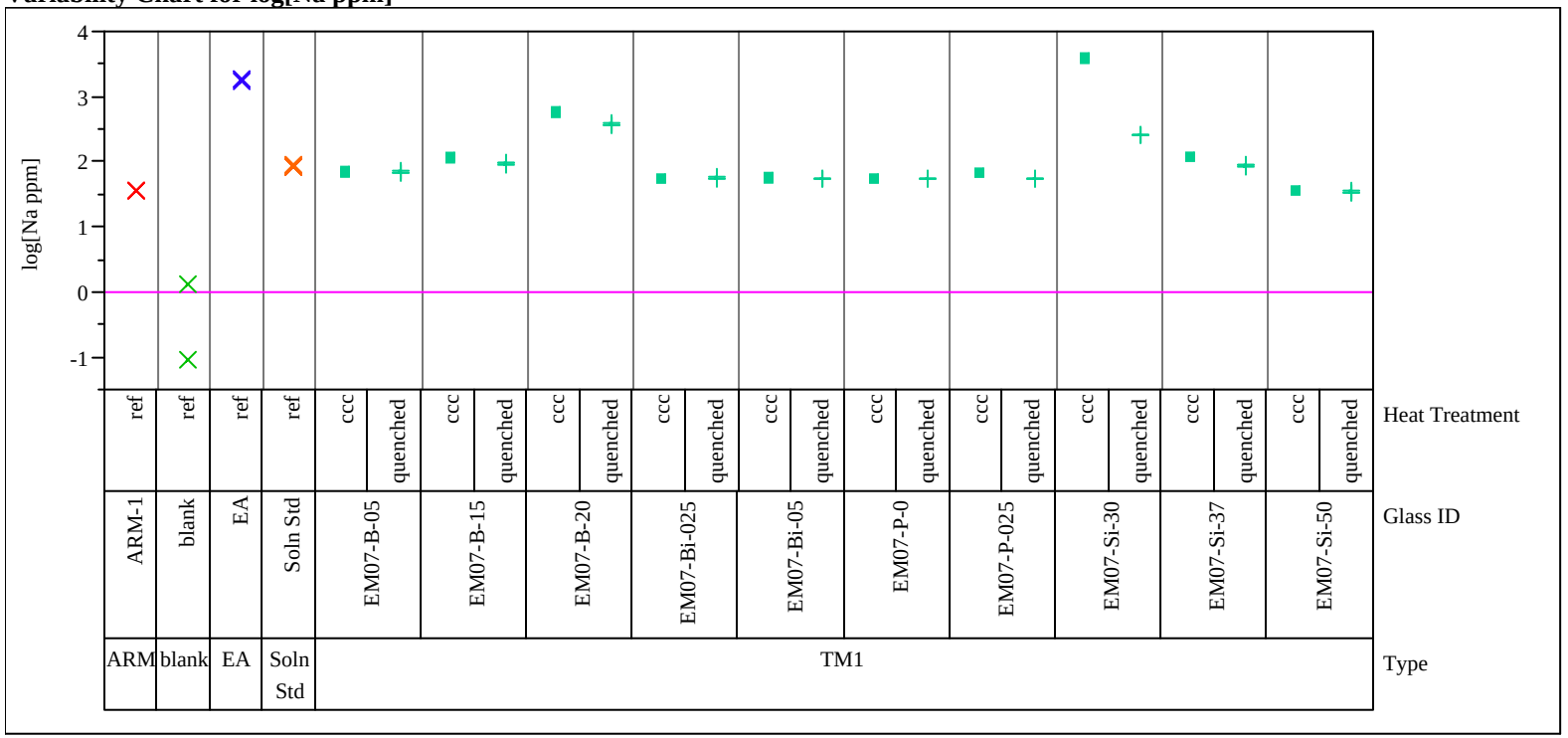


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=2
Variability Chart for log[Si ppm]

Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for B (ppm)

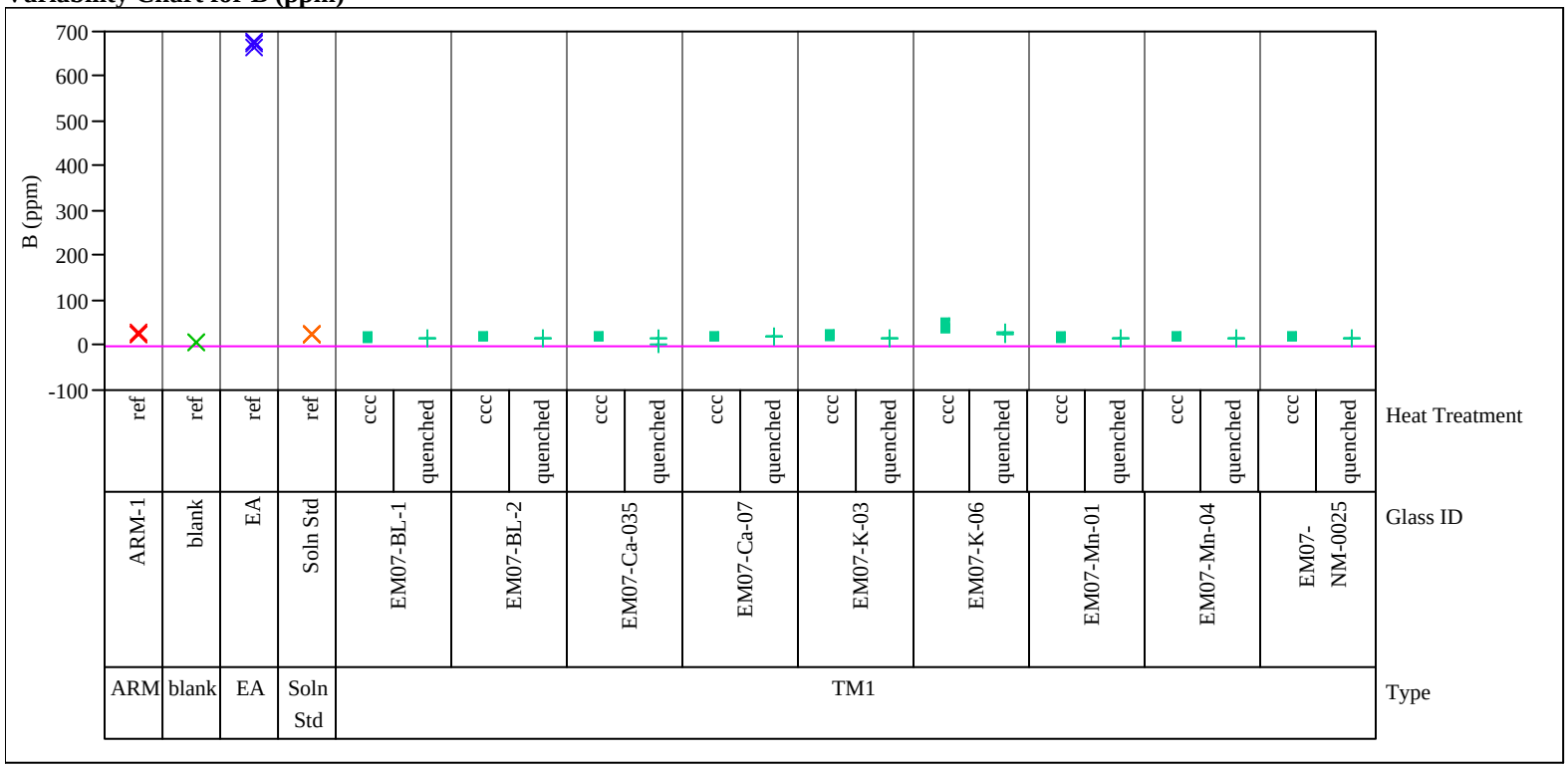


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for Li (ppm)

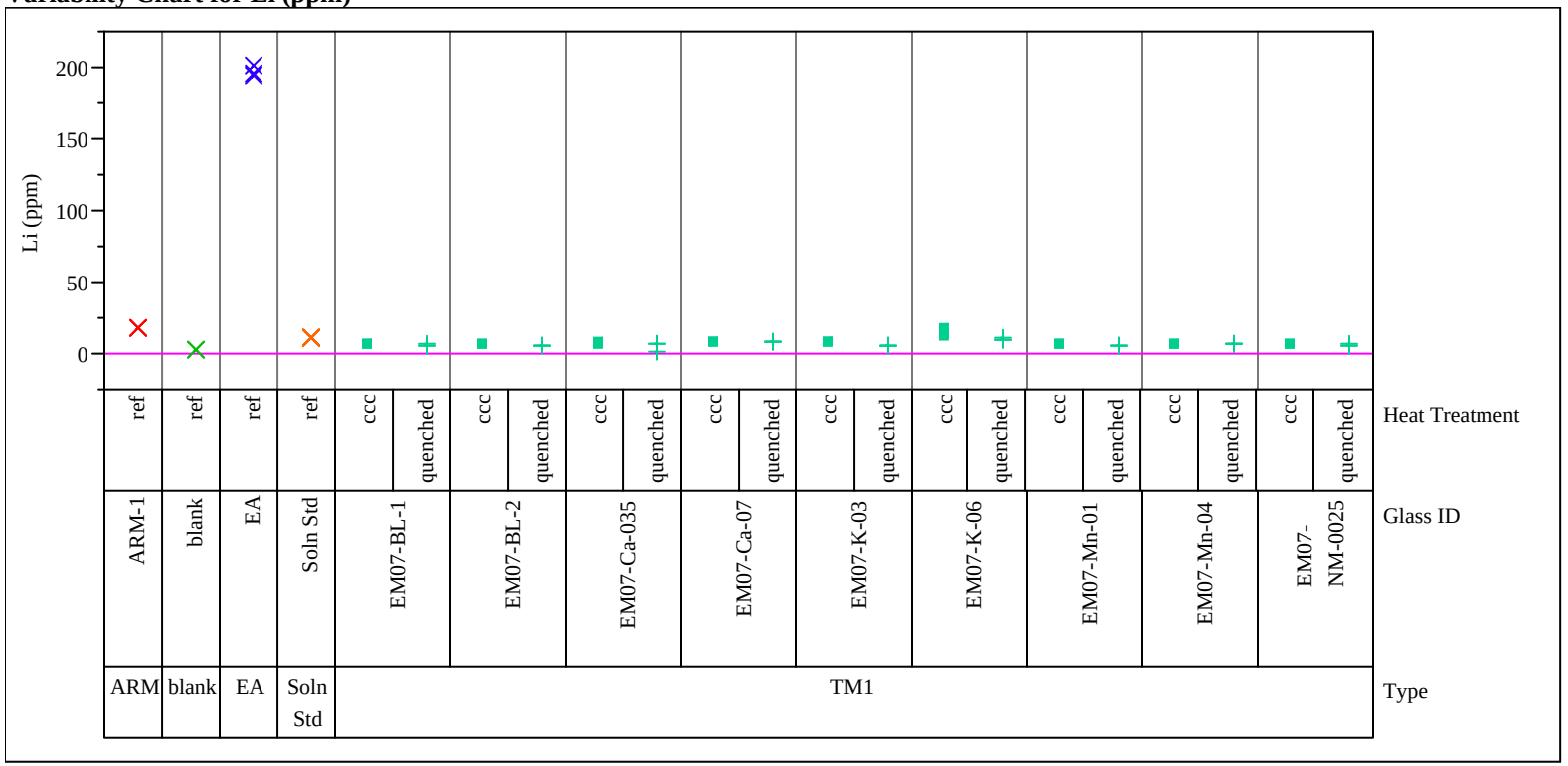


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for Na (ppm)

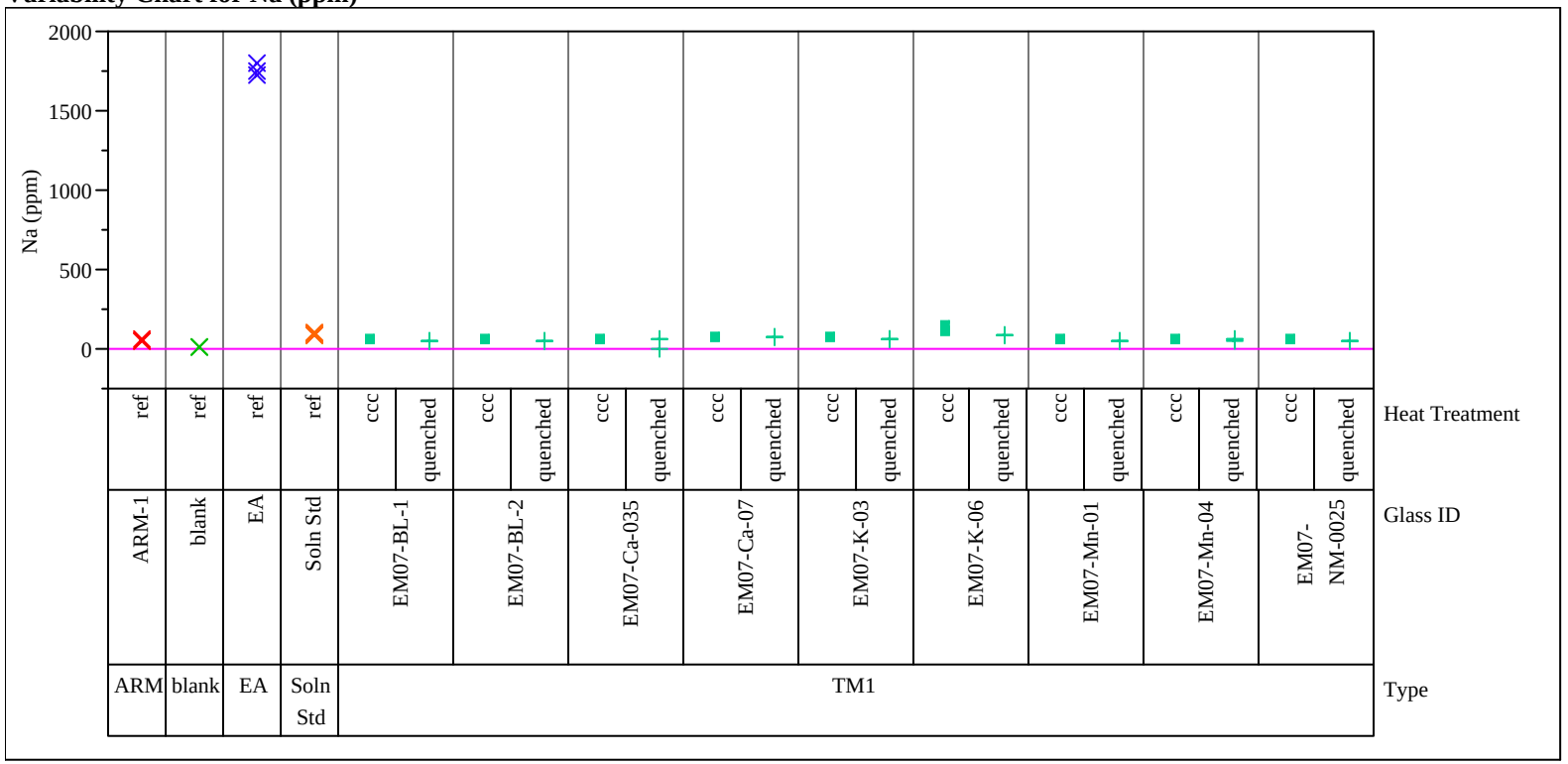


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for Si (ppm)

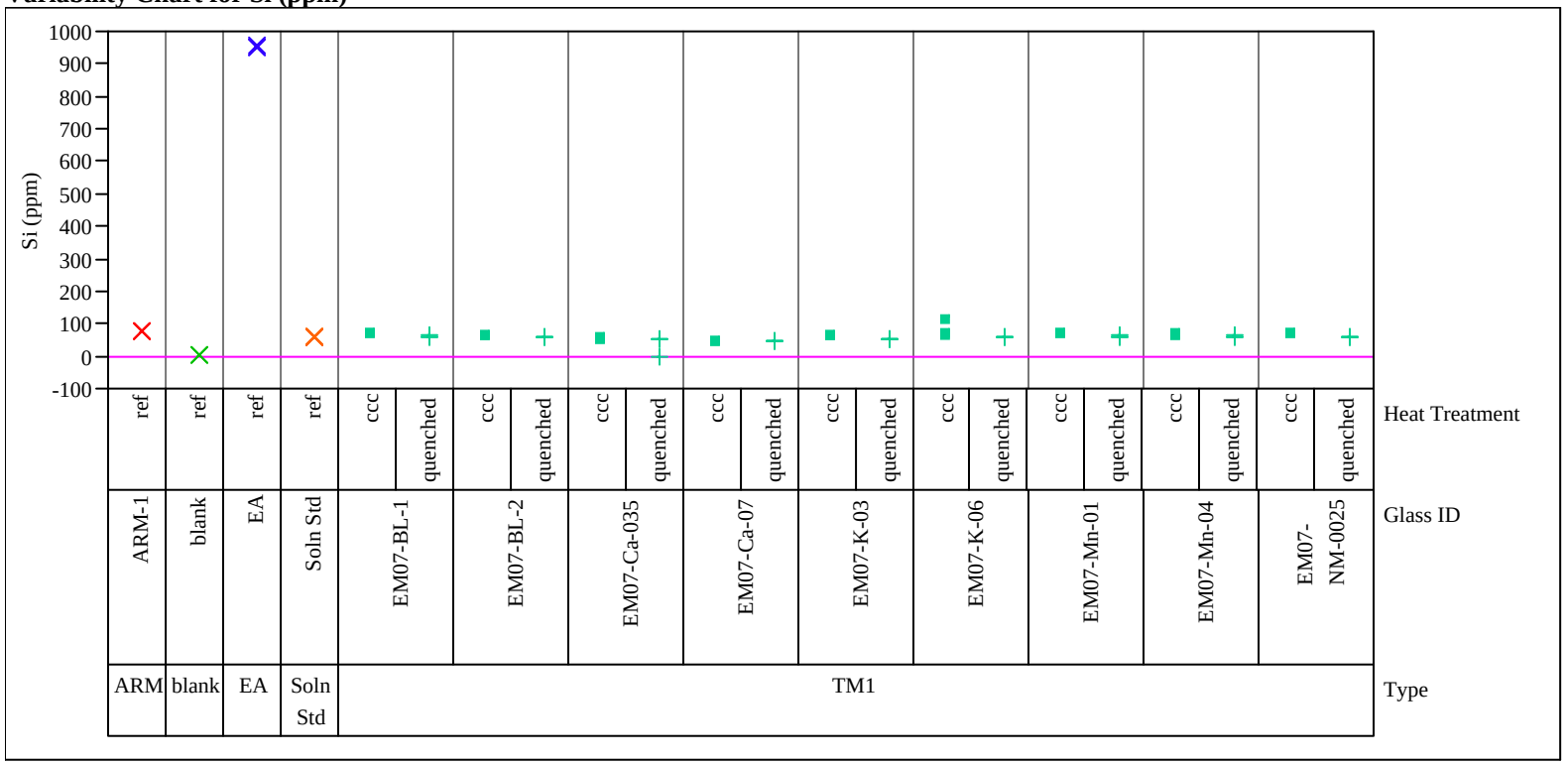


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for log[B ppm]

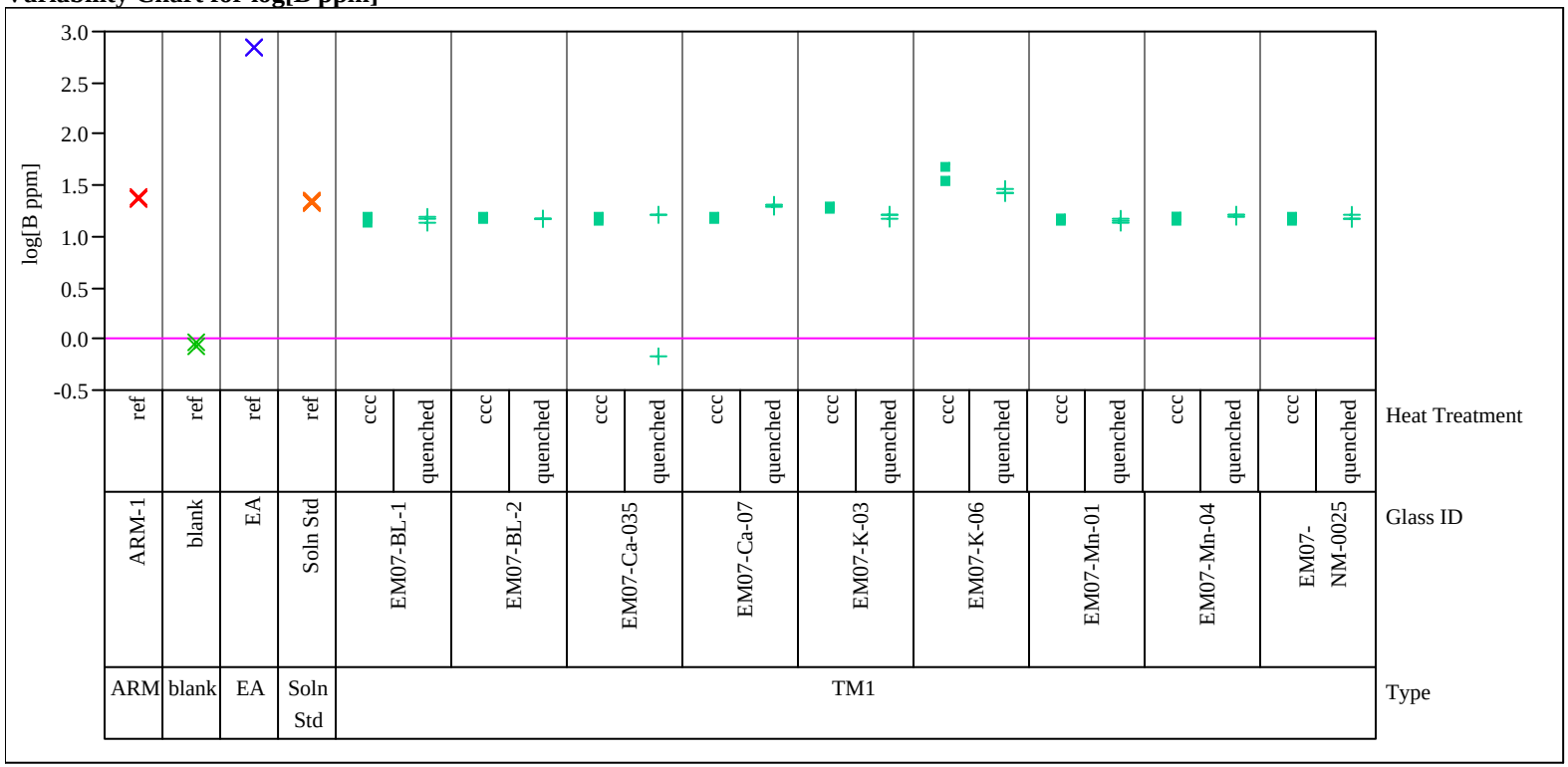


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for log[Li ppm]

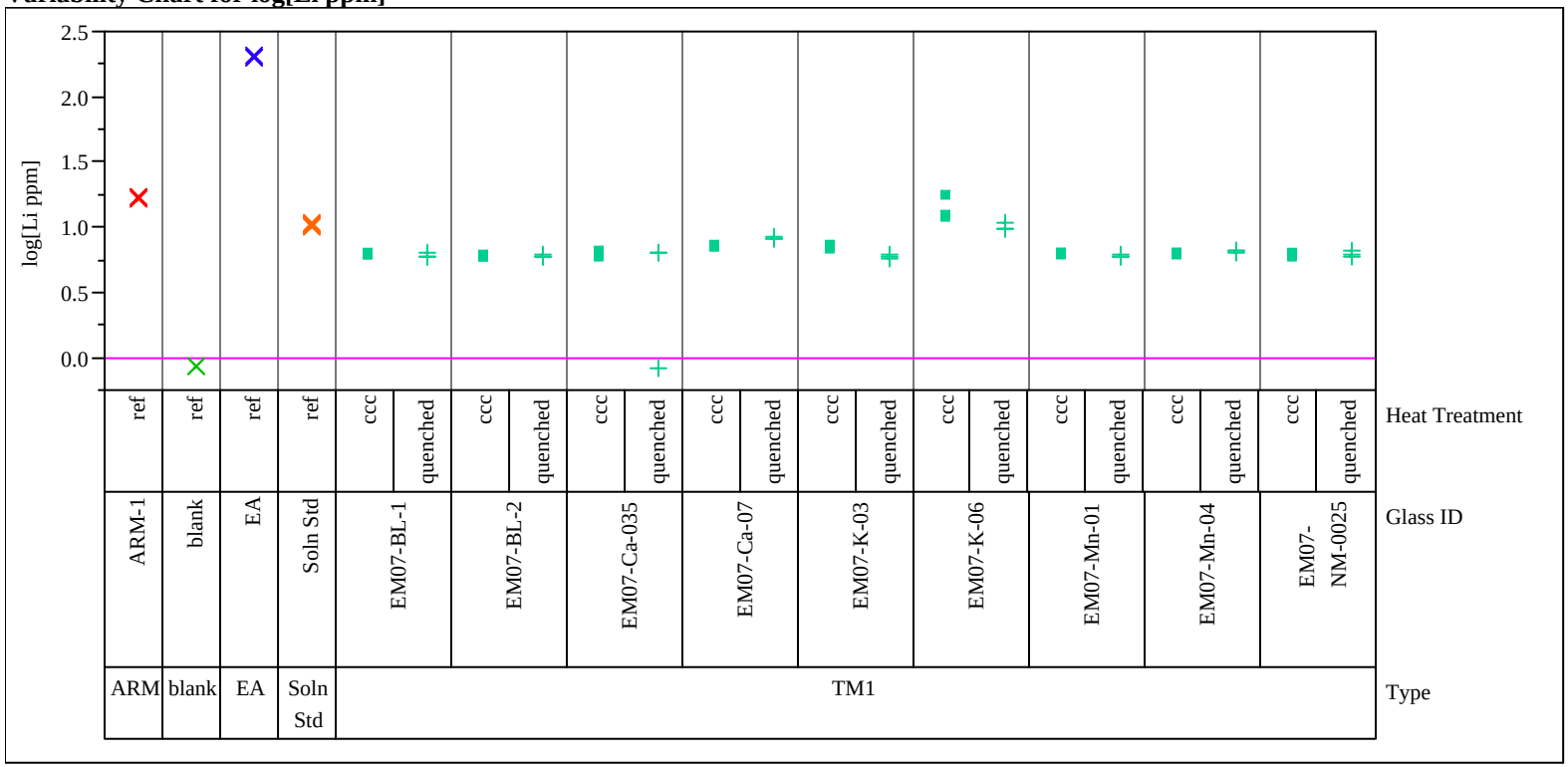


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for log[Na ppm]

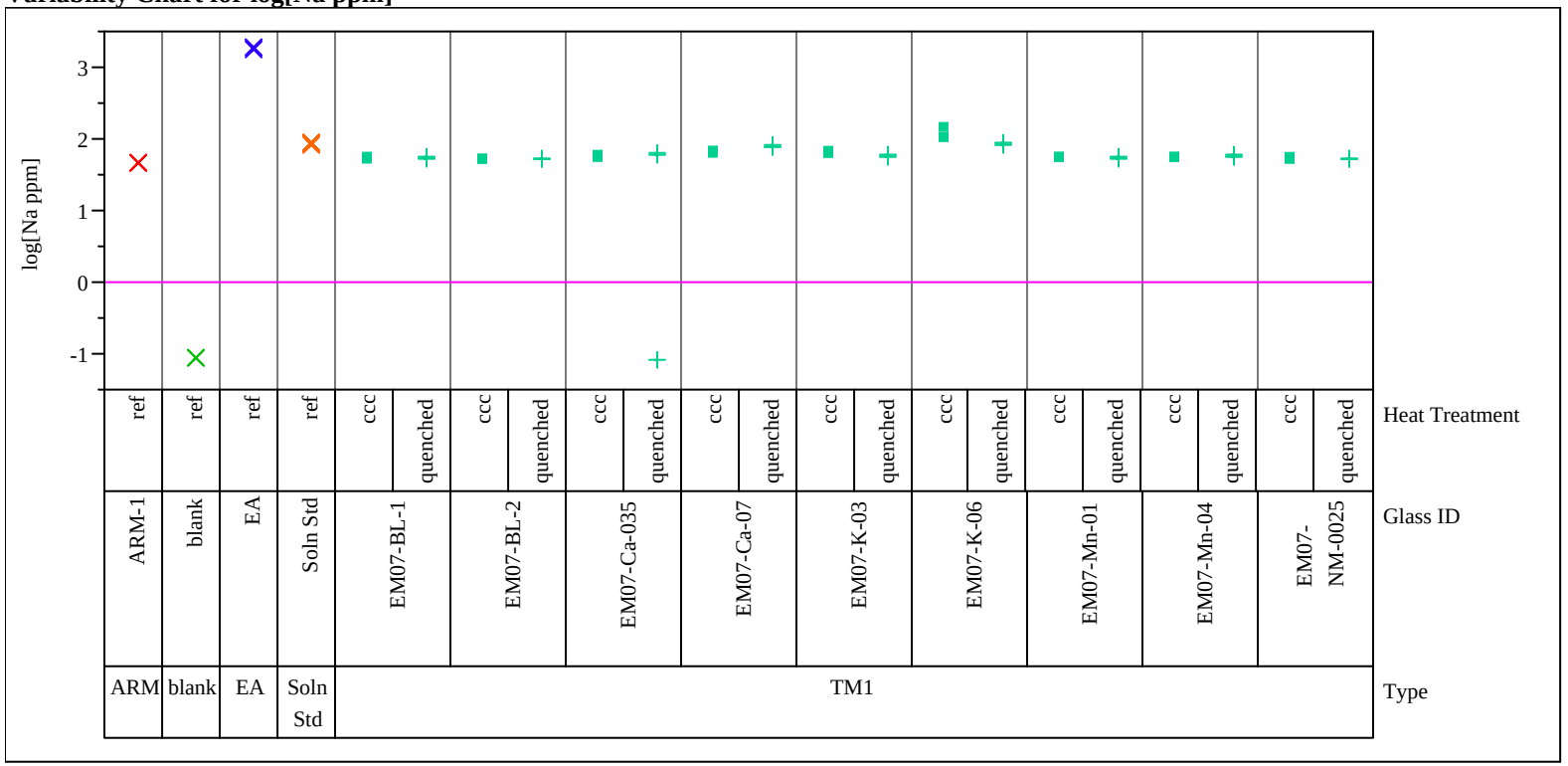


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=3
Variability Chart for log[Si ppm]

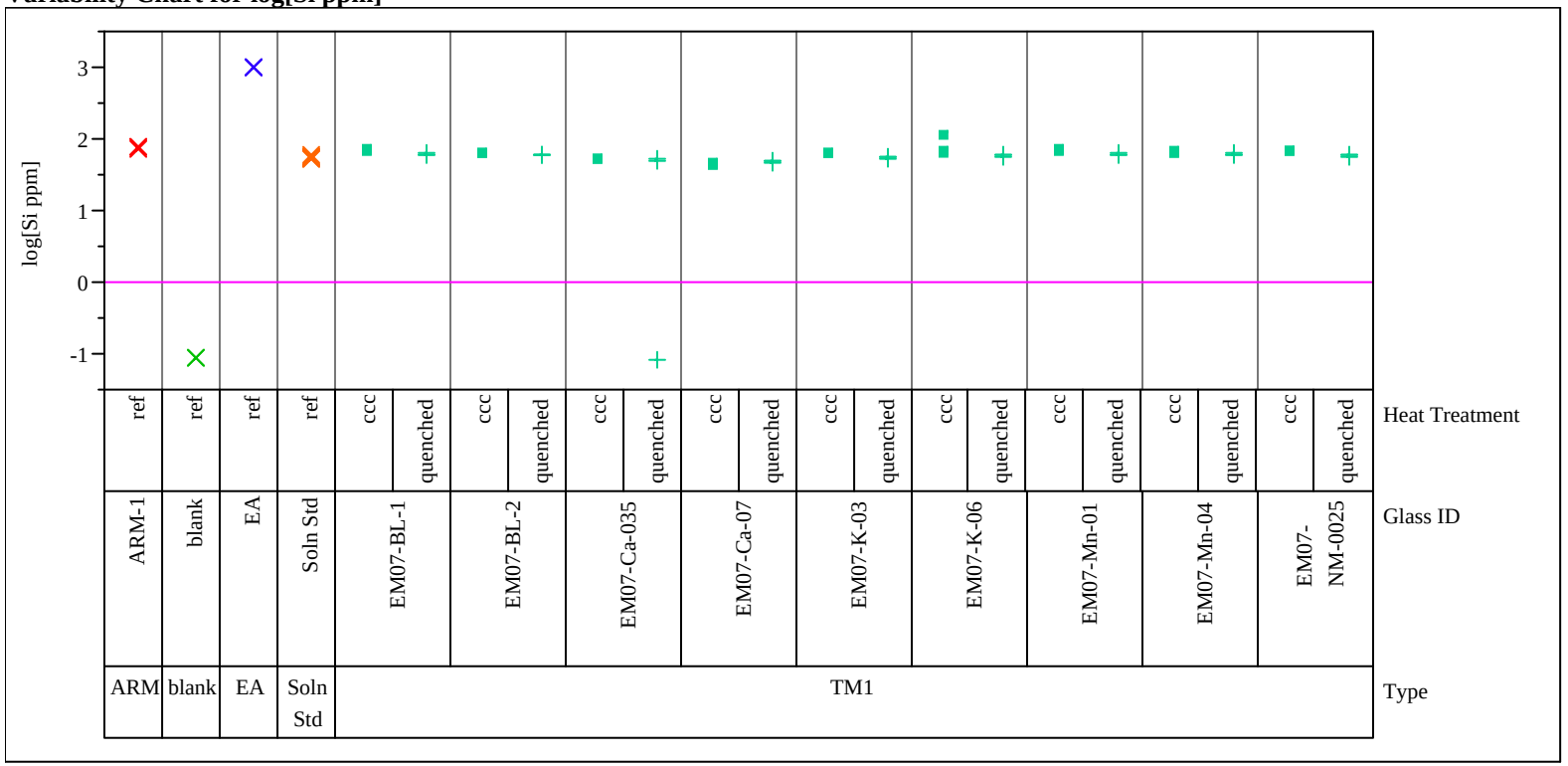


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for B (ppm)

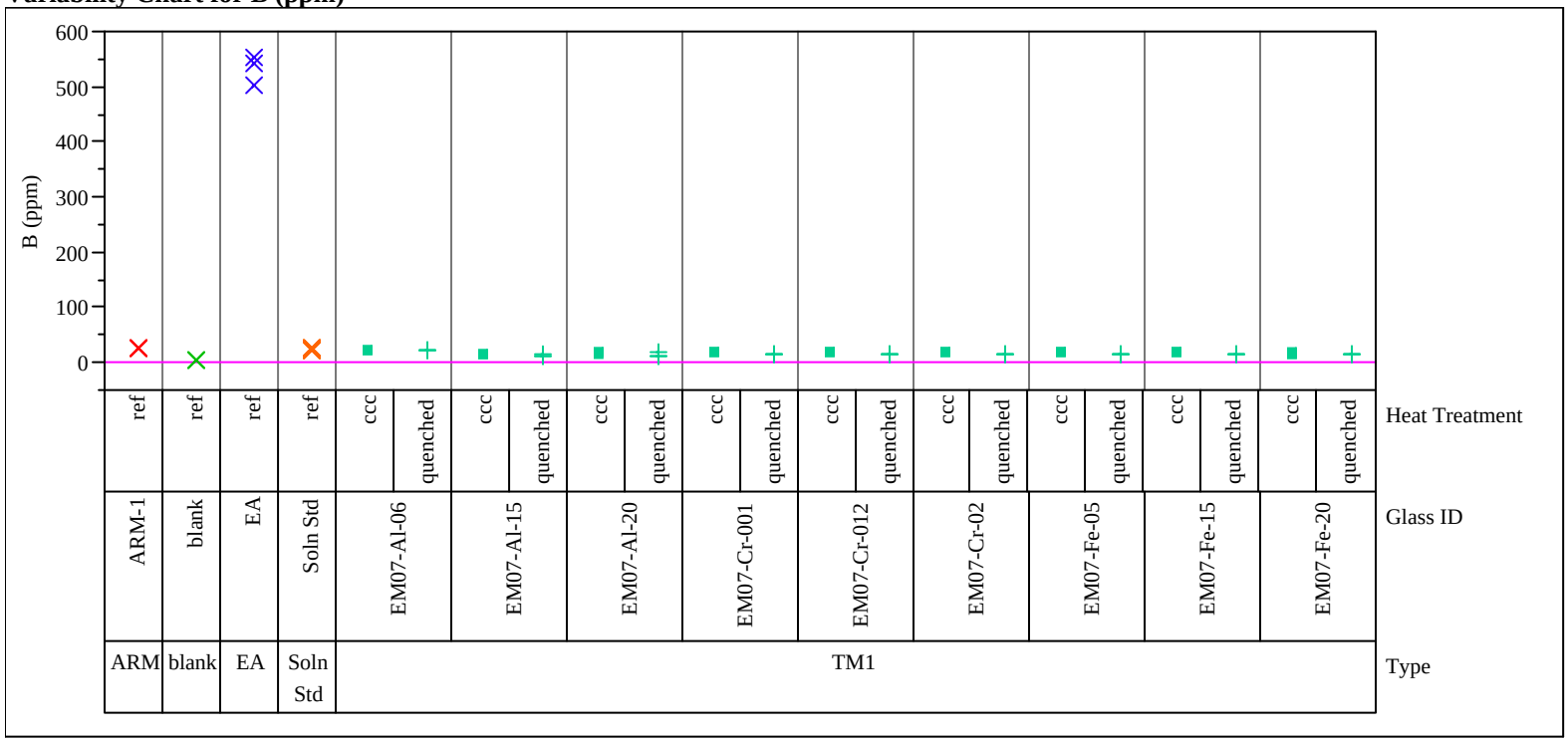


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for Li (ppm)

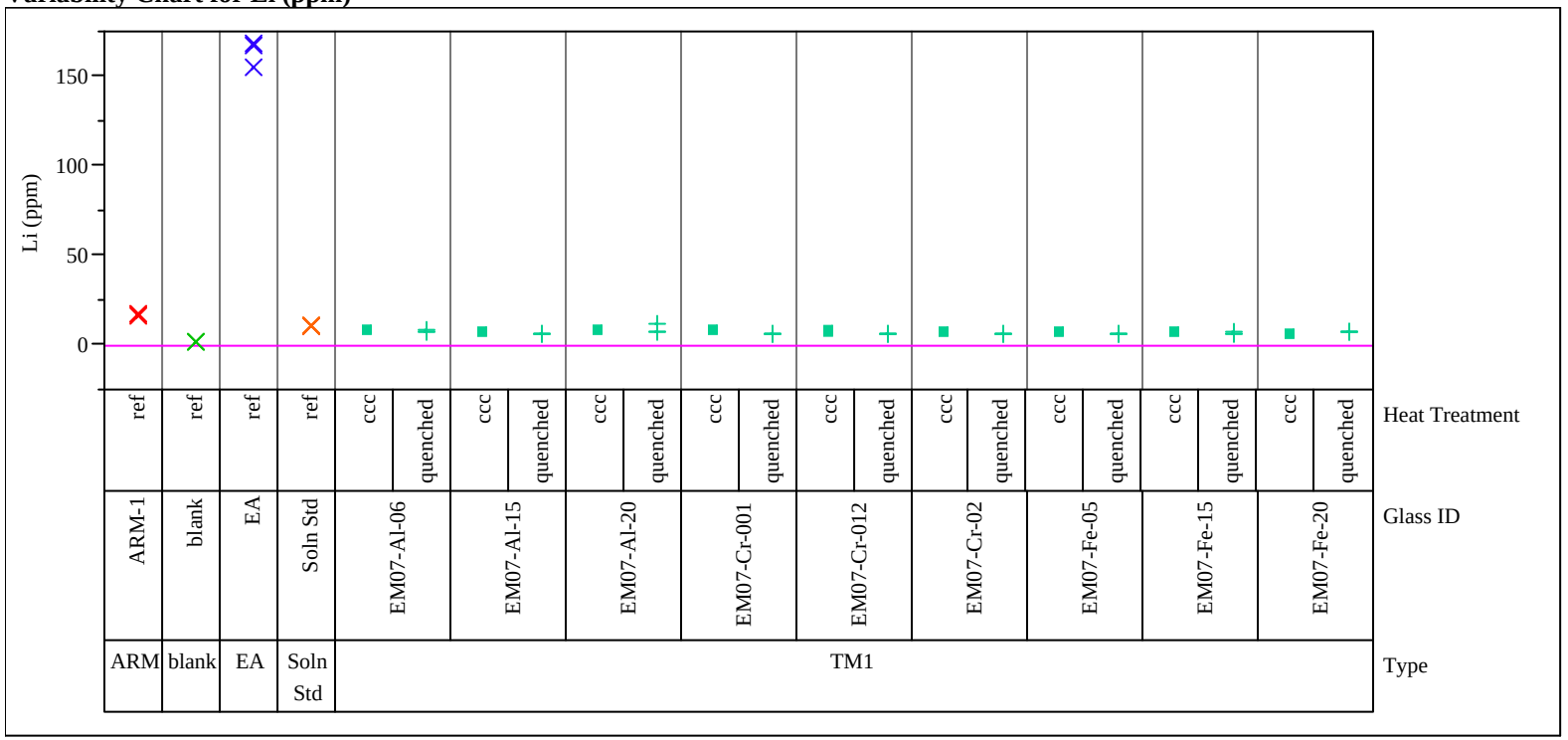


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for Na (ppm)

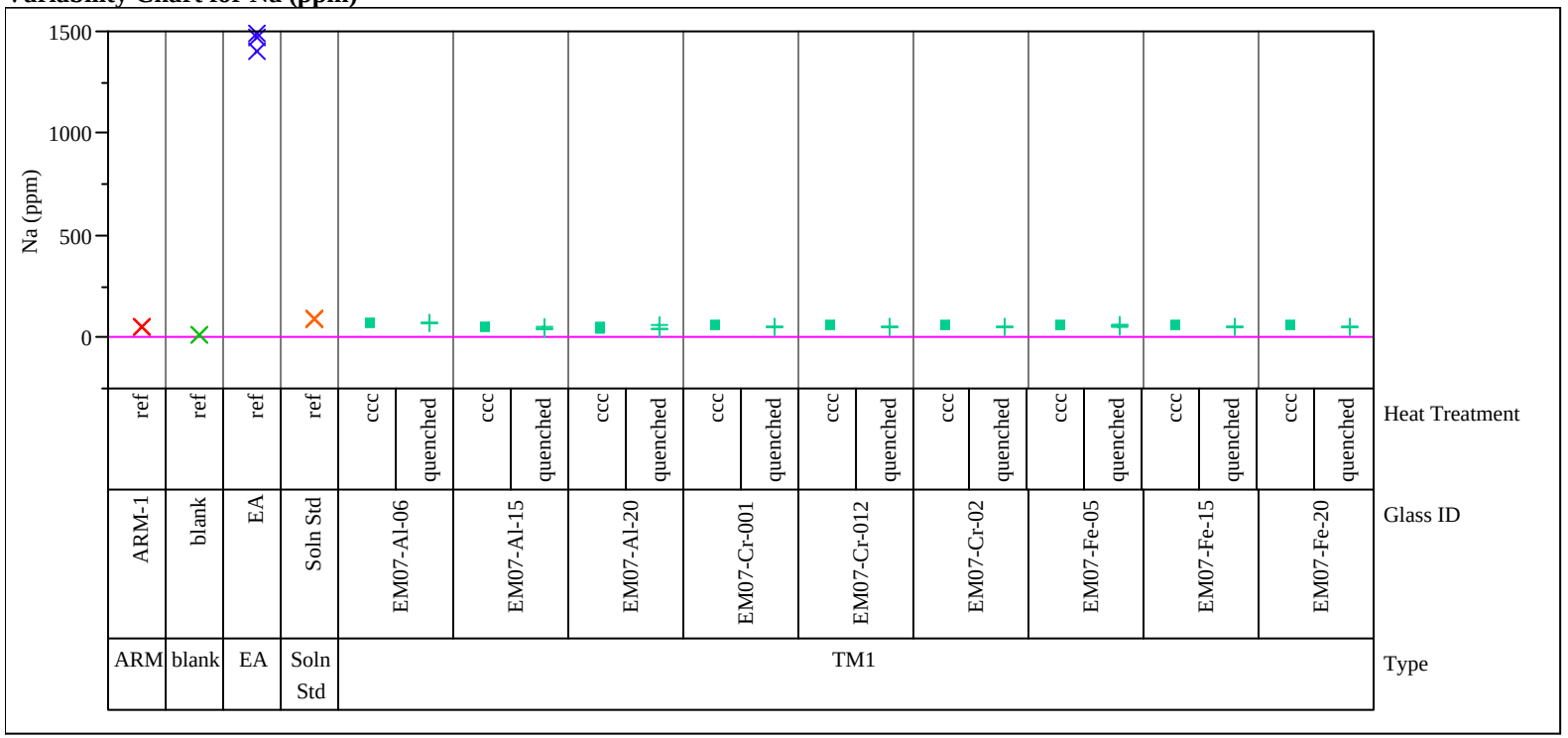


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for Si (ppm)

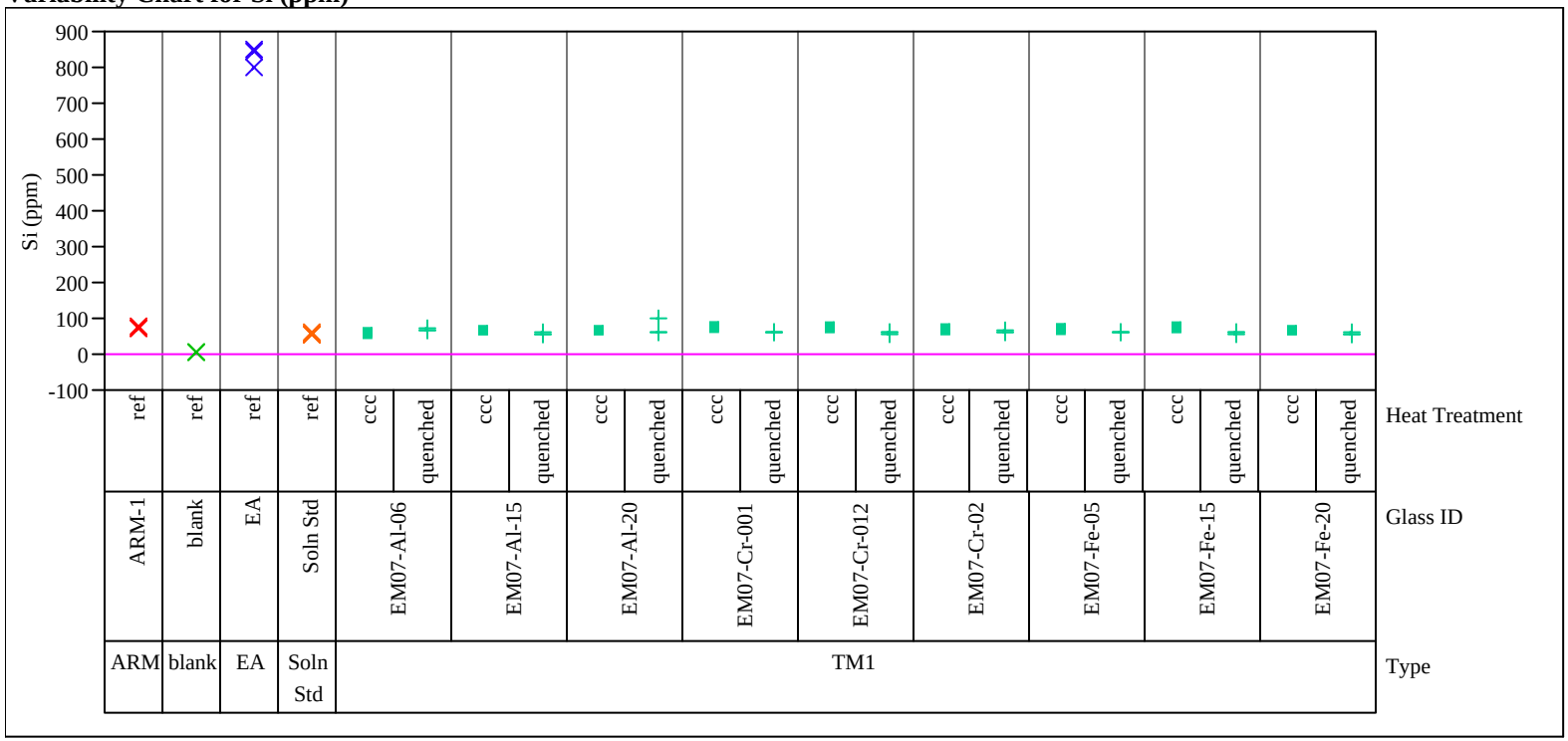


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for log[B ppm]

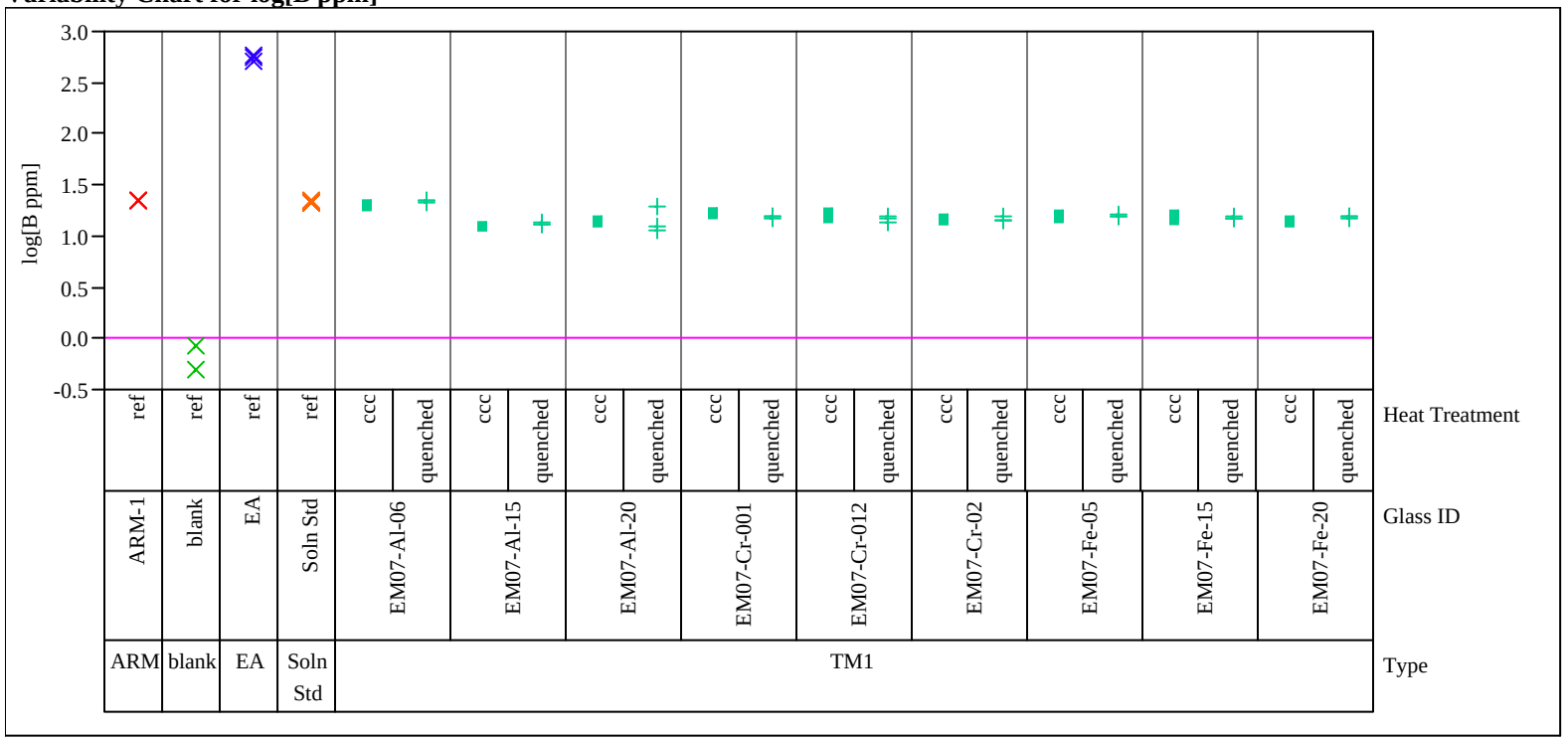


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for log[Li ppm]

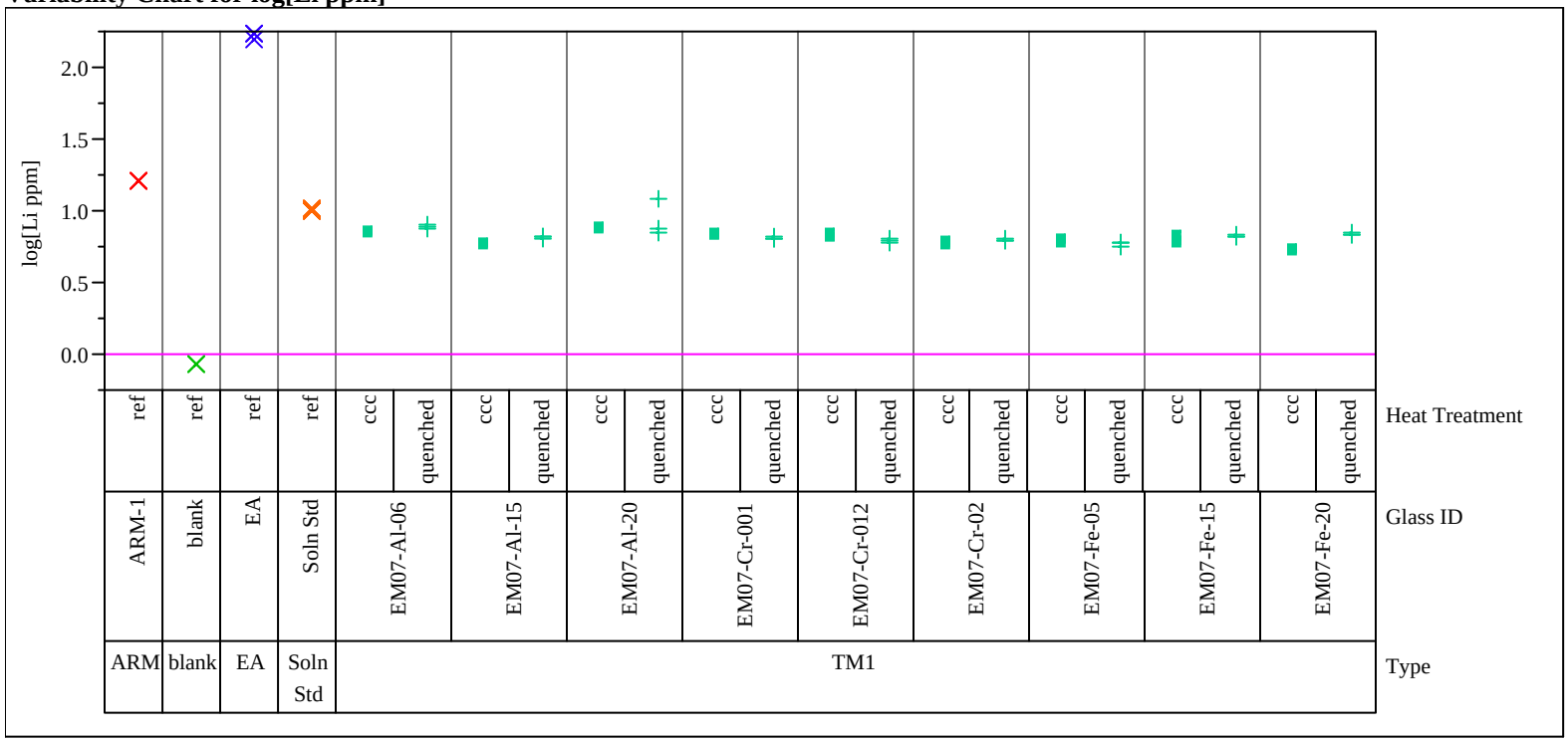


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for log[Na ppm]

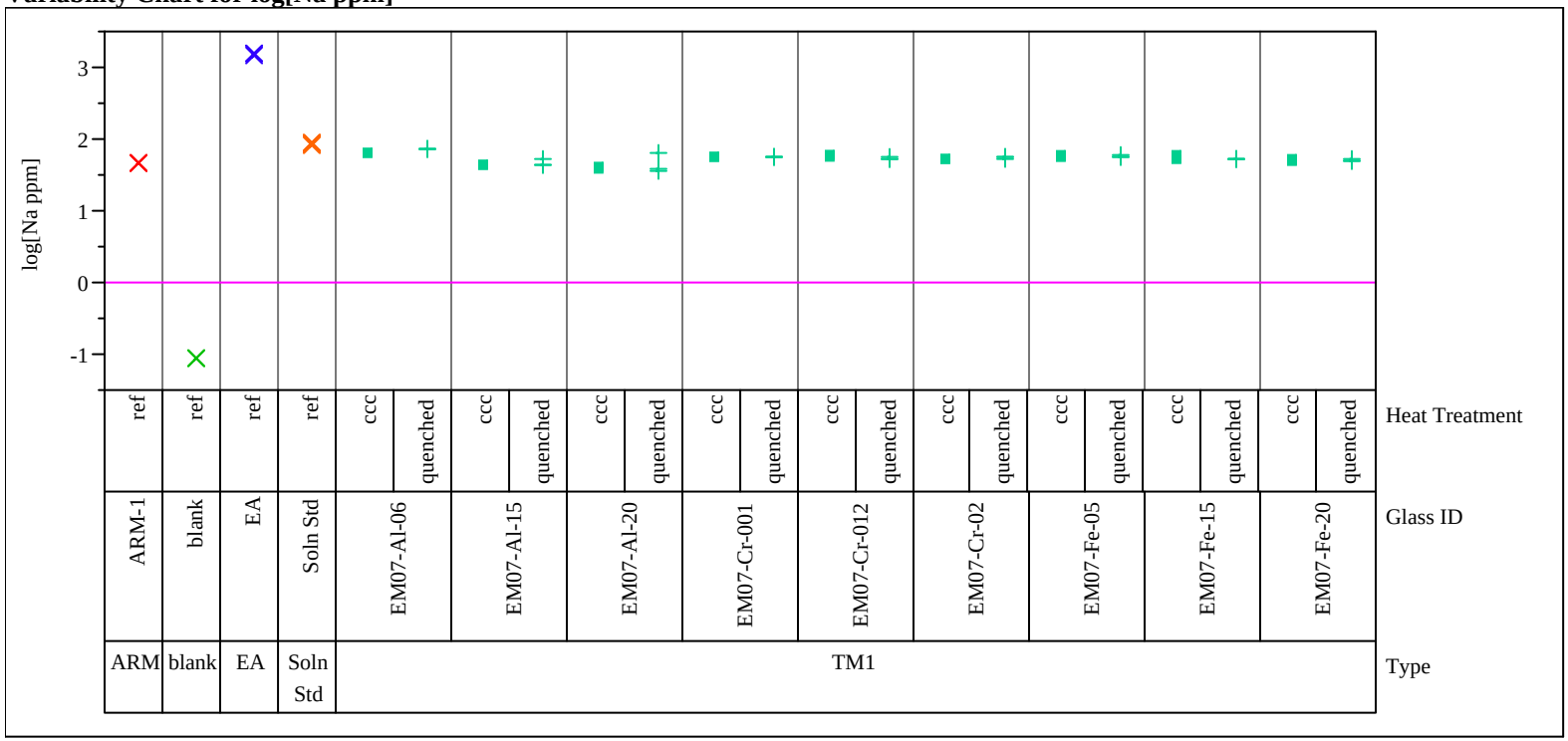


Figure B4. Laboratory PCT Measurements by Glass Number for Study Glasses and Standards
(ppm and log(ppm))

Variability Gage Set=4
Variability Chart for log[Si ppm]

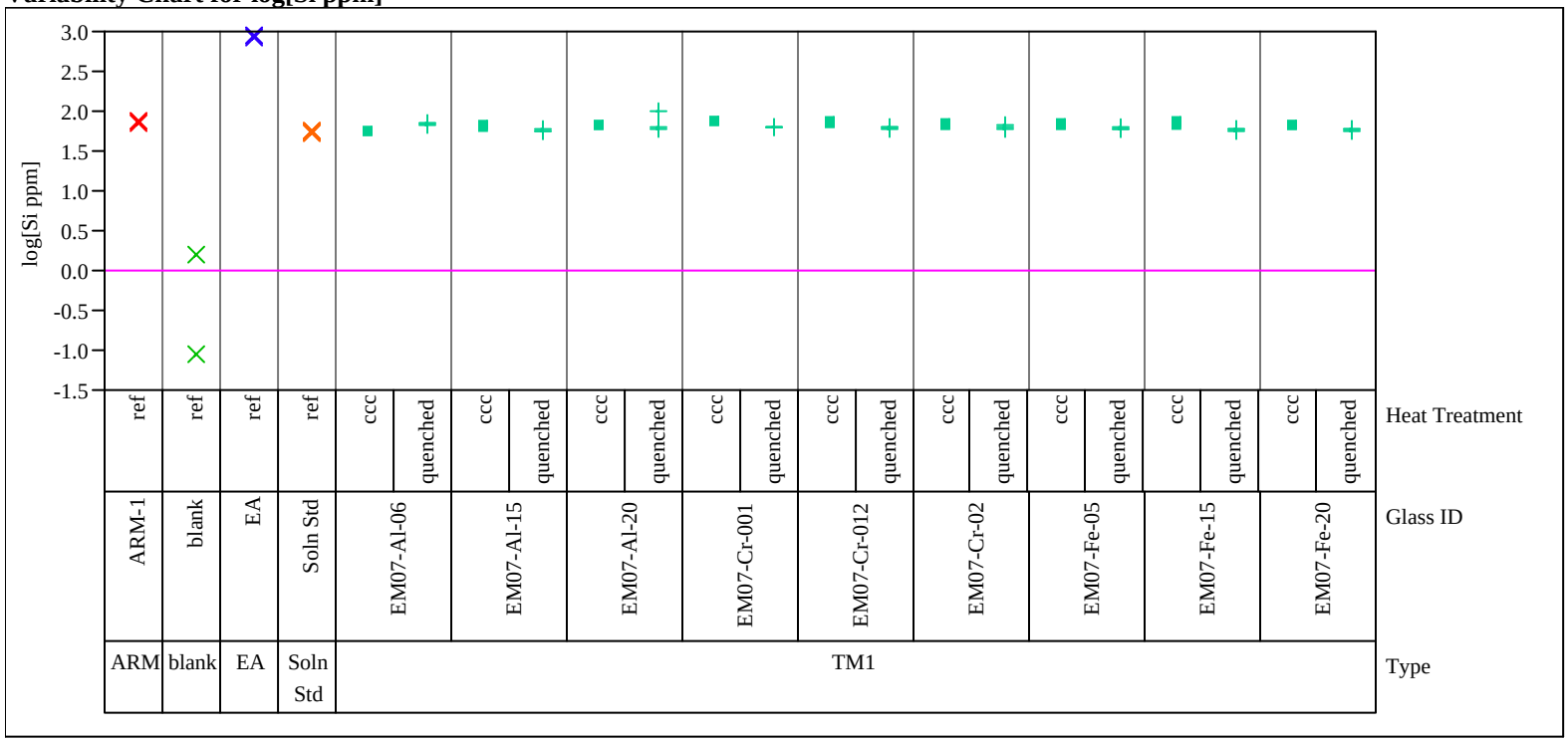


Figure B5. Correlations and Scatter Plots of Normalized PCTs Over All Compositional Views and Heat Treatments

Correlations

	log NL[B (g/L)]	log NL[Li(g/L)]	log NL[Na (g/L)]	log NL[Si (g/L)]
log NL[B (g/L)]	1.0000	0.9647	0.8320	0.5757
log NL[Li(g/L)]	0.9647	1.0000	0.7308	0.5271
log NL[Na (g/L)]	0.8320	0.7308	1.0000	0.5650
log NL[Si (g/L)]	0.5757	0.5271	0.5650	1.0000

Scatterplot Matrix

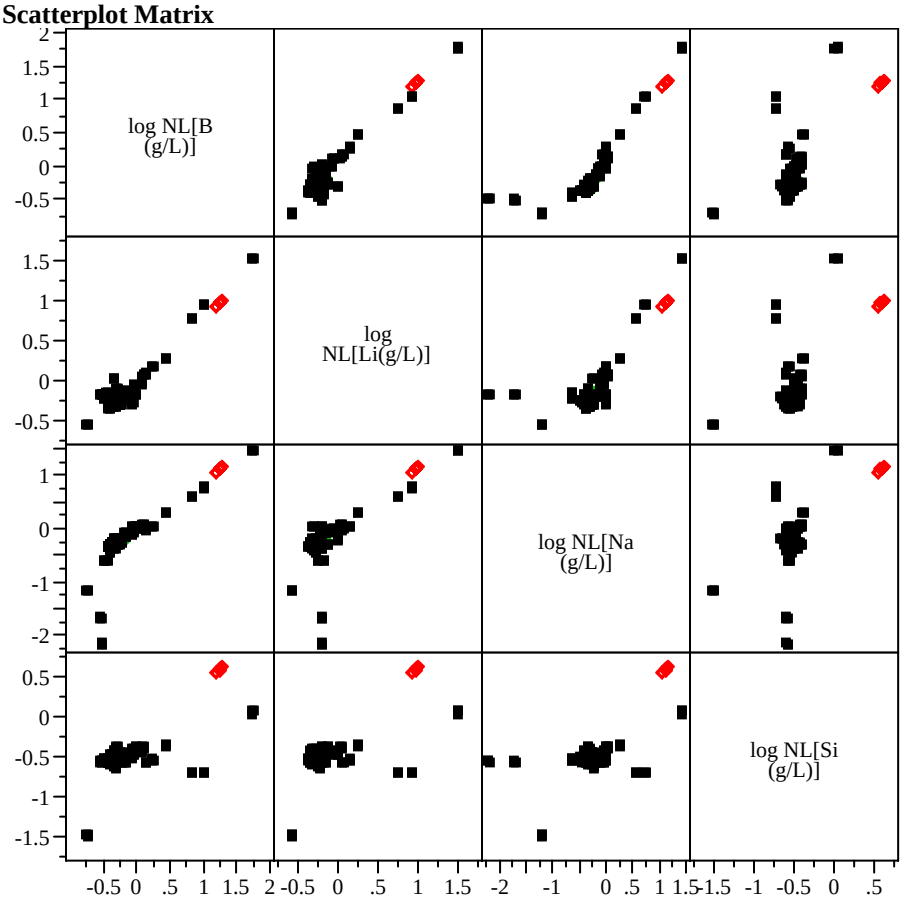
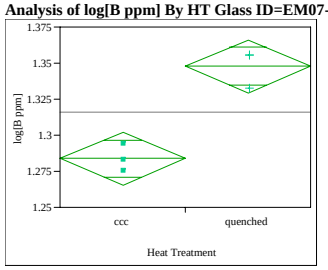


Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Al-06



Anova
Summary of Fit

Rsquare	0.920592
Adj Rsquare	0.90074
Root Mean Square Error	0.011511
Mean of Response	1.315745
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.064003	t Ratio	6.809767
Std Err Dif	0.009399	DF	4
Upper CL Dif	0.090098	Prob > |t|	0.0024
Lower CL Dif	0.037908	Prob > t	0.0012
Confidence	0.95	Prob < t	0.9988

Analysis of Variance

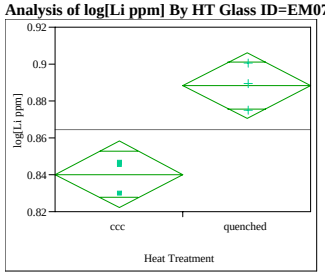
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00614459	0.006145	46.3729	0.0024
Error	4	0.00053002	0.000133		
C. Total	5	0.00667461			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.28374	0.00665	1.2653	1.3022
quenched	3	1.34775	0.00665	1.3293	1.3662

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Al-06



Anova
Summary of Fit

Rsquare	0.873964
Adj Rsquare	0.842455
Root Mean Square Error	0.011178
Mean of Response	0.864219
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.048066	t Ratio	5.266581
Std Err Dif	0.009127	DF	4
Upper CL Dif	0.073405	Prob > |t|	0.0062
Lower CL Dif	0.022726	Prob > t	0.0031
Confidence	0.95	Prob < t	0.9969

Analysis of Variance

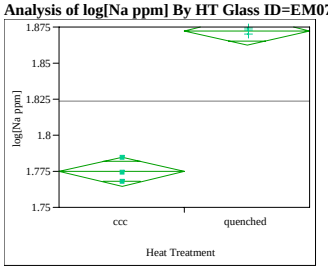
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00346548	0.003465	27.7369	0.0062
Error	4	0.00049977	0.000125		
C. Total	5	0.00396525			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.840186	0.00645	0.82227	0.85810
quenched	3	0.888252	0.00645	0.87033	0.90617

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Al-06



Anova
Summary of Fit

Rsquare	0.989194
Adj Rsquare	0.986493
Root Mean Square Error	0.006247
Mean of Response	1.82368
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.097611	t Ratio	19.13553
Std Err Dif	0.005101	DF	4
Upper CL Dif	0.111774	Prob > |t|	<.0001
Lower CL Dif	0.083449	Prob > t	<.0001
Confidence	0.95	Prob < t	1.0000

Analysis of Variance

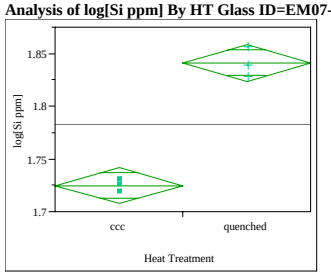
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01429200	0.014292	366.1686	<.0001
Error	4	0.00015612	0.000039		
C. Total	5	0.01444812			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.77487	0.00361	1.7649	1.7849
quenched	3	1.87249	0.00361	1.8625	1.8825

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Al-06



Anova
Summary of Fit

Rsquare	0.977712
Adj Rsquare	0.97214
Root Mean Square Error	0.010765
Mean of Response	1.78293
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.116428	t Ratio	13.24635
Std Err Dif	0.008789	DF	4
Upper CL Dif	0.140831	Prob > |t|	0.0002
Lower CL Dif	0.092024	Prob > t	<.0001
Confidence	0.95	Prob < t	0.9999

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.02033308	0.020333	175.4657	0.0002
Error	4	0.00046352	0.000116		
C. Total	5	0.02079660			

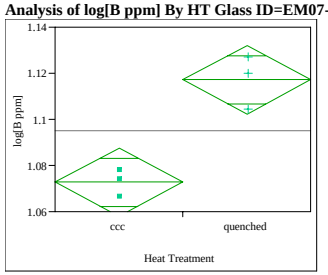
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.72472	0.00622	1.7075	1.7420
quenched	3	1.84114	0.00622	1.8239	1.8584

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Al-15



Anova
Summary of Fit

Rsquare	0.897252
Adj Rsquare	0.871565
Root Mean Square Error	0.009221
Mean of Response	1.094929
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.044495	t Ratio	5.91017
Std Err Dif	0.007529	DF	4
Upper CL Dif	0.065398	Prob > |t|	0.0041
Lower CL Dif	0.023593	Prob > t	0.0021
Confidence	0.95	Prob < t	0.9979

Analysis of Variance

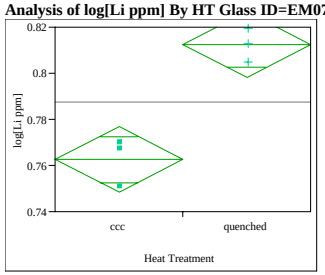
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00296975	0.002970	34.9301	0.0041
Error	4	0.00034008	0.000085		
C. Total	5	0.00330982			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.07268	0.00532	1.0579	1.0875
quenched	3	1.11718	0.00532	1.1024	1.1320

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Al-15



Anova
Summary of Fit

Rsquare	0.92237
Adj Rsquare	0.902962
Root Mean Square Error	0.00888
Mean of Response	0.787517
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.049987	t Ratio	6.893928
Std Err Dif	0.007251	DF	4
Upper CL Dif	0.070118	Prob > |t|	0.0023
Lower CL Dif	0.029855	Prob > t	0.0012
Confidence	0.95	Prob < t	0.9988

Analysis of Variance

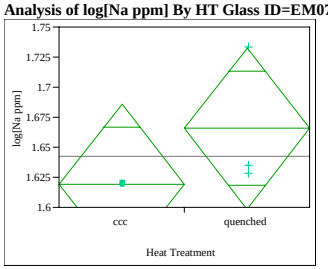
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00374800	0.003748	47.5262	0.0023
Error	4	0.00031545	0.000079		
C. Total	5	0.00406345			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.762524	0.00513	0.74829	0.77676
quenched	3	0.812510	0.00513	0.79828	0.82675

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Al-15



Anova
Summary of Fit

Rsquare	0.318448
Adj Rsquare	0.148061
Root Mean Square Error	0.041701
Mean of Response	1.642491
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.04655	t Ratio	1.3671
Std Err Dif	0.03405	DF	4
Upper CL Dif	0.14108	Prob > |t|	0.2434
Lower CL Dif	-0.04799	Prob > t	0.1217
Confidence	0.95	Prob < t	0.8783

Analysis of Variance

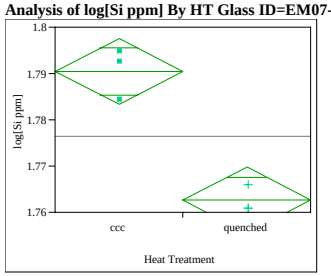
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00325007	0.003250	1.8690	0.2434
Error	4	0.00695589	0.001739		
C. Total	5	0.01020596			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.61922	0.02408	1.5524	1.6861
quenched	3	1.66577	0.02408	1.5989	1.7326

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Al-15



Anova
Summary of Fit

Rsquare	0.93677
Adj Rsquare	0.920962
Root Mean Square Error	0.004428
Mean of Response	1.776512
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02783	t Ratio	-7.6981
Std Err Dif	0.00362	DF	4
Upper CL Dif	-0.01779	Prob > |t|	0.0015
Lower CL Dif	-0.03787	Prob > t	0.9992
Confidence	0.95	Prob < t	0.0008

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00116168	0.001162	59.2608	0.0015
Error	4	0.00007841	0.000020		
C. Total	5	0.00124010			

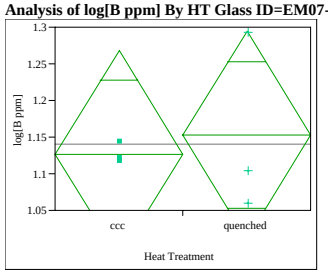
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.79043	0.00256	1.7833	1.7975
quenched	3	1.76260	0.00256	1.7555	1.7697

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Al-20



Anova
Summary of Fit

Rsquare	0.03045
Adj Rsquare	-0.21194
Root Mean Square Error	0.088399
Mean of Response	1.139752
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02558	t Ratio	0.354436
Std Err Dif	0.07218	DF	4
Upper CL Dif	0.22598	Prob > |t|	0.7409
Lower CL Dif	-0.17482	Prob > t	0.3705
Confidence	0.95	Prob < t	0.6295

Analysis of Variance

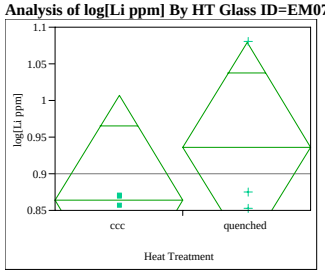
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00098169	0.000982	0.1256	0.7409
Error	4	0.03125786	0.007814		
C. Total	5	0.03223955			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.12696	0.05104	0.9853	1.2687
quenched	3	1.15254	0.05104	1.0108	1.2942

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Al-20



Anova
Summary of Fit

Rsquare	0.195448
Adj Rsquare	-0.00569
Root Mean Square Error	0.08901
Mean of Response	0.900096
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.07164	t Ratio	0.985752
Std Err Dif	0.07268	DF	4
Upper CL Dif	0.27342	Prob > |t|	0.3801
Lower CL Dif	-0.13014	Prob > t	0.1900
Confidence	0.95	Prob < t	0.8100

Analysis of Variance

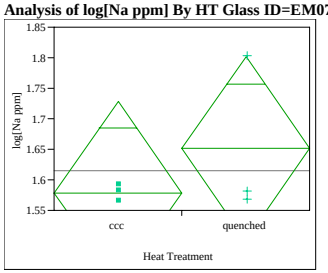
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00769861	0.007699	0.9717	0.3801
Error	4	0.03169104	0.007923		
C. Total	5	0.03938965			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.864276	0.05139	0.72159	1.0070
quenched	3	0.935917	0.05139	0.79324	1.0786

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Al-20



Anova
Summary of Fit

Rsquare	0.181012
Adj Rsquare	-0.02374
Root Mean Square Error	0.093628
Mean of Response	1.614955
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.07188	t Ratio	0.940253
Std Err Dif	0.07645	DF	4
Upper CL Dif	0.28413	Prob > |t|	0.4003
Lower CL Dif	-0.14037	Prob > t	0.2002
Confidence	0.95	Prob < t	0.7998

Analysis of Variance

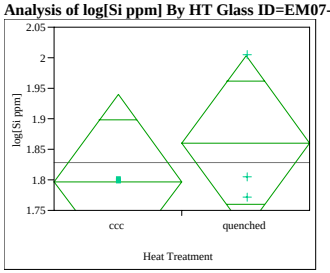
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00775006	0.007750	0.8841	0.4003
Error	4	0.03506515	0.008766		
C. Total	5	0.04281521			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.57902	0.05406	1.4289	1.7291
quenched	3	1.65090	0.05406	1.5008	1.8010

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Al-20



Anova
Summary of Fit

Rsquare	0.158846
Adj Rsquare	-0.05144
Root Mean Square Error	0.088871
Mean of Response	1.828958
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.06307	t Ratio	0.869121
Std Err Dif	0.07256	DF	4
Upper CL Dif	0.26453	Prob > |t|	0.4338
Lower CL Dif	-0.13840	Prob > t	0.2169
Confidence	0.95	Prob < t	0.7831

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00596598	0.005966	0.7554	0.4338
Error	4	0.03159233	0.007898		
C. Total	5	0.03755831			

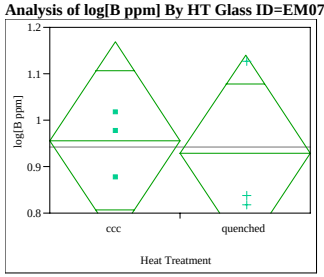
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.79742	0.05131	1.6550	1.9399
quenched	3	1.86049	0.05131	1.7180	2.0029

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-B-05



Anova
Summary of Fit

Rsquare	0.016686
Adj Rsquare	-0.22914
Root Mean Square Error	0.132754
Mean of Response	0.942075
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02824	t Ratio	-0.26053
Std Err Dif	0.10839	DF	4
Upper CL Dif	0.27271	Prob > |t|	0.8073
Lower CL Dif	-0.32919	Prob > t	0.5963
Confidence	0.95	Prob < t	0.4037

Analysis of Variance

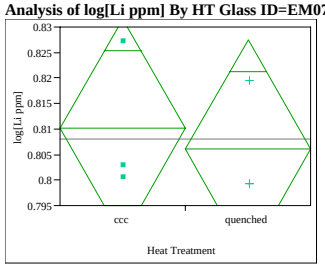
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00119626	0.001196	0.0679	0.8073
Error	4	0.07049469	0.017624		
C. Total	5	0.07169095			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.956195	0.07665	0.74339	1.1690
quenched	3	0.927955	0.07665	0.71515	1.1408

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-B-05



Anova
Summary of Fit

Rsquare	0.033754
Adj Rsquare	-0.20781
Root Mean Square Error	0.013314
Mean of Response	0.808115
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00406	t Ratio	-0.37381
Std Err Dif	0.01087	DF	4
Upper CL Dif	0.02612	Prob > |t|	0.7275
Lower CL Dif	-0.03424	Prob > t	0.6362
Confidence	0.95	Prob < t	0.3638

Analysis of Variance

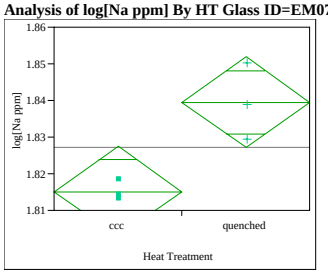
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00002477	0.000025	0.1397	0.7275
Error	4	0.00070901	0.000177		
C. Total	5	0.00073378			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.810147	0.00769	0.78881	0.83149
quenched	3	0.806084	0.00769	0.78474	0.82743

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-B-05



Anova
Summary of Fit

Rsquare	0.789525
Adj Rsquare	0.736907
Root Mean Square Error	0.007694
Mean of Response	1.827305
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.024335	t Ratio	3.873585
Std Err Dif	0.006282	DF	4
Upper CL Dif	0.041778	Prob > |t|	0.0179
Lower CL Dif	0.006893	Prob > t	0.0090
Confidence	0.95	Prob < t	0.9910

Analysis of Variance

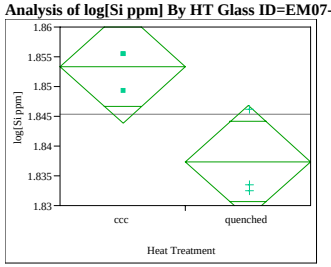
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00088831	0.000888	15.0047	0.0179
Error	4	0.00023681	0.000059		
C. Total	5	0.00112512			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.81514	0.00444	1.8028	1.8275
quenched	3	1.83947	0.00444	1.8271	1.8518

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-B-05



Anova
Summary of Fit

Rsquare	0.730363
Adj Rsquare	0.662953
Root Mean Square Error	0.005908
Mean of Response	1.845352
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01588	t Ratio	-3.29162
Std Err Dif	0.00482	DF	4
Upper CL Dif	-0.00249	Prob > |t|	0.0302
Lower CL Dif	-0.02927	Prob > t	0.9849
Confidence	0.95	Prob < t	0.0151

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00037822	0.000378	10.8347	0.0302
Error	4	0.00013963	0.000035		
C. Total	5	0.00051785			

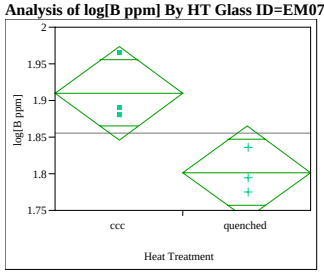
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.85329	0.00341	1.8438	1.8628
quenched	3	1.83741	0.00341	1.8279	1.8469

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-B-15



Anova
Summary of Fit

Rsquare	0.735208
Adj Rsquare	0.66901
Root Mean Square Error	0.039822
Mean of Response	1.856182
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.10836	t Ratio	-3.33259
Std Err Dif	0.03251	DF	4
Upper CL Dif	-0.01808	Prob > |t|	0.0290
Lower CL Dif	-0.19863	Prob > t	0.9855
Confidence	0.95	Prob < t	0.0145

Analysis of Variance

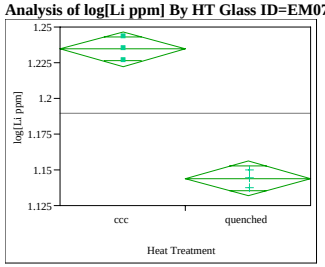
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01761239	0.017612	11.1062	0.0290
Error	4	0.00634327	0.001586		
C. Total	5	0.02395566			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.91036	0.02299	1.8465	1.9742
quenched	3	1.80200	0.02299	1.7382	1.8658

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-B-15



Anova
Summary of Fit

Rsquare	0.981887
Adj Rsquare	0.977359
Root Mean Square Error	0.007536
Mean of Response	1.189336
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.09061	t Ratio	-14.7254
Std Err Dif	0.00615	DF	4
Upper CL Dif	-0.07352	Prob > |t|	0.0001
Lower CL Dif	-0.10769	Prob > t	0.9999
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

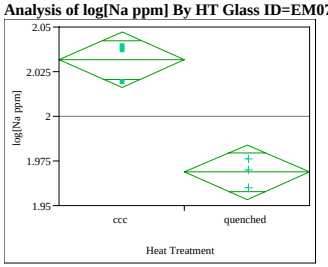
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01231496	0.012315	216.8387	0.0001
Error	4	0.00022717	0.000057		
C. Total	5	0.01254214			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.23464	0.00435	1.2226	1.2467
quenched	3	1.14403	0.00435	1.1320	1.1561

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-B-15



Anova
Summary of Fit

Rsquare	0.941201
Adj Rsquare	0.926502
Root Mean Square Error	0.00962
Mean of Response	2.000125
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.06285	t Ratio	-8.00179
Std Err Dif	0.00785	DF	4
Upper CL Dif	-0.04104	Prob > |t|	0.0013
Lower CL Dif	-0.08466	Prob > t	0.9993
Confidence	0.95	Prob < t	0.0007

Analysis of Variance

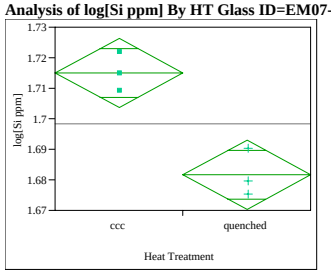
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00592587	0.005926	64.0287	0.0013
Error	4	0.00037020	0.000093		
C. Total	5	0.00629607			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.03155	0.00555	2.0161	2.0470
quenched	3	1.96870	0.00555	1.9533	1.9841

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-B-15



Anova
Summary of Fit

Rsquare	0.894003
Adj Rsquare	0.867503
Root Mean Square Error	0.007031
Mean of Response	1.69838
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.03335	t Ratio	-5.80834
Std Err Dif	0.00574	DF	4
Upper CL Dif	-0.01741	Prob > |t|	0.0044
Lower CL Dif	-0.04929	Prob > t	0.9978
Confidence	0.95	Prob < t	0.0022

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00166794	0.001668	33.7368	0.0044
Error	4	0.00019776	0.000049		
C. Total	5	0.00186570			

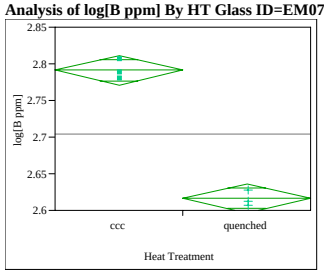
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.71505	0.00406	1.7038	1.7263
quenched	3	1.68171	0.00406	1.6704	1.6930

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-B-20



Anova
Summary of Fit

Rsquare	0.986799
Adj Rsquare	0.983498
Root Mean Square Error	0.012386
Mean of Response	2.703652
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.17487	t Ratio	-17.2916
Std Err Dif	0.01011	DF	4
Upper CL Dif	-0.14679	Prob > |t|	<.0001
Lower CL Dif	-0.20295	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

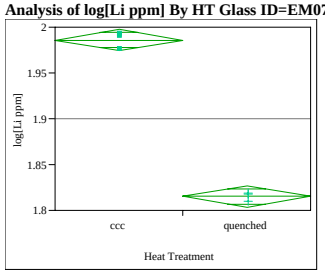
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.04586835	0.045868	298.9994	<.0001
Error	4	0.00061362	0.000153		
C. Total	5	0.04648197			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.79109	0.00715	2.7712	2.8109
quenched	3	2.61622	0.00715	2.5964	2.6361

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-B-20



Anova
Summary of Fit

Rsquare	0.995259
Adj Rsquare	0.994073
Root Mean Square Error	0.007211
Mean of Response	1.900424
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.17060	t Ratio	-28.9762
Std Err Dif	0.00589	DF	4
Upper CL Dif	-0.15425	Prob > |t|	<.0001
Lower CL Dif	-0.18694	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

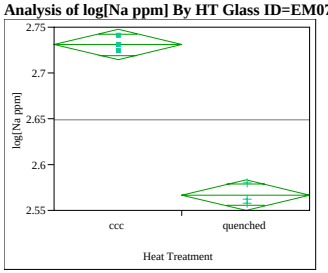
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.04365512	0.043655	839.6226	<.0001
Error	4	0.00020797	0.000052		
C. Total	5	0.04386310			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.98572	0.00416	1.9742	1.9973
quenched	3	1.81513	0.00416	1.8036	1.8267

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-B-20



Anova
Summary of Fit

Rsquare	0.989823
Adj Rsquare	0.987278
Root Mean Square Error	0.010196
Mean of Response	2.648902
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.16420	t Ratio	-19.7239
Std Err Dif	0.00832	DF	4
Upper CL Dif	-0.14108	Prob > |t|	<.0001
Lower CL Dif	-0.18731	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

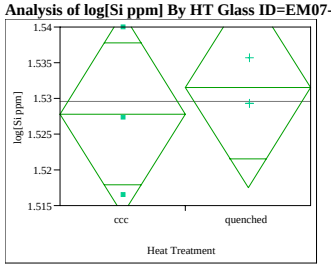
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.04044088	0.040441	389.0306	<.0001
Error	4	0.00041581	0.000104		
C. Total	5	0.04085669			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.73100	0.00589	2.7147	2.7473
quenched	3	2.56680	0.00589	2.5505	2.5831

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-B-20



Anova
Summary of Fit

Rsquare	0.061596
Adj Rsquare	-0.17301
Root Mean Square Error	0.008747
Mean of Response	1.529647
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00366	t Ratio	0.512402
Std Err Dif	0.00714	DF	4
Upper CL Dif	0.02349	Prob > |t|	0.6354
Lower CL Dif	-0.01617	Prob > t	0.3177
Confidence	0.95	Prob < t	0.6823

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00002009	0.000020	0.2626	0.6354
Error	4	0.00030603	0.000077		
C. Total	5	0.00032612			

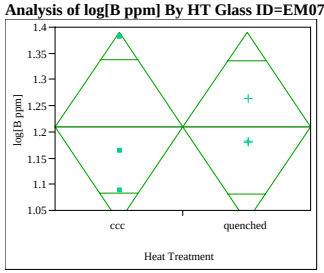
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.52782	0.00505	1.5138	1.5418
quenched	3	1.53148	0.00505	1.5175	1.5455

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Bi-025



Anova
Summary of Fit

Rsquare	5.124e-5
Adj Rsquare	-0.24994
Root Mean Square Error	0.112809
Mean of Response	1.209326
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00132	t Ratio	-0.01432
Std Err Dif	0.09211	DF	4
Upper CL Dif	0.25441	Prob > |t|	0.9893
Lower CL Dif	-0.25705	Prob > t	0.5054
Confidence	0.95	Prob < t	0.4946

Analysis of Variance

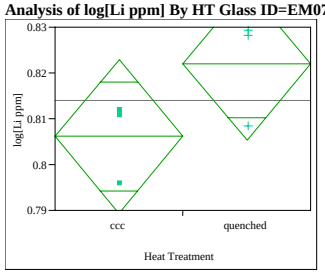
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00000261	2.608e-6	0.0002	0.9893
Error	4	0.05090345	0.012726		
C. Total	5	0.05090606			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.20999	0.06513	1.0292	1.3908
quenched	3	1.20867	0.06513	1.0278	1.3895

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Bi-025



Anova
Summary of Fit

Rsquare	0.465365
Adj Rsquare	0.331707
Root Mean Square Error	0.010417
Mean of Response	0.814063
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01587	t Ratio	1.865943
Std Err Dif	0.00851	DF	4
Upper CL Dif	0.03948	Prob > |t|	0.1355
Lower CL Dif	-0.00774	Prob > t	0.0677
Confidence	0.95	Prob < t	0.9323

Analysis of Variance

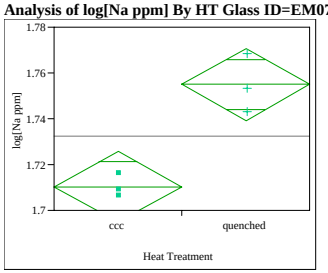
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00037780	0.000378	3.4817	0.1355
Error	4	0.00043404	0.000109		
C. Total	5	0.00081184			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.806128	0.00601	0.78943	0.82283
quenched	3	0.821999	0.00601	0.80530	0.83870

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Bi-025



Anova
Summary of Fit

Rsquare	0.887241
Adj Rsquare	0.859051
Root Mean Square Error	0.00972
Mean of Response	1.73265
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.044522	t Ratio	5.610164
Std Err Dif	0.007936	DF	4
Upper CL Dif	0.066556	Prob > |t|	0.0050
Lower CL Dif	0.022488	Prob > t	0.0025
Confidence	0.95	Prob < t	0.9975

Analysis of Variance

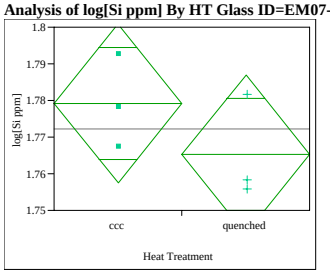
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00297335	0.002973	31.4739	0.0050
Error	4	0.00037788	0.000094		
C. Total	5	0.00335123			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.71039	0.00561	1.6948	1.7260
quenched	3	1.75491	0.00561	1.7393	1.7705

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Bi-025



Anova
Summary of Fit

Rsquare	0.284562
Adj Rsquare	0.105703
Root Mean Square Error	0.013484
Mean of Response	1.772298
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01389	t Ratio	-1.26134
Std Err Dif	0.01101	DF	4
Upper CL Dif	0.01668	Prob > |t|	0.2757
Lower CL Dif	-0.04446	Prob > t	0.8621
Confidence	0.95	Prob < t	0.1379

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00028928	0.000289	1.5910	0.2757
Error	4	0.00072730	0.000182		
C. Total	5	0.00101657			

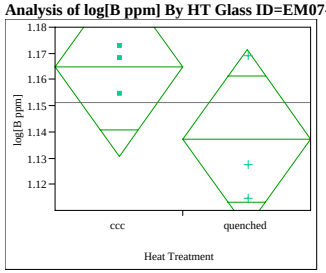
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.77924	0.00779	1.7576	1.8009
quenched	3	1.76535	0.00779	1.7437	1.7870

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Bi-05



Anova
Summary of Fit

Rsquare	0.389524
Adj Rsquare	0.236905
Root Mean Square Error	0.021314
Mean of Response	1.151052
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02780	t Ratio	-1.59758
Std Err Dif	0.01740	DF	4
Upper CL Dif	0.02052	Prob > |t|	0.1854
Lower CL Dif	-0.07612	Prob > t	0.9073
Confidence	0.95	Prob < t	0.0927

Analysis of Variance

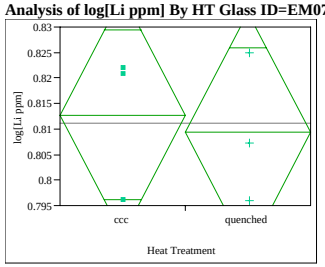
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00115941	0.001159	2.5523	0.1854
Error	4	0.00181707	0.000454		
C. Total	5	0.00297647			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.16495	0.01231	1.1308	1.1991
quenched	3	1.13715	0.01231	1.1030	1.1713

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Bi-05



Anova
Summary of Fit

Rsquare	0.019316
Adj Rsquare	-0.22586
Root Mean Square Error	0.014644
Mean of Response	0.811081
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00336	t Ratio	-0.28069
Std Err Dif	0.01196	DF	4
Upper CL Dif	0.02984	Prob > |t|	0.7929
Lower CL Dif	-0.03655	Prob > t	0.6036
Confidence	0.95	Prob < t	0.3964

Analysis of Variance

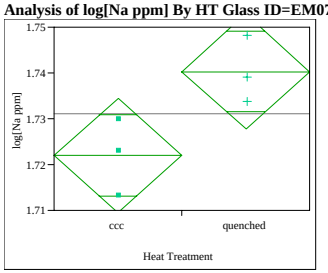
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00001690	0.000017	0.0788	0.7929
Error	4	0.00085782	0.000214		
C. Total	5	0.00087471			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.812759	0.00845	0.78928	0.83623
quenched	3	0.809403	0.00845	0.78593	0.83288

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Bi-05



Anova
Summary of Fit

Rsquare	0.674672
Adj Rsquare	0.59334
Root Mean Square Error	0.007816
Mean of Response	1.73114
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.018381	t Ratio	2.880155
Std Err Dif	0.006382	DF	4
Upper CL Dif	0.036099	Prob > |t|	0.0450
Lower CL Dif	0.000662	Prob > t	0.0225
Confidence	0.95	Prob < t	0.9775

Analysis of Variance

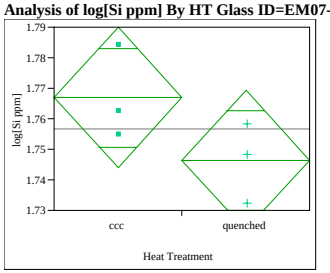
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00050677	0.000507	8.2953	0.0450
Error	4	0.00024436	0.000061		
C. Total	5	0.00075113			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.72195	0.00451	1.7094	1.7345
quenched	3	1.74033	0.00451	1.7278	1.7529

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Bi-05



Anova
Summary of Fit

Rsquare	0.439807
Adj Rsquare	0.299759
Root Mean Square Error	0.014268
Mean of Response	1.756661
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02064	t Ratio	-1.77212
Std Err Dif	0.01165	DF	4
Upper CL Dif	0.01170	Prob > |t|	0.1511
Lower CL Dif	-0.05299	Prob > t	0.9245
Confidence	0.95	Prob < t	0.0755

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00063930	0.000639	3.1404	0.1511
Error	4	0.00081429	0.000204		
C. Total	5	0.00145360			

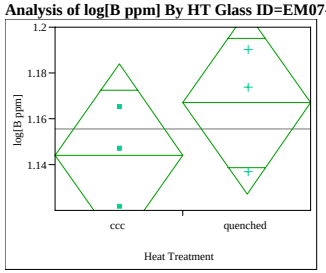
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.76698	0.00824	1.7441	1.7899
quenched	3	1.74634	0.00824	1.7235	1.7692

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-BL-1



Anova
Summary of Fit

Rsquare	0.238346
Adj Rsquare	0.047933
Root Mean Square Error	0.024853
Mean of Response	1.155565
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02270	t Ratio	1.118808
Std Err Dif	0.02029	DF	4
Upper CL Dif	0.07904	Prob > |t|	0.3259
Lower CL Dif	-0.03364	Prob > t	0.1629
Confidence	0.95	Prob < t	0.8371

Analysis of Variance

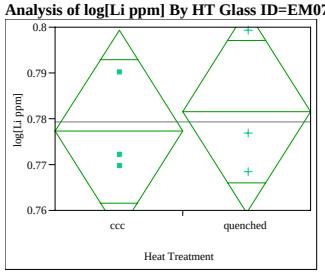
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00077314	0.000773	1.2517	0.3259
Error	4	0.00247063	0.000618		
C. Total	5	0.00324377			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.14421	0.01435	1.1044	1.1841
quenched	3	1.16692	0.01435	1.1271	1.2068

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-BL-1



Anova
Summary of Fit

Rsquare	0.035351
Adj Rsquare	-0.20581
Root Mean Square Error	0.013781
Mean of Response	0.779413
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00431	t Ratio	0.382868
Std Err Dif	0.01125	DF	4
Upper CL Dif	0.03555	Prob > |t|	0.7213
Lower CL Dif	-0.02693	Prob > t	0.3606
Confidence	0.95	Prob < t	0.6394

Analysis of Variance

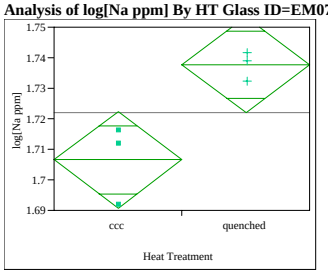
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00002784	0.000028	0.1466	0.7213
Error	4	0.00075965	0.000190		
C. Total	5	0.00078749			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.777259	0.00796	0.75517	0.79935
quenched	3	0.781567	0.00796	0.75948	0.80366

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-BL-1



Anova
Summary of Fit

Rsquare	0.791823
Adj Rsquare	0.739779
Root Mean Square Error	0.0098
Mean of Response	1.722108
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.031211	t Ratio	3.900571
Std Err Dif	0.008002	DF	4
Upper CL Dif	0.053428	Prob > |t|	0.0175
Lower CL Dif	0.008995	Prob > t	0.0088
Confidence	0.95	Prob < t	0.9912

Analysis of Variance

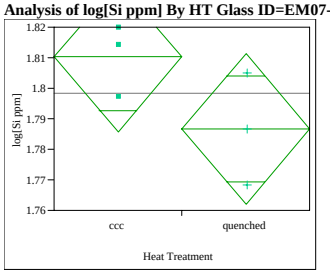
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00146122	0.001461	15.2145	0.0175
Error	4	0.00038416	0.000096		
C. Total	5	0.00184538			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.70650	0.00566	1.6908	1.7222
quenched	3	1.73771	0.00566	1.7220	1.7534

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-BL-1



Anova
Summary of Fit

Rsquare	0.467644
Adj Rsquare	0.334555
Root Mean Square Error	0.015387
Mean of Response	1.798435
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02355	t Ratio	-1.87451
Std Err Dif	0.01256	DF	4
Upper CL Dif	0.01133	Prob > |t|	0.1341
Lower CL Dif	-0.05843	Prob > t	0.9329
Confidence	0.95	Prob < t	0.0671

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00083196	0.000832	3.5138	0.1341
Error	4	0.00094708	0.000237		
C. Total	5	0.00177904			

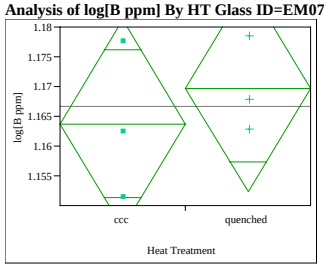
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.81021	0.00888	1.7855	1.8349
quenched	3	1.78666	0.00888	1.7620	1.8113

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-BL-2



Anova
Summary of Fit

Rsquare	0.101986
Adj Rsquare	-0.12252
Root Mean Square Error	0.010903
Mean of Response	1.166732
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00600	t Ratio	0.674
Std Err Dif	0.00890	DF	4
Upper CL Dif	0.03072	Prob > |t|	0.5373
Lower CL Dif	-0.01872	Prob > t	0.2686
Confidence	0.95	Prob < t	0.7314

Analysis of Variance

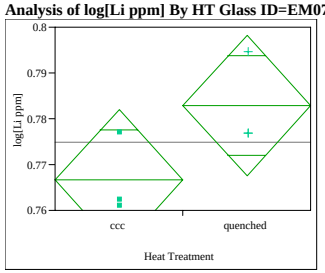
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00005400	0.000054	0.4543	0.5373
Error	4	0.00047550	0.000119		
C. Total	5	0.00052950			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.16373	0.00629	1.1463	1.1812
quenched	3	1.16973	0.00629	1.1523	1.1872

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-BL-2



Anova
Summary of Fit

Rsquare	0.515486
Adj Rsquare	0.394358
Root Mean Square Error	0.00961
Mean of Response	0.774784
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01619	t Ratio	2.062935
Std Err Dif	0.00785	DF	4
Upper CL Dif	0.03797	Prob > |t|	0.1081
Lower CL Dif	-0.00560	Prob > t	0.0540
Confidence	0.95	Prob < t	0.9460

Analysis of Variance

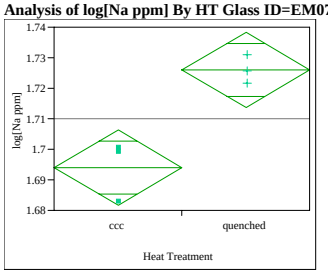
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00039302	0.000393	4.2557	0.1081
Error	4	0.00036941	0.000092		
C. Total	5	0.00076243			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.766691	0.00555	0.75129	0.78210
quenched	3	0.782878	0.00555	0.76747	0.79828

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-BL-2



Anova
Summary of Fit

Rsquare	0.866046
Adj Rsquare	0.832558
Root Mean Square Error	0.007714
Mean of Response	1.710068
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.032032	t Ratio	5.085371
Std Err Dif	0.006299	DF	4
Upper CL Dif	0.049520	Prob > |t|	0.0071
Lower CL Dif	0.014543	Prob > t	0.0035
Confidence	0.95	Prob < t	0.9965

Analysis of Variance

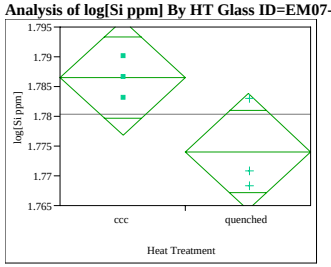
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00153903	0.001539	25.8610	0.0071
Error	4	0.00023805	0.000060		
C. Total	5	0.00177708			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.69405	0.00445	1.6817	1.7064
quenched	3	1.72608	0.00445	1.7137	1.7385

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-BL-2



Anova
Summary of Fit

Rsquare	0.612834
Adj Rsquare	0.516043
Root Mean Square Error	0.006055
Mean of Response	1.780294
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01244	t Ratio	-2.51624
Std Err Dif	0.00494	DF	4
Upper CL Dif	0.00129	Prob > |t|	0.0656
Lower CL Dif	-0.02617	Prob > t	0.9672
Confidence	0.95	Prob < t	0.0328

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00023215	0.000232	6.3315	0.0656
Error	4	0.00014667	0.000037		
C. Total	5	0.00037882			

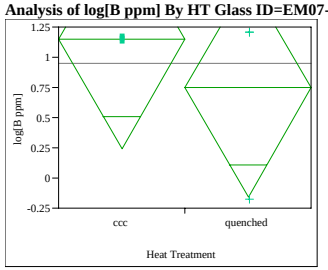
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.78651	0.00350	1.7768	1.7962
quenched	3	1.77407	0.00350	1.7644	1.7838

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Ca-035



Anova
Summary of Fit

Rsquare	0.158251
Adj Rsquare	-0.05219
Root Mean Square Error	0.56555
Mean of Response	0.946318
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.4004	t Ratio	-0.86719
Std Err Dif	0.4618	DF	4
Upper CL Dif	0.8816	Prob > |t|	0.4348
Lower CL Dif	-1.6825	Prob > t	0.7826
Confidence	0.95	Prob < t	0.2174

Analysis of Variance

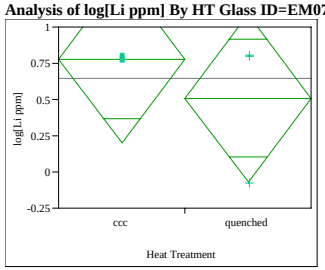
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.2405280	0.240528	0.7520	0.4348
Error	4	1.2793866	0.319847		
C. Total	5	1.5199145			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.14654	0.32652	0.2400	2.0531
quenched	3	0.74610	0.32652	-0.1605	1.6527

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Ca-035



Anova
Summary of Fit

Rsquare	0.172453
Adj Rsquare	-0.03443
Root Mean Square Error	0.361181
Mean of Response	0.644927
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.2692	t Ratio	-0.913
Std Err Dif	0.2949	DF	4
Upper CL Dif	0.5495	Prob > |t|	0.4129
Lower CL Dif	-1.0880	Prob > t	0.7936
Confidence	0.95	Prob < t	0.2064

Analysis of Variance

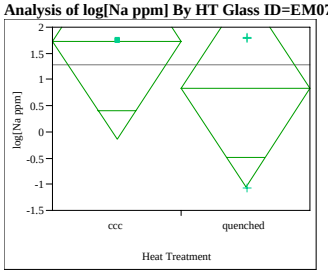
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.10873976	0.108740	0.8336	0.4129
Error	4	0.52180643	0.130452		
C. Total	5	0.63054620			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.779550	0.20853	0.2006	1.3585
quenched	3	0.510304	0.20853	-0.0687	1.0893

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Ca-035



Anova
Summary of Fit

Rsquare	0.180741
Adj Rsquare	-0.02407
Root Mean Square Error	1.172577
Mean of Response	1.285245
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.8994	t Ratio	-0.93939
Std Err Dif	0.9574	DF	4
Upper CL Dif	1.7588	Prob > |t|	0.4007
Lower CL Dif	-3.5576	Prob > t	0.7996
Confidence	0.95	Prob < t	0.2004

Analysis of Variance

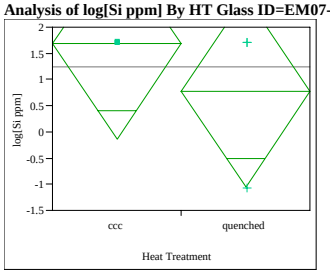
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	1.2133301	1.21333	0.8825	0.4007
Error	4	5.4997454	1.37494		
C. Total	5	6.7130754			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.73494	0.67699	-0.145	3.6146
quenched	3	0.83555	0.67699	-1.044	2.7152

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Ca-035



Anova
Summary of Fit

Rsquare	0.194688
Adj Rsquare	-0.00664
Root Mean Square Error	1.137694
Mean of Response	1.235361
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.9135	t Ratio	-0.98337
Std Err Dif	0.9289	DF	4
Upper CL Dif	1.6656	Prob > |t|	0.3811
Lower CL Dif	-3.4926	Prob > t	0.8095
Confidence	0.95	Prob < t	0.1905

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	1.2516594	1.25166	0.9670	0.3811
Error	4	5.1773905	1.29435		
C. Total	5	6.4290498			

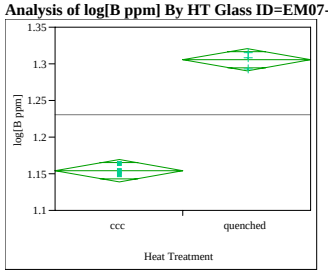
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.69210	0.65685	-0.132	3.5158
quenched	3	0.77862	0.65685	-1.045	2.6023

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Ca-07



Anova
Summary of Fit

Rsquare	0.989578
Adj Rsquare	0.986973
Root Mean Square Error	0.009518
Mean of Response	1.230015
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.151461	t Ratio	19.48896
Std Err Dif	0.007772	DF	4
Upper CL Dif	0.173038	Prob > |t|	<.0001
Lower CL Dif	0.129883	Prob > t	<.0001
Confidence	0.95	Prob < t	1.0000

Analysis of Variance

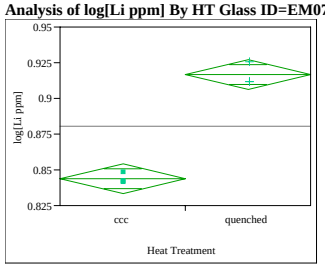
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.03441052	0.034411	379.8197	<.0001
Error	4	0.00036239	0.000091		
C. Total	5	0.03477290			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.15428	0.00550	1.1390	1.1695
quenched	3	1.30575	0.00550	1.2905	1.3210

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Ca-07



Anova
Summary of Fit

Rsquare	0.98031
Adj Rsquare	0.975387
Root Mean Square Error	0.006335
Mean of Response	0.88021
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.072991	t Ratio	14.11183
Std Err Dif	0.005172	DF	4
Upper CL Dif	0.087352	Prob > |t|	0.0001
Lower CL Dif	0.058630	Prob > t	<.0001
Confidence	0.95	Prob < t	0.9999

Analysis of Variance

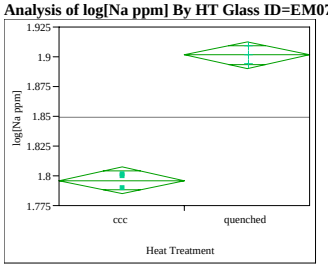
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00799152	0.007992	199.1438	0.0001
Error	4	0.00016052	0.000040		
C. Total	5	0.00815204			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.843714	0.00366	0.83356	0.85387
quenched	3	0.916705	0.00366	0.90655	0.92686

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Ca-07



Anova
Summary of Fit

Rsquare	0.988056
Adj Rsquare	0.98507
Root Mean Square Error	0.00709
Mean of Response	1.848893
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.105299	t Ratio	18.19027
Std Err Dif	0.005789	DF	4
Upper CL Dif	0.121371	Prob > |t|	<.0001
Lower CL Dif	0.089227	Prob > t	<.0001
Confidence	0.95	Prob < t	1.0000

Analysis of Variance

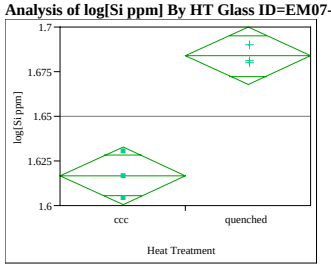
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01663185	0.016632	330.8858	<.0001
Error	4	0.00020106	0.000050		
C. Total	5	0.01683291			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.79624	0.00409	1.7849	1.8076
quenched	3	1.90154	0.00409	1.8902	1.9129

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Ca-07



Anova
Summary of Fit

Rsquare	0.942806
Adj Rsquare	0.928507
Root Mean Square Error	0.010101
Mean of Response	1.650246
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.066971	t Ratio	8.120184
Std Err Dif	0.008247	DF	4
Upper CL Dif	0.089870	Prob > |t|	0.0013
Lower CL Dif	0.044072	Prob > t	0.0006
Confidence	0.95	Prob < t	0.9994

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00672767	0.006728	65.9374	0.0013
Error	4	0.00040813	0.000102		
C. Total	5	0.00713580			

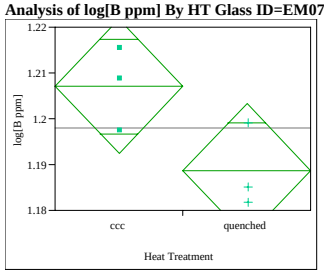
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.61676	0.00583	1.6006	1.6330
quenched	3	1.68373	0.00583	1.6675	1.6999

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Cr-001



Anova
Summary of Fit

Rsquare	0.602273
Adj Rsquare	0.502841
Root Mean Square Error	0.009134
Mean of Response	1.197893
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01835	t Ratio	-2.46113
Std Err Dif	0.00746	DF	4
Upper CL Dif	0.00235	Prob > |t|	0.0696
Lower CL Dif	-0.03906	Prob > t	0.9652
Confidence	0.95	Prob < t	0.0348

Analysis of Variance

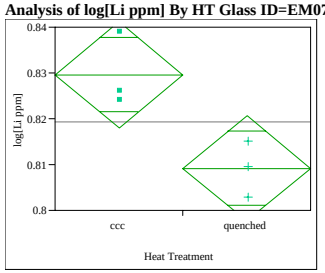
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00050533	0.000505	6.0571	0.0696
Error	4	0.00033371	0.000083		
C. Total	5	0.00083903			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.20707	0.00527	1.1924	1.2217
quenched	3	1.18872	0.00527	1.1741	1.2034

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Cr-001



Anova
Summary of Fit

Rsquare	0.751971
Adj Rsquare	0.689964
Root Mean Square Error	0.007194
Mean of Response	0.819392
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02045	t Ratio	-3.48241
Std Err Dif	0.00587	DF	4
Upper CL Dif	-0.00415	Prob > |t|	0.0253
Lower CL Dif	-0.03676	Prob > t	0.9874
Confidence	0.95	Prob < t	0.0126

Analysis of Variance

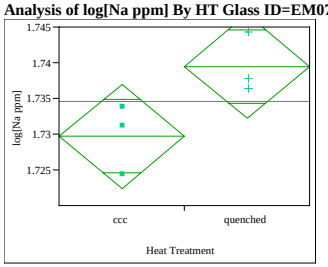
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00062760	0.000628	12.1272	0.0253
Error	4	0.00020701	0.000052		
C. Total	5	0.00083460			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.829620	0.00415	0.81809	0.84115
quenched	3	0.809165	0.00415	0.79763	0.82070

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Cr-001



Anova
Summary of Fit

Rsquare	0.632971
Adj Rsquare	0.541214
Root Mean Square Error	0.004562
Mean of Response	1.734587
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00978	t Ratio	2.626466
Std Err Dif	0.00373	DF	4
Upper CL Dif	0.02013	Prob > |t|	0.0584
Lower CL Dif	-0.00056	Prob > t	0.0292
Confidence	0.95	Prob < t	0.9708

Analysis of Variance

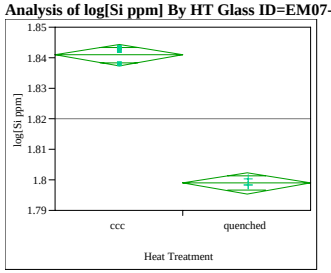
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00014360	0.000144	6.8983	0.0584
Error	4	0.00008327	0.000021		
C. Total	5	0.00022686			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.72970	0.00263	1.7224	1.7370
quenched	3	1.73948	0.00263	1.7322	1.7468

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Cr-001



Anova
Summary of Fit

Rsquare	0.992929
Adj Rsquare	0.991161
Root Mean Square Error	0.002169
Mean of Response	1.819955
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.04198	t Ratio	-23.6995
Std Err Dif	0.00177	DF	4
Upper CL Dif	-0.03706	Prob > |t|	<.0001
Lower CL Dif	-0.04690	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00264350	0.002644	561.6652	<.0001
Error	4	0.00001883	4.707e-6		
C. Total	5	0.00266233			

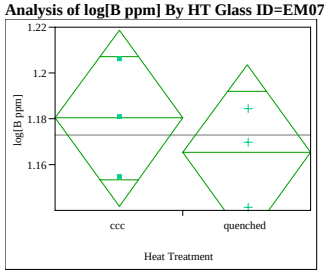
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.84094	0.00125	1.8375	1.8444
quenched	3	1.79896	0.00125	1.7955	1.8024

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Cr-012



Anova
Summary of Fit

Rsquare	0.130134
Adj Rsquare	-0.08733
Root Mean Square Error	0.023865
Mean of Response	1.172692
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01507	t Ratio	-0.77357
Std Err Dif	0.01949	DF	4
Upper CL Dif	0.03903	Prob > |t|	0.4824
Lower CL Dif	-0.06917	Prob > t	0.7588
Confidence	0.95	Prob < t	0.2412

Analysis of Variance

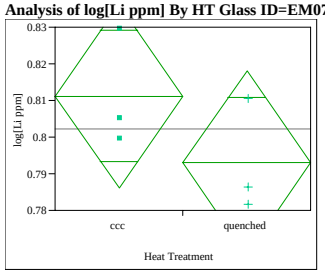
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00034082	0.000341	0.5984	0.4824
Error	4	0.00227816	0.000570		
C. Total	5	0.00261898			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.18023	0.01378	1.1420	1.2185
quenched	3	1.16516	0.01378	1.1269	1.2034

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Cr-012



Anova
Summary of Fit

Rsquare	0.335917
Adj Rsquare	0.169896
Root Mean Square Error	0.015711
Mean of Response	0.802116
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01825	t Ratio	-1.42244
Std Err Dif	0.01283	DF	4
Upper CL Dif	0.01737	Prob > |t|	0.2280
Lower CL Dif	-0.05386	Prob > t	0.8860
Confidence	0.95	Prob < t	0.1140

Analysis of Variance

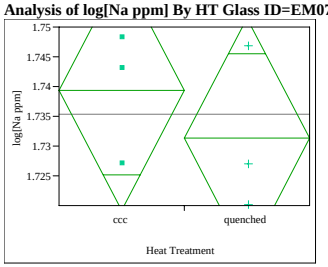
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00049943	0.000499	2.0233	0.2280
Error	4	0.00098734	0.000247		
C. Total	5	0.00148677			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.811239	0.00907	0.78605	0.83642
quenched	3	0.792992	0.00907	0.76781	0.81818

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Cr-012



Anova
Summary of Fit

Rsquare	0.133463
Adj Rsquare	-0.08317
Root Mean Square Error	0.012546
Mean of Response	1.73538
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00804	t Ratio	-0.7849
Std Err Dif	0.01024	DF	4
Upper CL Dif	0.02040	Prob > |t|	0.4764
Lower CL Dif	-0.03648	Prob > t	0.7618
Confidence	0.95	Prob < t	0.2382

Analysis of Variance

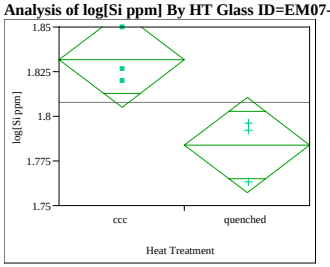
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00009698	0.000097	0.6161	0.4764
Error	4	0.00062965	0.000157		
C. Total	5	0.00072663			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.73940	0.00724	1.7193	1.7595
quenched	3	1.73136	0.00724	1.7112	1.7515

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Cr-012



Anova
Summary of Fit

Rsquare	0.75286
Adj Rsquare	0.691075
Root Mean Square Error	0.01674
Mean of Response	1.807764
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.04771	t Ratio	-3.49073
Std Err Dif	0.01367	DF	4
Upper CL Dif	-0.00976	Prob > |t|	0.0251
Lower CL Dif	-0.08566	Prob > t	0.9874
Confidence	0.95	Prob < t	0.0126

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00341454	0.003415	12.1852	0.0251
Error	4	0.00112088	0.000280		
C. Total	5	0.00453542			

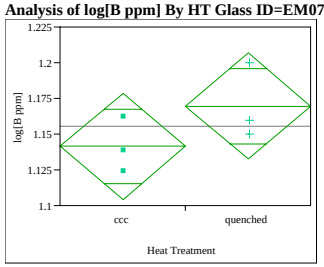
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.83162	0.00966	1.8048	1.8585
quenched	3	1.78391	0.00966	1.7571	1.8107

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Cr-02



Anova
Summary of Fit

Rsquare	0.358327
Adj Rsquare	0.197909
Root Mean Square Error	0.023247
Mean of Response	1.155534
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02837	t Ratio	1.494559
Std Err Dif	0.01898	DF	4
Upper CL Dif	0.08107	Prob > |t|	0.2093
Lower CL Dif	-0.02433	Prob > t	0.1047
Confidence	0.95	Prob < t	0.8953

Analysis of Variance

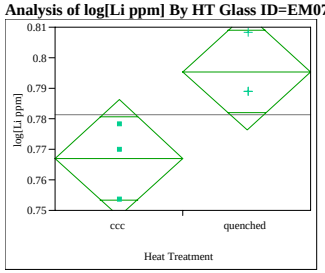
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00120720	0.001207	2.2337	0.2093
Error	4	0.00216178	0.000540		
C. Total	5	0.00336897			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.14135	0.01342	1.1041	1.1786
quenched	3	1.16972	0.01342	1.1325	1.2070

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Cr-02



Anova
Summary of Fit

Rsquare	0.677913
Adj Rsquare	0.597391
Root Mean Square Error	0.011971
Mean of Response	0.781223
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.028361	t Ratio	2.901551
Std Err Dif	0.009775	DF	4
Upper CL Dif	0.055500	Prob > |t|	0.0440
Lower CL Dif	0.001223	Prob > t	0.0220
Confidence	0.95	Prob < t	0.9780

Analysis of Variance

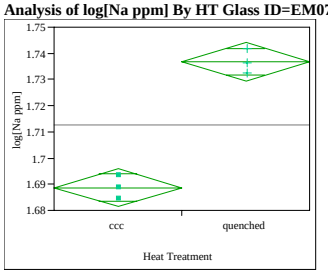
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00120655	0.001207	8.4190	0.0440
Error	4	0.00057325	0.000143		
C. Total	5	0.00177979			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.767043	0.00691	0.74785	0.78623
quenched	3	0.795404	0.00691	0.77621	0.81459

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Cr-02



Anova
Summary of Fit

Rsquare	0.976687
Adj Rsquare	0.970859
Root Mean Square Error	0.004553
Mean of Response	1.71277
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.048121	t Ratio	12.94531
Std Err Dif	0.003717	DF	4
Upper CL Dif	0.058442	Prob > |t|	0.0002
Lower CL Dif	0.037800	Prob > t	0.0001
Confidence	0.95	Prob < t	0.9999

Analysis of Variance

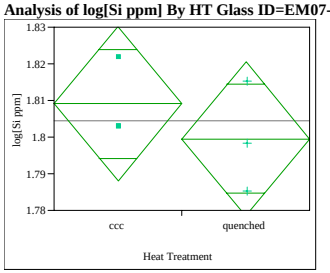
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00347347	0.003473	167.5811	0.0002
Error	4	0.00008291	0.000021		
C. Total	5	0.00355637			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.68871	0.00263	1.6814	1.6960
quenched	3	1.73683	0.00263	1.7295	1.7441

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Cr-02



Anova
Summary of Fit

Rsquare	0.165907
Adj Rsquare	-0.04262
Root Mean Square Error	0.013101
Mean of Response	1.804331
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00954	t Ratio	-0.89198
Std Err Dif	0.01070	DF	4
Upper CL Dif	0.02016	Prob > |t|	0.4228
Lower CL Dif	-0.03924	Prob > t	0.7886
Confidence	0.95	Prob < t	0.2114

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00013656	0.000137	0.7956	0.4228
Error	4	0.00068656	0.000172		
C. Total	5	0.00082312			

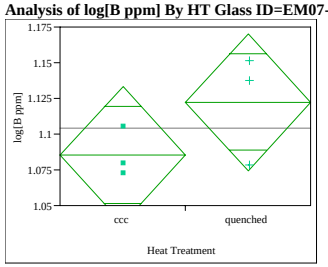
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.80910	0.00756	1.7881	1.8301
quenched	3	1.79956	0.00756	1.7786	1.8206

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-F-02



Anova
Summary of Fit

Rsquare	0.363538
Adj Rsquare	0.204422
Root Mean Square Error	0.029838
Mean of Response	1.103961
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.03683	t Ratio	1.511535
Std Err Dif	0.02436	DF	4
Upper CL Dif	0.10447	Prob > |t|	0.2052
Lower CL Dif	-0.03082	Prob > t	0.1026
Confidence	0.95	Prob < t	0.8974

Analysis of Variance

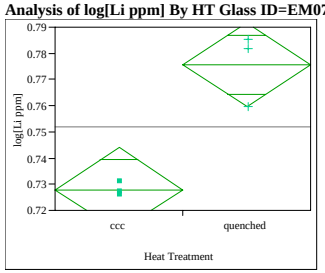
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00203414	0.002034	2.2847	0.2052
Error	4	0.00356127	0.000890		
C. Total	5	0.00559541			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.08555	0.01723	1.0377	1.1334
quenched	3	1.12237	0.01723	1.0745	1.1702

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-F-02



Anova
Summary of Fit

Rsquare	0.894519
Adj Rsquare	0.868149
Root Mean Square Error	0.010028
Mean of Response	0.751749
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.047688	t Ratio	5.824233
Std Err Dif	0.008188	DF	4
Upper CL Dif	0.070421	Prob > |t|	0.0043
Lower CL Dif	0.024955	Prob > t	0.0022
Confidence	0.95	Prob < t	0.9978

Analysis of Variance

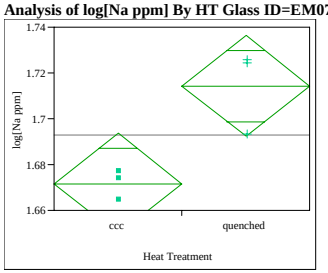
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00341120	0.003411	33.9217	0.0043
Error	4	0.00040224	0.000101		
C. Total	5	0.00381344			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.727905	0.00579	0.71183	0.74398
quenched	3	0.775593	0.00579	0.75952	0.79167

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-F-02



Anova
Summary of Fit

Rsquare	0.783607
Adj Rsquare	0.729509
Root Mean Square Error	0.013773
Mean of Response	1.692961
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.042799	t Ratio	3.805907
Std Err Dif	0.011246	DF	4
Upper CL Dif	0.074022	Prob > |t|	0.0190
Lower CL Dif	0.011577	Prob > t	0.0095
Confidence	0.95	Prob < t	0.9905

Analysis of Variance

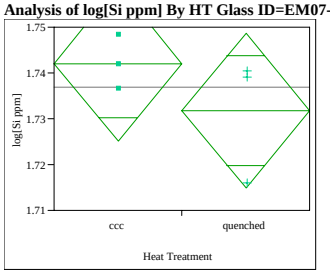
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00274769	0.002748	14.4849	0.0190
Error	4	0.00075877	0.000190		
C. Total	5	0.00350647			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.67156	0.00795	1.6495	1.6936
quenched	3	1.71436	0.00795	1.6923	1.7364

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-F-02



Anova
Summary of Fit

Rsquare	0.262741
Adj Rsquare	0.078426
Root Mean Square Error	0.010549
Mean of Response	1.736954
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01028	t Ratio	-1.19394
Std Err Dif	0.00861	DF	4
Upper CL Dif	0.01363	Prob > |t|	0.2985
Lower CL Dif	-0.03420	Prob > t	0.8508
Confidence	0.95	Prob < t	0.1492

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00015863	0.000159	1.4255	0.2985
Error	4	0.00044511	0.000111		
C. Total	5	0.00060374			

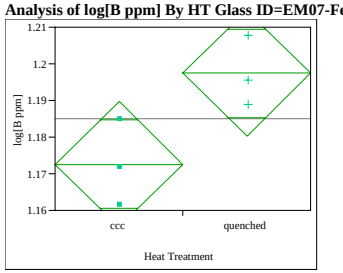
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.74210	0.00609	1.7252	1.7590
quenched	3	1.73181	0.00609	1.7149	1.7487

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Fe-05



Anova
Summary of Fit

Rsquare	0.668985
Adj Rsquare	0.586231
Root Mean Square Error	0.010669
Mean of Response	1.184988
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.024768	t Ratio	2.843242
Std Err Dif	0.008711	DF	4
Upper CL Dif	0.048955	Prob > |t|	0.0467
Lower CL Dif	0.000582	Prob > t	0.0234
Confidence	0.95	Prob < t	0.9766

Analysis of Variance

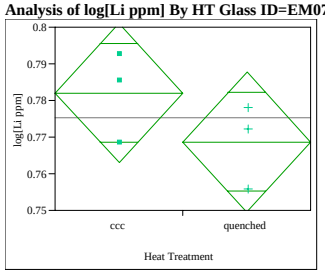
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00092021	0.000920	8.0840	0.0467
Error	4	0.00045532	0.000114		
C. Total	5	0.00137553			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.17260	0.00616	1.1555	1.1897
quenched	3	1.19737	0.00616	1.1803	1.2145

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Fe-05



Anova
Summary of Fit

Rsquare	0.319029
Adj Rsquare	0.148786
Root Mean Square Error	0.011932
Mean of Response	0.775378
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01334	t Ratio	-1.36893
Std Err Dif	0.00974	DF	4
Upper CL Dif	0.01371	Prob > |t|	0.2429
Lower CL Dif	-0.04039	Prob > t	0.8786
Confidence	0.95	Prob < t	0.1214

Analysis of Variance

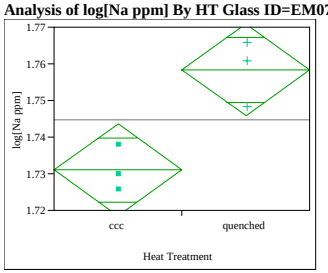
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00026680	0.000267	1.8740	0.2429
Error	4	0.00056948	0.000142		
C. Total	5	0.00083628			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.782046	0.00689	0.76292	0.80117
quenched	3	0.768710	0.00689	0.74958	0.78784

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Fe-05



Anova
Summary of Fit

Rsquare	0.821818
Adj Rsquare	0.777273
Root Mean Square Error	0.00779
Mean of Response	1.744691
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.027321	t Ratio	4.295228
Std Err Dif	0.006361	DF	4
Upper CL Dif	0.044981	Prob > |t|	0.0127
Lower CL Dif	0.009661	Prob > t	0.0063
Confidence	0.95	Prob < t	0.9937

Analysis of Variance

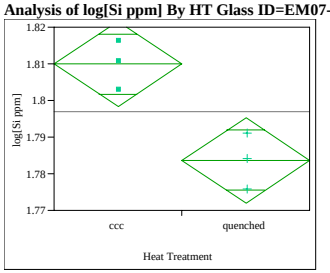
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00111966	0.001120	18.4490	0.0127
Error	4	0.00024276	0.000061		
C. Total	5	0.00136241			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.73103	0.00450	1.7185	1.7435
quenched	3	1.75835	0.00450	1.7459	1.7708

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Fe-05



Anova
Summary of Fit

Rsquare	0.829337
Adj Rsquare	0.786671
Root Mean Square Error	0.007278
Mean of Response	1.796807
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02620	t Ratio	-4.40885
Std Err Dif	0.00594	DF	4
Upper CL Dif	-0.00970	Prob > |t|	0.0116
Lower CL Dif	-0.04270	Prob > t	0.9942
Confidence	0.95	Prob < t	0.0058

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00102965	0.001030	19.4380	0.0116
Error	4	0.00021188	0.000053		
C. Total	5	0.00124153			

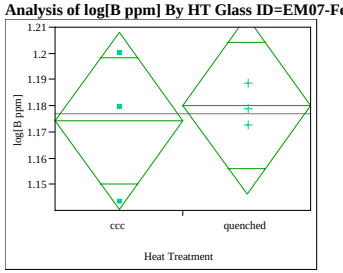
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.80991	0.00420	1.7982	1.8216
quenched	3	1.78371	0.00420	1.7720	1.7954

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Fe-15



Anova
Summary of Fit

Rsquare	0.028099
Adj Rsquare	-0.21488
Root Mean Square Error	0.021173
Mean of Response	1.177115
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00588	t Ratio	0.340065
Std Err Dif	0.01729	DF	4
Upper CL Dif	0.05388	Prob > |t|	0.7509
Lower CL Dif	-0.04212	Prob > t	0.3755
Confidence	0.95	Prob < t	0.6245

Analysis of Variance

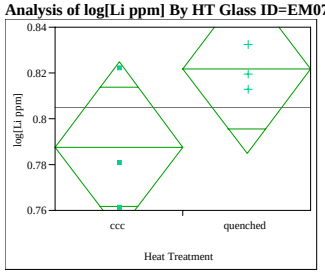
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00005184	0.000052	0.1156	0.7509
Error	4	0.00179318	0.000448		
C. Total	5	0.00184503			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.17418	0.01222	1.1402	1.2081
quenched	3	1.18005	0.01222	1.1461	1.2140

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Fe-15



Anova
Summary of Fit

Rsquare	0.448163
Adj Rsquare	0.310204
Root Mean Square Error	0.023048
Mean of Response	0.804705
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.03392	t Ratio	1.802364
Std Err Dif	0.01882	DF	4
Upper CL Dif	0.08617	Prob > |t|	0.1458
Lower CL Dif	-0.01833	Prob > t	0.0729
Confidence	0.95	Prob < t	0.9271

Analysis of Variance

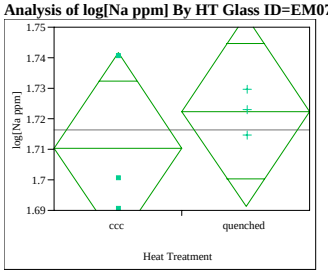
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00172559	0.001726	3.2485	0.1458
Error	4	0.00212477	0.000531		
C. Total	5	0.00385035			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.787747	0.01331	0.75080	0.82469
quenched	3	0.821664	0.01331	0.78472	0.85861

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Fe-15



Anova
Summary of Fit

Rsquare	0.12593
Adj Rsquare	-0.09259
Root Mean Square Error	0.019493
Mean of Response	1.716375
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01208	t Ratio	0.759138
Std Err Dif	0.01592	DF	4
Upper CL Dif	0.05627	Prob > |t|	0.4900
Lower CL Dif	-0.03211	Prob > t	0.2450
Confidence	0.95	Prob < t	0.7550

Analysis of Variance

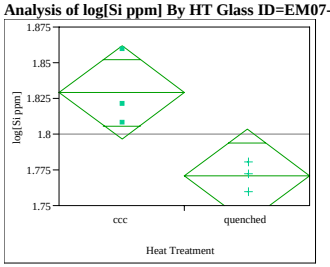
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00021898	0.000219	0.5763	0.4900
Error	4	0.00151995	0.000380		
C. Total	5	0.00173894			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.71033	0.01125	1.6791	1.7416
quenched	3	1.72242	0.01125	1.6912	1.7537

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Fe-15



Anova
Summary of Fit

Rsquare	0.752162
Adj Rsquare	0.690203
Root Mean Square Error	0.020503
Mean of Response	1.79994
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.05833	t Ratio	-3.48419
Std Err Dif	0.01674	DF	4
Upper CL Dif	-0.01185	Prob > |t|	0.0253
Lower CL Dif	-0.10481	Prob > t	0.9874
Confidence	0.95	Prob < t	0.0126

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00510329	0.005103	12.1396	0.0253
Error	4	0.00168153	0.000420		
C. Total	5	0.00678482			

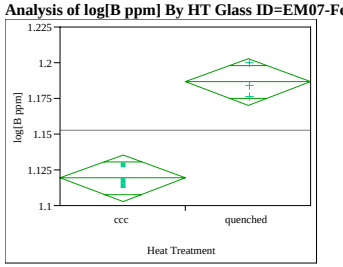
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.82910	0.01184	1.7962	1.8620
quenched	3	1.77078	0.01184	1.7379	1.8036

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Fe-20



Anova
Summary of Fit

Rsquare	0.943175
Adj Rsquare	0.928969
Root Mean Square Error	0.010127
Mean of Response	1.152944
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.067372	t Ratio	8.148139
Std Err Dif	0.008268	DF	4
Upper CL Dif	0.090329	Prob > |t|	0.0012
Lower CL Dif	0.044415	Prob > t	0.0006
Confidence	0.95	Prob < t	0.9994

Analysis of Variance

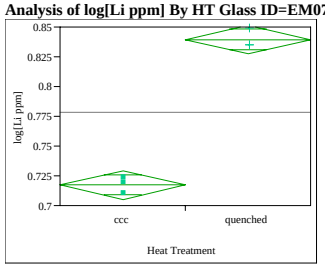
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00680845	0.006808	66.3922	0.0012
Error	4	0.00041020	0.000103		
C. Total	5	0.00721864			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.11926	0.00585	1.1030	1.1355
quenched	3	1.18663	0.00585	1.1704	1.2029

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Fe-20



Anova
Summary of Fit

Rsquare	0.990132
Adj Rsquare	0.987664
Root Mean Square Error	0.007467
Mean of Response	0.778436
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.122131	t Ratio	20.03329
Std Err Dif	0.006096	DF	4
Upper CL Dif	0.139058	Prob > |t|	<.0001
Lower CL Dif	0.105205	Prob > t	<.0001
Confidence	0.95	Prob < t	1.0000

Analysis of Variance

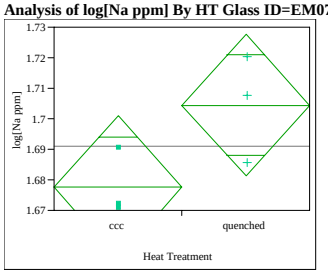
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.02237409	0.022374	401.3329	<.0001
Error	4	0.00022300	0.000056		
C. Total	5	0.02259708			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.717371	0.00431	0.70540	0.72934
quenched	3	0.839502	0.00431	0.82753	0.85147

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Fe-20



Anova
Summary of Fit

Rsquare	0.561773
Adj Rsquare	0.452216
Root Mean Square Error	0.014535
Mean of Response	1.691062
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02687	t Ratio	2.264441
Std Err Dif	0.01187	DF	4
Upper CL Dif	0.05982	Prob > |t|	0.0863
Lower CL Dif	-0.00608	Prob > t	0.0431
Confidence	0.95	Prob < t	0.9569

Analysis of Variance

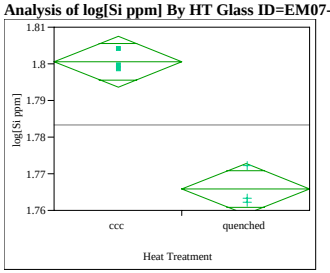
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00108332	0.001083	5.1277	0.0863
Error	4	0.00084508	0.000211		
C. Total	5	0.00192840			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.67763	0.00839	1.6543	1.7009
quenched	3	1.70450	0.00839	1.6812	1.7278

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Fe-20



Anova
Summary of Fit

Rsquare	0.95914
Adj Rsquare	0.948925
Root Mean Square Error	0.004372
Mean of Response	1.783196
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.03459	t Ratio	-9.68993
Std Err Dif	0.00357	DF	4
Upper CL Dif	-0.02468	Prob > |t|	0.0006
Lower CL Dif	-0.04450	Prob > t	0.9997
Confidence	0.95	Prob < t	0.0003

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00179434	0.001794	93.8948	0.0006
Error	4	0.00007644	0.000019		
C. Total	5	0.00187078			

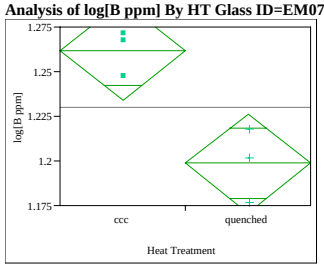
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.80049	0.00252	1.7935	1.8075
quenched	3	1.76590	0.00252	1.7589	1.7729

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-K-03



Anova
Summary of Fit

Rsquare	0.833502
Adj Rsquare	0.791877
Root Mean Square Error	0.017288
Mean of Response	1.230223
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.06317	t Ratio	-4.47485
Std Err Dif	0.01412	DF	4
Upper CL Dif	-0.02397	Prob > |t|	0.0110
Lower CL Dif	-0.10236	Prob > t	0.9945
Confidence	0.95	Prob < t	0.0055

Analysis of Variance

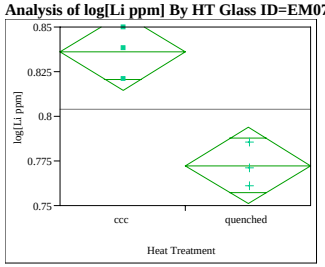
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00598504	0.005985	20.0243	0.0110
Error	4	0.00119556	0.000299		
C. Total	5	0.00718060			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.26181	0.00998	1.2341	1.2895
quenched	3	1.19864	0.00998	1.1709	1.2264

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-K-03



Anova
Summary of Fit

Rsquare	0.894326
Adj Rsquare	0.867907
Root Mean Square Error	0.01337
Mean of Response	0.804135
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.06352	t Ratio	-5.81826
Std Err Dif	0.01092	DF	4
Upper CL Dif	-0.03321	Prob > |t|	0.0043
Lower CL Dif	-0.09382	Prob > t	0.9978
Confidence	0.95	Prob < t	0.0022

Analysis of Variance

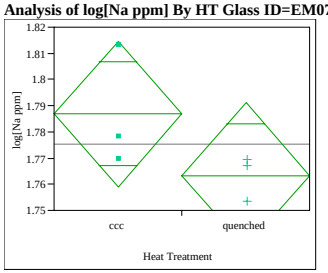
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00605129	0.006051	33.8521	0.0043
Error	4	0.00071503	0.000179		
C. Total	5	0.00676632			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.835893	0.00772	0.81446	0.85732
quenched	3	0.772378	0.00772	0.75095	0.79381

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-K-03



Anova
Summary of Fit

Rsquare	0.407744
Adj Rsquare	0.25968
Root Mean Square Error	0.017364
Mean of Response	1.775141
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02353	t Ratio	-1.65947
Std Err Dif	0.01418	DF	4
Upper CL Dif	0.01584	Prob > |t|	0.1724
Lower CL Dif	-0.06289	Prob > t	0.9138
Confidence	0.95	Prob < t	0.0862

Analysis of Variance

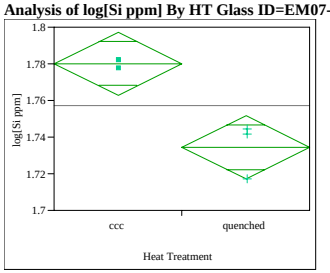
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00083028	0.000830	2.7538	0.1724
Error	4	0.00120600	0.000302		
C. Total	5	0.00203628			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.78690	0.01002	1.7591	1.8147
quenched	3	1.76338	0.01002	1.7355	1.7912

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-K-03



Anova
Summary of Fit

Rsquare	0.873046
Adj Rsquare	0.841308
Root Mean Square Error	0.010671
Mean of Response	1.757311
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.04570	t Ratio	-5.24477
Std Err Dif	0.00871	DF	4
Upper CL Dif	-0.02151	Prob > |t|	0.0063
Lower CL Dif	-0.06989	Prob > t	0.9968
Confidence	0.95	Prob < t	0.0032

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00313233	0.003132	27.5076	0.0063
Error	4	0.00045549	0.000114		
C. Total	5	0.00358782			

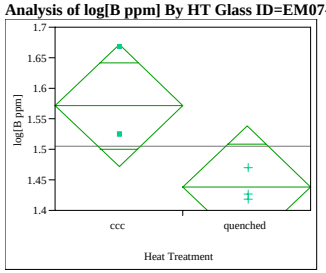
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.78016	0.00616	1.7631	1.7973
quenched	3	1.73446	0.00616	1.7174	1.7516

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-K-06



Anova
Summary of Fit

Rsquare	0.632
Adj Rsquare	0.54
Root Mean Square Error	0.062253
Mean of Response	1.504467
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.13322	t Ratio	-2.62099
Std Err Dif	0.05083	DF	4
Upper CL Dif	0.00790	Prob > |t|	0.0587
Lower CL Dif	-0.27435	Prob > t	0.9706
Confidence	0.95	Prob < t	0.0294

Analysis of Variance

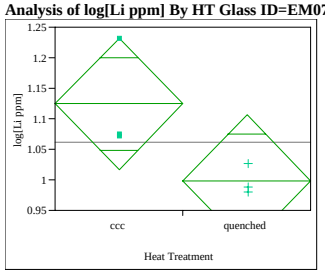
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.02662286	0.026623	6.8696	0.0587
Error	4	0.01550192	0.003875		
C. Total	5	0.04212477			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.57108	0.03594	1.4713	1.6709
quenched	3	1.43786	0.03594	1.3381	1.5376

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-K-06



Anova
Summary of Fit

Rsquare	0.569335
Adj Rsquare	0.461669
Root Mean Square Error	0.067078
Mean of Response	1.061566
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.12595	t Ratio	-2.29956
Std Err Dif	0.05477	DF	4
Upper CL Dif	0.02612	Prob > |t|	0.0830
Lower CL Dif	-0.27801	Prob > t	0.9585
Confidence	0.95	Prob < t	0.0415

Analysis of Variance

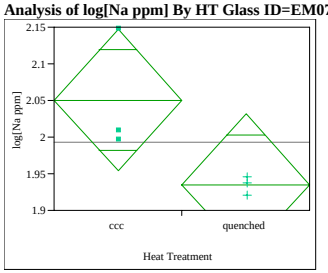
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.02379324	0.023793	5.2880	0.0830
Error	4	0.01799802	0.004500		
C. Total	5	0.04179127			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.12454	0.03873	1.0170	1.2321
quenched	3	0.99859	0.03873	0.8911	1.1061

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-K-06



Anova
Summary of Fit

Rsquare	0.579999
Adj Rsquare	0.474999
Root Mean Square Error	0.060295
Mean of Response	1.992793
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.11571	t Ratio	-2.35027
Std Err Dif	0.04923	DF	4
Upper CL Dif	0.02098	Prob > |t|	0.0785
Lower CL Dif	-0.25239	Prob > t	0.9608
Confidence	0.95	Prob < t	0.0392

Analysis of Variance

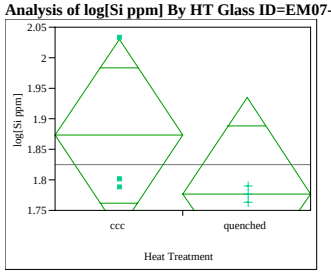
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.02008161	0.020082	5.5238	0.0785
Error	4	0.01454191	0.003635		
C. Total	5	0.03462352			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.05065	0.03481	1.9540	2.1473
quenched	3	1.93494	0.03481	1.8383	2.0316

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-K-06



Anova
Summary of Fit

Rsquare	0.263211
Adj Rsquare	0.079014
Root Mean Square Error	0.098191
Mean of Response	1.824735
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.09584	t Ratio	-1.19539
Std Err Dif	0.08017	DF	4
Upper CL Dif	0.12676	Prob > |t|	0.2980
Lower CL Dif	-0.31843	Prob > t	0.8510
Confidence	0.95	Prob < t	0.1490

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01377748	0.013777	1.4290	0.2980
Error	4	0.03856628	0.009642		
C. Total	5	0.05234376			

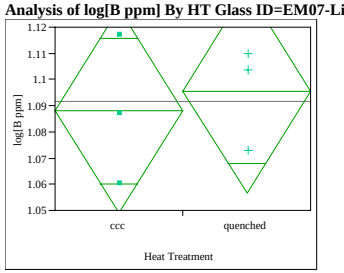
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.87265	0.05669	1.7153	2.0301
quenched	3	1.77682	0.05669	1.6194	1.9342

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Li-015



Anova
Summary of Fit

Rsquare	0.036214
Adj Rsquare	-0.20473
Root Mean Square Error	0.024431
Mean of Response	1.091788
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00773	t Ratio	0.387684
Std Err Dif	0.01995	DF	4
Upper CL Dif	0.06312	Prob > |t|	0.7180
Lower CL Dif	-0.04765	Prob > t	0.3590
Confidence	0.95	Prob < t	0.6410

Analysis of Variance

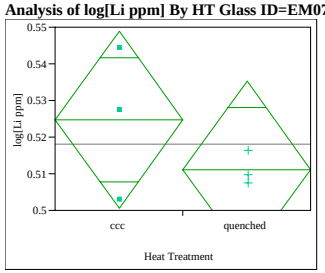
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00008971	0.000090	0.1503	0.7180
Error	4	0.00238742	0.000597		
C. Total	5	0.00247712			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.08792	0.01411	1.0488	1.1271
quenched	3	1.09566	0.01411	1.0565	1.1348

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Li-015



Anova
Summary of Fit

Rsquare	0.235376
Adj Rsquare	0.04422
Root Mean Square Error	0.015003
Mean of Response	0.517929
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01359	t Ratio	-1.10965
Std Err Dif	0.01225	DF	4
Upper CL Dif	0.02042	Prob > |t|	0.3294
Lower CL Dif	-0.04760	Prob > t	0.8353
Confidence	0.95	Prob < t	0.1647

Analysis of Variance

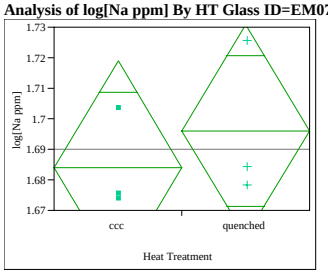
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00027715	0.000277	1.2313	0.3294
Error	4	0.00090033	0.000225		
C. Total	5	0.00117748			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.524725	0.00866	0.50068	0.54877
quenched	3	0.511133	0.00866	0.48708	0.53518

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Li-015



Anova
Summary of Fit

Rsquare	0.102575
Adj Rsquare	-0.12178
Root Mean Square Error	0.02174
Mean of Response	1.690041
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01200	t Ratio	0.676162
Std Err Dif	0.01775	DF	4
Upper CL Dif	0.06129	Prob > |t|	0.5360
Lower CL Dif	-0.03728	Prob > t	0.2680
Confidence	0.95	Prob < t	0.7320

Analysis of Variance

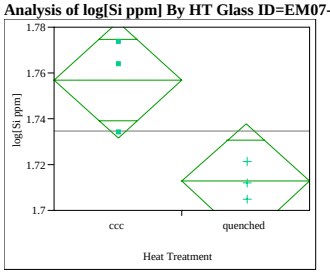
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00021609	0.000216	0.4572	0.5360
Error	4	0.00189055	0.000473		
C. Total	5	0.00210664			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.68404	0.01255	1.6492	1.7189
quenched	3	1.69604	0.01255	1.6612	1.7309

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Li-015



Anova
Summary of Fit

Rsquare	0.746741
Adj Rsquare	0.683427
Root Mean Square Error	0.015738
Mean of Response	1.734763
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.04413	t Ratio	-3.43426
Std Err Dif	0.01285	DF	4
Upper CL Dif	-0.00845	Prob > |t|	0.0264
Lower CL Dif	-0.07981	Prob > t	0.9868
Confidence	0.95	Prob < t	0.0132

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00292134	0.002921	11.7941	0.0264
Error	4	0.00099078	0.000248		
C. Total	5	0.00391211			

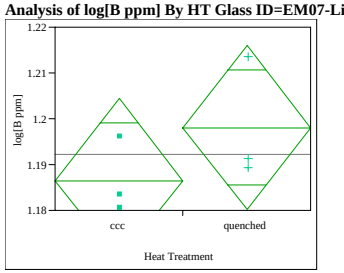
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.75683	0.00909	1.7316	1.7821
quenched	3	1.71270	0.00909	1.6875	1.7379

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Li-04



Anova
Summary of Fit

Rsquare	0.286831
Adj Rsquare	0.108539
Root Mean Square Error	0.011136
Mean of Response	1.192302
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01153	t Ratio	1.268372
Std Err Dif	0.00909	DF	4
Upper CL Dif	0.03678	Prob > |t|	0.2735
Lower CL Dif	-0.01371	Prob > t	0.1367
Confidence	0.95	Prob < t	0.8633

Analysis of Variance

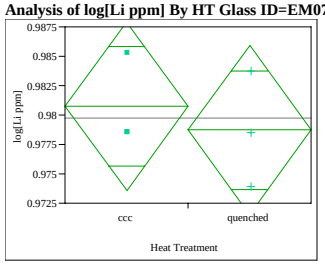
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00019949	0.000199	1.6088	0.2735
Error	4	0.00049601	0.000124		
C. Total	5	0.00069550			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.18654	0.00643	1.1687	1.2044
quenched	3	1.19807	0.00643	1.1802	1.2159

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Li-04



Anova
Summary of Fit

Rsquare	0.07198
Adj Rsquare	-0.16002
Root Mean Square Error	0.004462
Mean of Response	0.979743
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00203	t Ratio	-0.557
Std Err Dif	0.00364	DF	4
Upper CL Dif	0.00809	Prob > |t|	0.6072
Lower CL Dif	-0.01214	Prob > t	0.6964
Confidence	0.95	Prob < t	0.3036

Analysis of Variance

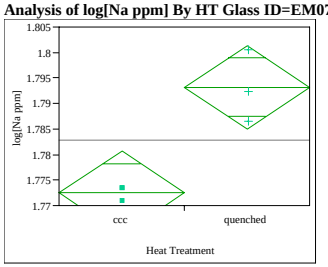
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00000618	6.177e-6	0.3103	0.6072
Error	4	0.00007964	0.000020		
C. Total	5	0.00008581			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.980758	0.00258	0.97361	0.98791
quenched	3	0.978728	0.00258	0.97158	0.98588

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Li-04



Anova
Summary of Fit

Rsquare	0.861939
Adj Rsquare	0.827424
Root Mean Square Error	0.005061
Mean of Response	1.782816
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.020648	t Ratio	4.997275
Std Err Dif	0.004132	DF	4
Upper CL Dif	0.032120	Prob > |t|	0.0075
Lower CL Dif	0.009176	Prob > t	0.0038
Confidence	0.95	Prob < t	0.9962

Analysis of Variance

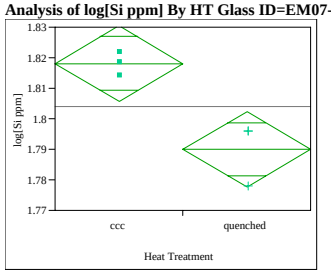
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00063953	0.000640	24.9728	0.0075
Error	4	0.00010244	0.000026		
C. Total	5	0.00074197			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.77249	0.00292	1.7644	1.7806
quenched	3	1.79314	0.00292	1.7850	1.8013

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Li-04



Anova
Summary of Fit

Rsquare	0.831805
Adj Rsquare	0.789757
Root Mean Square Error	0.007737
Mean of Response	1.804028
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02810	t Ratio	-4.44769
Std Err Dif	0.00632	DF	4
Upper CL Dif	-0.01056	Prob > |t|	0.0113
Lower CL Dif	-0.04564	Prob > t	0.9944
Confidence	0.95	Prob < t	0.0056

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00118419	0.001184	19.7820	0.0113
Error	4	0.00023945	0.000060		
C. Total	5	0.00142363			

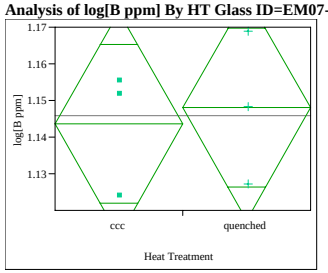
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.81808	0.00447	1.8057	1.8305
quenched	3	1.78998	0.00447	1.7776	1.8024

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Mn-01



Anova
Summary of Fit

Rsquare	0.019231
Adj Rsquare	-0.22596
Root Mean Square Error	0.019128
Mean of Response	1.145851
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00437	t Ratio	0.280059
Std Err Dif	0.01562	DF	4
Upper CL Dif	0.04774	Prob > |t|	0.7933
Lower CL Dif	-0.03899	Prob > t	0.3967
Confidence	0.95	Prob < t	0.6033

Analysis of Variance

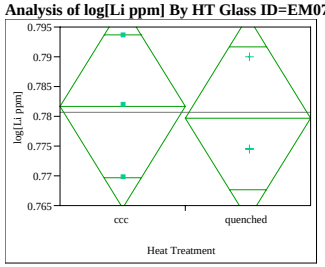
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00002870	0.000029	0.0784	0.7933
Error	4	0.00146356	0.000366		
C. Total	5	0.00149226			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.14366	0.01104	1.1130	1.1743
quenched	3	1.14804	0.01104	1.1174	1.1787

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Mn-01



Anova
Summary of Fit

Rsquare	0.0126
Adj Rsquare	-0.23425
Root Mean Square Error	0.010575
Mean of Response	0.780679
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00195	t Ratio	-0.22592
Std Err Dif	0.00863	DF	4
Upper CL Dif	0.02202	Prob > |t|	0.8323
Lower CL Dif	-0.02592	Prob > t	0.5838
Confidence	0.95	Prob < t	0.4162

Analysis of Variance

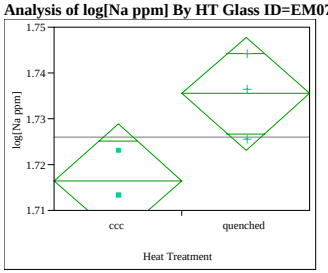
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00000571	5.708e-6	0.0510	0.8323
Error	4	0.00044730	0.000112		
C. Total	5	0.00045301			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.781654	0.00611	0.76470	0.79861
quenched	3	0.779703	0.00611	0.76275	0.79665

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Mn-01



Anova
Summary of Fit

Rsquare	0.694644
Adj Rsquare	0.618305
Root Mean Square Error	0.007714
Mean of Response	1.725952
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.019000	t Ratio	3.016529
Std Err Dif	0.006299	DF	4
Upper CL Dif	0.036488	Prob > |t|	0.0393
Lower CL Dif	0.001512	Prob > t	0.0196
Confidence	0.95	Prob < t	0.9804

Analysis of Variance

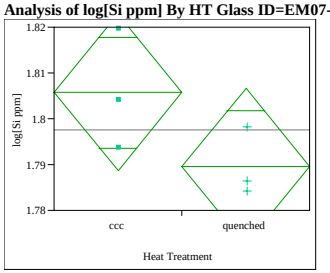
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00054150	0.000542	9.0995	0.0393
Error	4	0.00023804	0.000060		
C. Total	5	0.00077954			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.71645	0.00445	1.7041	1.7288
quenched	3	1.73545	0.00445	1.7231	1.7478

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Mn-01



Anova
Summary of Fit

Rsquare	0.459202
Adj Rsquare	0.324002
Root Mean Square Error	0.01067
Mean of Response	1.797652
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01606	t Ratio	-1.84295
Std Err Dif	0.00871	DF	4
Upper CL Dif	0.00813	Prob > |t|	0.1391
Lower CL Dif	-0.04024	Prob > t	0.9304
Confidence	0.95	Prob < t	0.0696

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00038668	0.000387	3.3965	0.1391
Error	4	0.00045539	0.000114		
C. Total	5	0.00084207			

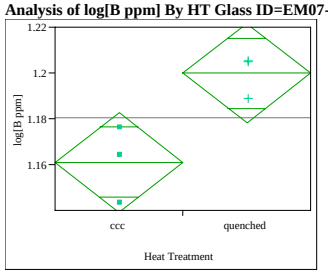
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.80568	0.00616	1.7886	1.8228
quenched	3	1.78962	0.00616	1.7725	1.8067

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Mn-04



Anova
Summary of Fit

Rsquare	0.754127
Adj Rsquare	0.692659
Root Mean Square Error	0.013574
Mean of Response	1.180407
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.038821	t Ratio	3.502652
Std Err Dif	0.011083	DF	4
Upper CL Dif	0.069594	Prob > |t|	0.0248
Lower CL Dif	0.008049	Prob > t	0.0124
Confidence	0.95	Prob < t	0.9876

Analysis of Variance

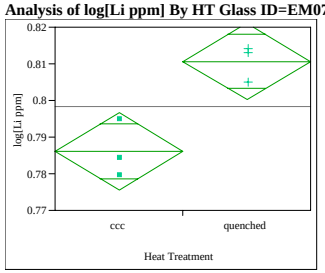
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00226066	0.002261	12.2686	0.0248
Error	4	0.00073706	0.000184		
C. Total	5	0.00299772			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.16100	0.00784	1.1392	1.1828
quenched	3	1.19982	0.00784	1.1781	1.2216

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Mn-04



Anova
Summary of Fit

Rsquare	0.840954
Adj Rsquare	0.801193
Root Mean Square Error	0.006548
Mean of Response	0.798376
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.024589	t Ratio	4.598914
Std Err Dif	0.005347	DF	4
Upper CL Dif	0.039435	Prob > |t|	0.0100
Lower CL Dif	0.009744	Prob > t	0.0050
Confidence	0.95	Prob < t	0.9950

Analysis of Variance

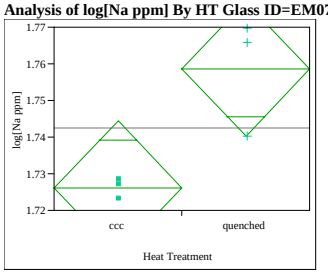
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00090696	0.000907	21.1500	0.0100
Error	4	0.00017153	0.000043		
C. Total	5	0.00107849			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.786081	0.00378	0.77558	0.79658
quenched	3	0.810671	0.00378	0.80017	0.82117

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Mn-04



Anova
Summary of Fit

Rsquare	0.752111
Adj Rsquare	0.690138
Root Mean Square Error	0.011443
Mean of Response	1.742369
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.032547	t Ratio	3.483709
Std Err Dif	0.009343	DF	4
Upper CL Dif	0.058487	Prob > |t|	0.0253
Lower CL Dif	0.006608	Prob > t	0.0126
Confidence	0.95	Prob < t	0.9874

Analysis of Variance

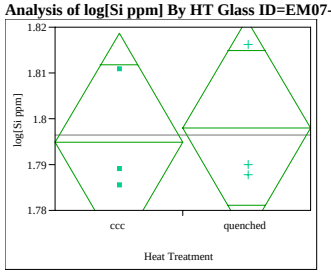
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00158901	0.001589	12.1362	0.0253
Error	4	0.00052372	0.000131		
C. Total	5	0.00211273			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.72610	0.00661	1.7078	1.7444
quenched	3	1.75864	0.00661	1.7403	1.7770

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Mn-04



Anova
Summary of Fit

Rsquare	0.015469
Adj Rsquare	-0.23066
Root Mean Square Error	0.014824
Mean of Response	1.796488
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00303	t Ratio	0.250692
Std Err Dif	0.01210	DF	4
Upper CL Dif	0.03664	Prob > |t|	0.8144
Lower CL Dif	-0.03057	Prob > t	0.4072
Confidence	0.95	Prob < t	0.5928

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00001381	0.000014	0.0628	0.8144
Error	4	0.00087900	0.000220		
C. Total	5	0.00089281			

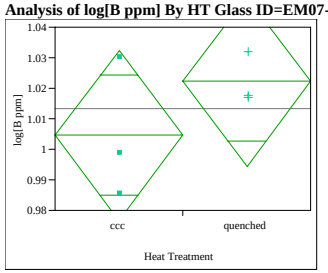
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.79497	0.00856	1.7712	1.8187
quenched	3	1.79800	0.00856	1.7742	1.8218

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Na-05



Anova
Summary of Fit

Rsquare	0.279901
Adj Rsquare	0.099877
Root Mean Square Error	0.017338
Mean of Response	1.013464
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01765	t Ratio	1.246914
Std Err Dif	0.01416	DF	4
Upper CL Dif	0.05696	Prob > |t|	0.2805
Lower CL Dif	-0.02165	Prob > t	0.1402
Confidence	0.95	Prob < t	0.8598

Analysis of Variance

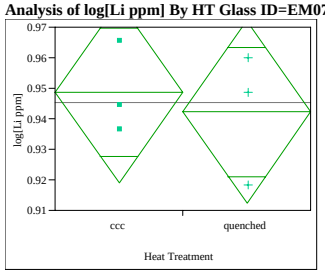
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00046741	0.000467	1.5548	0.2805
Error	4	0.00120249	0.000301		
C. Total	5	0.00166990			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.00464	0.01001	0.97684	1.0324
quenched	3	1.02229	0.01001	0.99450	1.0501

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Na-05



Anova
Summary of Fit

Rsquare	0.043503
Adj Rsquare	-0.19562
Root Mean Square Error	0.018571
Mean of Response	0.945448
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00647	t Ratio	-0.42653
Std Err Dif	0.01516	DF	4
Upper CL Dif	0.03563	Prob > |t|	0.6917
Lower CL Dif	-0.04857	Prob > t	0.6542
Confidence	0.95	Prob < t	0.3458

Analysis of Variance

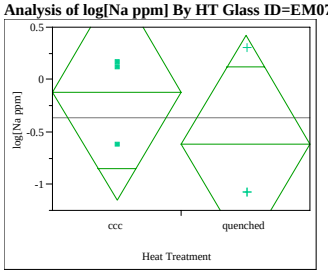
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00006274	0.000063	0.1819	0.6917
Error	4	0.00137951	0.000345		
C. Total	5	0.00144226			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.948682	0.01072	0.91891	0.97845
quenched	3	0.942214	0.01072	0.91245	0.97198

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Na-05



Anova
Summary of Fit

Rsquare	0.181283
Adj Rsquare	-0.0234
Root Mean Square Error	0.646742
Mean of Response	-0.36823
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.4970	t Ratio	-0.94111
Std Err Dif	0.5281	DF	4
Upper CL Dif	0.9692	Prob > |t|	0.3999
Lower CL Dif	-1.9631	Prob > t	0.8000
Confidence	0.95	Prob < t	0.2000

Analysis of Variance

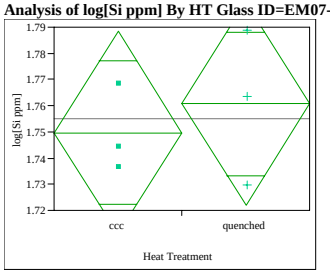
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.3704648	0.370465	0.8857	0.3999
Error	4	1.6731014	0.418275		
C. Total	5	2.0435662			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	-0.11974	0.37340	-1.156	0.91697
quenched	3	-0.61671	0.37340	-1.653	0.42001

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Na-05



Anova
Summary of Fit

Rsquare	0.072328
Adj Rsquare	-0.15959
Root Mean Square Error	0.024071
Mean of Response	1.75519
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01098	t Ratio	0.558454
Std Err Dif	0.01965	DF	4
Upper CL Dif	0.06554	Prob > |t|	0.6063
Lower CL Dif	-0.04359	Prob > t	0.3032
Confidence	0.95	Prob < t	0.6968

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00018070	0.000181	0.3119	0.6063
Error	4	0.00231758	0.000579		
C. Total	5	0.00249827			

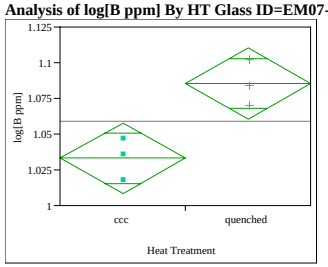
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.74970	0.01390	1.7111	1.7883
quenched	3	1.76068	0.01390	1.7221	1.7993

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Na-10



Anova
Summary of Fit

Rsquare	0.810132
Adj Rsquare	0.762665
Root Mean Square Error	0.015517
Mean of Response	1.059208
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.052340	t Ratio	4.131259
Std Err Dif	0.012669	DF	4
Upper CL Dif	0.087516	Prob > |t|	0.0145
Lower CL Dif	0.017165	Prob > t	0.0072
Confidence	0.95	Prob < t	0.9928

Analysis of Variance

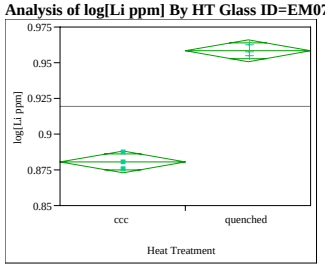
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00410923	0.004109	17.0673	0.0145
Error	4	0.00096306	0.000241		
C. Total	5	0.00507229			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.03304	0.00896	1.0082	1.0579
quenched	3	1.08538	0.00896	1.0605	1.1103

Std Error uses a pooled estimate of error variance

Analysis of Log[Li ppm] By HT Glass ID=EM07-Na-10



Anova
Summary of Fit

Rsquare	0.989908
Adj Rsquare	0.987385
Root Mean Square Error	0.004808
Mean of Response	0.919362
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.077764	t Ratio	19.80792
Std Err Dif	0.003926	DF	4
Upper CL Dif	0.088664	Prob > |t|	<.0001
Lower CL Dif	0.066864	Prob > t	<.0001
Confidence	0.95	Prob < t	1.0000

Analysis of Variance

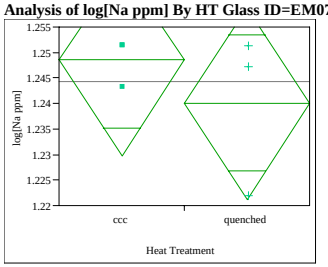
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00907093	0.009071	392.3538	<.0001
Error	4	0.00009248	0.000023		
C. Total	5	0.00916341			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.880479	0.00278	0.87277	0.88819
quenched	3	0.958244	0.00278	0.95054	0.96595

Std Error uses a pooled estimate of error variance

Analysis of Log[Na ppm] By HT Glass ID=EM07-Na-10



Anova
Summary of Fit

Rsquare	0.161715
Adj Rsquare	-0.04786
Root Mean Square Error	0.011743
Mean of Response	1.244299
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.00842	t Ratio	-0.87844
Std Err Dif	0.00959	DF	4
Upper CL Dif	0.01820	Prob > |t|	0.4293
Lower CL Dif	-0.03504	Prob > t	0.7853
Confidence	0.95	Prob < t	0.2147

Analysis of Variance

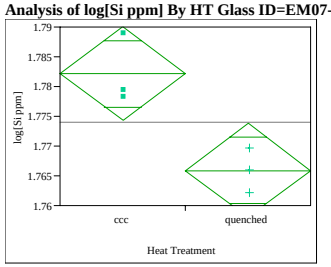
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00010641	0.000106	0.7716	0.4293
Error	4	0.00055157	0.000138		
C. Total	5	0.00065798			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.24851	0.00678	1.2297	1.2673
quenched	3	1.24009	0.00678	1.2213	1.2589

Std Error uses a pooled estimate of error variance

Analysis of Log[Si ppm] By HT Glass ID=EM07-Na-10



Anova
Summary of Fit

Rsquare	0.803151
Adj Rsquare	0.753938
Root Mean Square Error	0.004918
Mean of Response	1.774025
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01622	t Ratio	-4.03982
Std Err Dif	0.00402	DF	4
Upper CL Dif	-0.00507	Prob > |t|	0.0156
Lower CL Dif	-0.02737	Prob > t	0.9922
Confidence	0.95	Prob < t	0.0078

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00039469	0.000395	16.3201	0.0156
Error	4	0.00009674	0.000024		
C. Total	5	0.00049143			

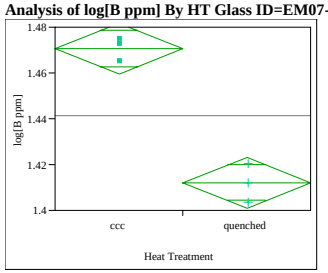
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.78214	0.00284	1.7743	1.7900
quenched	3	1.76591	0.00284	1.7580	1.7738

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Na-20



Anova
Summary of Fit

Rsquare	0.963648
Adj Rsquare	0.95456
Root Mean Square Error	0.006957
Mean of Response	1.441381
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.05849	t Ratio	-10.2974
Std Err Dif	0.00568	DF	4
Upper CL Dif	-0.04272	Prob > |t|	0.0005
Lower CL Dif	-0.07426	Prob > t	0.9997
Confidence	0.95	Prob < t	0.0003

Analysis of Variance

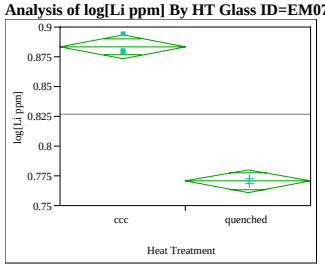
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00513213	0.005132	106.0356	0.0005
Error	4	0.00019360	0.000048		
C. Total	5	0.00532573			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.47063	0.00402	1.4595	1.4818
quenched	3	1.41213	0.00402	1.4010	1.4233

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Na-20



Anova
Summary of Fit

Rsquare	0.992233
Adj Rsquare	0.990292
Root Mean Square Error	0.006114
Mean of Response	0.826874
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.11285	t Ratio	-22.6056
Std Err Dif	0.00499	DF	4
Upper CL Dif	-0.09899	Prob > |t|	<.0001
Lower CL Dif	-0.12671	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

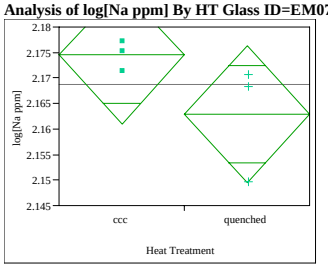
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01910298	0.019103	511.0128	<.0001
Error	4	0.00014953	0.000037		
C. Total	5	0.01925251			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.883300	0.00353	0.87350	0.89310
quenched	3	0.770449	0.00353	0.76065	0.78025

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Na-20



Anova
Summary of Fit

Rsquare	0.415079
Adj Rsquare	0.268849
Root Mean Square Error	0.008393
Mean of Response	2.168709
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01155	t Ratio	-1.6848
Std Err Dif	0.00685	DF	4
Upper CL Dif	0.00748	Prob > |t|	0.1673
Lower CL Dif	-0.03057	Prob > t	0.9163
Confidence	0.95	Prob < t	0.0837

Analysis of Variance

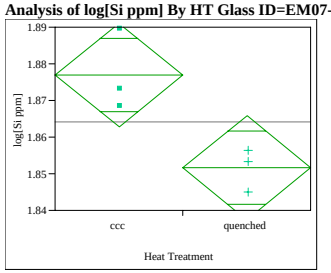
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00019994	0.000200	2.8385	0.1673
Error	4	0.00028174	0.000070		
C. Total	5	0.00048168			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.17448	0.00485	2.1610	2.1879
quenched	3	2.16294	0.00485	2.1495	2.1764

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Na-20



Anova
Summary of Fit

Rsquare	0.75607
Adj Rsquare	0.695088
Root Mean Square Error	0.008808
Mean of Response	1.864242
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02532	t Ratio	-3.5211
Std Err Dif	0.00719	DF	4
Upper CL Dif	-0.00536	Prob > |t|	0.0244
Lower CL Dif	-0.04529	Prob > t	0.9878
Confidence	0.95	Prob < t	0.0122

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00096176	0.000962	12.3982	0.0244
Error	4	0.00031029	0.000078		
C. Total	5	0.00127206			

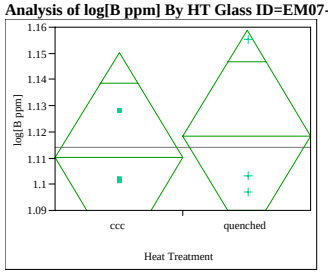
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.87690	0.00509	1.8628	1.8910
quenched	3	1.85158	0.00509	1.8375	1.8657

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Ni-001



Anova
Summary of Fit

Rsquare	0.040816
Adj Rsquare	-0.19898
Root Mean Square Error	0.025107
Mean of Response	1.114273
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00846	t Ratio	0.412568
Std Err Dif	0.02050	DF	4
Upper CL Dif	0.06537	Prob > |t|	0.7011
Lower CL Dif	-0.04846	Prob > t	0.3505
Confidence	0.95	Prob < t	0.6495

Analysis of Variance

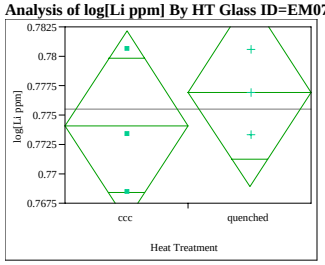
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00010729	0.000107	0.1702	0.7011
Error	4	0.00252136	0.000630		
C. Total	5	0.00262866			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.11004	0.01450	1.0698	1.1503
quenched	3	1.11850	0.01450	1.0783	1.1587

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Ni-001



Anova
Summary of Fit

Rsquare	0.10743
Adj Rsquare	-0.11571
Root Mean Square Error	0.005032
Mean of Response	0.775516
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00285	t Ratio	0.69386
Std Err Dif	0.00411	DF	4
Upper CL Dif	0.01426	Prob > |t|	0.5260
Lower CL Dif	-0.00856	Prob > t	0.2630
Confidence	0.95	Prob < t	0.7370

Analysis of Variance

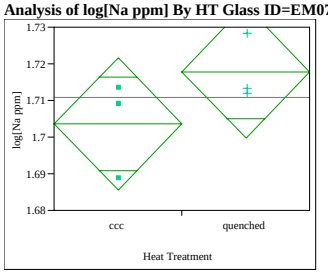
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00001219	0.000012	0.4814	0.5260
Error	4	0.00010127	0.000025		
C. Total	5	0.00011346			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.774091	0.00291	0.76603	0.78216
quenched	3	0.776942	0.00291	0.76888	0.78501

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Ni-001



Anova
Summary of Fit

Rsquare	0.370137
Adj Rsquare	0.212671
Root Mean Square Error	0.011306
Mean of Response	1.710723
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01415	t Ratio	1.533163
Std Err Dif	0.00923	DF	4
Upper CL Dif	0.03978	Prob > |t|	0.2000
Lower CL Dif	-0.01148	Prob > t	0.1000
Confidence	0.95	Prob < t	0.9000

Analysis of Variance

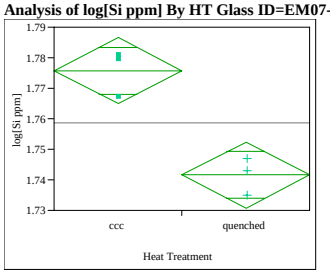
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00030044	0.000300	2.3506	0.2000
Error	4	0.00051126	0.000128		
C. Total	5	0.00081170			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.70365	0.00653	1.6855	1.7218
quenched	3	1.71780	0.00653	1.6997	1.7359

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Ni-001



Anova
Summary of Fit

Rsquare	0.904939
Adj Rsquare	0.881174
Root Mean Square Error	0.006756
Mean of Response	1.758678
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.03404	t Ratio	-6.17077
Std Err Dif	0.00552	DF	4
Upper CL Dif	-0.01872	Prob > |t|	0.0035
Lower CL Dif	-0.04936	Prob > t	0.9982
Confidence	0.95	Prob < t	0.0018

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00173816	0.001738	38.0784	0.0035
Error	4	0.00018259	0.000046		
C. Total	5	0.00192075			

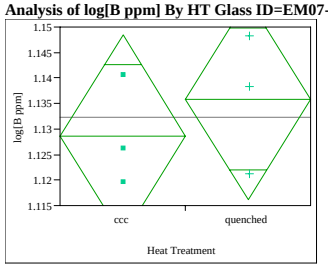
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.77570	0.00390	1.7649	1.7865
quenched	3	1.74166	0.00390	1.7308	1.7525

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Ni-02



Anova
Summary of Fit

Rsquare	0.115048
Adj Rsquare	-0.10619
Root Mean Square Error	0.012293
Mean of Response	1.132262
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00724	t Ratio	0.721123
Std Err Dif	0.01004	DF	4
Upper CL Dif	0.03510	Prob > |t|	0.5107
Lower CL Dif	-0.02063	Prob > t	0.2554
Confidence	0.95	Prob < t	0.7446

Analysis of Variance

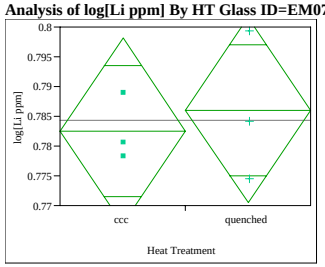
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00007858	0.000079	0.5200	0.5107
Error	4	0.00060444	0.000151		
C. Total	5	0.00068302			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.12864	0.00710	1.1089	1.1483
quenched	3	1.13588	0.00710	1.1162	1.1556

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Ni-02



Anova
Summary of Fit

Rsquare	0.045809
Adj Rsquare	-0.19274
Root Mean Square Error	0.009703
Mean of Response	0.784272
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00347	t Ratio	0.438214
Std Err Dif	0.00792	DF	4
Upper CL Dif	0.02547	Prob > |t|	0.6839
Lower CL Dif	-0.01852	Prob > t	0.3419
Confidence	0.95	Prob < t	0.6581

Analysis of Variance

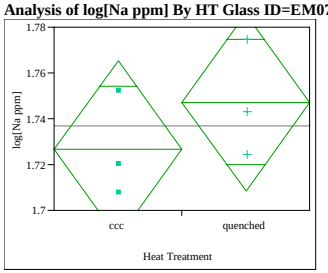
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00001808	0.000018	0.1920	0.6839
Error	4	0.00037661	0.000094		
C. Total	5	0.00039469			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.782537	0.00560	0.76698	0.79809
quenched	3	0.786008	0.00560	0.77045	0.80156

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Ni-02



Anova
Summary of Fit

Rsquare	0.214899
Adj Rsquare	0.018624
Root Mean Square Error	0.02419
Mean of Response	1.736935
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02067	t Ratio	1.046367
Std Err Dif	0.01975	DF	4
Upper CL Dif	0.07551	Prob > |t|	0.3545
Lower CL Dif	-0.03417	Prob > t	0.1772
Confidence	0.95	Prob < t	0.8228

Analysis of Variance

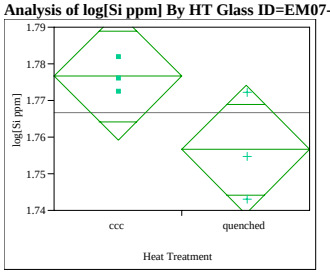
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00064070	0.000641	1.0949	0.3545
Error	4	0.00234071	0.000585		
C. Total	5	0.00298142			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.72660	0.01397	1.6878	1.7654
quenched	3	1.74727	0.01397	1.7085	1.7860

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Ni-02



Anova
Summary of Fit

Rsquare	0.556458
Adj Rsquare	0.445573
Root Mean Square Error	0.010916
Mean of Response	1.766547
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01997	t Ratio	-2.24016
Std Err Dif	0.00891	DF	4
Upper CL Dif	0.00478	Prob > |t|	0.0886
Lower CL Dif	-0.04471	Prob > t	0.9557
Confidence	0.95	Prob < t	0.0443

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00059795	0.000598	5.0183	0.0886
Error	4	0.00047661	0.000119		
C. Total	5	0.00107456			

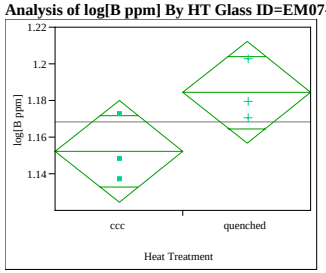
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.77653	0.00630	1.7590	1.7940
quenched	3	1.75656	0.00630	1.7391	1.7741

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-NM-0025



Anova
Summary of Fit

Rsquare	0.561498
Adj Rsquare	0.451873
Root Mean Square Error	0.017382
Mean of Response	1.168272
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.03212	t Ratio	2.263178
Std Err Dif	0.01419	DF	4
Upper CL Dif	0.07152	Prob > |t|	0.0864
Lower CL Dif	-0.00728	Prob > t	0.0432
Confidence	0.95	Prob < t	0.9568

Analysis of Variance

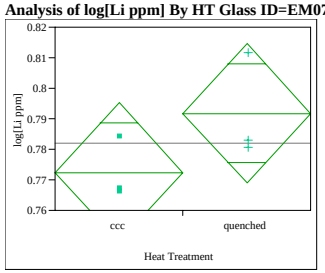
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00154744	0.001547	5.1220	0.0864
Error	4	0.00120847	0.000302		
C. Total	5	0.00275591			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.15221	0.01004	1.1243	1.1801
quenched	3	1.18433	0.01004	1.1565	1.2122

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-NM-0025



Anova
Summary of Fit

Rsquare	0.409199
Adj Rsquare	0.261499
Root Mean Square Error	0.014248
Mean of Response	0.782095
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01936	t Ratio	1.664472
Std Err Dif	0.01163	DF	4
Upper CL Dif	0.05166	Prob > |t|	0.1713
Lower CL Dif	-0.01294	Prob > t	0.0857
Confidence	0.95	Prob < t	0.9143

Analysis of Variance

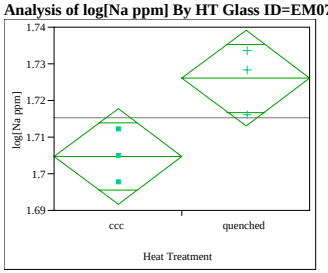
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00056244	0.000562	2.7705	0.1713
Error	4	0.00081205	0.000203		
C. Total	5	0.00137449			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.772413	0.00823	0.74957	0.79525
quenched	3	0.791777	0.00823	0.76894	0.81462

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-NM-0025



Anova
Summary of Fit

Rsquare	0.718856
Adj Rsquare	0.64857
Root Mean Square Error	0.008175
Mean of Response	1.715365
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.021347	t Ratio	3.19806
Std Err Dif	0.006675	DF	4
Upper CL Dif	0.039879	Prob > |t|	0.0330
Lower CL Dif	0.002814	Prob > t	0.0165
Confidence	0.95	Prob < t	0.9835

Analysis of Variance

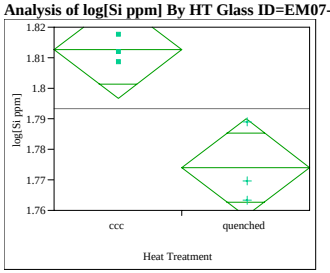
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00068351	0.000684	10.2276	0.0330
Error	4	0.00026732	0.000067		
C. Total	5	0.00095084			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.70469	0.00472	1.6916	1.7178
quenched	3	1.72604	0.00472	1.7129	1.7391

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-NM-0025



Anova
Summary of Fit

Rsquare	0.850237
Adj Rsquare	0.812796
Root Mean Square Error	0.009908
Mean of Response	1.79326
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.03855	t Ratio	-4.76538
Std Err Dif	0.00809	DF	4
Upper CL Dif	-0.01609	Prob > |t|	0.0089
Lower CL Dif	-0.06101	Prob > t	0.9956
Confidence	0.95	Prob < t	0.0044

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00222926	0.002229	22.7089	0.0089
Error	4	0.00039267	0.000098		
C. Total	5	0.00262193			

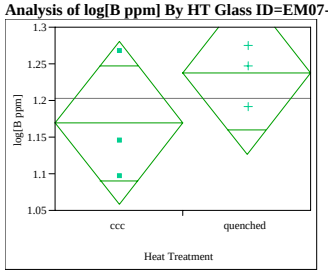
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.81254	0.00572	1.7967	1.8284
quenched	3	1.77398	0.00572	1.7581	1.7899

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-P-0



Anova
Summary of Fit

Rsquare	0.2681
Adj Rsquare	0.085126
Root Mean Square Error	0.069447
Mean of Response	1.203472
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.06864	t Ratio	1.210467
Std Err Dif	0.05670	DF	4
Upper CL Dif	0.22607	Prob > |t|	0.2927
Lower CL Dif	-0.08880	Prob > t	0.1464
Confidence	0.95	Prob < t	0.8536

Analysis of Variance

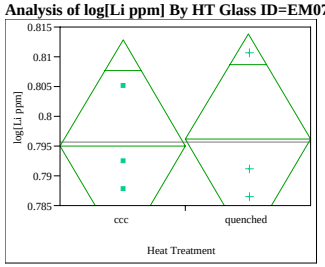
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00706667	0.007067	1.4652	0.2927
Error	4	0.01929162	0.004823		
C. Total	5	0.02635829			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.16915	0.04010	1.0578	1.2805
quenched	3	1.23779	0.04010	1.1265	1.3491

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-P-0



Anova
Summary of Fit

Rsquare	0.003656
Adj Rsquare	-0.24543
Root Mean Square Error	0.011061
Mean of Response	0.795601
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00109	t Ratio	0.121146
Std Err Dif	0.00903	DF	4
Upper CL Dif	0.02617	Prob > |t|	0.9094
Lower CL Dif	-0.02398	Prob > t	0.4547
Confidence	0.95	Prob < t	0.5453

Analysis of Variance

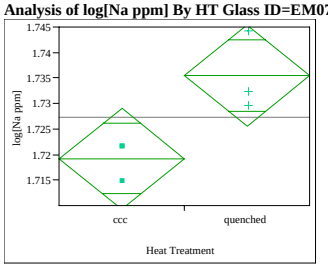
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00000180	1.795e-6	0.0147	0.9094
Error	4	0.00048934	0.000122		
C. Total	5	0.00049114			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.795054	0.00639	0.77732	0.81278
quenched	3	0.796148	0.00639	0.77842	0.81388

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-P-0



Anova
Summary of Fit

Rsquare	0.721647
Adj Rsquare	0.652059
Root Mean Square Error	0.006175
Mean of Response	1.727354
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.016237	t Ratio	3.220286
Std Err Dif	0.005042	DF	4
Upper CL Dif	0.030236	Prob > |t|	0.0323
Lower CL Dif	0.002238	Prob > t	0.0161
Confidence	0.95	Prob < t	0.9839

Analysis of Variance

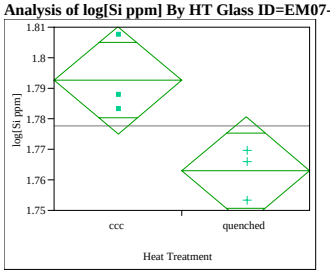
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00039545	0.000395	10.3702	0.0323
Error	4	0.00015253	0.000038		
C. Total	5	0.00054799			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.71924	0.00357	1.7093	1.7291
quenched	3	1.73547	0.00357	1.7256	1.7454

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-P-0



Anova
Summary of Fit

Rsquare	0.733969
Adj Rsquare	0.667462
Root Mean Square Error	0.010948
Mean of Response	1.777813
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.02970	t Ratio	-3.32203
Std Err Dif	0.00894	DF	4
Upper CL Dif	-0.00488	Prob > |t|	0.0293
Lower CL Dif	-0.05452	Prob > t	0.9853
Confidence	0.95	Prob < t	0.0147

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00132279	0.001323	11.0359	0.0293
Error	4	0.00047945	0.000120		
C. Total	5	0.00180224			

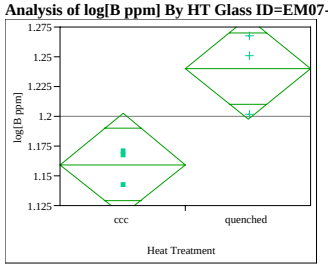
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.79266	0.00632	1.7751	1.8102
quenched	3	1.76296	0.00632	1.7454	1.7805

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-P-025



Anova
Summary of Fit

Rsquare	0.774675
Adj Rsquare	0.718344
Root Mean Square Error	0.026557
Mean of Response	1.199737
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.080411	t Ratio	3.708388
Std Err Dif	0.021683	DF	4
Upper CL Dif	0.140614	Prob > |t|	0.0207
Lower CL Dif	0.020208	Prob > t	0.0103
Confidence	0.95	Prob < t	0.9897

Analysis of Variance

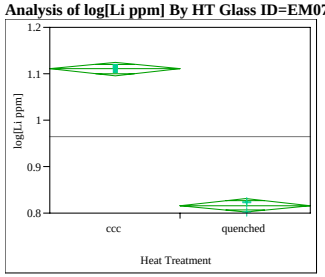
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00969884	0.009699	13.7521	0.0207
Error	4	0.00282104	0.000705		
C. Total	5	0.01251988			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.15953	0.01533	1.1170	1.2021
quenched	3	1.23994	0.01533	1.1974	1.2825

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-P-025



Anova
Summary of Fit

Rsquare	0.997362
Adj Rsquare	0.996702
Root Mean Square Error	0.009256
Mean of Response	0.963449
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.29388	t Ratio	-38.8865
Std Err Dif	0.00756	DF	4
Upper CL Dif	-0.27290	Prob > |t|	<.0001
Lower CL Dif	-0.31486	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

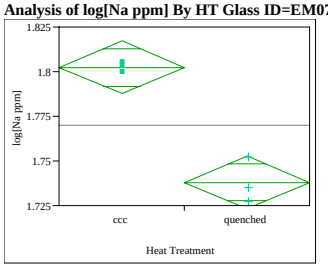
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.12955004	0.129550	1512.162	<.0001
Error	4	0.00034269	0.000086		
C. Total	5	0.12989273			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.11039	0.00534	1.0956	1.1252
quenched	3	0.81651	0.00534	0.8017	0.8313

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-P-025



Anova
Summary of Fit

Rsquare	0.947596
Adj Rsquare	0.934495
Root Mean Square Error	0.009267
Mean of Response	1.770221
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.06435	t Ratio	-8.50469
Std Err Dif	0.00757	DF	4
Upper CL Dif	-0.04334	Prob > |t|	0.0010
Lower CL Dif	-0.08536	Prob > t	0.9995
Confidence	0.95	Prob < t	0.0005

Analysis of Variance

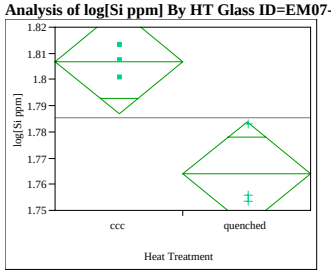
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00621127	0.006211	72.3297	0.0010
Error	4	0.00034350	0.000086		
C. Total	5	0.00655477			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.80240	0.00535	1.7875	1.8173
quenched	3	1.73805	0.00535	1.7232	1.7529

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-P-025



Anova
Summary of Fit

Rsquare	0.817128
Adj Rsquare	0.77141
Root Mean Square Error	0.012414
Mean of Response	1.785486
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.04285	t Ratio	-4.22768
Std Err Dif	0.01014	DF	4
Upper CL Dif	-0.01471	Prob > |t|	0.0134
Lower CL Dif	-0.07100	Prob > t	0.9933
Confidence	0.95	Prob < t	0.0067

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00275453	0.002755	17.8733	0.0134
Error	4	0.00061646	0.000154		
C. Total	5	0.00337099			

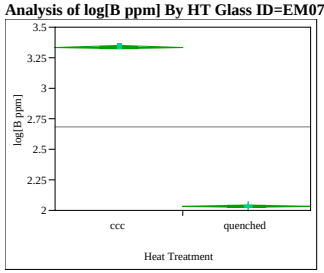
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.80691	0.00717	1.7870	1.8268
quenched	3	1.76406	0.00717	1.7442	1.7840

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Si-30



Anova
Summary of Fit

Rsquare	0.999916
Adj Rsquare	0.999895
Root Mean Square Error	0.007297
Mean of Response	2.68424
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-1.3031	t Ratio	-218.722
Std Err Dif	0.0060	DF	4
Upper CL Dif	-1.2866	Prob > |t|	<.0001
Lower CL Dif	-1.3196	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

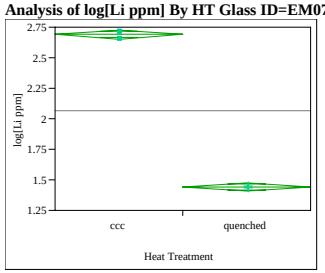
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	2.5471185	2.54712	47839.42	<.0001
Error	4	0.0002130	5.324e-5		
C. Total	5	2.5473315			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	3.33579	0.00421	3.3241	3.3475
quenched	3	2.03269	0.00421	2.0210	2.0444

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Si-30



Anova
Summary of Fit

Rsquare	0.999111
Adj Rsquare	0.998889
Root Mean Square Error	0.022813
Mean of Response	2.065501
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-1.2489	t Ratio	-67.0462
Std Err Dif	0.0186	DF	4
Upper CL Dif	-1.1971	Prob > |t|	<.0001
Lower CL Dif	-1.3006	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

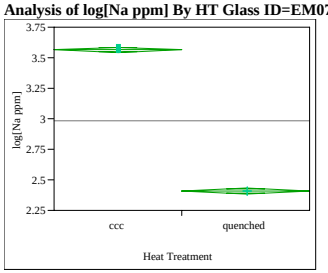
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	2.3394851	2.33949	4495.190	<.0001
Error	4	0.0020818	0.00052		
C. Total	5	2.3415668			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.68993	0.01317	2.6534	2.7265
quenched	3	1.44107	0.01317	1.4045	1.4776

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Si-30



Anova
Summary of Fit

Rsquare	0.999586
Adj Rsquare	0.999483
Root Mean Square Error	0.014376
Mean of Response	2.98634
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-1.1539	t Ratio	-98.3076
Std Err Dif	0.0117	DF	4
Upper CL Dif	-1.1213	Prob > |t|	<.0001
Lower CL Dif	-1.1865	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

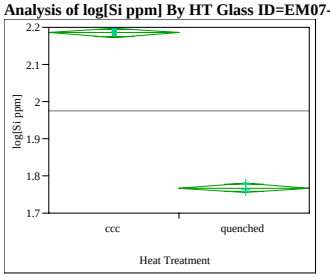
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	1.9973551	1.99736	9664.383	<.0001
Error	4	0.0008267	0.00021		
C. Total	5	1.9981818			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	3.56331	0.00830	3.5403	3.5864
quenched	3	2.40937	0.00830	2.3863	2.4324

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Si-30



Anova
Summary of Fit

Rsquare	0.999004
Adj Rsquare	0.998754
Root Mean Square Error	0.008075
Mean of Response	1.976246
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.41751	t Ratio	-63.3257
Std Err Dif	0.00659	DF	4
Upper CL Dif	-0.39920	Prob > |t|	<.0001
Lower CL Dif	-0.43581	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.26146759	0.261468	4010.143	<.0001
Error	4	0.00026081	0.000065		
C. Total	5	0.26172839			

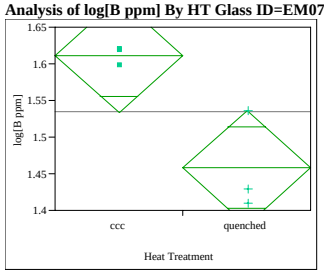
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.18500	0.00466	2.1721	2.1979
quenched	3	1.76749	0.00466	1.7545	1.7804

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Si-37



Anova
Summary of Fit

Rsquare	0.786554
Adj Rsquare	0.733192
Root Mean Square Error	0.048986
Mean of Response	1.534708
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.15356	t Ratio	-3.83928
Std Err Dif	0.04000	DF	4
Upper CL Dif	-0.04251	Prob > |t|	0.0185
Lower CL Dif	-0.26461	Prob > t	0.9908
Confidence	0.95	Prob < t	0.0092

Analysis of Variance

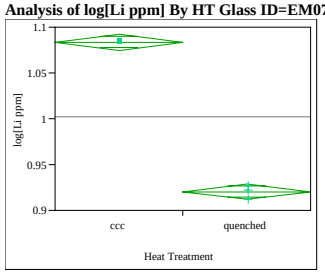
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.03537007	0.035370	14.7401	0.0185
Error	4	0.00959833	0.002400		
C. Total	5	0.04496841			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.61149	0.02828	1.5330	1.6900
quenched	3	1.45793	0.02828	1.3794	1.5365

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Si-37



Anova
Summary of Fit

Rsquare	0.997093
Adj Rsquare	0.996366
Root Mean Square Error	0.005393
Mean of Response	1.002042
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.16310	t Ratio	-37.0378
Std Err Dif	0.00440	DF	4
Upper CL Dif	-0.15087	Prob > |t|	<.0001
Lower CL Dif	-0.17532	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

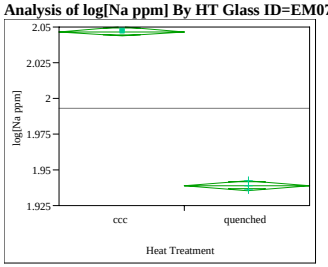
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.03990118	0.039901	1371.798	<.0001
Error	4	0.00011635	0.000029		
C. Total	5	0.04001753			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.08359	0.00311	1.0749	1.0922
quenched	3	0.92049	0.00311	0.9118	0.9291

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Si-37



Anova
Summary of Fit

Rsquare	0.999005
Adj Rsquare	0.998757
Root Mean Square Error	0.002085
Mean of Response	1.992908
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.10788	t Ratio	-63.3818
Std Err Dif	0.00170	DF	4
Upper CL Dif	-0.10316	Prob > |t|	<.0001
Lower CL Dif	-0.11261	Prob > t	1.0000
Confidence	0.95	Prob < t	<.0001

Analysis of Variance

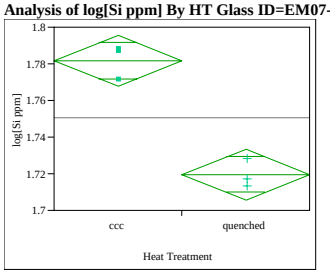
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.01745846	0.017458	4017.253	<.0001
Error	4	0.00001738	4.346e-6		
C. Total	5	0.01747585			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	2.04685	0.00120	2.0435	2.0502
quenched	3	1.93897	0.00120	1.9356	1.9423

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Si-37



Anova
Summary of Fit

Rsquare	0.950733
Adj Rsquare	0.938416
Root Mean Square Error	0.008648
Mean of Response	1.750679
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.06204	t Ratio	-8.78577
Std Err Dif	0.00706	DF	4
Upper CL Dif	-0.04243	Prob > |t|	0.0009
Lower CL Dif	-0.08164	Prob > t	0.9995
Confidence	0.95	Prob < t	0.0005

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00577258	0.005773	77.1898	0.0009
Error	4	0.00029914	0.000075		
C. Total	5	0.00607172			

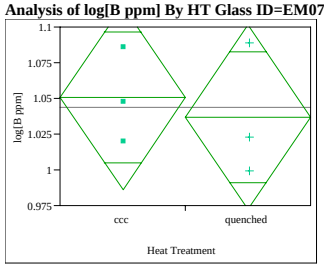
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.78170	0.00499	1.7678	1.7956
quenched	3	1.71966	0.00499	1.7058	1.7335

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Si-50



Anova
Summary of Fit

Rsquare	0.041284
Adj Rsquare	-0.1984
Root Mean Square Error	0.040325
Mean of Response	1.043697
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01366	t Ratio	-0.41503
Std Err Dif	0.03293	DF	4
Upper CL Dif	0.07775	Prob > |t|	0.6994
Lower CL Dif	-0.10508	Prob > t	0.6503
Confidence	0.95	Prob < t	0.3497

Analysis of Variance

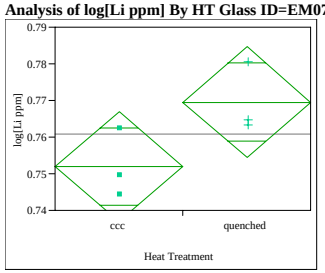
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00028010	0.000280	0.1722	0.6994
Error	4	0.00650451	0.001626		
C. Total	5	0.00678461			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.05053	0.02328	0.98589	1.1152
quenched	3	1.03686	0.02328	0.97222	1.1015

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Si-50



Anova
Summary of Fit

Rsquare	0.568289
Adj Rsquare	0.460362
Root Mean Square Error	0.009378
Mean of Response	0.760777
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01757	t Ratio	2.29466
Std Err Dif	0.00766	DF	4
Upper CL Dif	0.03883	Prob > |t|	0.0834
Lower CL Dif	-0.00369	Prob > t	0.0417
Confidence	0.95	Prob < t	0.9583

Analysis of Variance

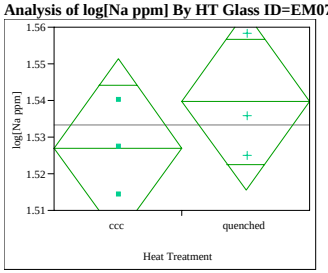
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00046305	0.000463	5.2655	0.0834
Error	4	0.00035176	0.000088		
C. Total	5	0.00081482			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.751992	0.00541	0.73696	0.76702
quenched	3	0.769562	0.00541	0.75453	0.78459

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Si-50



Anova
Summary of Fit

Rsquare	0.207876
Adj Rsquare	0.009845
Root Mean Square Error	0.015083
Mean of Response	1.53339
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01262	t Ratio	1.024557
Std Err Dif	0.01231	DF	4
Upper CL Dif	0.04681	Prob > |t|	0.3635
Lower CL Dif	-0.02157	Prob > t	0.1817
Confidence	0.95	Prob < t	0.8183

Analysis of Variance

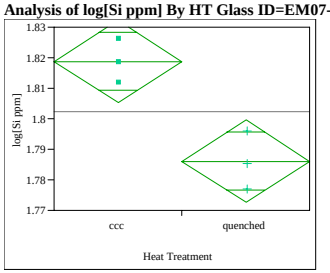
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00023880	0.000239	1.0497	0.3635
Error	4	0.00090995	0.000227		
C. Total	5	0.00114875			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.52708	0.00871	1.5029	1.5513
quenched	3	1.53970	0.00871	1.5155	1.5639

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Si-50



Anova
Summary of Fit

Rsquare	0.850575
Adj Rsquare	0.813219
Root Mean Square Error	0.008399
Mean of Response	1.802421
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.03272	t Ratio	-4.77172
Std Err Dif	0.00686	DF	4
Upper CL Dif	-0.01368	Prob > |t|	0.0088
Lower CL Dif	-0.05176	Prob > t	0.9956
Confidence	0.95	Prob < t	0.0044

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00160609	0.001606	22.7693	0.0088
Error	4	0.00028215	0.000071		
C. Total	5	0.00188824			

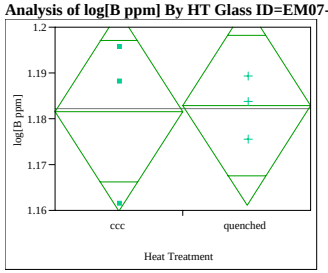
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.81878	0.00485	1.8053	1.8322
quenched	3	1.78606	0.00485	1.7726	1.7995

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Zr-001



Anova
Summary of Fit

Rsquare	0.003517
Adj Rsquare	-0.2456
Root Mean Square Error	0.013581
Mean of Response	1.182266
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.00132	t Ratio	0.118815
Std Err Dif	0.01109	DF	4
Upper CL Dif	0.03210	Prob > |t|	0.9111
Lower CL Dif	-0.02947	Prob > t	0.4556
Confidence	0.95	Prob < t	0.5444

Analysis of Variance

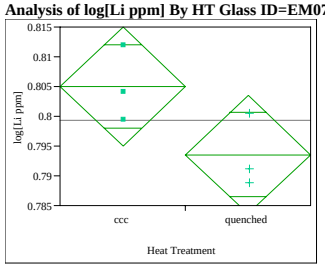
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00000260	2.604e-6	0.0141	0.9111
Error	4	0.00073776	0.000184		
C. Total	5	0.00074036			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.18161	0.00784	1.1598	1.2034
quenched	3	1.18293	0.00784	1.1612	1.2047

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Zr-001



Anova
Summary of Fit

Rsquare	0.56114
Adj Rsquare	0.451424
Root Mean Square Error	0.006222
Mean of Response	0.799281
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01149	t Ratio	-2.26153
Std Err Dif	0.00508	DF	4
Upper CL Dif	0.00262	Prob > |t|	0.0865
Lower CL Dif	-0.02559	Prob > t	0.9567
Confidence	0.95	Prob < t	0.0433

Analysis of Variance

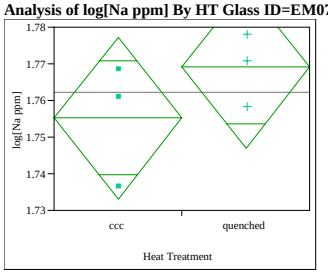
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00019798	0.000198	5.1145	0.0865
Error	4	0.00015483	0.000039		
C. Total	5	0.00035281			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.805026	0.00359	0.79505	0.81500
quenched	3	0.793537	0.00359	0.78356	0.80351

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Zr-001



Anova
Summary of Fit

Rsquare	0.276125
Adj Rsquare	0.095156
Root Mean Square Error	0.013781
Mean of Response	1.762196
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.01390	t Ratio	1.235238
Std Err Dif	0.01125	DF	4
Upper CL Dif	0.04514	Prob > |t|	0.2843
Lower CL Dif	-0.01734	Prob > t	0.1422
Confidence	0.95	Prob < t	0.8578

Analysis of Variance

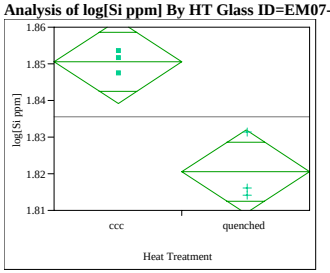
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00028978	0.000290	1.5258	0.2843
Error	4	0.00075968	0.000190		
C. Total	5	0.00104946			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.75525	0.00796	1.7332	1.7773
quenched	3	1.76915	0.00796	1.7471	1.7912

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Zr-001



Anova
Summary of Fit

Rsquare	0.871367
Adj Rsquare	0.839209
Root Mean Square Error	0.007059
Mean of Response	1.835579
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.03000	t Ratio	-5.2054
Std Err Dif	0.00576	DF	4
Upper CL Dif	-0.01400	Prob > |t|	0.0065
Lower CL Dif	-0.04600	Prob > t	0.9968
Confidence	0.95	Prob < t	0.0032

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00135006	0.001350	27.0962	0.0065
Error	4	0.00019930	0.000050		
C. Total	5	0.00154936			

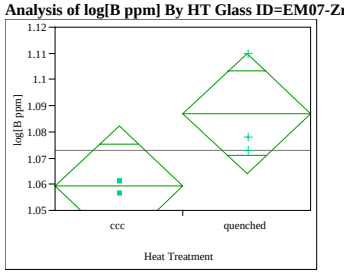
Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.85058	0.00408	1.8393	1.8619
quenched	3	1.82058	0.00408	1.8093	1.8319

Std Error uses a pooled estimate of error variance

Figure B6. Effects of Heat Treatment (HT) on PCT log(ppm)-Response of Study Glasses

Analysis of log[B ppm] By HT Glass ID=EM07-Zr-05



Anova
Summary of Fit

Rsquare	0.586588
Adj Rsquare	0.483235
Root Mean Square Error	0.014299
Mean of Response	1.073138
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02781	t Ratio	2.382349
Std Err Dif	0.01168	DF	4
Upper CL Dif	0.06023	Prob > |t|	0.0758
Lower CL Dif	-0.00460	Prob > t	0.0379
Confidence	0.95	Prob < t	0.9621

Analysis of Variance

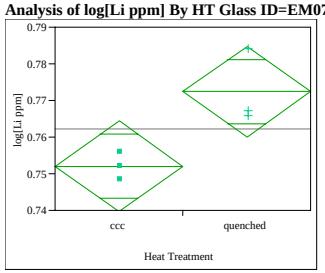
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00116047	0.001160	5.6756	0.0758
Error	4	0.00081787	0.000204		
C. Total	5	0.00197833			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.05923	0.00826	1.0363	1.0822
quenched	3	1.08704	0.00826	1.0641	1.1100

Std Error uses a pooled estimate of error variance

Analysis of log[Li ppm] By HT Glass ID=EM07-Zr-05



Anova
Summary of Fit

Rsquare	0.724231
Adj Rsquare	0.655288
Root Mean Square Error	0.007696
Mean of Response	0.76223
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.020368	t Ratio	3.241121
Std Err Dif	0.006284	DF	4
Upper CL Dif	0.037815	Prob > |t|	0.0316
Lower CL Dif	0.002920	Prob > t	0.0158
Confidence	0.95	Prob < t	0.9842

Analysis of Variance

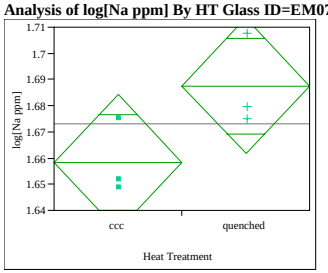
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00062226	0.000622	10.5049	0.0316
Error	4	0.00023694	0.000059		
C. Total	5	0.00085920			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	0.752046	0.00444	0.73971	0.76438
quenched	3	0.772413	0.00444	0.76008	0.78475

Std Error uses a pooled estimate of error variance

Analysis of log[Na ppm] By HT Glass ID=EM07-Zr-05



Anova
Summary of Fit

Rsquare	0.549234
Adj Rsquare	0.436543
Root Mean Square Error	0.016151
Mean of Response	1.672941
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	0.02911	t Ratio	2.207667
Std Err Dif	0.01319	DF	4
Upper CL Dif	0.06573	Prob > |t|	0.0919
Lower CL Dif	-0.00750	Prob > t	0.0459
Confidence	0.95	Prob < t	0.9541

Analysis of Variance

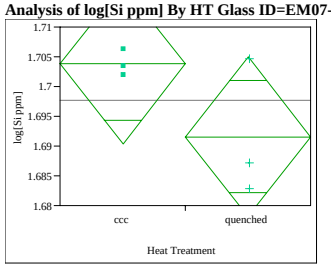
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00127137	0.001271	4.8738	0.0919
Error	4	0.00104344	0.000261		
C. Total	5	0.00231481			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.65838	0.00932	1.6325	1.6843
quenched	3	1.68750	0.00932	1.6616	1.7134

Std Error uses a pooled estimate of error variance

Analysis of log[Si ppm] By HT Glass ID=EM07-Zr-05



Anova
Summary of Fit

Rsquare	0.44426
Adj Rsquare	0.305325
Root Mean Square Error	0.008355
Mean of Response	1.697675
Observations (or Sum Wgts)	6

t Test
quenched-ccc

Assuming equal variances

Difference	-0.01220	t Ratio	-1.78819
Std Err Dif	0.00682	DF	4
Upper CL Dif	0.00674	Prob > |t|	0.1483
Lower CL Dif	-0.03114	Prob > t	0.9259
Confidence	0.95	Prob < t	0.0741

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
HT	1	0.00022320	0.000223	3.1976	0.1483
Error	4	0.00027921	0.000070		
C. Total	5	0.00050241			

Means for Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
ccc	3	1.70377	0.00482	1.6904	1.7172
quenched	3	1.69158	0.00482	1.6782	1.7050

Std Error uses a pooled estimate of error variance

Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured
Variability Chart for log NL[B (g/L)]

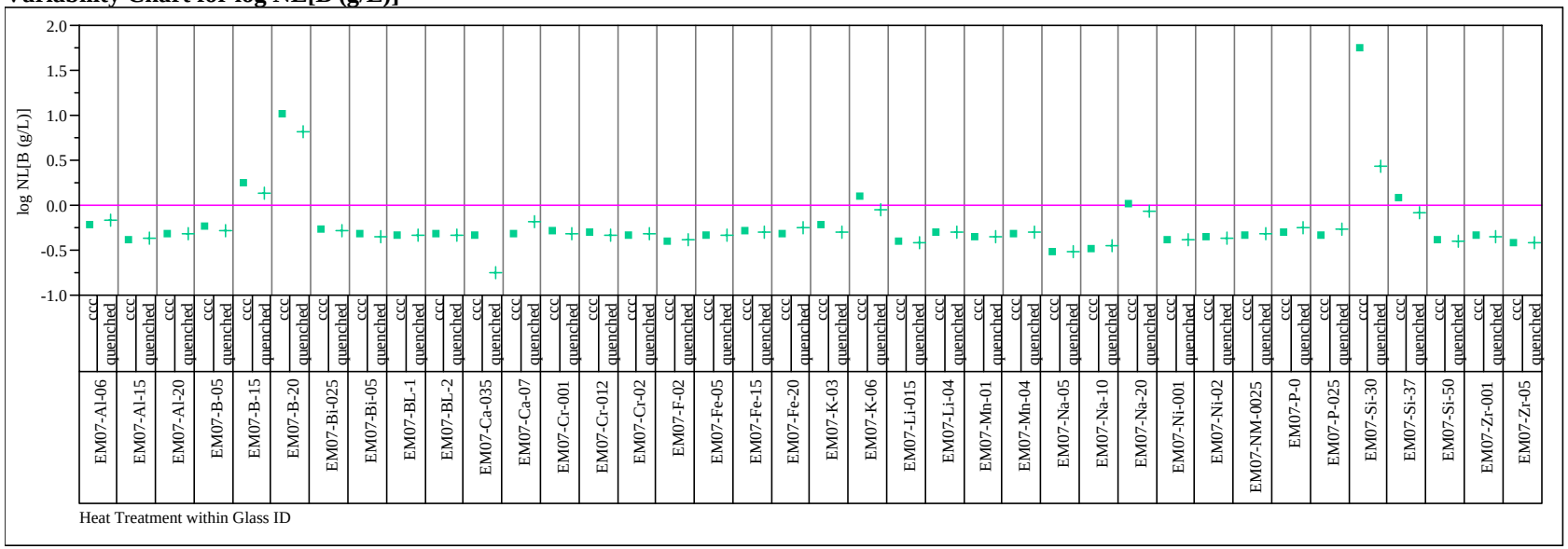


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured
Variability Chart for log NL[Li(g/L)]

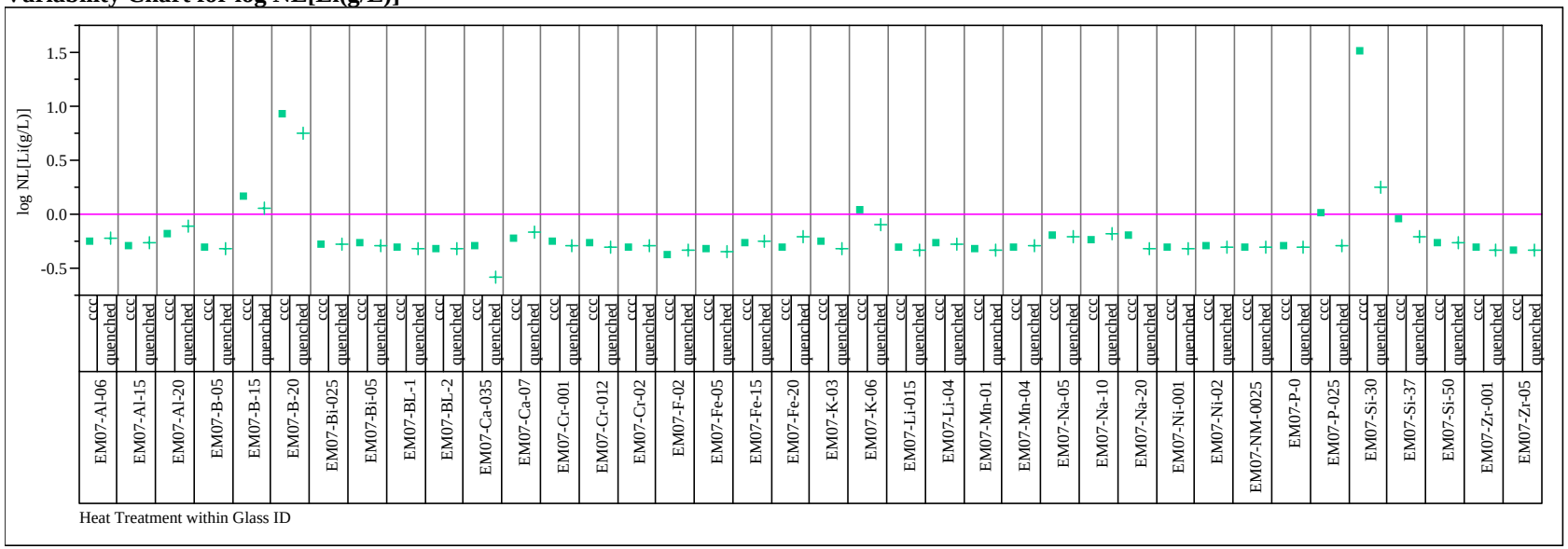


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured
Variability Chart for log NL[Na (g/L)]

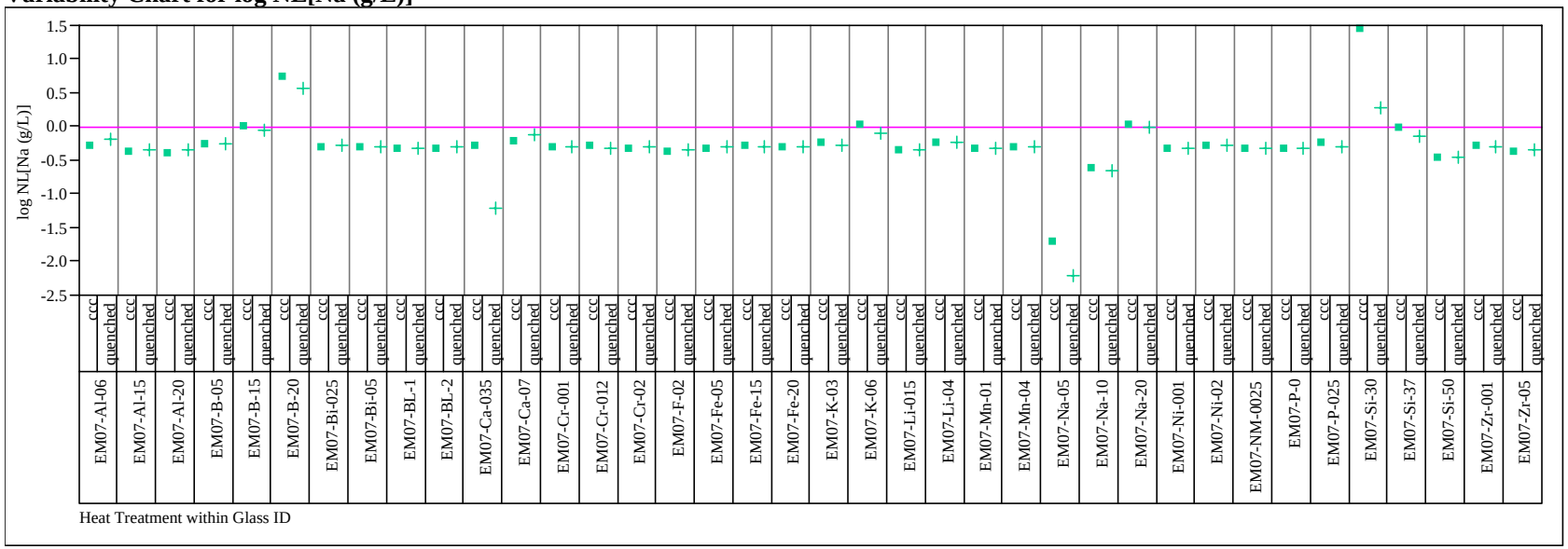


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured
Variability Chart for log NL[Si (g/L)]

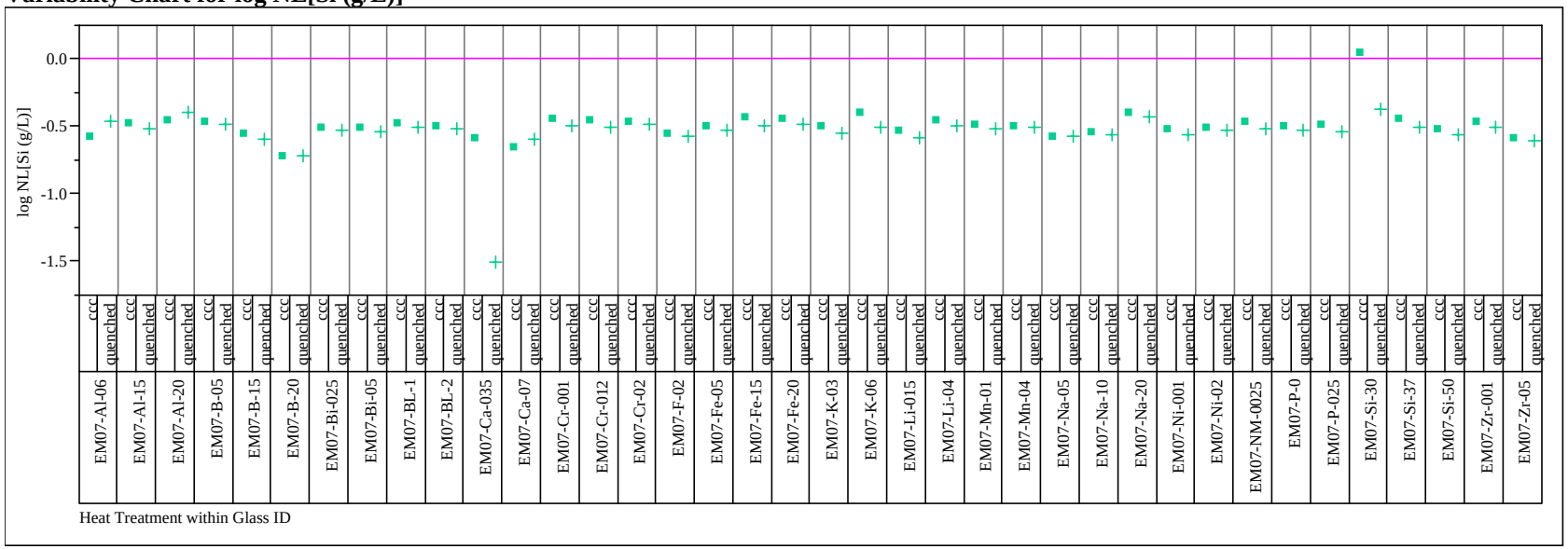


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured bc
Variability Chart for log NL[B (g/L)]

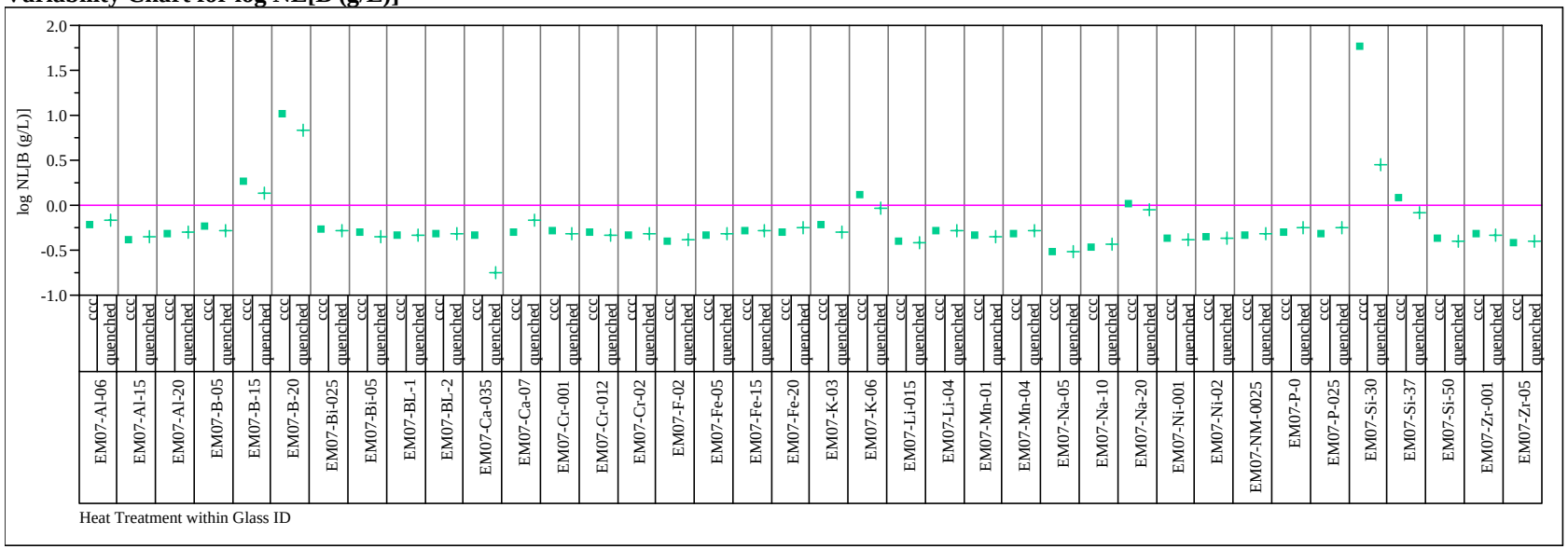


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured bc
Variability Chart for log NL[Li(g/L)]

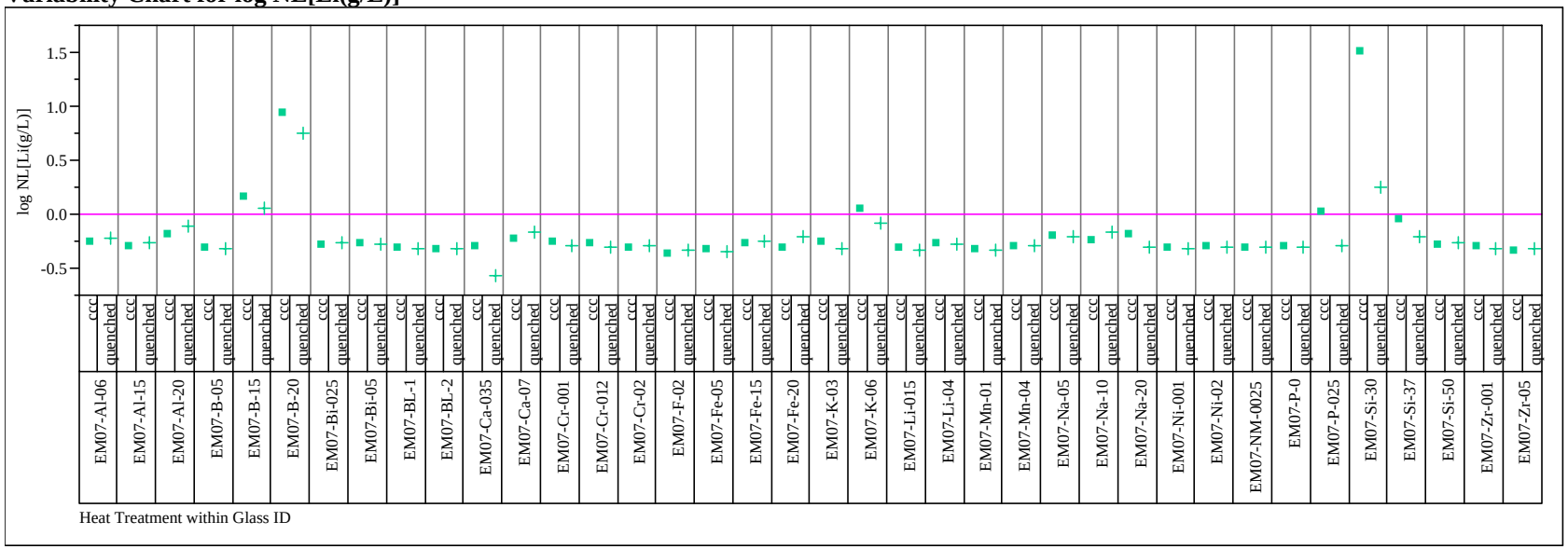


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured bc
Variability Chart for log NL[Na (g/L)]

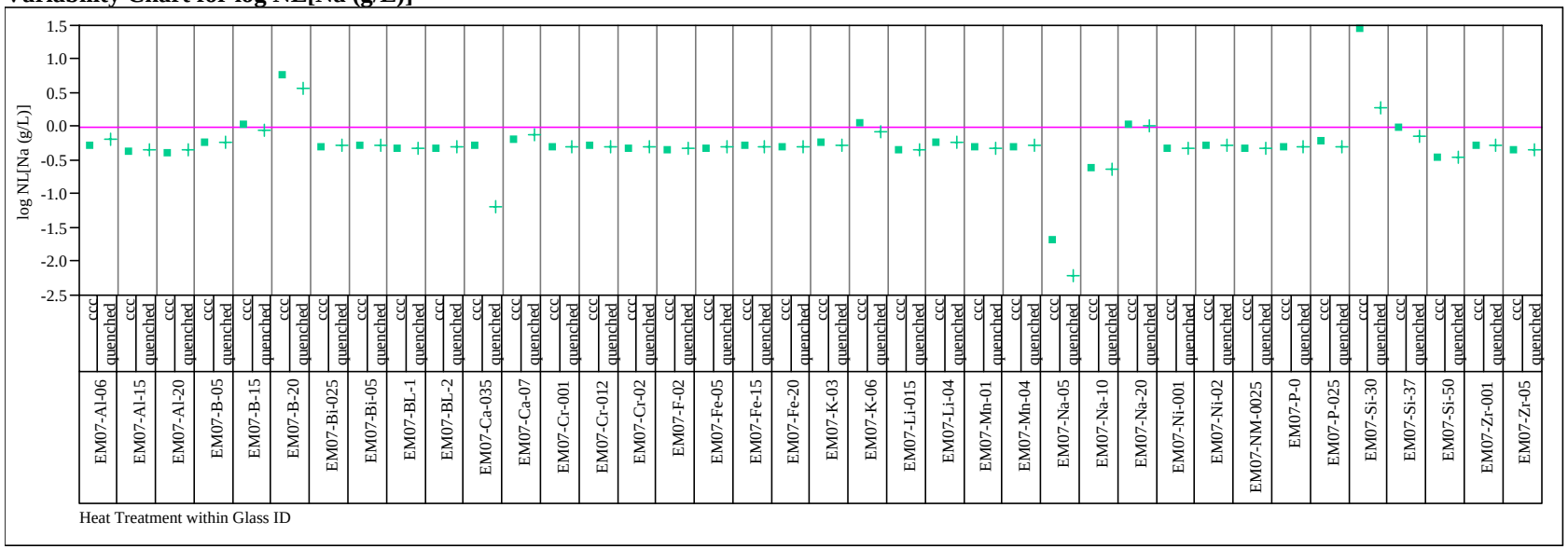


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=measured bc
Variability Chart for log NL[Si (g/L)]

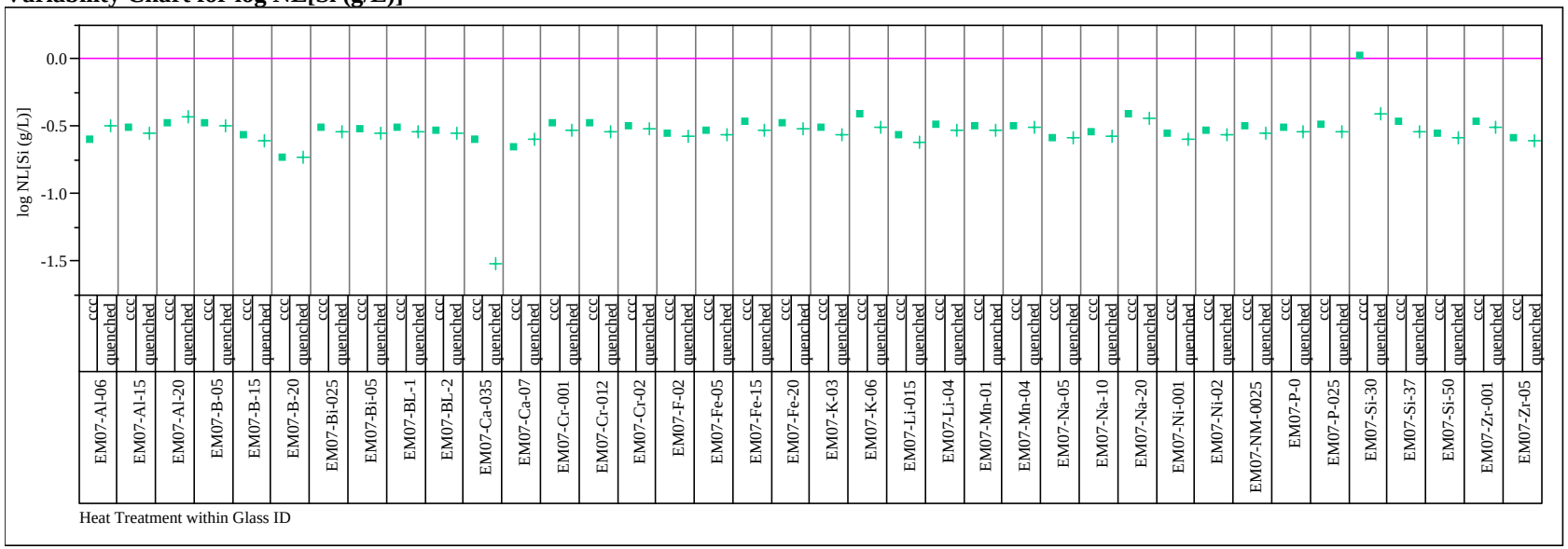


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=targeted
Variability Chart for log NL[B (g/L)]

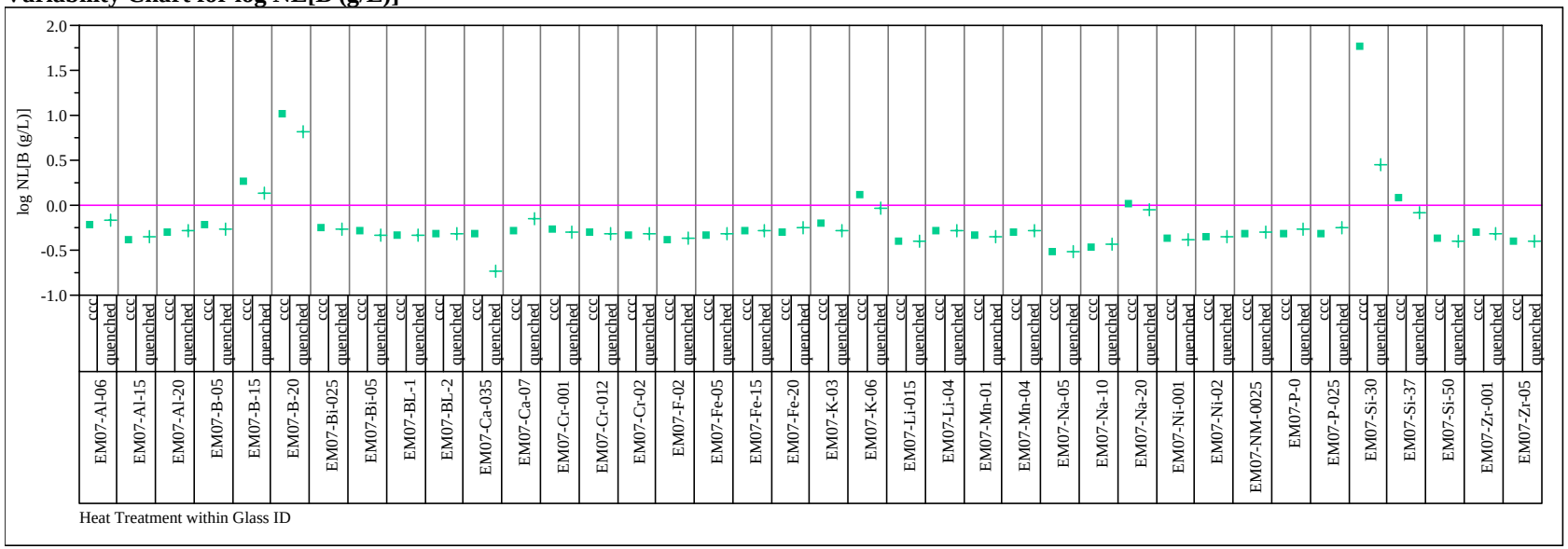


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=targeted
Variability Chart for log NL[Li(g/L)]

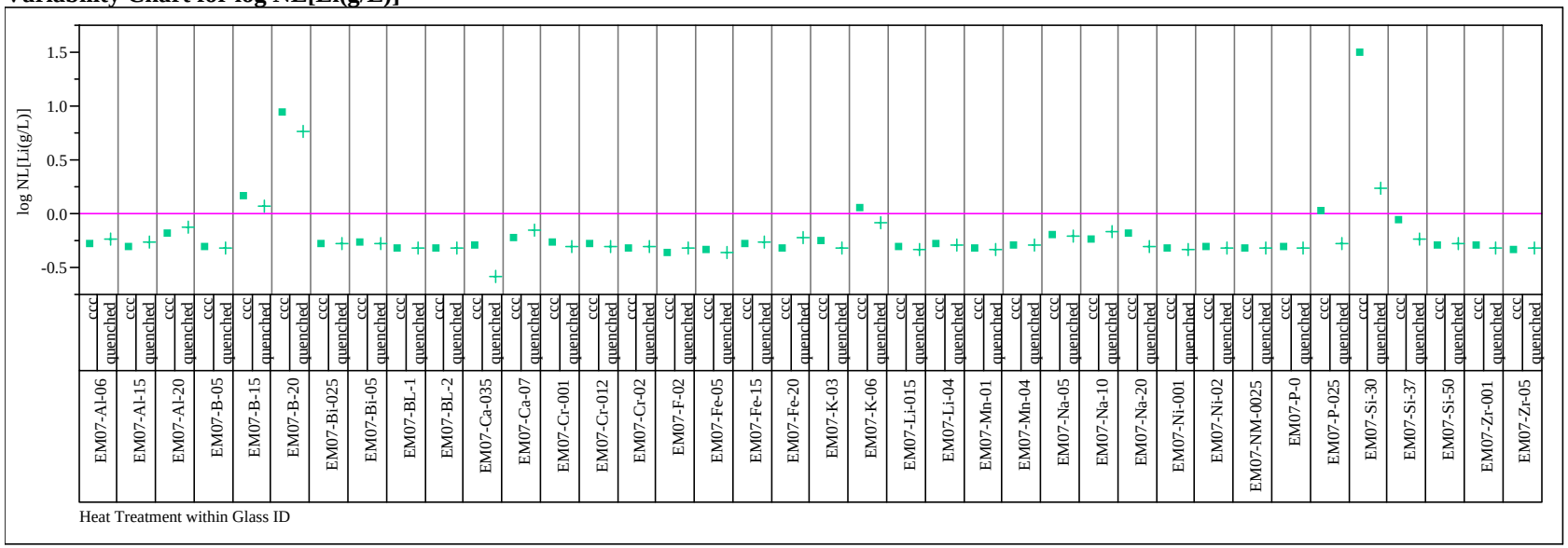


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=targeted
Variability Chart for log NL[Na (g/L)]

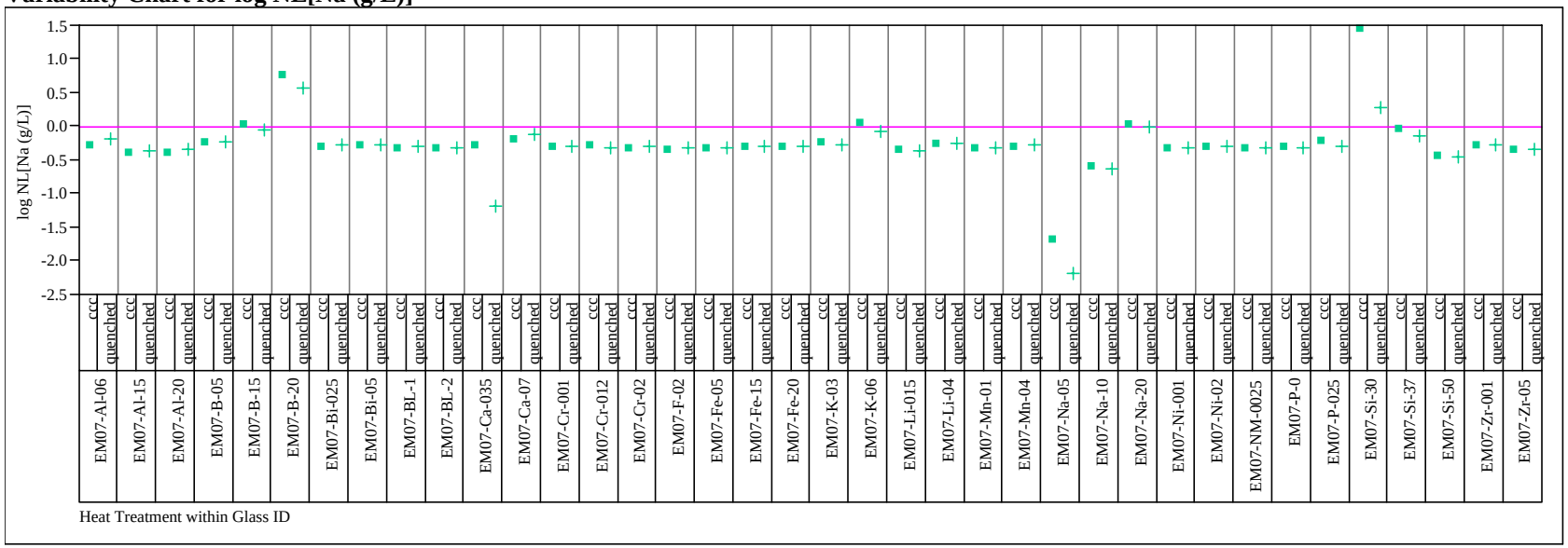
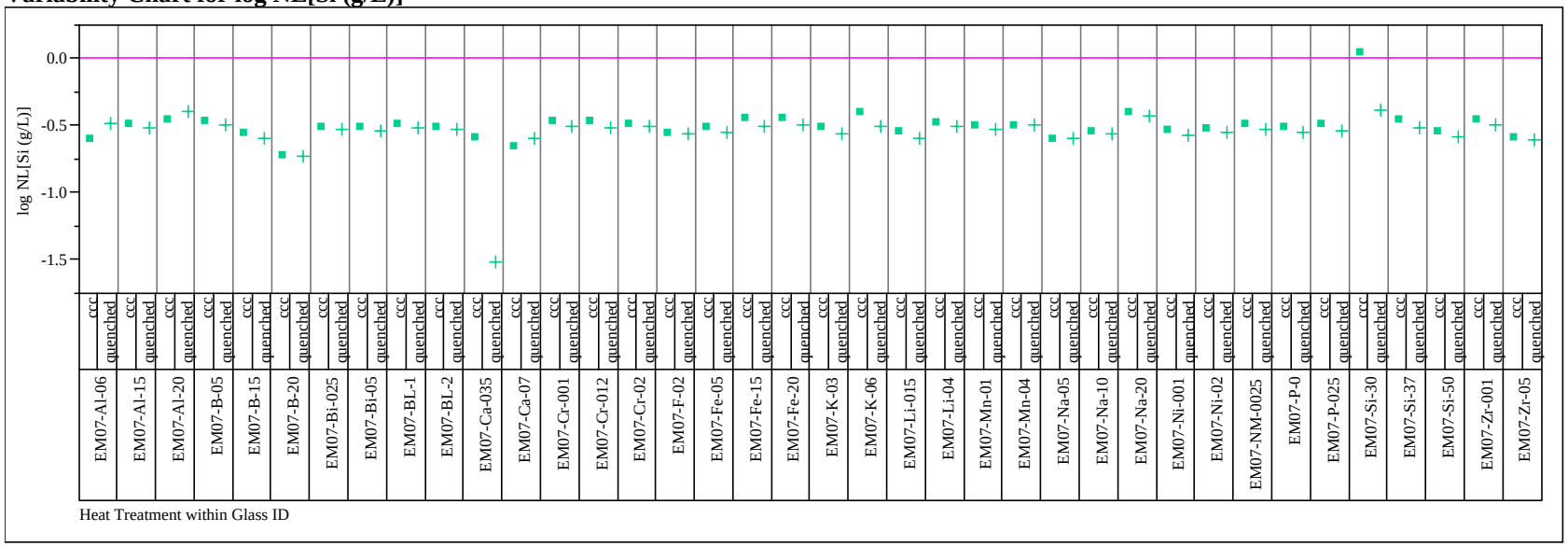


Figure B7. Effects of Heat Treatment on Normalized PCT Results

Comp View=targeted
Variability Chart for log NL[Si (g/L)]



Distribution

A.B. Barnes, 999-W
D.R. Best, 999-W
T.B. Edwards, 999-W
K.M. Fox, 999-W
J.C. Griffin, 773-A
C.C. Herman, 999-W
J.E. Marra, 773-A
T.A. Nance, 773-42A
D.K. Peeler, 999-W
F.C. Raszewski, 999-W
P.C. Suggs, 766-H
J.P. Vaughan, 773-41A

PNNL

J. Crum
P. Hrma
D-S. Kim
B. Riley
C. Rodriguez
M. Schweiger
J. Vienna

DOE-HQ

T. Chee
K. Gerdes