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Scientific Notebook No. 314A: Glass Durability Studies (Data) (08/24/1999 through 03/01/2004)

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

[Notebook 2 of 2]

CNWRA
CONTROLLED
COPY 314

Yi-Ming Pan
ext. 6640
VIJAY JAIN
5437 VJ.

This is a continuation of CNWRA Scientific Notebook No. 314. There is an earlier S/N. No. 314 and now this No. 314. This ~~X~~ BSW 4/10/2001 Notebook is 2 of 2 and the earlier No. 314 is 1 of 2.

Sam Mahesh QA
4/10/2001

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LONG-TERM TEST DATA SHEET

Test ID WVNSLF3-T1

Vessel ID No. 033 Batch Cleaning No. 7-21-99

Glass Sample ID WVNS
Sample Weight (g) 3.00565
Sample Preparation Date 7-26-99

Type of Solution 0.0025 M $FeCl_3$
Leachant Volume (ml) 30
Initial pH of Leachant 2.215

Weight of Empty Vessel (g) 127.19965
Weight of Vessel + Sample (g) 130.18905
2nd Weight of Sample (Difference of the last two items) (g) 2.98940
Total Weight of Vessel + Sample + Solution (g) 159.88225

Test Temperature 90°C
Date and Time Test Started (d:hr:min) 7/27/99; 10:20

Final pH of Leachate 9.091
Cation Analysis No. T1-033 Dilution Factor

1 Leachant Replacement Date and Time(d:hr:min) 7/30/99; 9:50
Initial pH of Leachant 2.223 Final pH of Leachate 9.095
Cation Analysis No. T2-033 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 8/3/99; 9:15
Initial pH of Leachant 2.278 Final pH of Leachate 8.699
Cation Analysis No. T3-033 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 8/6/99; 10:05
Initial pH of Leachant 2.132 Final pH of Leachate 8.732
Cation Analysis No. T4-033 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 8/10/99; 10:25
Initial pH of Leachant 2.123 Final pH of Leachate 8.487
Cation Analysis No. T5-033 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 8/13/99; 10:15
Initial pH of Leachant 2.258 Final pH of Leachate 8.487
Cation Analysis No. T6-033 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 8/17/99; 10:12
Initial pH of Leachant 2.158 Final pH of Leachate 8.219
Cation Analysis No. T7-033 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 8/20/99; 8:50
Initial pH of Leachant 2.230 Final pH of Leachate 8.319
Cation Analysis No. T8-033 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 8/24/99, 9:00
Initial pH of Leachant 2.238 Final pH of Leachate 8.006
Cation Analysis No. T9-033 Dilution Factor

8/24/99

C33

9 Leachant Replacement Date and Time(d:hr:min) 8/27/99; 8:45
Initial pH of Leachant 2.214 — Final pH of Leachate 8.136
Cation Analysis No. T10-033 — Dilution Factor

10 Leachant Replacement Date and Time(d:hr:min) 8/31/99; 9:30
Initial pH of Leachant 2.426 — Final pH of Leachate 7.858
Cation Analysis No. T11-033 — Dilution Factor

11 Leachant Replacement Date and Time(d:hr:min) 9/3/99; 9:30
Initial pH of Leachant 2.336 — Final pH of Leachate 7.923
Cation Analysis No. T12-033 — Dilution Factor

12 Leachant Replacement Date and Time(d:hr:min) 9/7/99; 9:00
Initial pH of Leachant 2.318 — Final pH of Leachate 7.430
Cation Analysis No. T13-033 — Dilution Factor

13 Leachant Replacement Date and Time(d:hr:min) 9/10/99; 10:00
Initial pH of Leachant 2.282 — Final pH of Leachate 7.570
Cation Analysis No. T14-033 — Dilution Factor

14 Leachant Replacement Date and Time(d:hr:min) 9/14/99; 9:15
Initial pH of Leachant 2.276 — Final pH of Leachate 7.020
Cation Analysis No. T15-033 — Dilution Factor

15 Leachant Replacement Date and Time(d:hr:min) 9/17/99; 9:00
Initial pH of Leachant 2.320 — Final pH of Leachate 7.273
Cation Analysis No. T16-033 — Dilution Factor

16 Leachant Replacement Date and Time(d:hr:min) 9/21/99; 10:00
Initial pH of Leachant 2.330 — Final pH of Leachate 6.460
Cation Analysis No. T17-033 — Dilution Factor

17 Leachant Replacement Date and Time(d:hr:min) 9/24/99; 10:30
Initial pH of Leachant 2.204 — Final pH of Leachate 6.842
Cation Analysis No. T18-033 — Dilution Factor

18 Leachant Replacement Date and Time(d:hr:min) 9/28/99; 9:30
Initial pH of Leachant 2.200 — Final pH of Leachate 6.715
Cation Analysis No. T19-033 — Dilution Factor

19 Leachant Replacement Date and Time(d:hr:min) ~~9/28~~ 10/1/99; 9:30 (BJP 10/1/99)
Initial pH of Leachant 2.175 — Final pH of Leachate 6.766
Cation Analysis No. T20-033 — Dilution Factor

20 Leachant Replacement Date and Time(d:hr:min) 10/5/99; 9:30
Initial pH of Leachant 2.100 — Final pH of Leachate 6.742
Cation Analysis No. T21-033 — Dilution Factor

21 Leachant Replacement Date and Time(d:hr:min) 10/8/99; 9:30
Initial pH of Leachant 2.098 — Final pH of Leachate 6.410
Cation Analysis No. T22-033 — Dilution Factor

22 Leachant Replacement Date and Time(d:hr:min) 10/12/99 9:45
Initial pH of Leachant 2.227 — Final pH of Leachate 6.667
Cation Analysis No. T23-033 — Dilution Factor

BJP 10/14/99

C33

23 Leachant Replacement Date and Time(d:hr:min) 10/15/99; 9:45
Initial pH of Leachant 2.294 — Final pH of Leachate 6.520
Cation Analysis No. T24-033 — Dilution Factor

24 Leachant Replacement Date and Time(d:hr:min) 10/26/99; 10:00
Initial pH of Leachant 2.330 — Final pH of Leachate 6.950
Cation Analysis No. T25-033 — Dilution Factor

25 Leachant Replacement Date and Time(d:hr:min) 11/2/99; 9:55
Initial pH of Leachant 2.290 — Final pH of Leachate 7.106
Cation Analysis No. T26-033 — Dilution Factor

26 Leachant Replacement Date and Time(d:hr:min) 11/9/99; 9:30
Initial pH of Leachant 2.265 — Final pH of Leachate 7.026
Cation Analysis No. T27-033 — Dilution Factor

27 Leachant Replacement Date and Time(d:hr:min) 11/16/99; 1:00
Initial pH of Leachant 2.205 — Final pH of Leachate 7.060
Cation Analysis No. T28-033 — Dilution Factor

28 Leachant Replacement Date and Time(d:hr:min) 11/23/99 10:30
Initial pH of Leachant 2.240 — Final pH of Leachate ~~6.686~~ 6.696
Cation Analysis No. T29-033 — Dilution Factor

BJP 11/30/99

29 Leachant Replacement Date and Time(d:hr:min) 11/30/99 10:00
Initial pH of Leachant 2.215 — Final pH of Leachate 6.621
Cation Analysis No. T30-033 — Dilution Factor

30 Leachant Replacement Date and Time(d:hr:min) 12/7/99 11:15
Initial pH of Leachant 2.436 — Final pH of Leachate 6.472
Cation Analysis No. T31-033 — Dilution Factor

31 Leachant Replacement Date and Time(d:hr:min) 12/14/99 10:00
Initial pH of Leachant 2.322 — Final pH of Leachate 6.274
Cation Analysis No. T32-033 — Dilution Factor

32 Leachant Replacement Date and Time(d:hr:min) 12/21/99 10:00
Initial pH of Leachant 3.803 — Final pH of Leachate 6.301
Cation Analysis No. T33-033 — Dilution Factor

33 Leachant Replacement Date and Time(d:hr:min) 12/28/99 11:15
Initial pH of Leachant 2.258 — Final pH of Leachate 6.065
Cation Analysis No. T34-033 — Dilution Factor

34 Leachant Replacement Date and Time(d:hr:min) 1/4/00 10:30
Initial pH of Leachant 2.265 — Final pH of Leachate 5.986
Cation Analysis No. T35-033 — Dilution Factor

35 Leachant Replacement Date and Time(d:hr:min) 1/11/00 10:30
Initial pH of Leachant 2.263 — Final pH of Leachate 6.023
Cation Analysis No. T36-033 — Dilution Factor

36 Leachant Replacement Date and Time(d:hr:min) 1/18/00 10:50
Initial pH of Leachant 2.364 — Final pH of Leachate 6.145
Cation Analysis No. T37-033 — Dilution Factor

BJP 1/20/00

033

37 Leachant Replacement Date and Time(d:hr:min) 1/25/00 10:45
Initial pH of Leachant 2.242 Final pH of Leachate 6.212
Cation Analysis No. T38-033 Dilution Factor

38 Leachant Replacement Date and Time(d:hr:min) 2/2/00 3pm
Initial pH of Leachant 2.326 Final pH of Leachate 6.818
Cation Analysis No. T39-033 Dilution Factor

39 Leachant Replacement Date and Time(d:hr:min) 2/15/00 10:30
Initial pH of Leachant 2.182 Final pH of Leachate 6.808
Cation Analysis No. T40-033 Dilution Factor

40 Leachant Replacement Date and Time(d:hr:min) 2/29/00 2:30pm
Initial pH of Leachant 2.368 Final pH of Leachate 6.719
Cation Analysis No. T41-033 Dilution Factor

41 Leachant Replacement Date and Time(d:hr:min) 3/14/00 11:00am
Initial pH of Leachant 2.369 Final pH of Leachate 6.588
Cation Analysis No. T42-033 Dilution Factor

42 Leachant Replacement Date and Time(d:hr:min) 3/28/00 10:00am
Initial pH of Leachant 2.193 Final pH of Leachate 6.385
Cation Analysis No. T43-033 Dilution Factor

43 Leachant Replacement Date and Time(d:hr:min) 4/11/00 2:00pm
Initial pH of Leachant 2.212 Final pH of Leachate 6.235
Cation Analysis No. T44-033 Dilution Factor

44 Leachant Replacement Date and Time(d:hr:min) 4/25/00 2.00 pm
Initial pH of Leachant 2.282 Final pH of Leachate 6.619
Cation Analysis No. T45-033 Dilution Factor

45 Leachant Replacement Date and Time(d:hr:min) 5/8/00 10:30
Initial pH of Leachant 2.236 Final pH of Leachate 6.33
Cation Analysis No. T46-033 Dilution Factor

46 Leachant Replacement Date and Time(d:hr:min) 5/23/00 2:00pm
Initial pH of Leachant 2.261 Final pH of Leachate 6.45
Cation Analysis No. T47-033 Dilution Factor

47 Leachant Replacement Date and Time(d:hr:min) 6/6/00 10:30
Initial pH of Leachant 2.270 Final pH of Leachate 6.37
Cation Analysis No. T48-033 Dilution Factor

48 Leachant Replacement Date and Time(d:hr:min) 6/20/00 1:00pm
Initial pH of Leachant 2.256 Final pH of Leachate 6.678
Cation Analysis No. T49-033 Dilution Factor

49 Leachant Replacement Date and Time(d:hr:min) 7/5/00 8:30
Initial pH of Leachant 2.234 Final pH of Leachate 6.440
Cation Analysis No. T50-033 Dilution Factor

50 Leachant Replacement Date and Time(d:hr:min) 7/18/00 10:30
Initial pH of Leachant 2.207 Final pH of Leachate 6.108
Cation Analysis No. T51-033 Dilution Factor

Yp Par 6/6/00

Yp Par 8/11/00

LONG-TERM TEST DATA SHEET

Test ID WVNS LF3-T2

Vessel ID No. 034 Batch Cleaning No. 7-21-99

Glass Sample ID WVNS
Sample Weight (g) 3.00673
Sample Preparation Date 7-26-99

Type of Solution 0.0025 M FeCl3
Leachant Volume (ml) 30
Initial pH of Leachant 2.215

Weight of Empty Vessel (g) 127.01060
Weight of Vessel + Sample (g) 130.00460
2nd Weight of Sample (Difference of the last two items) (g) 2.99400
Total Weight of Vessel + Sample + Solution (g) 159.76915

Test Temperature 90°C
Date and Time Test Started (d:hr:min) 7/27/99; 10:20

Final pH of Leachate 9.107
Cation Analysis No. T1-034 Dilution Factor

1 Leachant Replacement Date and Time(d:hr:min) 7/30/99; 9:50
Initial pH of Leachant 2.223 Final pH of Leachate 9.105
Cation Analysis No. T2-034 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 8/3/99; 9:15
Initial pH of Leachant 2.278 Final pH of Leachate 8.715
Cation Analysis No. T3-034 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 8/6/99; 10:05
Initial pH of Leachant 2.132 Final pH of Leachate 8.750
Cation Analysis No. T4-034 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 8/10/99; 10:25
Initial pH of Leachant 2.123 Final pH of Leachate 8.483
Cation Analysis No. T5-034 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 8/13/99; 10:15
Initial pH of Leachant 2.258 Final pH of Leachate 8.498
Cation Analysis No. T6-034 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 8/17/99; 10:12
Initial pH of Leachant 2.158 Final pH of Leachate 8.223
Cation Analysis No. T7-034 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 8/20/99; 8:50
Initial pH of Leachant 2.230 Final pH of Leachate 8.334
Cation Analysis No. T8-034 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 8/24/99; 9:00
Initial pH of Leachant 2.238 Final pH of Leachate 8.025
Cation Analysis No. T9-034 Dilution Factor

Yp Par 8/26/99

034

9 Leachant Replacement Date and Time(d:hr:min) 8/27/99 ; 8:45
Initial pH of Leachant 2.214 — Final pH of Leachate 8.134
Cation Analysis No. T10-034 — Dilution Factor

10 Leachant Replacement Date and Time(d:hr:min) 8/31/99 ; 9:30
Initial pH of Leachant 2.426 — Final pH of Leachate 7.894
Cation Analysis No. T11-034 — Dilution Factor

11 Leachant Replacement Date and Time(d:hr:min) 9/3/99 ; 9:30
Initial pH of Leachant 2.336 — Final pH of Leachate 7.949
Cation Analysis No. T12-034 — Dilution Factor

12 Leachant Replacement Date and Time(d:hr:min) 9/7/99 ; 9:00
Initial pH of Leachant 2.318 — Final pH of Leachate 7.498
Cation Analysis No. T13-034 — Dilution Factor

13 Leachant Replacement Date and Time(d:hr:min) 9/10/99 ; 10:00
Initial pH of Leachant 2.282 — Final pH of Leachate 7.609
Cation Analysis No. T14-034 — Dilution Factor

14 Leachant Replacement Date and Time(d:hr:min) 9/14/99 ; 9:15
Initial pH of Leachant 2.276 — Final pH of Leachate 7.201
Cation Analysis No. T15-034 — Dilution Factor

15 Leachant Replacement Date and Time(d:hr:min) 9/17/99 ; 9:00
Initial pH of Leachant 2.320 — Final pH of Leachate 7.381
Cation Analysis No. T16-034 — Dilution Factor

16 Leachant Replacement Date and Time(d:hr:min) 9/21/99 ; 10:00
Initial pH of Leachant 2.330 — Final pH of Leachate 6.525
Cation Analysis No. T17-034 — Dilution Factor

17 Leachant Replacement Date and Time(d:hr:min) 9/24/99 ; 10:30
Initial pH of Leachant 2.204 — Final pH of Leachate 6.924
Cation Analysis No. T18-034 — Dilution Factor

18 Leachant Replacement Date and Time(d:hr:min) 9/28/99 ; 9:30
Initial pH of Leachant 2.200 — Final pH of Leachate 6.650
Cation Analysis No. T19-034 — Dilution Factor

19 Leachant Replacement Date and Time(d:hr:min) 10/1/99 ; 9:30
Initial pH of Leachant 2.175 — Final pH of Leachate 6.571
Cation Analysis No. T20-034 — Dilution Factor

20 Leachant Replacement Date and Time(d:hr:min) 10/5/99 ; 9:30
Initial pH of Leachant 2.100 — Final pH of Leachate 6.649
Cation Analysis No. T21-034 — Dilution Factor

21 Leachant Replacement Date and Time(d:hr:min) 10/8/99 ; 9:30
Initial pH of Leachant 2.098 — Final pH of Leachate 6.352
Cation Analysis No. T22-034 — Dilution Factor

22 Leachant Replacement Date and Time(d:hr:min) 10/12/99 9:45
Initial pH of Leachant 2.227 — Final pH of Leachate 6.567
Cation Analysis No. T23-034 — Dilution Factor

10/14/99

034

23 Leachant Replacement Date and Time(d:hr:min) 10/15/99 ; 9:45
Initial pH of Leachant 2.294 — Final pH of Leachate 6.434
Cation Analysis No. T24-034 — Dilution Factor

24 Leachant Replacement Date and Time(d:hr:min) 10/26/99 ; 10:00
Initial pH of Leachant 2.330 — Final pH of Leachate 6.995
Cation Analysis No. T25-034 — Dilution Factor

25 Leachant Replacement Date and Time(d:hr:min) 11/2/99 ; 9:55
Initial pH of Leachant 2.290 — Final pH of Leachate 7.127
Cation Analysis No. T26-034 — Dilution Factor

26 Leachant Replacement Date and Time(d:hr:min) 11/9/99 ; 9:30
Initial pH of Leachant 2.265 — Final pH of Leachate 6.989
Cation Analysis No. T27-034 — Dilution Factor

27 Leachant Replacement Date and Time(d:hr:min) 11/14/99 ; 1:00
Initial pH of Leachant 2.205 — Final pH of Leachate 6.861
Cation Analysis No. T28-034 — Dilution Factor

28 Leachant Replacement Date and Time(d:hr:min) 11/23/99 10:30
Initial pH of Leachant 2.240 — Final pH of Leachate 6.830
Cation Analysis No. T29-034 — Dilution Factor

29 Leachant Replacement Date and Time(d:hr:min) 11/30/99 10:00
Initial pH of Leachant 2.215 — Final pH of Leachate 6.649
Cation Analysis No. T30-034 — Dilution Factor

30 Leachant Replacement Date and Time(d:hr:min) 12/7/99 11:15
Initial pH of Leachant 2.436 — Final pH of Leachate 6.497
Cation Analysis No. T31-034 — Dilution Factor

31 Leachant Replacement Date and Time(d:hr:min) 12/14/99 10:00
Initial pH of Leachant 2.322 — Final pH of Leachate 6.350
Cation Analysis No. T32-034 — Dilution Factor

32 Leachant Replacement Date and Time(d:hr:min) 12/21/99 10:00
Initial pH of Leachant 3.803 — Final pH of Leachate 6.328
Cation Analysis No. T33-034 — Dilution Factor

33 Leachant Replacement Date and Time(d:hr:min) 12/28/99 11:15
Initial pH of Leachant 2.258 — Final pH of Leachate 6.201
Cation Analysis No. T34-034 — Dilution Factor

34 Leachant Replacement Date and Time(d:hr:min) 1/4/00 10:30
Initial pH of Leachant 2.265 — Final pH of Leachate 6.268
Cation Analysis No. T35-034 — Dilution Factor

35 Leachant Replacement Date and Time(d:hr:min) 1/11/00 10:30
Initial pH of Leachant 2.263 — Final pH of Leachate 6.123
Cation Analysis No. T36-034 — Dilution Factor

36 Leachant Replacement Date and Time(d:hr:min) 1/18/00 10:50
Initial pH of Leachant 2.364 — Final pH of Leachate 6.246
Cation Analysis No. T37-034 — Dilution Factor

1/20/00

034

37 Leachant Replacement Date and Time(d:hr:min) 1/25/00 10:45
Initial pH of Leachant 2.242 Final pH of Leachate 6.288
Cation Analysis No. T38-034 Dilution Factor

38 Leachant Replacement Date and Time(d:hr:min) 2/2/00 3pm
Initial pH of Leachant 2.326 Final pH of Leachate 6.665
Cation Analysis No. T39-034 Dilution Factor

39 Leachant Replacement Date and Time(d:hr:min) 2/15/00 10:30
Initial pH of Leachant 2.182 Final pH of Leachate 6.961
Cation Analysis No. T40-034 Dilution Factor

40 Leachant Replacement Date and Time(d:hr:min) 2/29/00 2:30pm
Initial pH of Leachant 2.368 Final pH of Leachate 6.740
Cation Analysis No. T41-034 Dilution Factor

41 Leachant Replacement Date and Time(d:hr:min) 3/14/00 11:00am
Initial pH of Leachant 2.269 Final pH of Leachate 6.625
Cation Analysis No. T42-034 Dilution Factor

42 Leachant Replacement Date and Time(d:hr:min) 3/28/00 10:00am
Initial pH of Leachant 2.193 Final pH of Leachate 6.629
Cation Analysis No. T43-034 Dilution Factor

43 Leachant Replacement Date and Time(d:hr:min) 4/11/00 2:00pm
Initial pH of Leachant 2.212 Final pH of Leachate 6.545
Cation Analysis No. T44-034 Dilution Factor

44 Leachant Replacement Date and Time(d:hr:min) 4/25/00 2:00 pm
Initial pH of Leachant 2.282 Final pH of Leachate 6.771
Cation Analysis No. T45-034 Dilution Factor

45 Leachant Replacement Date and Time(d:hr:min) 5/9/00 10:30
Initial pH of Leachant 2.236 Final pH of Leachate 6.44
Cation Analysis No. T46-034 Dilution Factor

46 Leachant Replacement Date and Time(d:hr:min) 5/23/00 2:00pm
Initial pH of Leachant 2.261 Final pH of Leachate 6.44
Cation Analysis No. T47-034 Dilution Factor

47 Leachant Replacement Date and Time(d:hr:min) 6/6/00 10:30
Initial pH of Leachant 2.271 Final pH of Leachate 6.41
Cation Analysis No. T48-034 Dilution Factor

6/6/00

48 Leachant Replacement Date and Time(d:hr:min) 6/20/00 1:00pm
Initial pH of Leachant 2.256 Final pH of Leachate 6.552
Cation Analysis No. T49-034 Dilution Factor

49 Leachant Replacement Date and Time(d:hr:min) 7/5/00 8:30
Initial pH of Leachant 2.334 Final pH of Leachate 6.406
Cation Analysis No. T50-034 Dilution Factor

50 Leachant Replacement Date and Time(d:hr:min) 7/18/00 10:30
Initial pH of Leachant 2.207 Final pH of Leachate 6.936
Cation Analysis No. T51-034 Dilution Factor

8/11/00

LONG-TERM TEST DATA SHEET

Test ID WVNS LF3-T3

Vessel ID No. 035 Batch Cleaning No. 7-21-99

Glass Sample ID WVNS
Sample Weight (g) 3.00970
Sample Preparation Date 7-26-99

Type of Solution 0.0025 M FeCl3
Leachant Volume (ml) 30
Initial pH of Leachant 2.215

Weight of Empty Vessel (g) 126.70805
Weight of Vessel + Sample (g) 129.71230
2nd Weight of Sample (Difference of the last two items) (g) 3.00425
Total Weight of Vessel + Sample + Solution (g) 159.21680

Test Temperature 90°C
Date and Time Test Started (d:hr:min) 7/27/99 ; 10:20

Final pH of Leachate 9.123
Cation Analysis No. T1-035 Dilution Factor

1 Leachant Replacement Date and Time(d:hr:min) 7/30/99; 9:50
Initial pH of Leachant 2.223 Final pH of Leachate 9.094
Cation Analysis No. T2-035 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 8/3/99; 9:15
Initial pH of Leachant 2.278 Final pH of Leachate 8.721
Cation Analysis No. T3-035 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 8/6/99; 10:05
Initial pH of Leachant 2.132 Final pH of Leachate 8.750
Cation Analysis No. T4-035 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 8/10/99; 10:25
Initial pH of Leachant 2.123 Final pH of Leachate 8.447
Cation Analysis No. T5-035 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 8/13/99; 10:15
Initial pH of Leachant 2.258 Final pH of Leachate 8.501
Cation Analysis No. T6-035 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 8/17/99; 10:12
Initial pH of Leachant 2.158 Final pH of Leachate 8.181
Cation Analysis No. T7-035 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 8/20/99; 8:50
Initial pH of Leachant 2.230 Final pH of Leachate 8.321
Cation Analysis No. T8-035 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 8/24/99; 9:00
Initial pH of Leachant 2.238 Final pH of Leachate 7.956
Cation Analysis No. T9-035 Dilution Factor

8/26/99

C35

9 Leachant Replacement Date and Time(d:hr:min) 8/27/99; 8:45
Initial pH of Leachant 2.214 Final pH of Leachate 8.141
Cation Analysis No. T10-035 Dilution Factor

10 Leachant Replacement Date and Time(d:hr:min) 8/31/99; 9:30
Initial pH of Leachant 2.426 Final pH of Leachate 7.868
Cation Analysis No. T11-035 Dilution Factor

11 Leachant Replacement Date and Time(d:hr:min) 9/3/99; 9:30
Initial pH of Leachant 2.336 Final pH of Leachate 7.974
Cation Analysis No. T12-035 Dilution Factor

12 Leachant Replacement Date and Time(d:hr:min) 9/7/99; 9:00
Initial pH of Leachant 2.318 Final pH of Leachate 7.429
Cation Analysis No. T13-035 Dilution Factor

13 Leachant Replacement Date and Time(d:hr:min) 9/10/99; 10:00
Initial pH of Leachant 2.282 Final pH of Leachate 7.645
Cation Analysis No. T14-035 Dilution Factor

14 Leachant Replacement Date and Time(d:hr:min) 9/14/99; 9:15
Initial pH of Leachant 2.276 Final pH of Leachate 7.111
Cation Analysis No. T15-035 Dilution Factor

15 Leachant Replacement Date and Time(d:hr:min) 9/17/99; 9:00
Initial pH of Leachant 2.320 Final pH of Leachate 7.320
Cation Analysis No. T16-035 Dilution Factor

16 Leachant Replacement Date and Time(d:hr:min) 9/21/99; 10:00
Initial pH of Leachant 2.330 Final pH of Leachate 6.530
Cation Analysis No. T17-035 Dilution Factor

17 Leachant Replacement Date and Time(d:hr:min) 9/24/99; 10:30
Initial pH of Leachant 2.204 Final pH of Leachate 7.029
Cation Analysis No. T18-035 Dilution Factor

18 Leachant Replacement Date and Time(d:hr:min) 9/28/99; 9:30
Initial pH of Leachant 2.200 Final pH of Leachate 6.609
Cation Analysis No. T19-035 Dilution Factor

19 Leachant Replacement Date and Time(d:hr:min) 10/1/99; 9:30
Initial pH of Leachant 2.175 Final pH of Leachate 7.734
Cation Analysis No. T20-035 Dilution Factor

20 Leachant Replacement Date and Time(d:hr:min) 10/5/99; 9:30
Initial pH of Leachant 2.100 Final pH of Leachate 6.769
Cation Analysis No. T21-035 Dilution Factor

21 Leachant Replacement Date and Time(d:hr:min) 10/8/99; 9:30
Initial pH of Leachant 2.098 Final pH of Leachate 6.365
Cation Analysis No. T22-035 Dilution Factor

22 Leachant Replacement Date and Time(d:hr:min) 10/12/99 9:45
Initial pH of Leachant 2.227 Final pH of Leachate 6.664
Cation Analysis No. T23-035 Dilution Factor

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10/14/99

035

23 Leachant Replacement Date and Time(d:hr:min) 10/15/99; 9:45
Initial pH of Leachant 2.294 Final pH of Leachate 6.426
Cation Analysis No. T24-035 Dilution Factor

24 Leachant Replacement Date and Time(d:hr:min) 10/26/99; 10:00
Initial pH of Leachant 2.330 Final pH of Leachate 6.990
Cation Analysis No. T25-035 Dilution Factor

25 Leachant Replacement Date and Time(d:hr:min) 11/2/99; 9:55
Initial pH of Leachant 2.290 Final pH of Leachate 7.141
Cation Analysis No. T26-035 Dilution Factor

26 Leachant Replacement Date and Time(d:hr:min) 11/9/99; 9:30
Initial pH of Leachant 2.265 Final pH of Leachate 6.955
Cation Analysis No. T27-035 Dilution Factor

27 Leachant Replacement Date and Time(d:hr:min) 11/16/99; 1:00
Initial pH of Leachant 2.205 Final pH of Leachate 6.930
Cation Analysis No. T28-035 Dilution Factor

28 Leachant Replacement Date and Time(d:hr:min) 11/23/99 10:30
Initial pH of Leachant 2.240 Final pH of Leachate 6.790
Cation Analysis No. T29-035 Dilution Factor

29 Leachant Replacement Date and Time(d:hr:min) 11/30/99 10:00
Initial pH of Leachant 2.215 Final pH of Leachate 6.619
Cation Analysis No. T30-035 Dilution Factor

30 Leachant Replacement Date and Time(d:hr:min) 12/7/99 11:15
Initial pH of Leachant 2.436 Final pH of Leachate 6.531
Cation Analysis No. T31-035 Dilution Factor

31 Leachant Replacement Date and Time(d:hr:min) 12/14/99 10:00
Initial pH of Leachant 2.322 Final pH of Leachate 6.364
Cation Analysis No. T32-035 Dilution Factor

32 Leachant Replacement Date and Time(d:hr:min) 12/21/99 10:00
Initial pH of Leachant 3.803 Final pH of Leachate 6.335
Cation Analysis No. T33-035 Dilution Factor

33 Leachant Replacement Date and Time(d:hr:min) 12/28/99 11:15
Initial pH of Leachant 2.258 Final pH of Leachate 6.240
Cation Analysis No. T34-035 Dilution Factor

34 Leachant Replacement Date and Time(d:hr:min) 1/4/00 10:30
Initial pH of Leachant 2.265 Final pH of Leachate 6.306
Cation Analysis No. T35-035 Dilution Factor

35 Leachant Replacement Date and Time(d:hr:min) 1/11/00 10:30
Initial pH of Leachant 2.263 Final pH of Leachate 6.124
Cation Analysis No. T36-035 Dilution Factor

36 Leachant Replacement Date and Time(d:hr:min) 1/18/00 10:50
Initial pH of Leachant 3.364 Final pH of Leachate 6.276
Cation Analysis No. T37-035 Dilution Factor

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1/20/00

035

37 Leachant Replacement Date and Time(d:hr:min) 1/25/00 10:45
Initial pH of Leachant 2.242 Final pH of Leachate 6.302
Cation Analysis No. T38-035 Dilution Factor

38 Leachant Replacement Date and Time(d:hr:min) 2/2/00 3pm
Initial pH of Leachant 2.326 Final pH of Leachate 6.615
Cation Analysis No. T39-035 Dilution Factor

39 Leachant Replacement Date and Time(d:hr:min) 2/15/00 10:30
Initial pH of Leachant 2.182 Final pH of Leachate 6.872
Cation Analysis No. T40-035 Dilution Factor

40 Leachant Replacement Date and Time(d:hr:min) 2/29/00 2:30pm
Initial pH of Leachant 2.368 Final pH of Leachate 6.717
Cation Analysis No. T41-035 Dilution Factor

41 Leachant Replacement Date and Time(d:hr:min) 3/14/00 11:00am
Initial pH of Leachant 2.367 Final pH of Leachate 6.620
Cation Analysis No. T42-035 Dilution Factor

42 Leachant Replacement Date and Time(d:hr:min) 3/28/00 10:00am
Initial pH of Leachant 2.193 Final pH of Leachate 6.690
Cation Analysis No. T43-035 Dilution Factor

43 Leachant Replacement Date and Time(d:hr:min) 4/11/00 2.00 pm
Initial pH of Leachant 2.212 Final pH of Leachate 6.692
Cation Analysis No. T44-035 Dilution Factor

44 Leachant Replacement Date and Time(d:hr:min) 4/25/00 2:00 pm
Initial pH of Leachant 2.282 Final pH of Leachate 6.656
Cation Analysis No. T45-035 Dilution Factor

45 Leachant Replacement Date and Time(d:hr:min) 5/9/00 10:30
Initial pH of Leachant 2.236 Final pH of Leachate 6.47
Cation Analysis No. T46-035 Dilution Factor

46 Leachant Replacement Date and Time(d:hr:min) 5/23/00 2:00pm
Initial pH of Leachant 2.261 Final pH of Leachate 6.47
Cation Analysis No. T47-035 Dilution Factor

47 Leachant Replacement Date and Time(d:hr:min) 6/6/00 10:30
Initial pH of Leachant 2.270 Final pH of Leachate 6.43
Cation Analysis No. T48-035 Dilution Factor

6/6/00

48 Leachant Replacement Date and Time(d:hr:min) 6/20/00 1:00pm
Initial pH of Leachant 2.256 Final pH of Leachate 6.615
Cation Analysis No. T49-035 Dilution Factor

49 Leachant Replacement Date and Time(d:hr:min) 7/5/00 8:30
Initial pH of Leachant 2.234 Final pH of Leachate 6.421
Cation Analysis No. T50-035 Dilution Factor

50 Leachant Replacement Date and Time(d:hr:min) 7/18/00 10:30
Initial pH of Leachant 2.207 Final pH of Leachate 6.370
Cation Analysis No. T51-035 Dilution Factor

8/11/00

LONG-TERM TEST DATA SHEET

Test ID WVNS0.25HCl-T1

Vessel ID No. 036 Batch Cleaning No. 7-21-99

Glass Sample ID WVNS
Sample Weight (g) 3.0026
Sample Preparation Date 7-29-99

Type of Solution 0.25M HCl
Leachant Volume (ml) 30
Initial pH of Leachant 0.692

Weight of Empty Vessel (g) 126.8213
Weight of Vessel + Sample (g) 129.8210
2nd Weight of Sample (Difference of the last two items) (g) 2.9997
Total Weight of Vessel + Sample + Solution (g) 159.5717

Test Temperature 90°C
Date and Time Test Started (d:hr:min) 11/09/99 1:30 pm

Final pH of Leachate 3.480
Cation Analysis No. T1-036 Dilution Factor

Accumulated Days

1 Leachant Replacement Date and Time(d:hr:min) 11/12/99 2:50 pm
Initial pH of Leachant ~~0.692~~ 0.714 11/12/99 Final pH of Leachate 1.760 — 3
Cation Analysis No. T2-036 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 11/16/99 ; 1:00
Initial pH of Leachant ~~0.714~~ 0.667 11/16/99 Final pH of Leachate 1.705 — 7
Cation Analysis No. T3-036 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 11/19/99 ; 2:20 pm
Initial pH of Leachant 0.667 Final pH of Leachate 1.495 — 10
Cation Analysis No. T4-036 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 11/23/99 10:30
Initial pH of Leachant 0.660 Final pH of Leachate 1.668 — 14
Cation Analysis No. T5-036 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 11/30/99 10:00
Initial pH of Leachant 0.661 Final pH of Leachate 1.137 — 21
Cation Analysis No. T6-036 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 12/3/99 2:15 pm
Initial pH of Leachant 0.661 Final pH of Leachate 0.838 — 24
Cation Analysis No. T7-036 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 12/7/99 11:15
Initial pH of Leachant 0.638 Final pH of Leachate 0.749 — 28
Cation Analysis No. T8-036 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 12/14/99 10:00
Initial pH of Leachant 0.776 Final pH of Leachate 0.705 — 35
Cation Analysis No. T9-036 Dilution Factor

12/14/99

036

9 Leachant Replacement Date and Time(d:hr:min) 12/17/99 2:00 pm — 38
Initial pH of Leachant 0.675 — Final pH of Leachate 0.674
Cation Analysis No. T10-036 — Dilution Factor

10 Leachant Replacement Date and Time(d:hr:min) 12/21/99 10:00 — 42 start 1wk cycle
Initial pH of Leachant 0.765 — Final pH of Leachate 0.672
Cation Analysis No. T11-036 — Dilution Factor

11 Leachant Replacement Date and Time(d:hr:min) 12/28/99 11:15 — 49
Initial pH of Leachant 0.717 — Final pH of Leachate 0.692
Cation Analysis No. T12-036 — Dilution Factor

12 Leachant Replacement Date and Time(d:hr:min) 1/4/00 10:30 — 56
Initial pH of Leachant 0.653 — Final pH of Leachate 0.683
Cation Analysis No. T13-036 — Dilution Factor

13 Leachant Replacement Date and Time(d:hr:min) 1/11/00 10:30 — 63
Initial pH of Leachant 0.739 — Final pH of Leachate 0.729
Cation Analysis No. T14-036 — Dilution Factor

14 Leachant Replacement Date and Time(d:hr:min) 1/18/00 10:50 — 70
Initial pH of Leachant 0.771 — Final pH of Leachate 0.623
Cation Analysis No. T15-036 — Dilution Factor

15 Leachant Replacement Date and Time(d:hr:min) 1/25/00 10:45 — 77
Initial pH of Leachant 0.688 — Final pH of Leachate 0.661
Cation Analysis No. T16-036 — Dilution Factor

16 Leachant Replacement Date and Time(d:hr:min) 2/2/00 3:00 pm — 84
Initial pH of Leachant ~~T17-036~~ 3/14/00 0.689 — Final pH of Leachate 0.641
Cation Analysis No. T17-036 — Dilution Factor

17 Leachant Replacement Date and Time(d:hr:min) 2/8/00 5:50 pm — 91
Initial pH of Leachant 0.664 — Final pH of Leachate 0.627
Cation Analysis No. T18-036 — Dilution Factor

18 Leachant Replacement Date and Time(d:hr:min) 2/15/00 1:00 pm — 98
Initial pH of Leachant 0.676 — Final pH of Leachate 0.605
Cation Analysis No. T19-036 — Dilution Factor

19 Leachant Replacement Date and Time(d:hr:min) 2/22/00 2:00 pm — 105
Initial pH of Leachant 0.657 — Final pH of Leachate 0.607
Cation Analysis No. T20-036 — Dilution Factor

20 Leachant Replacement Date and Time(d:hr:min) 2/29/00 — 112
Initial pH of Leachant 0.676 — Final pH of Leachate 0.674
Cation Analysis No. T21-036 — Dilution Factor

21 Leachant Replacement Date and Time(d:hr:min) 3-7-00 12:30 — 119
Initial pH of Leachant 0.595 — Final pH of Leachate 0.579
Cation Analysis No. T22-036 — Dilution Factor

22 Leachant Replacement Date and Time(d:hr:min) 3/14/00 11:00 am — 126
Initial pH of Leachant 0.635 — Final pH of Leachate ~~0.360~~ 0.587 — 3/14/00 Recal'd Meter
Cation Analysis No. T23-036 — Dilution Factor

3/14/00

036

23 Leachant Replacement Date and Time(d:hr:min) 3/21/00 10:30 AM — 133
Initial pH of Leachant ~~0.647~~ 0.665 — Final pH of Leachate .657
Cation Analysis No. T24-036 — Dilution Factor

24 Leachant Replacement Date and Time(d:hr:min) 3/28/00 10:00 Am — 140
Initial pH of Leachant .665 — Final pH of Leachate .543
Cation Analysis No. T25-036 — Dilution Factor

25 Leachant Replacement Date and Time(d:hr:min) 4-4-00 9:30 Am — 147
Initial pH of Leachant .640 — Final pH of Leachate .673
Cation Analysis No. T26-036 — Dilution Factor

26 Leachant Replacement Date and Time(d:hr:min) 4-11-00 2:00 pm — 154
Initial pH of Leachant .638 — Final pH of Leachate .674
Cation Analysis No. T27-036 — Dilution Factor

27 Leachant Replacement Date and Time(d:hr:min) 4-18-00 10:30 Am — 161
Initial pH of Leachant .655 — Final pH of Leachate .665
Cation Analysis No. T28-036 — Dilution Factor

28 Leachant Replacement Date and Time(d:hr:min) 4-25-00 2:00 — 168
Initial pH of Leachant .681 — Final pH of Leachate ~~.690~~ .703 — KR 5/9/00
Cation Analysis No. T29-036 — Dilution Factor

29 Leachant Replacement Date and Time(d:hr:min) 5-2-00 10:30 Am — 175
Initial pH of Leachant .573 — Final pH of Leachate 0.614
Cation Analysis No. T30-036 — Dilution Factor

30 Leachant Replacement Date and Time(d:hr:min) 5-9-00 10:30 Am — 182
Initial pH of Leachant .639 — Final pH of Leachate 0.568
Cation Analysis No. T31-036 — Dilution Factor

31 Leachant Replacement Date and Time(d:hr:min) 5-17-00 9:30 Am — 189
Initial pH of Leachant .626 — Final pH of Leachate 0.688
Cation Analysis No. T32-036 — Dilution Factor

32 Leachant Replacement Date and Time(d:hr:min) 5-~~24~~ 33-00 2:00 pm — 196
Initial pH of Leachant .631 — Final pH of Leachate 0.671
Cation Analysis No. T33-036 — Dilution Factor

33 Leachant Replacement Date and Time(d:hr:min) 5-30-00 11:00 — 203
Initial pH of Leachant .639 — Final pH of Leachate 0.671
Cation Analysis No. T34-036 — Dilution Factor

34 Leachant Replacement Date and Time(d:hr:min) 6-6-00 10:30 — 210
Initial pH of Leachate .624 — Final pH of Leachate 0.632
Cation Analysis No. T35-036 — Dilution Factor — start 2-wk cycle

35 Leachant Replacement Date and Time(d:hr:min) 6/20/00 1:00 pm — 224
Initial pH of Leachant .640 — Final pH of Leachate 0.632
Cation Analysis No. T36-036 — Dilution Factor

36 Leachant Replacement Date and Time(d:hr:min) 7/5/00 8:30 — 238
Initial pH of Leachant .642 — Final pH of Leachate 0.662
Cation Analysis No. T36-037 — Dilution Factor

6/6/00

7/18/00

036

37 Leachant Replacement Date and Time(d:hr:min) 7/18/00 10:30 — 252
Initial pH of Leachant 0.630 — Final pH of Leachate 0.652
Cation Analysis No. T38-036 — Dilution Factor

38 Leachant Replacement Date and Time(d:hr:min) 8/1/00 10:00 — 266
Initial pH of Leachant 0.649 — Final pH of Leachate 0.681
Cation Analysis No. T39-036 — Dilution Factor

39 Leachant Replacement Date and Time(d:hr:min) 8/15/00 9:30 — 280
Initial pH of Leachant 0.647 — Final pH of Leachate 0.726 8/15/00
Cation Analysis No. T40-036 — Dilution Factor

40 Leachant Replacement Date and Time(d:hr:min) 8/29/00 9:00 — 294
Initial pH of Leachant 0.650 — Final pH of Leachate 0.804
Cation Analysis No. T41-036 — Dilution Factor

41 Leachant Replacement Date and Time(d:hr:min) 9/12/00 9:00 — 308
Initial pH of Leachant 0.641 — Final pH of Leachate 0.766
Cation Analysis No. T42-036 — Dilution Factor

42 Leachant Replacement Date and Time(d:hr:min) 9/26/00 9:30 — 322
Initial pH of Leachant 0.635 — Final pH of Leachate 0.743
Cation Analysis No. T43-036 — Dilution Factor

43 Leachant Replacement Date and Time(d:hr:min) 10/10/00 9:00 — 336
Initial pH of Leachant 0.630 — Final pH of Leachate 0.556
Cation Analysis No. T44-036 — Dilution Factor

44 Leachant Replacement Date and Time(d:hr:min) 10/24/00 9:30 — 350
Initial pH of Leachant 0.626 — Final pH of Leachate 0.731
Cation Analysis No. T45-036 — Dilution Factor

45 Leachant Replacement Date and Time(d:hr:min) 10/26/2000 — 364
Initial pH of Leachant — Final pH of Leachate
Cation Analysis No. — Dilution Factor

46 Leachant Replacement Date and Time(d:hr:min)
Initial pH of Leachant — Final pH of Leachate
Cation Analysis No. — Dilution Factor

47 Leachant Replacement Date and Time(d:hr:min)
Initial pH of Leachant — Final pH of Leachate
Cation Analysis No. — Dilution Factor

48 Leachant Replacement Date and Time(d:hr:min)
Initial pH of Leachant — Final pH of Leachate
Cation Analysis No. — Dilution Factor

49 Leachant Replacement Date and Time(d:hr:min)
Initial pH of Leachant — Final pH of Leachate
Cation Analysis No. — Dilution Factor

50 Leachant Replacement Date and Time(d:hr:min)
Initial pH of Leachant — Final pH of Leachate
Cation Analysis No. — Dilution Factor

10/26/2000

LONG-TERM TEST DATA SHEET

Test ID WVNS0.25HCl-T2

Vessel ID No. 037 — Batch Cleaning No. 7-21-99

Glass Sample ID WVNS
Sample Weight (g) 3.0015
Sample Preparation Date 7-29-99

Type of Solution 0.25M HCl
Leachant Volume (ml) 30
Initial pH of Leachant 0.692

Weight of Empty Vessel (g) 126.8256
Weight of Vessel + Sample (g) 129.8222
2nd Weight of Sample (Difference of the last two items) (g) 2.9966
Total Weight of Vessel + Sample + Solution (g) 159.3958

Test Temperature 90°C
Date and Time Test Started (d:hr:min) 11/09/99 1:30pm

Final pH of Leachate 3.534
Cation Analysis No. T1-037 — Dilution Factor

1 Leachant Replacement Date and Time(d:hr:min) 11/12/99 2:50pm
Initial pH of Leachant ~~0.692~~ 0.714 — Final pH of Leachate 1.753
Cation Analysis No. T2-037 — Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 11/16/99 1:00
Initial pH of Leachant ~~0.714~~ 0.667 — Final pH of Leachate 1.707
Cation Analysis No. T3-037 — Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 11/19/99 2:20pm
Initial pH of Leachant 0.667 — Final pH of Leachate 1.507
Cation Analysis No. T4-037 — Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 11/23/99 10:30am
Initial pH of Leachant 0.660 — Final pH of Leachate 1.639
Cation Analysis No. T5-037 — Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 11/30/99 10:00
Initial pH of Leachant 0.661 — Final pH of Leachate 1.147
Cation Analysis No. T6-~~036~~ 037 11/30/99 — Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 12/3/99 2:15pm
Initial pH of Leachant 0.661 — Final pH of Leachate 0.860
Cation Analysis No. T7-~~036~~ 037 12/3/99 — Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 12/7/99 11:15
Initial pH of Leachant 0.638 — Final pH of Leachate 0.749
Cation Analysis No. T8-037 — Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 12/14/99 10:00
Initial pH of Leachant 0.776 — Final pH of Leachate 0.724
Cation Analysis No. T9-037 — Dilution Factor

12/14/99

037

9 Leachant Replacement Date and Time(d:hr:min) 2:00 pm 12/17/99
Initial pH of Leachant 0.675 — Final pH of Leachate 0.676
Cation Analysis No. T10-037 — Dilution Factor

10 Leachant Replacement Date and Time(d:hr:min) 12/21/99 10:00
Initial pH of Leachant 0.765 — Final pH of Leachate 0.671
Cation Analysis No. T11-037 — Dilution Factor

11 Leachant Replacement Date and Time(d:hr:min) 12/28/99 11:15
Initial pH of Leachant 0.717 — Final pH of Leachate 0.648
Cation Analysis No. T12-037 — Dilution Factor

12 Leachant Replacement Date and Time(d:hr:min) 1/4/00 10:30
Initial pH of Leachant 0.653 — Final pH of Leachate 0.654
Cation Analysis No. T13-037 — Dilution Factor

13 Leachant Replacement Date and Time(d:hr:min) 1/11/00 10:30
Initial pH of Leachant 0.739 — Final pH of Leachate 0.688
Cation Analysis No. T14-037 — Dilution Factor

14 Leachant Replacement Date and Time(d:hr:min) 1/18/00 10:50
Initial pH of Leachant 0.771 — Final pH of Leachate 0.624
Cation Analysis No. T15-037 — Dilution Factor

15 Leachant Replacement Date and Time(d:hr:min) 1/25/00 10:45
Initial pH of Leachant 0.688 — Final pH of Leachate 0.615
Cation Analysis No. T16-037 — Dilution Factor

16 Leachant Replacement Date and Time(d:hr:min) 2/2/00 3:00pm
Initial pH of Leachant 0.689 — Final pH of Leachate 0.607
Cation Analysis No. T17-037 — Dilution Factor

17 Leachant Replacement Date and Time(d:hr:min) 2/8/00 5:50 pm
Initial pH of Leachant 0.664 — Final pH of Leachate 0.603
Cation Analysis No. T18-037 — Dilution Factor

18 Leachant Replacement Date and Time(d:hr:min) 2/15/00 1:00pm
Initial pH of Leachant 0.676 — Final pH of Leachate 0.604
Cation Analysis No. T19-037 — Dilution Factor

19 Leachant Replacement Date and Time(d:hr:min) 2/22/00 2:00 pm
Initial pH of Leachant 0.657 — Final pH of Leachate 0.578
Cation Analysis No. T20-037 — Dilution Factor

20 Leachant Replacement Date and Time(d:hr:min) 2/29/00
Initial pH of Leachant 0.676 — Final pH of Leachate 0.647
Cation Analysis No. T21-037 — Dilution Factor

21 Leachant Replacement Date and Time(d:hr:min) 3-7-00 12:30
Initial pH of Leachant 0.595 — Final pH of Leachate 0.580
Cation Analysis No. T22-037 — Dilution Factor

22 Leachant Replacement Date and Time(d:hr:min) 3/14/00 11:00 am HO 3/14/00
Initial pH of Leachant 0.625 — Final pH of Leachate ~~0.333~~ 0.545
Cation Analysis No. — Dilution Factor

3/14/00

037

23 Leachant Replacement Date and Time(d:hr:min) 3/21/00 10:30Am
Initial pH of Leachant ~~0.647~~ 0.665 — Final pH of Leachate .631
Cation Analysis No. T24-037 — Dilution Factor

24 Leachant Replacement Date and Time(d:hr:min) 3/28/00 10:00
Initial pH of Leachant .665 — Final pH of Leachate .514
Cation Analysis No. T25-037 — Dilution Factor

25 Leachant Replacement Date and Time(d:hr:min) 4/4/00 9:30
Initial pH of Leachant .640 — Final pH of Leachate .650
Cation Analysis No. T26-037 — Dilution Factor

26 Leachant Replacement Date and Time(d:hr:min) 4-11-00 2:00pm
Initial pH of Leachant .638 — Final pH of Leachate .660
Cation Analysis No. T27-037 — Dilution Factor

27 Leachant Replacement Date and Time(d:hr:min) 4-18-00 10:30
Initial pH of Leachant .655 — Final pH of Leachate .657
Cation Analysis No. T28-037 — Dilution Factor

28 Leachant Replacement Date and Time(d:hr:min) 4-25-00 2:00pm
Initial pH of Leachant .681 — Final pH of Leachate .690
Cation Analysis No. T29-037 — Dilution Factor

29 Leachant Replacement Date and Time(d:hr:min) 5-2-00 10:30
Initial pH of Leachant .571 — Final pH of Leachate .621
Cation Analysis No. T30-037 — Dilution Factor

30 Leachant Replacement Date and Time(d:hr:min) 5-9-00 10:30
Initial pH of Leachant .639 — Final pH of Leachate .533
Cation Analysis No. T31-037 — Dilution Factor

31 Leachant Replacement Date and Time(d:hr:min) 5-17-00 9:30
Initial pH of Leachant .626 — Final pH of Leachate .674
Cation Analysis No. T32-037 — Dilution Factor

32 Leachant Replacement Date and Time(d:hr:min) 5-23-00 2:00pm
Initial pH of Leachant .631 — Final pH of Leachate .669
Cation Analysis No. T33-037 — Dilution Factor

33 Leachant Replacement Date and Time(d:hr:min) 5-30-00 11:00
Initial pH of Leachant .639 — Final pH of Leachate .671
Cation Analysis No. T34-037 — Dilution Factor

34 Leachant Replacement Date and Time(d:hr:min) 6-6-00 10:30
Initial pH of Leachant .624 — Final pH of Leachate .600
Cation Analysis No. T35-037 — Dilution Factor

6/6/00

35 Leachant Replacement Date and Time(d:hr:min) 6-20-00 1:00pm
Initial pH of Leachant .640 — Final pH of Leachate .598
Cation Analysis No. T36-037 — Dilution Factor

36 Leachant Replacement Date and Time(d:hr:min) 7/5/00 8:30
Initial pH of Leachant .642 — Final pH of Leachate .598
Cation Analysis No. T37-037 — Dilution Factor

< Continued, P. 80 >

7/18/00

Leaching Solution ICP Analysis Calculation

1. Normalized concentration for element i

$$NC_i = \frac{C_i}{F_i}$$

where NC_i in g-glass/m^3

C_i concentration of element i in solution (g/m^3)

F_i mass fraction of element i in glass

2. F_i for each element of three different glasses

OxideComposition	Al	B	Ca	Fe	Li	Mg	Mn	P	K	Si	Na	Zr
EA	3.67	11.12	1.13	8.08	4.28	1.66	1.34	0	0.04	49.95	16.71	0.41
SRS	4.16	8.05	1.03	10.91	4.44	1.41	1.67	0	3.68	51.9	9.13	0.14
WVNS	6.67	11.48	0.66	11.98	4.84	0.18	0.51	2.01	5.15	42.28	11.94	1.28
Coversion oxide to element	0.529412	0.310345	0.714286	0.7	0.463087	0.6	0.774648	0.43662	0.829787	0.5	0.741935	0.739837
Element composition	(gm element/gm glass) or F_i											
EA	0.019429	0.03451	0.008071	0.05656	0.01982	0.00996	0.01038	0	0.000332	0.24975	0.123977	0.003033
SRS	0.022024	0.024983	0.007357	0.07637	0.020561	0.00846	0.01296	0	0.030536	0.2595	0.067739	0.001036
WVNS	0.035312	0.035628	0.004714	0.08386	0.022413	0.00108	0.003951	0.008776	0.042734	0.2114	0.088587	0.00947

3. Normalized leach rate for element i at n^{th} solution replacement

$$NLR_i = \frac{(NC_i)_n - (NC_i)_{n-1}}{(S/V)(t_n - t_{n-1})}$$

where NLR_i in g-glass/m^2-day

S/V surface to volume ratio (m^{-1})

$t_n - t_{n-1}$ time in days between the $n-1^{th}$ and n^{th} solution replacements

1/14/2000

Leaching Solution Results for EA Glass in Deionized Water
(First 12 solution replacements)

Leachate Analysis for PCT Tests (mg/L)

(mg of element/Liter of Leachant)

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-003	3	1.31	590	0.125	0	177	0	0	0.717	3.24	845	1507	0	5.78	12.00
T1-004	3	1.39	583	0.124	0	176	0	0	0.707	3.26	844	1508	0	5.78	12.01
T1-005	3	1.39	583	0.145	0	178	0	0	0.868	3.2	849	1524	0	5.78	12.01
T2-003	7	1.25	421	0.12	0	136	0	0	0.46	2.38	721	1096	0	5.77	11.99
T2-004	7	1.31	399	0.111	0	129	0	0	0.439	2.31	692	1045	0	5.77	12.02
T2-005	7	1.29	397	0.12	0	129	0	0	0.469	2.18	678	999	0	5.77	12.01
T3-003	10	1.04	330	0.12	0	113	0	0	0.352	1.55	614	844	0	5.90	11.76
T3-004	10	1.04	312	0	0	108	0	0	0.38	1.45	577	793	0	5.90	11.76
T3-005	10	1.07	286	0.117	0	101	0	0	0.348	1.35	560	731	0	5.90	11.73
T4-003	14	0.98	337	0.115	0	112	0	0	0.392	1.42	635	886	0	5.91	11.83
T4-004	14	1.02	323	0	0	108	0	0	0.374	1.39	613	847	0	5.91	11.82
T4-005	14	1.06	300	0.103	0	101	0	0	0.35	1.31	575	782	0	5.91	11.81
T5-003	17	1.18	203	0	0	79.2	0	0	0.263	0.904	467	558	0	5.91	11.55
T5-004	17	1.11	223	0	0	84.1	0	0	0.275	0.916	478	587	0	5.91	11.58
T5-005	17	1.22	230	0.117	0	85.8	0	0	0.287	1.12	482	596	0	5.91	11.55
T6-003	21	1.11	233	0.114	0	84.9	0	0	0.287	1.27	498	628	0	6.26	11.57
T6-004	21	1.11	226	0.107	0	82.2	0	0	0.282	1.16	489	615	0	6.26	11.54
T6-005	21	1.16	223	0.12	0	81.6	0	0	0.284	1.17	482	604	0	6.26	11.54
T7-003	24	1.21	177	0.132	0	72.8	0	0	0.201	0.918	438	508	0	5.91	11.49
T7-004	24	1.11	192	0.117	0	77.3	0	0	0.228	0.922	450	541	0	5.91	11.48
T7-005	24	1.16	193	0.202	0	77.6	0	0	0.229	0.839	446	532	0	5.91	11.50
T8-003	28	1.16	172	0	0	70.2	0	0	0.227	0.782	407	480	0	5.92	11.44
T8-004	28	1.11	195	0	0	78.8	0	0	0.248	0.943	437	514	0	5.92	11.47
T8-005	28	1.14	205	0	0	82.9	0	0	0.261	0.974	449	532	0	5.92	11.47
T9-003	31	1.41	120	0.1	0.2	50.7	0.1	0.01	0.144	0.616	358	454	0.01	5.58	11.34
T9-004	31	1.26	139	0.1	0.2	57.6	0.1	0.01	0.181	0.721	383	508	0.01	5.58	11.40
T9-005	31	1.3	148	0.1	0.2	60.5	0.1	0.01	0.197	0.78	386	523	0.01	5.58	11.42
T10-003	35	1.51	125	0.101	0.2	53.4	0.1	0.01	0.146	0.363	344	449	0.01	5.66	11.26
T10-004	35	1.14	138	0.1	0.2	57	0.1	0.01	0.179	0.527	369	499	0.01	5.66	11.32
T10-005	35	1.69	147	0.1	0.2	59.9	0.1	0.01	0.207	0.601	380	525	0.01	5.66	11.34
T11-003	38	1.6	79.3	0.1	0.2	36.6	0.1	0.01	0.085	0.443	285	328	0.01	5.40	11.20
T11-004	38	1.46	87.5	0.1	0.2	39.3	0.1	0.01	0.11	0.568	298	353	0.01	5.40	11.24
T11-005	38	1.42	96.1	0.1	0.2	42.8	0.1	0.01	0.121	0.48	310	373	0.01	5.40	11.26
T12-003	42	1.57	76.7	0.1	0.2	32.3	0.1	0.01	0.092	0.414	258	274	0.01	6.12	11.09
T12-004	42	1.46	86.3	0.1	0.2	35.3	0.1	0.01	0.097	0.415	272	293	0.01	6.12	11.14
T12-005	42	1.38	99	0.1	0.2	39.4	0.1	0.01	0.12	0.485	287	335	0.01	6.12	11.18

* Numbers in parentheses are instrument detection limits.

2/4/2000

Normalized Concentration (gm glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-003	67.42355	17096.32	15.48673	0	8930.313	0	0	#DIV/0!	9761.538	3383.383	12155.44	0
T1-004	71.54102	16893.49	15.36283	0	8879.859	0	0	#DIV/0!	9821.795	3379.379	12163.51	0
T1-005	71.54102	16893.49	17.9646	0	8980.767	0	0	#DIV/0!	9641.026	3399.399	12292.56	0
T2-003	64.33545	12199.24	14.86726	0	6861.709	0	0	#DIV/0!	7170.513	2886.887	8840.32	0
T2-004	67.42355	11561.75	13.75221	0	6508.533	0	0	#DIV/0!	6959.615	2770.771	8428.954	0
T2-005	66.39419	11503.8	14.86726	0	6508.533	0	0	#DIV/0!	6567.949	2714.715	8057.919	0
T3-003	53.5271	9562.35	14.86726	0	5701.273	0	0	#DIV/0!	4669.872	2458.458	6807.691	0
T3-004	53.5271	9040.767	0	0	5449.004	0	0	#DIV/0!	4368.59	2310.31	6396.326	0
T3-005	55.07115	8287.37	14.49558	0	5095.828	0	0	#DIV/0!	4067.308	2242.242	5896.235	0
T4-003	50.54193	9765.188	14.24779	0	5650.819	0	0	#DIV/0!	4278.205	2542.543	7146.463	0
T4-004	52.49773	9359.512	0	0	5449.004	0	0	#DIV/0!	4187.821	2454.454	6831.889	0
T4-005	54.55646	8693.046	12.76106	0	5095.828	0	0	#DIV/0!	3946.795	2302.302	6307.6	0
T5-003	60.73267	5882.294	0	0	3995.937	0	0	#DIV/0!	2723.59	1869.87	4500.82	0
T5-004	57.12988	6461.831	0	0	4243.16	0	0	#DIV/0!	2759.744	1913.914	4734.733	0
T5-005	62.7914	6664.668	14.49558	0	4328.931	0	0	#DIV/0!	3374.359	1929.93	4807.327	0
T6-003	57.12988	6751.599	14.12389	0	4283.523	0	0	#DIV/0!	3826.282	1993.994	5065.439	0
T6-004	57.12988	6548.761	13.25664	0	4147.298	0	0	#DIV/0!	3494.872	1957.958	4960.581	0
T6-005	59.7033	6461.831	14.86726	0	4117.026	0	0	#DIV/0!	3525	1929.93	4871.855	0
T7-003	62.27672	5128.897	16.35398	0	3673.033	0	0	#DIV/0!	2765.769	1753.754	4097.52	0
T7-004	57.12988	5563.549	14.49558	0	3900.074	0	0	#DIV/0!	2777.821	1801.802	4363.698	0
T7-005	59.7033	5592.526	25.02655	0	3915.211	0	0	#DIV/0!	2527.756	1785.786	4291.104	0
T8-003	59.7033	4984.013	0	0	3541.853	0	0	#DIV/0!	2356.026	1629.63	3871.673	0
T8-004	57.12988	5650.48	0	0	3975.755	0	0	#DIV/0!	2841.09	1749.75	4145.916	0
T8-005	58.67393	5940.248	0	0	4182.615	0	0	#DIV/0!	2934.487	1797.798	4291.104	0
T9-003	72.57039	3477.218	12.38938	3.536068	2558.005	10.04016	0.963365	#DIV/0!	1855.897	1433.433	3661.957	3.296703
T9-004	64.85014	4027.778	12.38938	3.536068	2906.136	10.04016	0.963365	#DIV/0!	2172.244	1533.534	4097.52	3.296703
T9-005	66.90887	4288.569	12.38938	3.536068	3052.452	10.04016	0.963365	#DIV/0!	2350	1545.546	4218.51	3.296703
T10-003	77.78156	3622.102	12.51327	3.536068	2694.23	10.04016	0.963365	#DIV/0!	1093.654	1377.377	3621.627	3.296703
T10-004	58.67393	3998.801	12.38938	3.536068	2875.863	10.04016	0.963365	#DIV/0!	1587.756	1477.477	4024.926	3.296703
T10-005	86.98153	4259.592	12.38938	3.536068	3022.179	10.04016	0.963365	#DIV/0!	1810.705	1521.522	4234.642	3.296703
T11-003	82.34938	2297.862	12.38938	3.536068	1846.607	10.04016	0.963365	#DIV/0!	1334.679	1141.141	2645.643	3.296703
T11-004	75.14381	2535.472	12.38938	3.536068	1982.832	10.04016	0.963365	#DIV/0!	1711.282	1193.193	2847.293	3.296703
T11-005	73.08507	2784.672	12.38938	3.536068	2159.42	10.04016	0.963365	#DIV/0!	1446.154	1241.241	3008.612	3.296703
T12-003	80.80533	2222.522	12.38938	3.536068	1629.656	10.04016	0.963365	#DIV/0!	1247.308	1033.033	2210.08	3.296703
T12-004	75.14381	2500.699	12.38938	3.536068	1781.017	10.04016	0.963365	#DIV/0!	1250.321	1089.089	2363.334	3.296703
T12-005	71.02634	2868.705	12.38938	3.536068	1987.878	10.04016	0.963365	#DIV/0!	1461.218	1149.149	2702.105	3.296703

Average normalized Concentration(g-glass/m^3)

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-EADW	3	70.16853	16961.1	16.27139	0	8930.313	0	0	#DIV/0!	9741.453	3387.387	12203.84	0	
T2-EADW	7	66.05106	11754.93	14.49558	0	6626.259	0	0	#DIV/0!	6899.359	2790.791	8442.398	0	
T3-EADW	10	54.04178	8963.496	9.787611	0	5415.369	0	0	#DIV/0!	4368.59	2337.004	6366.751	0	
T4-EADW	14	52.53204	9272.582	9.00295	0	5398.551	0	0	#DIV/0!	4137.607	2433.1	6761.984	0	
T5-EADW	17	60.21798	6336.264	4.831858	0	4189.343	0	0	#DIV/0!	2952.564	1904.571	4680.96	0	
T6-EADW	21	57.98769	6587.397	14.0826	0	4182.615	0	0	#DIV/0!	3615.385	1960.627	4965.958	0	
T7-EADW	24	59.7033	5428.324	18.62537	0	3829.439	0	0	#DIV/0!	2690.449	1780.447	4250.774	0	
T8-EADW	28	58.50237	5524.913	0	0	3900.074	0	0	#DIV/0!	2710.534	1725.726	4102.898	0	
T9-EADW	31	68.1098	3931.188	12.38938	3.536068	2838.864	10.04016	0.963365	#DIV/0!	2126.047	1504.171	3992.663	3.296703	
T10-EADW	35	74.47901	3960.165	12.43068	3.536068	2864.091	10.04016	0.963365	#DIV/0!	1497.372	1458.792	3960.399	3.296703	
T11-EADW	38	76.85942	2539.335	12.38938	3.536068	1996.287	10.04016	0.963365	#DIV/0!	1497.372	1191.859	2833.849	3.296703	
T12-EADW	42	75.65849	2530.642	12.38938	3.536068	1799.517	10.04016	0.963365	#DIV/0!	1319.615	1090.424	2425.173	3.296703	

Accumulated normalized Concentration

	Accumulated	Al	B	Ca	Fe	Li	Mg	Mn	P	K	Si	Na	Zr	
T1-EADW	3	70.16853	16961.1	16.27139	0	8930.313	0	0	#DIV/0!	9741.453	3387.387	12203.84	0	
T2-EADW	7	136.2196	28716.03	30.76696	0	15556.57	0	0	#DIV/0!	16640.81	6178.178	20646.23	0	
T3-EADW	10	190.2614	37679.52	40.55457	0	20971.94	0	0	#DIV/0!	21009.4	8515.182	27012.98	0	
T4-EADW	14	242.7934	46952.1	49.55752	0	26370.49	0	0	#DIV/0!	25147.01	10948.28	33774.97	0	
T5-EADW	17	303.0114	53288.37	54.38938	0	30559.83	0	0	#DIV/0!	28099.57	12852.85	38455.93	0	
T6-EADW	21	360.9991	59875.77	68.47198	0	34742.45	0	0	#DIV/0!	31714.96	14813.48	43421.89	0	
T7-EADW	24	420.7024	65304.09	87.09735	0	38571.89	0	0	#DIV/0!	34405.41	16593.93	47672.66	0	
T8-EADW	28	479.2048	70829	87.09735	0	42471.96	0	0	#DIV/0!	37115.94	18319.65	51775.56	0	
T9-EADW	31	547.3146	74760.19	99.48673	3.536068	45310.83	10.04016	0.963365	#DIV/0!	39241.99	19823.82	55768.22	3.296703	
T10-EADW	35	621.7936	78720.36	111.9174	7.072136	48174.92	20.08032	1.92673	#DIV/0!	40739.36	21282.62	59728.62	6.593407	
T11-EADW	38	698.653	81259.69	124.3068	10.6082	50171.2	30.12048	2.890095	#DIV/0!	42236.73	22474.47	62562.47	9.89011	
T12-EADW	42	774.3115	83790.33	136.6962	14.14427	51970.72	40.16064	3.85346	#DIV/0!	43556.35	23564.9	64987.64	13.18681	

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-EADW	3	0.011695	2.82685	0.002712	0	1.488385	0	0	#DIV/0!	1.623575	0.564565	2.033973	0	5.78	12.00667
T2-EADW	4	0.008256	1.469366	0.001812	0	0.828282	0	0	#DIV/0!	0.86242	0.348849	1.0553	0	5.77	12.00667
T3-EADW	3	0.009007	1.493916	0.001631	0	0.902561	0	0	#DIV/0!	0.728098	0.389501	1.061125	0	5.9	11.75
T4-EADW	4	0.006567	1.159073	0.001125	0	0.674819	0	0	#DIV/0!	0.517201	0.304137	0.845248	0	5.91	11.82
T5-EADW	3	0.010036	1.056044	0.000805	0	0.698224	0	0	#DIV/0!	0.492094	0.317429	0.78016	0	5.91	11.56
T6-EADW	4	0.007248	0.823425	0.00176	0	0.522827	0	0	#DIV/0!	0.451923	0.245078	0.620745	0	6.26	11.55
T7-EADW	3	0.009951	0.904721	0.003104	0	0.63824	0	0	#DIV/0!	0.448408	0.296741	0.708462	0	5.91	11.49
T8-EADW	4	0.007313	0.690614	0	0	0.487509	0	0	#DIV/0!	0.338817	0.215716	0.512862	0	5.92	11.46
T9-EADW	3	0.011352	0.655198	0.002065	0.000589	0.473144	0.001673	0.000161	#DIV/0!	0.354341	0.250695	0.665444	0.000549	5.58	11.38667
T10-EADW	4	0.00931	0.495021	0.001554	0.000442	0.358011	0.001255	0.00012	#DIV/0!	0.187171	0.182349	0.49505	0.000412	5.66	11.30667
T11-EADW	3	0.01281	0.423223	0.002065	0.000589	0.332714	0.001673	0.000161	#DIV/0!	0.249562	0.198643	0.472308	0.000549	5.4	11.23333
T12-EADW	4	0.009457	0.31633	0.001549	0.000442	0.22494	0.001255	0.00012	#DIV/0!	0.164952	0.136303	0.303147	0.000412	6.12	11.13667

11.56
± 0.28

Element/Si Leach rate ratio

	Test	Al	B	Ca	Fe	Li	Mg	Mn	P	K	Si	Na	Zr
T1-EADW	3	0.020715	5.007133	0.004804	0	2.636342	0	0	#DIV/0!	2.875801	1	3.602728	0
T2-EADW	4	0.023668	4.212042	0.005194	0	2.37433	0	0	#DIV/0!	2.472188	1	3.025092	0
T3-EADW	3	0.023124	3.835465	0.004188	0	2.317227	0	0	#DIV/0!	1.869312	1	2.724322	0
T4-EADW	4	0.021591	3.811016	0.0037	0	2.218795	0	0	#DIV/0!	1.70055	1	2.779164	0
T5-EADW	3	0.031618	3.326872	0.002537	0	2.199625	0	0	#DIV/0!	1.550251	1	2.45775	0
T6-EADW	4	0.029576	3.359841	0.007183	0	2.133305	0	0	#DIV/0!	1.843994	1	2.532841	0
T7-EADW	3	0.033533	3.048854	0.010461	0	2.15083	0	0	#DIV/0!	1.511108	1	2.387476	0
T8-EADW	4	0.0339	3.201501	0	0	2.259962	0	0	#DIV/0!	1.570663	1	2.377491	0
T9-EADW	3	0.045281	2.613525	0.008237	0.002351	1.887328	0.006675	0.00064	#DIV/0!	1.413435	1	2.654394	0.002192
T10-EADW	4	0.051055	2.714688	0.008521	0.002424	1.96333	0.006883	0.00066	#DIV/0!	1.026446	1	2.714848	0.00226
T11-EADW	3	0.064487	2.130568	0.010395	0.002967	1.674936	0.008424	0.000808	#DIV/0!	1.256334	1	2.377673	0.002766
T12-EADW	4	0.069384	2.320788	0.011362	0.003243	1.650291	0.009208	0.000883	#DIV/0!	1.210186	1	2.224065	0.003023

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-006	3	4.54	19.3	0.108	1.83	13.9	0.21	0.22	0.057	16.4	99	53.3	0.017	5.78	10.49
T1-007	3	4.38	18.6	0.1	1.72	13.8	0.198	0.19	0.142	15.8	98.7	52.8	0.016	5.78	10.48
T1-008	3	4.32	17.9	0.096	1.72	13.3	0.208	0.195	0.302	15.3	96.6	51	0.015	5.78	10.46
T2-006	7	4.15	14.7	0.129	1.43	9.25	0.068	0.124	0.03	13	83	38	0.028	5.77	10.67
T2-007	7	4.09	11.9	0.128	1.4	9.42	0.075	0.125	0.05	12.8	81.6	36.3	0.026	5.77	10.64
T2-008	7	4.11	12.1	0.123	1.35	9.46	0.069	0.12	0.136	13.1	82.3	36.5	0.026	5.77	10.66
T3-006	10	3.78	10	0.176	1.21	6.76	0	0.078	0	10.8	71	27.2	0.03	5.90	10.15
T3-007	10	3.72	9.74	0.148	1.15	6.81	0	0.073	0.024	10.9	71.6	27.5	0.028	5.90	10.08
T3-008	10	3.81	9.77	0.154	1.14	6.91	0	0.071	0.023	11.1	72.5	27.9	0.03	5.90	10.18
T4-006	14	3.52	10.4	0.207	1.31	7.76	0	0.082	0	12.3	78.1	31.9	0.041	5.91	10.23
T4-007	14	3.51	9.86	0.189	1.22	7.64	0	0.076	0	12.4	77	31.6	0.039	5.91	10.26
T4-008	14	3.53	9.29	0.179	1.21	7.74	0	0.074	0	12.6	78	32.5	0.04	5.91	10.27
T5-006	17	3.45	10.8	0.205	1.36	6.98	0	0.078	0	11.4	71.1	29.1	0.043	5.91	9.99
T5-007	17	3.37	10.6	0.189	1.19	7.05	0	0.067	0	11.4	71.8	29.7	0.04	5.91	10.00
T5-008	17	3.38	10.6	0.201	1.18	7.06	0	0.066	0	11.3	72.2	30	0.041	5.91	9.95
T6-006	21	3.03	12	0.229	1.36	7.95	0	0.079	0	12.3	78.4	34	0.052	6.26	10.11
T6-007	21	2.97	11.9	0.238	1.33	8.1	0	0.078	0.02	12.6	79.2	34.3	0.053	6.26	10.13
T6-008	21	3.01	12	0.224	1.28	8.15	0	0.076	0	12.7	79.3	34.7	0.052	6.26	10.01
T7-006	24	3.11	11.9	0.226	1.19	7.58	0	0.066	0	11.7	75.4	33.1	0.05	5.91	10.07
T7-007	24	3.13	11.3	0.221	1.12	7.75	0	0.062	0	11.9	75.9	33.2	0.049	5.91	10.07
T7-008	24	3.14	11.3	0.225	1.12	7.73	0	0.062	0	12	76.5	33.6	0.049	5.91	10.04
T8-006	28	2.86	13.4	0.26	1.19	8.84	0	0.068	0.025	12.8	81.9	33.8	0.057	5.92	10.13
T8-007	28	2.87	13.4	0.253	1.14	9.01	0	0.065	0.024	13.1	82.6	34.4	0.056	5.92	10.13
T8-008	28	2.86	13.2	0.258	1.07	8.96	0	0.061	0	13	82.5	35.3	0.055	5.92	10.14
T9-006	31	2.75	12	0.272	0.991	7.8	0.05	0.055	0.02	10.8	77	35.7	0.052	5.58	10.08
T9-007	31	2.83	11.9	0.244	1.02	7.84	0.05	0.056	0.023	12.1	78.7	36.5	0.051	5.58	10.09
T9-008	31	2.8	11.9	0.226	0.884	7.81	0.05	0.049	0.021	12	78.2	36.1	0.048	5.58	10.09
T10-006	35	2.86	13.3	0.312	0.963	8.85	0.05	0.056	0.02	12.8	81.8	41.1	0.055	5.66	10.15
T10-007	35	2.62	13.7	0.253	0.862	9.11	0.05	0.05	0.02	12.7	83.7	42.6	0.054	5.66	10.14
T10-008	35	2.6	13.6	0.306	0.821	9.08	0.05	0.048	0.02	12.7	83.7	42.8	0.053	5.66	10.15
T11-006	38	2.66	12.6	0.234	0.772	7.99	0.05	0.043	0.02	11.9	76.7	35	0.046	5.40	10.13
T11-007	38	2.64	12.4	0.242	0.726	8.04	0.05	0.04	0.02	11.7	77.4	35.8	0.046	5.40	10.12
T11-008	38	2.64	12.2	0.235	0.705	8.09	0.05	0.039	0.021	11.7	76.9	35.6	0.046	5.40	10.12
T12-006	42	2.46	14.5	0.254	0.752	7.51	0.05	0.043	0.02	13.1	83	37.3	0.053	6.12	10.13
T12-007	42	2.45	14.2	0.258	0.723	7.59	0.05	0.041	0.02	13.1	83.4	37.9	0.053	6.12	10.14
T12-008	42	2.46	14	0.26	0.686	7.6	0.05	0.04	0.021	13.2	83.3	37.6	0.052	6.12	10.16

Leaching Solution Results for SRS Glass in Deionized Water

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-006	206.1432	772.5328	14.67961	23.96229	676.0347	24.8227	16.97561	#DIV/0!	537.068	381.5029	786.847	16.41287
T1-007	198.8782	744.5135	13.59223	22.52193	671.1712	23.40426	14.66075	#DIV/0!	517.4192	380.3468	779.4657	15.44741
T1-008	196.1538	716.4941	13.04854	22.52193	646.8534	24.58629	15.04656	#DIV/0!	501.0452	372.2543	752.893	14.48195
T2-006	188.4348	588.4058	17.53398	18.72463	449.8792	8.037825	9.568071	#DIV/0!	425.7246	319.8459	560.9791	27.03297
T2-007	185.7105	476.3285	17.39806	18.33181	458.1473	8.865248	9.645233	#DIV/0!	419.175	314.4509	535.8827	25.10204
T2-008	186.6186	484.334	16.71845	17.6771	460.0927	8.156028	9.259424	#DIV/0!	428.9994	317.1484	538.8352	25.10204
T3-006	171.6346	400.2761	23.92233	15.84392	328.7766	0	6.018625	#DIV/0!	353.6789	273.6031	401.5429	28.96389
T3-007	168.9103	389.8689	20.1165	15.05827	331.2084	0	5.632816	#DIV/0!	356.9537	275.9152	405.9717	27.03297
T3-008	172.9968	391.0697	20.93204	14.92733	336.0719	0	5.478492	#DIV/0!	363.5033	279.3834	411.8768	28.96389
T4-006	159.8291	416.2871	28.13592	17.15333	377.4122	0	6.327273	#DIV/0!	402.801	300.9634	470.9272	39.58399
T4-007	159.375	394.6722	25.68932	15.97486	371.5759	0	5.864302	#DIV/0!	406.0758	296.7245	466.4984	37.65306
T4-008	160.2831	371.8565	24.3301	15.84392	376.4395	0	5.709978	#DIV/0!	412.6254	300.578	479.7848	38.61852
T5-006	156.6506	432.2981	27.86408	17.80804	339.4764	0	6.018625	#DIV/0!	373.3278	273.9884	429.5919	41.51491
T5-007	153.0182	424.2926	25.68932	15.58203	342.8809	0	5.169845	#DIV/0!	373.3278	276.6859	438.4494	38.61852
T5-008	153.4722	424.2926	27.32039	15.45109	343.3673	0	5.092683	#DIV/0!	370.053	278.2274	442.8782	39.58399
T6-006	137.5801	480.3313	31.12621	17.80804	386.653	0	6.095787	#DIV/0!	402.801	302.1195	501.9287	50.20408
T6-007	134.8558	476.3285	32.34951	17.41522	393.9483	0	6.018625	#DIV/0!	412.6254	305.2023	506.3574	51.16954
T6-008	136.672	480.3313	30.4466	16.76051	396.3801	0	5.864302	#DIV/0!	415.9002	305.5877	512.2625	50.20408
T7-006	141.2126	476.3285	30.71845	15.58203	368.6578	0	5.092683	#DIV/0!	383.1522	290.5588	488.6423	48.27316
T7-007	142.1207	452.3119	30.03883	14.66544	376.9258	0	4.784035	#DIV/0!	389.7018	292.4855	490.1186	47.30769
T7-008	142.5748	452.3119	30.58252	14.66544	375.9531	0	4.784035	#DIV/0!	392.9766	294.7977	496.0236	47.30769
T8-006	129.8611	536.3699	35.33981	15.58203	429.9386	0	5.247007	#DIV/0!	419.175	315.6069	498.9761	55.0314
T8-007	130.3152	536.3699	34.38835	14.92733	438.2067	0	5.015521	#DIV/0!	428.9994	318.3044	507.8337	54.06593
T8-008	129.8611	528.3644	35.06796	14.01074	435.7749	0	4.706874	#DIV/0!	425.7246	317.9191	521.1201	53.10047
T9-006	124.8665	480.3313	36.97087	12.9763	379.3576	5.910165	4.243902	#DIV/0!	353.6789	296.7245	527.0251	50.20408
T9-007	128.4989	476.3285	33.16505	13.35603	381.303	5.910165	4.321064	#DIV/0!	396.2514	303.2755	538.8352	49.23862
T9-008	127.1368	476.3285	30.71845	11.57523	379.844	5.910165	3.780931	#DIV/0!	392.9766	301.3487	532.9301	46.34223
T10-006	129.8611	532.3671	42.40777	12.60966	430.425	5.910165	4.321064	#DIV/0!	419.175	315.2216	606.7432	53.10047
T10-007	118.9637	548.3782	34.38835	11.28715	443.0702	5.910165	3.858093	#DIV/0!	415.9002	322.5434	628.8871	52.13501
T10-008	118.0556	544.3754	41.59223	10.75029	441.6112	5.910165	3.703769	#DIV/0!	415.9002	322.5434	631.8396	51.16954
T11-006	120.7799	504.3478	31.80583	10.10868	388.5984	5.910165	3.31796	#DIV/0!	389.7018	295.5684	516.6913	44.4113
T11-007	119.8718	496.3423	32.8932	9.506351	391.0302	5.910165	3.086475	#DIV/0!	383.1522	298.2659	528.5014	44.4113
T11-008	119.8718	488.3368	31.94175	9.231374	393.4619	5.910165	3.009313	#DIV/0!	383.1522	296.3391	525.5488	44.4113
T12-006	111.6987	580.4003	34.52427	9.846798	365.2533	5.910165	3.31796	#DIV/0!	428.9994	319.8459	550.6453	51.16954
T12-007	111.2447	568.392	35.06796	9.467068	369.1441	5.910165	3.163636	#DIV/0!	428.9994	321.3873	559.5028	51.16954
T12-008	111.6987	560.3865	35.33981	8.982585	369.6305	5.910165	3.086475	#DIV/0!	432.2742	321.0019	555.0741	50.20408

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-SRSDW	3	200.39174	744.5135	13.77346	23.00205	664.6864	24.27108	15.56098	#DIV/0!	518.5108	378.0347	773.0686	15.44741	
T2-SRSDW	7	186.9213	516.3561	17.21683	18.24451	456.0397	8.353034	9.490909	#DIV/0!	424.633	317.1484	545.2323	25.74568	
T3-SRSDW	10	171.18056	393.7382	21.65696	15.2765	332.019	0	5.709978	#DIV/0!	358.0453	276.3006	406.4638	28.32025	
T4-SRSDW	14	159.82906	394.2719	26.05178	16.32404	375.1425	0	5.967184	#DIV/0!	407.1674	299.422	472.4034	38.61852	
T5-SRSDW	17	154.38034	426.9611	26.95793	16.28039	341.9082	0	5.427051	#DIV/0!	372.2362	276.3006	436.9732	39.90581	
T6-SRSDW	21	136.3693	478.997	31.30744	17.32792	392.3271	0	5.992905	#DIV/0!	410.4422	304.3031	506.8495	50.5259	
T7-SRSDW	24	141.96937	460.3175	30.4466	14.97097	373.8456	0	4.886918	#DIV/0!	388.6102	292.614	491.5948	47.62951	
T8-SRSDW	28	130.01246	533.7014	34.93204	14.84003	434.6401	0	4.9898	#DIV/0!	424.633	317.2768	509.31	54.06593	
T9-SRSDW	31	126.83405	477.6628	33.61812	12.63585	380.1682	5.910165	4.115299	#DIV/0!	380.969	300.4496	532.9301	48.59498	
T10-SRSDW	35	122.29345	541.7069	39.46278	11.54904	438.3688	5.910165	3.960976	#DIV/0!	416.9918	320.1028	622.49	52.13501	
T11-SRSDW	38	120.1745	496.3423	32.21359	9.615469	391.0302	5.910165	3.137916	#DIV/0!	385.3354	296.7245	523.5805	44.4113	
T12-SRSDW	42	111.54736	569.7262	34.97735	9.43215	368.0093	5.910165	3.189357	#DIV/0!	430.091	320.745	555.0741	50.84772	

Accumulated normalized Concentration

	Accumulated	Al	B	Ca	Fe	Li	Mg	Mn	P	K	Si	Na	Zr	
T1-SRSDW	3	200.39174	744.5135	13.77346	23.00205	664.6864	24.27108	15.56098	#DIV/0!	518.5108	378.0347	773.0686	15.44741	
T2-SRSDW	7	387.31303	1260.87	30.99029	41.24656	1120.726	32.62411	25.05188	#DIV/0!	943.1438	695.183	1318.301	41.19309	
T3-SRSDW	10	558.49359	1654.608	52.64725	56.52307	1452.745	32.62411	30.76186	#DIV/0!	1301.189	971.4836	1724.765	69.51334	
T4-SRSDW	14	718.32265	2048.88	78.69903	72.8471	1827.888	32.62411	36.72905	#DIV/0!	1708.357	1270.906	2197.168	108.1319	
T5-SRSDW	17	872.70299	2475.841	105.657	89.12749	2169.796	32.62411	42.1561	#DIV/0!	2080.593	1547.206	2634.141	148.0377	
T6-SRSDW	21	1009.0723	2954.838	136.9644	106.4554	2562.123	32.62411	48.149	#DIV/0!	2491.035	1851.509	3140.991	198.5636	
T7-SRSDW	24	1151.0417	3415.155	167.411	121.4264	2935.969	32.62411	53.03592	#DIV/0!	2879.645	2144.123	3632.586	246.1931	
T8-SRSDW	28	1281.0541	3948.857	202.343	136.2664	3370.609	32.62411	58.02572	#DIV/0!	3304.278	2461.4	4141.896	300.259	
T9-SRSDW	31	1407.8882	4426.519	235.9612	148.9023	3750.777	38.53428	62.14102	#DIV/0!	3685.247	2761.85	4674.826	348.854	
T10-SRSDW	35	1530.1816	4968.226	275.4239	160.4513	4189.146	44.44444	66.102	#DIV/0!	4102.239	3081.952	5297.316	400.989	
T11-SRSDW	38	1650.3561	5464.569	307.6375	170.0668	4580.176	50.35461	69.23991	#DIV/0!	4487.574	3378.677	5820.896	445.4003	
T12-SRSDW	42	1761.9035	6034.295	342.6149	179.4989	4948.185	56.26478	72.42927	#DIV/0!	4917.665	3699.422	6375.97	496.248	

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-SRSDW	3	0.033399	0.124086	0.002296	0.003834	0.110781	0.004045	0.002593	#DIV/0!	0.086418	0.063006	0.128845	0.002575	5.78	10.47667
T2-SRSDW	4	0.023365	0.064545	0.002152	0.002281	0.057005	0.001044	0.001186	#DIV/0!	0.053079	0.039644	0.068154	0.003218	5.77	10.65667
T3-SRSDW	3	0.02853	0.065623	0.003609	0.002546	0.055336	0	0.000952	#DIV/0!	0.059674	0.04605	0.067744	0.00472	5.9	10.13667
T4-SRSDW	4	0.019979	0.049284	0.003256	0.002041	0.046893	0	0.000746	#DIV/0!	0.050896	0.037428	0.05905	0.004827	5.91	10.25333
T5-SRSDW	3	0.02573	0.07116	0.004493	0.002713	0.056985	0	0.000905	#DIV/0!	0.062039	0.04605	0.072829	0.006651	5.91	9.98
T6-SRSDW	4	0.017046	0.059875	0.003913	0.002166	0.049041	0	0.000749	#DIV/0!	0.051305	0.038038	0.063356	0.006316	6.26	10.08333
T7-SRSDW	3	0.023662	0.07672	0.005074	0.002495	0.062308	0	0.000814	#DIV/0!	0.064768	0.048769	0.081932	0.007938	5.91	10.06
T8-SRSDW	4	0.016252	0.066713	0.004367	0.001855	0.05433	0	0.000624	#DIV/0!	0.053079	0.03966	0.063664	0.006758	5.92	10.13333
T9-SRSDW	3	0.021139	0.07961	0.005603	0.002106	0.063361	0.000985	0.000686	#DIV/0!	0.063495	0.050075	0.088822	0.008099	5.58	10.08667
T10-SRSDW	4	0.015287	0.067713	0.004933	0.001444	0.054796	0.000739	0.000495	#DIV/0!	0.052124	0.040013	0.077811	0.006517	5.66	10.14667
T11-SRSDW	3	0.020029	0.082724	0.005369	0.001603	0.065172	0.000985	0.000523	#DIV/0!	0.064223	0.049454	0.087263	0.007402	5.4	10.12333
T12-SRSDW	4	0.013943	0.071216	0.004372	0.001179	0.046001	0.000739	0.000399	#DIV/0!	0.053761	0.040093	0.069384	0.006356	6.12	10.14333

10.19
± 0.19

Element/Si Leach rate ratio

	Test	Al	B	Ca	Fe	Li	Mg	Mn	P	K	Si	Na	Zr
T1-SRSDW	3	0.530088	1.969432	0.036434	0.060846	1.758268	0.064203	0.041163	#DIV/0!	1.371596	1	2.044967	0.040862
T2-SRSDW	4	0.589381	1.628122	0.054286	0.057527	1.437938	0.026338	0.029926	#DIV/0!	1.33891	1	1.719171	0.081179
T3-SRSDW	3	0.619545	1.425036	0.078382	0.055289	1.201659	0	0.020666	#DIV/0!	1.295854	1	1.471093	0.102498
T4-SRSDW	4	0.533792	1.316777	0.087007	0.054519	1.252889	0	0.019929	#DIV/0!	1.359845	1	1.577718	0.128977
T5-SRSDW	3	0.558741	1.545278	0.097567	0.058923	1.23745	0	0.019642	#DIV/0!	1.347215	1	1.581514	0.144429
T6-SRSDW	4	0.448136	1.574078	0.102882	0.056943	1.289264	0	0.019694	#DIV/0!	1.348794	1	1.665607	0.166038
T7-SRSDW	3	0.485176	1.573122	0.10405	0.051163	1.277607	0	0.016701	#DIV/0!	1.328064	1	1.680011	0.162773
T8-SRSDW	4	0.409776	1.682132	0.1101	0.046773	1.369908	0	0.015727	#DIV/0!	1.338368	1	1.605254	0.170406
T9-SRSDW	3	0.422148	1.589827	0.111893	0.042056	1.265331	0.019671	0.013697	#DIV/0!	1.267996	1	1.773776	0.161741
T10-SRSDW	4	0.382044	1.692291	0.123282	0.036079	1.369463	0.018463	0.012374	#DIV/0!	1.302681	1	1.944657	0.16287
T11-SRSDW	3	0.405004	1.672738	0.108564	0.032405	1.317822	0.019918	0.010575	#DIV/0!	1.29863	1	1.764534	0.149672
T12-SRSDW	4	0.347776	1.776259	0.10905	0.029407	1.147358	0.018426	0.009944	#DIV/0!	1.340913	1	1.730577	0.15853

Leaching Solution Results for WVNS Glass in Deionized Water

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-009	3	8.51	33.3	0.116	3.56	12.5	0	0.168	3.23	16.6	61.9	67.4	0.245	5.78	10.46
T1-010	3	8.45	33.4	0.12	3.67	12.6	0	0.174	3.19	16.4	62.2	67.3	0.303		10.40
T1-011	3	8.38	32.2	0.113	3.63	12.4	0	0.17	3.14	15.9	61.8	66.5	0.209		10.42
T2-009	7	8.96	21.9	0.193	5.55	8.83	0	0.302	2.24	13.1	56.2	47.1	0.08	5.77	10.68
T2-010	7	9.05	22.5	0.142	5.69	9	0	0.312	2.18	13.4	56.2	47.6	0.057		10.69
T2-011	7	8.78	23.3	0.138	5.74	9.33	0	0.311	2.23	13.5	56.8	49.3	0.073		10.69
T3-009	10	8.93	15.1	0.13	4.23	6.26	0	0.226	1.38	10.1	48.6	34	0	5.90	10.15
T3-010	10	9.06	15.6	0.111	4.38	6.47	0	0.235	1.41	10.4	49.7	35.6	0.051		10.17
T3-011	10	9.1	15.8	0.108	4.43	6.6	0	0.24	1.42	10.4	49.9	35.7	0		10.18
T4-009	14	9.59	14.7	0.115	4.64	6.73	0	0.255	1.73	11.5	51.9	38.5	0.062	5.91	10.31
T4-010	14	9.76	15.5	0.103	4.64	7.01	0	0.258	1.72	12.1	51.7	40.2	0		10.10
T4-011	14	9.36	15.2	0.108	4.7	6.9	0	0.261	1.74	11.5	51.8	39.4	0.07		10.11
T5-009	17	8.79	13.5	0.117	4.8	5.88	0	0.246	1.32	9.53	47.7	33.4	0.23	5.91	10.03
T5-010	17	8.94	13.6	0.127	4.8	5.98	0	0.244	1.31	9.57	48.3	34.4	0.064		10.02
T5-011	17	8.96	13.3	0.113	4.63	5.92	0	0.24	1.3	9.46	47.8	33.4	0.598		10.05
T6-009	21	8.6	14.6	0.134	6.02	6.15	0	0.312	1.33	10.5	49.5	34.3	1.21	6.26	10.09
T6-010	21	8.51	15	0.126	5.83	6.25	0.052	0.299	1.31	10.7	50.2	35.5	0.05		10.06
T6-011	21	8.59	15.4	0.132	5.89	6.37	0.052	0.304	1.32	10.8	51.1	36.5	0.367		10.09
T7-009	24	8.74	11.8	0.124	5.56	5.37	0	0.272	1.16	9.47	47.1	31.3	0.29	5.91	10.02
T7-010	24	8.81	12.1	0.123	5.43	5.52	0	0.267	1.19	9.5	48.1	32.1	0.19		10.05
T7-011	24	8.67	11.9	0.131	5.58	5.38	0.051	0.279	1.16	9.5	47.9	31.9	0.284		10.04
T8-009	28	8.91	14.1	0.159	7.6	6.12	0.069	0.369	1.2	10.4	50.6	31.8	0.076	5.92	10.04
T8-010	28	8.95	14.5	0.159	7.7	6.26	0.072	0.375	1.19	10.4	51.2	32.3	0.073		10.06
T8-011	28	9.02	14.5	0.162	7.56	6.25	0.073	0.368	1.22	10.5	51.8	33.3	0.039		10.04
T9-009	31	8.24	11	0.142	6.16	4.89	0.06	0.287	1.06	9.03	47.2	30.4	0.048	5.58	10.02
T9-010	31	8.33	11.3	0.139	6.11	5.01	0.061	0.287	1.06	9.12	47.6	31.1	0.036		10.03
T9-011	31	8.35	11.2	0.148	6.14	4.98	0.061	0.288	1.06	9.16	47.7	31	0.04		10.03
T10-009	35	8.55	13.2	0.194	7.78	5.62	0.07	0.366	1.13	9.62	49.2	33.9	0.052	5.66	10.02
T10-010	35	8.63	13.4	0.17	8.05	5.71	0.072	0.382	1.1	9.72	49.3	34.3	0.06		10.02
T10-011	35	8.68	13.4	0.19	7.88	5.72	0.072	0.371	1.1	9.77	49.7	34.5	0.05		9.99
T11-009	38	7.91	9.89	0.128	6.56	4.38	0.062	0.298	0.957	8.19	44.7	26.5	0.062	5.40	10.01
T11-010	38	7.99	10.1	0.13	6.73	4.48	0.063	0.306	0.974	8.32	45.3	27.3	0.057		10.01
T11-011	38	8.07	9.99	0.131	6.74	4.49	0.061	0.307	0.976	8.44	45.4	27.2	0.045		10.01
T12-009	42	8.14	11.9	0.164	8.24	3.95	0.081	0.357	0.99	9.36	47.6	27.1	0.067	6.12	9.99
T12-010	42	8.24	12	0.165	8.42	4.04	0.078	0.364	0.975	9.52	48	27.6	0.042		9.99
T12-011	42	8.28	11.9	0.159	8.05	4	0.075	0.351	0.998	9.5	47.9	27.4	0.033		9.97

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-009	240.9962	934.669	24.60606	42.45171	557.7015	0	42.52406	368.0469	388.4491	292.8098	760.8332	25.87139
T1-010	239.297	937.4758	25.45455	43.76342	562.1631	0	44.04278	363.489	383.769	294.2289	759.7043	31.99605
T1-011	237.3147	903.794	23.9697	43.28643	553.2399	0	43.0303	357.7917	372.0687	292.3368	750.6737	22.06988
T2-009	253.7398	614.6922	40.93939	66.18173	393.9604	0	76.44207	255.2399	306.5472	265.8467	531.6801	8.447802
T2-010	256.2885	631.5331	30.12121	67.85118	401.5451	0	78.97326	248.4031	313.5673	265.8467	537.3243	6.019059
T2-011	248.6423	653.9876	29.27273	68.44741	416.2684	0	78.72014	254.1005	315.9074	268.685	556.5145	7.70862
T3-009	252.8902	423.8289	27.57576	50.44121	279.2969	0	57.20499	157.246	236.3455	229.8959	383.8031	0
T3-010	256.5717	437.863	23.54545	52.22991	288.6663	0	59.48307	160.6644	243.3657	235.0993	401.8644	5.385474
T3-011	257.7045	443.4766	22.90909	52.82614	294.4664	0	60.74866	161.8039	243.3657	236.0454	402.9932	0
T4-009	271.5809	412.6016	24.39394	55.33031	300.2665	0	64.54545	197.1273	269.1063	245.5061	434.6005	6.547047
T4-010	276.3951	435.0561	21.84848	55.33031	312.759	0	65.30481	195.9878	283.1466	244.5601	453.7907	0
T4-011	265.0675	426.6357	22.90909	56.04579	307.8512	0	66.06417	198.2667	269.1063	245.0331	444.76	7.391827
T5-009	248.9255	378.9199	24.81818	57.23825	262.3428	0	62.26738	150.4092	223.0072	225.6386	377.0301	24.28743
T5-010	253.1734	381.7267	26.93939	57.23825	266.8044	0	61.76114	149.2698	223.9432	228.4768	388.3184	6.758242
T5-011	253.7398	373.3062	23.9697	55.21107	264.1274	0	60.74866	148.1303	221.3692	226.1116	377.0301	63.14732
T6-009	243.5449	409.7948	28.42424	71.78631	274.3891	0	78.97326	151.5487	245.7058	234.1533	387.1896	127.773
T6-010	240.9962	421.0221	26.72727	69.52063	278.8508	48.14815	75.68271	149.2698	250.3859	237.4645	400.7356	5.279876
T6-011	243.2617	432.2493	28	70.23611	284.2047	48.14815	76.94831	150.4092	252.7259	241.7219	412.0239	38.75429
T7-009	247.5096	331.204	26.30303	66.30098	239.5886	0	68.84848	132.1778	221.6032	222.8004	353.3246	30.62328
T7-010	249.4919	339.6245	26.09091	64.75078	246.281	0	67.58289	135.5962	222.3052	227.5307	362.3553	20.06353
T7-011	245.5272	334.0108	27.78788	66.53947	240.0347	47.22222	70.62032	132.1778	222.3052	226.5847	360.0976	29.9897
T8-009	252.3238	395.7607	33.72727	90.62724	273.0507	63.88889	93.40107	136.7357	243.3657	239.3567	358.9688	8.025412
T8-010	253.4566	406.988	33.72727	91.8197	279.2969	66.66667	94.91979	135.5962	243.3657	242.1949	364.6129	7.70862
T8-011	255.4389	406.988	34.36364	90.15025	278.8508	67.59259	93.14795	139.0146	245.7058	245.0331	375.9012	4.118304
T9-009	233.35	308.7495	30.12121	73.45576	218.1728	55.55556	72.64528	120.7832	211.3069	223.2734	343.1651	5.068681
T9-010	235.8987	317.17	29.48485	72.85953	223.5268	56.48148	72.64528	120.7832	213.413	225.1656	351.0669	3.801511
T9-011	236.4651	314.3631	31.39394	73.21727	222.1883	56.48148	72.8984	120.7832	214.349	225.6386	349.9381	4.223901
T10-009	242.1289	370.4994	41.15152	92.77367	250.7426	64.81481	92.64171	128.7594	225.1133	232.7342	382.6742	5.491071
T10-010	244.3945	376.113	36.06061	95.99332	254.7581	66.66667	96.69162	125.341	227.4533	233.2072	387.1896	6.335852
T10-011	245.8104	376.113	40.30303	93.96613	255.2042	66.66667	93.90731	125.341	228.6234	235.0993	389.4472	5.279876
T11-009	224.0047	277.5939	27.15152	78.22561	195.4186	57.40741	75.42959	109.0467	191.6505	211.4475	299.1406	6.547047
T11-010	226.2702	283.4882	27.57576	80.2528	199.8802	58.33333	77.45455	110.9838	194.6926	214.2857	308.1713	6.019059
T11-011	228.5357	280.4007	27.78788	80.37205	200.3264	56.48148	77.70766	111.2117	197.5006	214.7588	307.0425	4.751889
T12-009	230.5181	334.0108	34.78788	98.259	176.2337	75	90.36364	112.8069	219.0291	225.1656	305.9136	7.075034
T12-010	233.35	336.8177	35	100.4054	180.2491	72.22222	92.13547	111.0977	222.7732	227.0577	311.5578	4.435096
T12-011	234.4828	334.0108	33.72727	95.99332	178.4645	69.44444	88.84492	113.7185	222.3052	226.5847	309.3001	3.484718

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-WVNSDW	3	239.2026	925.3129	24.67677	43.16718	557.7015	0	43.19905	363.1092	381.4289	293.1252	757.0704	26.64578	
T2-WVNSDW	7	252.8902	633.4043	33.44444	67.49344	403.9246	0	78.04516	252.5812	312.0073	266.7928	541.8396	7.391827	
T3-WVNSDW	10	255.7221	435.0561	24.67677	51.83242	287.4765	0	59.14557	159.9048	241.0256	233.6802	396.2202	1.795158	
T4-WVNSDW	14	271.0145	424.7645	23.05051	55.56881	306.9589	0	65.30481	197.1273	273.7864	245.0331	444.3838	4.646291	
T5-WVNSDW	17	251.9462	377.9843	25.24242	56.56252	264.4249	0	61.59239	149.2698	222.7732	226.7424	380.7929	31.39766	
T6-WVNSDW	21	242.6009	421.0221	27.71717	70.51435	279.1482	32.09877	77.20143	150.4092	249.6058	237.7799	399.983	57.26906	
T7-WVNSDW	24	247.5096	334.9464	26.72727	65.86374	241.9681	15.74074	69.01723	133.3173	222.0712	225.6386	358.5925	26.89217	
T8-WVNSDW	28	253.7398	403.2456	33.93939	90.86573	277.0661	66.04938	93.82294	137.1155	244.1457	242.1949	366.4943	6.617445	
T9-WVNSDW	31	235.2379	313.4275	30.33333	73.17752	221.296	56.17284	72.72965	120.7832	213.023	224.6925	348.0567	4.364698	
T10-WVNSDW	35	244.1113	374.2418	39.17172	94.24438	253.5683	66.04938	94.41355	126.4805	227.0633	233.6802	386.437	5.702266	
T11-WVNSDW	38	226.2702	280.4943	27.50505	79.61682	198.5417	57.40741	76.86393	110.4141	194.6146	213.4973	304.7848	5.772665	
T12-WVNSDW	42	232.7836	334.9464	34.50505	98.21925	178.3158	72.22222	90.44801	112.5411	221.3692	226.2693	308.9238	4.998283	

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-WVNSDW	3	239.2026	925.3129	24.67677	43.16718	557.7015	0	43.19905	363.1092	381.4289	293.1252	757.0704	26.64578	
T2-WVNSDW	7	492.0928	1558.717	58.12121	110.6606	961.6261	0	121.2442	615.6904	693.4362	559.918	1298.91	34.0376	
T3-WVNSDW	10	747.815	1993.773	82.79798	162.493	1249.103	0	180.3898	775.5951	934.4619	793.5982	1695.13	35.83276	
T4-WVNSDW	14	1018.829	2418.538	105.8485	218.0618	1556.062	0	245.6946	972.7224	1208.248	1038.631	2139.514	40.47905	
T5-WVNSDW	17	1270.776	2796.522	131.0909	274.6244	1820.486	0	307.287	1121.992	1431.021	1265.374	2520.307	71.87672	
T6-WVNSDW	21	1513.377	3217.544	158.8081	345.1387	2099.635	32.09877	384.4884	1272.401	1680.627	1503.154	2920.29	129.1458	
T7-WVNSDW	24	1760.886	3552.491	185.5354	411.0025	2341.603	47.83951	453.5056	1405.719	1902.699	1728.792	3278.882	156.0379	
T8-WVNSDW	28	2014.626	3955.736	219.4747	501.8682	2618.669	113.8889	547.3286	1542.834	2146.844	1970.987	3645.377	162.6554	
T9-WVNSDW	31	2249.864	4269.164	249.8081	575.0457	2839.965	170.0617	620.0582	1663.617	2359.867	2195.68	3993.433	167.0201	
T10-WVNSDW	35	2493.975	4643.406	288.9798	669.2901	3093.533	236.1111	714.4718	1790.098	2586.931	2429.36	4379.87	172.7224	
T11-WVNSDW	38	2720.245	4923.9	316.4848	748.9069	3292.075	293.5185	791.3357	1900.512	2781.545	2642.857	4684.655	178.495	
T12-WVNSDW	42	2953.029	5258.846	350.9899	847.1262	3470.391	365.7407	881.7837	2013.053	3002.914	2869.126	4993.579	183.4933	

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-WVNSDW	3	0.039867	0.154219	0.004113	0.007195	0.09295	0	0.0072	0.060518	0.063571	0.048854	0.126178	0.004441	5.78	10.42667
T2-WVNSDW	4	0.031611	0.079176	0.004181	0.008437	0.050491	0	0.009756	0.031573	0.039001	0.033349	0.06773	0.000924	5.77	10.68667
T3-WVNSDW	3	0.04262	0.072509	0.004113	0.008639	0.047913	0	0.009858	0.026651	0.040171	0.038947	0.066037	0.000299	5.9	10.16667
T4-WVNSDW	4	0.033877	0.053096	0.002881	0.006946	0.03837	0	0.008163	0.024641	0.034223	0.030629	0.055548	0.000581	5.91	10.17333
T5-WVNSDW	3	0.041991	0.062997	0.004207	0.009427	0.044071	0	0.010265	0.024878	0.037129	0.03779	0.063465	0.005233	5.91	10.03333
T6-WVNSDW	4	0.030325	0.052628	0.003465	0.008814	0.034894	0.00401	0.00965	0.018801	0.031201	0.029722	0.049998	0.007159	6.26	10.08
T7-WVNSDW	3	0.041252	0.055824	0.004455	0.010977	0.040328	0.00262	0.011503	0.02222	0.037012	0.037606	0.059765	0.004482	5.91	10.03667
T8-WVNSDW	4	0.031717	0.050406	0.004242	0.011358	0.034633	0.00826	0.011728	0.017139	0.030518	0.030274	0.045812	0.000827	5.92	10.04667
T9-WVNSDW	3	0.039206	0.052238	0.005056	0.012196	0.036883	0.00936	0.012122	0.020131	0.035504	0.037449	0.058009	0.000727	5.58	10.02667
T10-WVNSDW	4	0.030514	0.04678	0.004896	0.011781	0.031696	0.00826	0.011802	0.01581	0.028383	0.02921	0.048305	0.000713	5.66	10.01
T11-WVNSDW	3	0.037712	0.046749	0.004584	0.013269	0.03309	0.00957	0.012811	0.018402	0.032436	0.035583	0.050797	0.000962	5.4	10.01
T12-WVNSDW	4	0.029098	0.041868	0.004313	0.012277	0.022289	0.00903	0.011306	0.014068	0.027671	0.028284	0.038615	0.000625	6.12	9.983333

10.14
± 0.21

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSDW	3	0.816043	3.156716	0.084185	0.147265	1.902605	0	0.147374	1.238751	1.301249	1	2.582754	0.090902
T2-WVNSDW	4	0.94789	2.374143	0.125357	0.252981	1.514001	0	0.292531	0.946732	1.169474	1	2.030938	0.027706
T3-WVNSDW	3	1.094325	1.861758	0.105601	0.221809	1.230213	0	0.253105	0.684289	1.031434	1	1.695566	0.007682
T4-WVNSDW	4	1.106032	1.733498	0.094071	0.226781	1.252724	0	0.266514	0.804492	1.117345	1	1.813566	0.018962
T5-WVNSDW	3	1.111157	1.667021	0.111326	0.249457	1.166191	0	0.27164	0.658323	0.982495	1	1.679408	0.138473
T6-WVNSDW	4	1.020275	1.770638	0.116567	0.296553	1.173977	0.13499	0.324676	0.632557	1.049735	1	1.682157	0.240849
T7-WVNSDW	3	1.096929	1.484438	0.118452	0.291899	1.07237	0.06976	0.305875	0.590844	0.98419	1	1.589234	0.119182
T8-WVNSDW	4	1.047668	1.664963	0.140133	0.375176	1.14398	0.27271	0.387386	0.566137	1.008055	1	1.513221	0.027323
T9-WVNSDW	3	1.046933	1.394918	0.134999	0.325678	0.984884	0.25	0.323685	0.537549	0.948064	1	1.549036	0.019425
T10-WVNSDW	4	1.044638	1.601513	0.16763	0.403305	1.085108	0.28265	0.404029	0.541255	0.971684	1	1.6537	0.024402
T11-WVNSDW	3	1.059827	1.313807	0.128831	0.372917	0.92995	0.26889	0.360023	0.517168	0.911555	1	1.427581	0.027039
T12-WVNSDW	4	1.02879	1.4803	0.152495	0.434081	0.788069	0.31919	0.399736	0.497377	0.978344	1	1.365293	0.02209

Leaching Solution Results for SPS Glass in 0.25M $FeCl_3$

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-012	3	2.93	237	68.9	11587	192	74.6	123	0.11	315	136	654	0	2.47	3.10
T1-013	3	10.7	189	54.5	11869	151	59.1	98.8	0.104	245	131	497	0		2.61
T1-014	3	9.21	186	54	12108	150	58.1	97.3	0.123	242	133	497	0		2.61
T2-012	7	17.7	171	50.1	11874	133	54.5	89.8	0.119	231	135	446	0	2.47	2.75
T2-013	7	12.5	140	40.8	12212	107	44.1	73	0.113	185	128	360	0		2.59
T2-014	7	24.7	163	48.1	11904	126	52.8	85.5	0.11	217	134	428	0		2.69
T3-012	10	22.9	205	60.2	11872	168	65.9	109	0.121	278	139	552	0	2.42	2.66
T3-013	10	20.7	194	56.3	11976	157	62.3	103	0.099	262	138	515	0		2.70
T3-014	10	13.2	205	58.4	11811	165	64.6	108	0.109	273	137	539	0		2.76
T4-012	14	61.5	141	40.7	12351	113	44.7	74.5	0.104	196	146	372	0	2.21	2.48
T4-013	14	37.5	149	42.4	12401	116	47	76.8	0.119	203	144	393	0		2.49
T4-014	14	50.2	153	43.8	12437	115	48.6	81.3	0.105	212	145	409	0		2.51
T5-012	17	77.2	179	53.3	12042	133	58	91.3	0.139	276	139	483	0	2.16	2.50
T5-013	17	48.7	194	56.5	11987	147	62.7	97.7	0.14	297	136	523	0		2.63
T5-014	17	57.2	196	57.9	11836	148	63.6	99	0.135	301	135	529	0		2.59
T6-012	21	107	138	42.2	12334	103	45.3	74.3	0.127	216	142	372	0	2.30	2.24
T6-013	21	63.3	126	38.4	12671	95	41.4	68.7	0.129	196	131	335	0		2.32
T6-014	21	69.7	123	38.7	12720	91.6	40.4	67	0.143	191	132	325	0		2.27
T7-012	24	123	148	43.2	12270	112	46.9	74.5	0.123	237	143	405	0	2.27	2.12
T7-013	24	107	160	47.2	12299	123	51.3	80.7	0.114	256	141	441	0		2.28
T7-014	24	119	159	47.2	12219	121	51.6	80.4	0.12	257	145	445	0		2.25
T8-012	28	139	122	40.6	12537	98.6	41.8	66.5	0.133	165	147	323	0	2.18	1.99
T8-013	28	121	136	45.4	12540	111	47.1	74.4	0.153	183	148	362	0		2.21
T8-014	28	137	135	44.6	12318	110	46.8	73.4	0.121	184	147	364	0		2.15
T9-012	31	166	128	36.4	11981	92	39.4	63.3	0.123	236	149	331	0.05	2.18	1.80
T9-013	31	154	147	42.3	11845	106	46.3	73.2	0.117	271	147	392	0.05		2.08
T9-014	31	169	149	41.6	11893	108	46.2	72.7	0.134	271	148	389	0.05		2.02
T10-012	35	102	72.5	21.3	12779	59.6	22.4	37.4	0.13	149	147	245	0.05	2.91	2.04
T10-013	35	94.8	80.7	24.2	12712	66.6	25.3	41.7	0.139	168	143	276	0.05		2.30
T10-014	35	145	96.1	28.7	13178	80.7	30.2	49.2	0.157	204	144	319	0.05		2.17
T11-012	38	105	76	23.2	12442	60	24.3	40.2	0.119	147	140	255	0.05	2.62	1.67
T11-013	38	143	86.2	26.2	12613	68.9	27.6	45.4	0.128	172	147	295	0.05		1.85
T11-014	38	131	84.4	25.2	12414	66.4	26.9	43.9	0.124	167	142	284	0.05		1.78
T12-012	42	66.2	50.9	14.8	13206	39.9	16.2	26.6	0.12	104	138	161	0.05	2.54	1.60
T12-013	42	103	54	16.2	12967	43.6	17.1	28.5	0.124	116	143	167	0.05		1.70
T12-014	42	91.8	57.2	17	13018	46.2	18.3	29.9	0.114	123	141	178	0.05		1.67

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-012	133.0395	9486.542	9365.049	151721.9	9338.034	8817.967	9490.909	#DIV/0!	10315.64	524.0848	9654.745	0
T1-013	485.844	7565.217	7407.767	155414.4	7343.974	6985.816	7623.592	#DIV/0!	8023.272	504.817	7337.016	0
T1-014	418.1891	7445.135	7339.806	158543.9	7295.339	6867.612	7507.849	#DIV/0!	7925.028	512.5241	7337.016	0
T2-012	803.6859	6844.72	6809.709	155479.9	6468.534	6442.08	6929.135	#DIV/0!	7564.799	520.2312	6584.123	0
T2-013	567.5748	5603.865	5545.631	159905.7	5204.008	5212.766	5632.816	#DIV/0!	6058.389	493.2563	5314.539	0
T2-014	1121.528	6524.5	6537.864	155872.7	6128.085	6241.135	6597.339	#DIV/0!	7106.327	516.3776	6318.396	0
T3-012	1039.797	8205.659	8182.524	155453.7	8170.779	7789.598	8410.643	#DIV/0!	9103.958	535.6455	8148.959	0
T3-013	939.9038	7765.355	7652.427	156815.5	7635.788	7364.066	7947.672	#DIV/0!	8579.989	531.7919	7602.743	0
T3-014	599.359	8205.659	7937.864	154655	8024.873	7635.934	8333.481	#DIV/0!	8940.217	527.9383	7957.046	0
T4-012	2792.468	5643.892	5532.039	161725.8	5495.822	5283.688	5748.559	#DIV/0!	6418.618	562.6204	5491.69	0
T4-013	1702.724	5964.113	5763.107	162380.5	5641.729	5555.556	5926.031	#DIV/0!	6647.854	554.9133	5801.705	0
T4-014	2279.38	6124.224	5953.398	162851.9	5593.093	5744.681	6273.259	#DIV/0!	6942.586	558.7669	6037.907	0
T5-012	3505.342	7164.941	7244.66	157679.7	6468.534	6855.792	7044.878	#DIV/0!	9038.462	535.6455	7130.34	0
T5-013	2211.271	7765.355	7679.612	156959.5	7149.432	7411.348	7538.714	#DIV/0!	9726.171	524.0848	7720.844	0
T5-014	2597.222	7845.411	7869.903	154982.3	7198.068	7517.73	7639.024	#DIV/0!	9857.163	520.2312	7809.419	0
T6-012	4858.44	5523.81	5735.922	161503.2	5009.466	5354.61	5733.126	#DIV/0!	7073.579	547.2062	5491.69	0
T6-013	2874.199	5043.478	5219.417	165915.9	4620.381	4893.617	5301.02	#DIV/0!	6418.618	504.817	4945.474	0
T6-014	3164.797	4923.395	5260.194	166557.5	4455.02	4775.414	5169.845	#DIV/0!	6254.877	508.6705	4797.848	0
T7-012	5584.936	5924.086	5871.845	160665.2	5447.186	5543.735	5748.559	#DIV/0!	7761.288	551.0597	5978.856	0
T7-013	4858.44	6404.417	6415.534	161044.9	5982.178	6063.83	6226.962	#DIV/0!	8383.501	543.3526	6510.31	0
T7-014	5403.312	6364.389	6415.534	159997.4	5884.907	6099.291	6203.814	#DIV/0!	8416.249	558.7669	6569.36	0
T8-012	6311.432	4883.368	5518.447	164161.3	4795.469	4940.898	5131.264	#DIV/0!	5403.428	566.474	4768.322	0
T8-013	5494.124	5443.754	6170.874	164200.6	5398.551	5567.376	5740.843	#DIV/0!	5992.893	570.3276	5344.064	0
T8-014	6220.62	5403.727	6062.136	161293.7	5349.915	5531.915	5663.681	#DIV/0!	6025.641	566.474	5373.589	0
T9-012	7537.393	5123.533	4947.573	156881	4474.474	4657.21	4884.346	#DIV/0!	7728.54	574.1811	4886.423	48.27316
T9-013	6992.521	5884.058	5749.515	155100.2	5155.373	5472.813	5648.248	#DIV/0!	8874.721	566.474	5786.942	48.27316
T9-014	7673.611	5964.113	5654.369	155728.7	5252.644	5460.993	5609.667	#DIV/0!	8874.721	570.3276	5742.654	48.27316
T10-012	4631.41	2902.001	2895.146	167330.1	2898.681	2647.754	2885.854	#DIV/0!	4879.459	566.474	3616.839	48.27316
T10-013	4304.487	3230.228	3289.32	166452.8	3239.13	2990.544	3217.65	#DIV/0!	5501.672	551.0597	4074.48	48.27316
T10-014	6583.868	3846.653	3900.971	172554.7	3924.892	3569.74	3796.364	#DIV/0!	6680.602	554.9133	4709.272	48.27316
T11-012	4767.628	3042.098	3153.398	162917.4	2918.136	2872.34	3101.907	#DIV/0!	4813.963	539.499	3764.465	48.27316
T11-013	6493.056	3450.38	3561.165	165156.5	3350.992	3262.411	3503.149	#DIV/0!	5632.664	566.474	4354.969	48.27316
T11-014	5948.184	3378.33	3425.243	162550.7	3229.403	3179.669	3387.406	#DIV/0!	5468.924	547.2062	4192.581	48.27316
T12-012	3005.876	2037.405	2011.65	172921.3	1940.56	1914.894	2052.506	#DIV/0!	3405.797	531.7919	2376.78	48.27316
T12-013	4676.816	2161.491	2201.942	169791.8	2120.512	2021.277	2199.113	#DIV/0!	3798.774	551.0597	2465.355	48.27316
T12-014	4168.269	2289.579	2310.68	170459.6	2246.964	2163.121	2307.14	#DIV/0!	4028.01	543.3526	2627.744	48.27316

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSHCL2	3	345.6909	8165.631	8037.54	155226.7	7992.449	7557.132	8207.45	#DIV/0!	8754.645	513.8086	8109.593	0
T2-SRSHCL2	7	830.9295	6324.362	6297.735	157086.1	5933.542	5965.327	6386.43	#DIV/0!	6909.838	509.955	6072.353	0
T3-SRSHCL2	10	859.6866	8058.891	7924.272	155641.4	7943.813	7596.533	8230.599	#DIV/0!	8874.721	531.7919	7902.916	0
T4-SRSHCL2	14	2258.191	5910.743	5749.515	162319.4	5576.881	5527.975	5982.616	#DIV/0!	6669.686	558.7669	5777.1	0
T5-SRSHCL2	17	2771.278	7591.902	7598.058	156540.5	6938.678	7261.623	7407.539	#DIV/0!	9540.598	526.6538	7553.534	0
T6-SRSHCL2	21	3632.479	5163.561	5405.178	164658.9	4694.956	5007.88	5401.33	#DIV/0!	6582.358	520.2312	5078.337	0
T7-SRSHCL2	24	5282.229	6230.964	6234.304	160569.2	5771.424	5902.285	6059.778	#DIV/0!	8187.012	551.0597	6352.842	0
T8-SRSHCL2	28	6008.725	5243.616	5917.152	163218.5	5181.312	5346.73	5511.929	#DIV/0!	5807.321	567.7585	5161.992	0
T9-SRSHCL2	31	7401.175	5657.235	5450.485	155903.3	4960.83	5197.006	5380.754	#DIV/0!	8492.661	570.3276	5472.007	48.27316
T10-SRSHCL2	35	5173.255	3326.294	3361.812	168779.2	3354.235	3069.346	3299.956	#DIV/0!	5687.245	557.4823	4133.53	48.27316
T11-SRSHCL2	38	5736.289	3290.269	3379.935	163541.5	3166.177	3104.807	3330.82	#DIV/0!	5305.184	551.0597	4104.005	48.27316
T12-SRSHCL2	42	3950.321	2162.825	2174.757	171057.6	2102.679	2033.097	2186.253	#DIV/0!	3744.194	542.0681	2489.96	48.27316

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSHCL2	3	345.6909	8165.631	8037.54	155226.7	7992.449	7557.132	8207.45	#DIV/0!	8754.645	513.8086	8109.593	0
T2-SRSHCL2	7	1176.62	14489.99	14335.28	312312.9	13925.99	13522.46	14593.88	#DIV/0!	15664.48	1023.764	14181.95	0
T3-SRSHCL2	10	2036.307	22548.88	22259.55	467954.3	21869.8	21118.99	22824.48	#DIV/0!	24539.2	1555.556	22084.86	0
T4-SRSHCL2	14	4294.498	28459.63	28009.06	630273.7	27446.69	26646.97	28807.1	#DIV/0!	31208.89	2114.322	27861.96	0
T5-SRSHCL2	17	7065.776	36051.53	35607.12	786814.2	34385.36	33908.59	36214.63	#DIV/0!	40749.49	2640.976	35415.5	0
T6-SRSHCL2	21	10698.25	41215.09	41012.3	951473.1	39080.32	38916.47	41615.96	#DIV/0!	47331.85	3161.207	40493.83	0
T7-SRSHCL2	24	15980.48	47446.05	47246.6	1112042	44851.74	44818.75	47675.74	#DIV/0!	55518.86	3712.267	46846.68	0
T8-SRSHCL2	28	21989.21	52689.67	53163.75	1275261	50033.05	50165.48	53187.67	#DIV/0!	61326.18	4280.026	52008.67	0
T9-SRSHCL2	31	29390.38	58346.91	58614.24	1431164	54993.89	55362.49	58568.43	#DIV/0!	69818.84	4850.353	57480.67	48.27316
T10-SRSHCL2	35	34563.64	61673.2	61976.05	1599943	58348.12	58431.84	61868.38	#DIV/0!	75506.09	5407.836	61614.2	96.54631
T11-SRSHCL2	38	40299.93	64963.47	65355.99	1763485	61514.3	61536.64	65199.2	#DIV/0!	80811.27	5958.895	65718.21	144.8195
T12-SRSHCL2	42	44250.25	67126.29	67530.74	1934542	63616.98	63569.74	67385.45	#DIV/0!	84555.46	6500.963	68208.17	193.0926

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-SRSHCL2	3	0.057615	1.360939	1.33959	25.87112	1.332075	1.259522	1.367908	#DIV/0!	1.459108	0.085635	1.351599	0	2.47	2.773333
T2-SRSHCL2	4	0.103866	0.790545	0.787217	19.63576	0.741693	0.745666	0.798304	#DIV/0!	0.86373	0.063744	0.759044	0	2.47	2.676667
T3-SRSHCL2	3	0.143281	1.343149	1.320712	25.94023	1.323969	1.266089	1.371766	#DIV/0!	1.47912	0.088632	1.317153	0	2.42	2.706667
T4-SRSHCL2	4	0.282274	0.738843	0.718689	20.28993	0.69711	0.690997	0.747827	#DIV/0!	0.833711	0.069846	0.722138	0	2.21	2.493333
T5-SRSHCL2	3	0.46188	1.265317	1.266343	26.09009	1.156446	1.210271	1.23459	#DIV/0!	1.5901	0.087776	1.258922	0	2.16	2.573333
T6-SRSHCL2	4	0.45406	0.645445	0.675647	20.58236	0.586869	0.625985	0.675166	#DIV/0!	0.822795	0.065029	0.634792	0	2.3	2.276667
T7-SRSHCL2	3	0.880372	1.038494	1.039051	26.76153	0.961904	0.983714	1.009963	#DIV/0!	1.364502	0.091843	1.058807	0	2.27	2.216667
T8-SRSHCL2	4	0.751091	0.655452	0.739644	20.40232	0.647664	0.668341	0.688991	#DIV/0!	0.725915	0.07097	0.645249	0	2.18	2.116667
T9-SRSHCL2	3	1.233529	0.942872	0.908414	25.98388	0.826805	0.866168	0.896792	#DIV/0!	1.415443	0.095055	0.912001	0.008046	2.18	1.966667
T10-SRSHCL2	4	0.646657	0.415787	0.420227	21.0974	0.419279	0.383668	0.412494	#DIV/0!	0.710906	0.069685	0.516691	0.006034	2.91	2.17
T11-SRSHCL2	3	0.956048	0.548378	0.563323	27.25692	0.527696	0.517468	0.555137	#DIV/0!	0.884197	0.091843	0.684001	0.008046	2.62	1.766667
T12-SRSHCL2	4	0.49379	0.270353	0.271845	21.3822	0.262835	0.254137	0.273282	#DIV/0!	0.468024	0.067759	0.311245	0.006034	2.54	1.656667

Element/Si Leach rate ratio

2.28
± 0.37

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSHCL2	3	0.672801	15.89236	15.64306	302.1101	15.5553	14.70807	15.97375	#DIV/0!	17.03873	1	15.78329	0
T2-SRSHCL2	4	1.629417	12.4018	12.34959	308.0391	11.63542	11.69775	12.52352	#DIV/0!	13.5499	1	11.90762	0
T3-SRSHCL2	3	1.616585	15.15422	14.90108	292.6735	14.93782	14.28478	15.4771	#DIV/0!	16.68833	1	14.86092	0
T4-SRSHCL2	4	4.041383	10.57819	10.28965	290.4958	9.980694	9.893169	10.70682	#DIV/0!	11.93644	1	10.33902	0
T5-SRSHCL2	3	5.26205	14.41536	14.42704	297.2361	13.17503	13.78823	14.06529	#DIV/0!	18.1155	1	14.3425	0
T6-SRSHCL2	4	6.982431	9.925512	10.38995	316.511	9.024748	9.626259	10.38256	#DIV/0!	12.65275	1	9.761692	0
T7-SRSHCL2	3	9.585584	11.30724	11.3133	291.3825	10.47332	10.71079	10.99659	#DIV/0!	14.85685	1	11.52841	0
T8-SRSHCL2	4	10.58324	9.235645	10.42195	287.4788	9.125908	9.41726	9.708228	#DIV/0!	10.2285	1	9.091879	0
T9-SRSHCL2	3	12.97706	9.919273	9.556763	273.3574	8.698213	9.112317	9.434498	#DIV/0!	14.89085	1	9.594498	0.008046
T10-SRSHCL2	4	9.279675	5.966636	6.030348	302.7525	6.016755	5.505728	5.91939	#DIV/0!	10.20166	1	7.414639	0.006034
T11-SRSHCL2	3	10.40956	5.970803	6.133519	296.7764	5.745615	5.634248	6.044391	#DIV/0!	9.627239	1	7.447478	0.008046
T12-SRSHCL2	4	7.287499	3.989951	4.011963	315.5647	3.878994	3.75063	4.03317	#DIV/0!	6.907239	1	4.593445	0.006034

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-015	3	0.752	390	40.2	11446	190	7.77	31	0.12	453	78.4	969	0	2.47	3.18
T1-016	3	1.06	395	39	11552	194	7.52	30.1	0.128	457	81	958	0		3.08
T1-017	3	0.637	419	43.1	11302	204	7.6	32.8	0.128	496	81.7	1070	0		3.22
T2-015	7	1.05	289	23.8	11893	139	3.52	18	0.135	346	83.8	689	0	2.47	3.13
T2-016	7	2.42	269	20.3	11852	129	3.09	15.5	0.122	335	91.4	650	0		3.09
T2-017	7	1.39	296	21.7	11872	142	3.13	16.5	0.115	370	90.6	724	0		3.11
T3-015	10	0.878	345	30	11868	172	3.84	22.7	0.118	402	97.7	839	0	2.42	2.97
T3-016	10	1.23	328	29.2	12031	160	3.99	22.4	0.122	385	94.1	804	0		2.91
T3-017	10	1.54	299	25.2	12086	146	3.54	19.5	0.125	367	94.7	732	0		2.85
T4-015	14	7.92	220	16.4	12524	104	2.48	13.8	0.108	339	114	568	0	2.21	2.63
T4-016	14	4.19	229	18.5	12335	109	2.79	14.8	0.118	315	103	569	0		2.61
T4-017	14	9.64	215	15.9	12300	102	2.48	12.8	0.101	309	112	540	0		2.58
T5-015	17	28	273	13.2	12179	131	2.92	11.9	0.127	446	130	722	0.05	2.16	2.80
T5-016	17	8.94	274	18.6	12356	126	3.19	15.8	0.153	387	110	678	0		2.76
T5-017	17	26.3	284	15.7	12090	134	3.37	14.4	0.153	435	129	728	0.05		2.82
T6-015	21	99.2	193	13	12569	93.5	3.4	10.9	0.142	328	154	502	0	2.30	2.39
T6-016	21	72.1	172	11.8	12754	85.4	2.51	9.79	0.118	340	149	463	0		2.45
T6-017	21	77.3	183	12.6	12756	88.8	2.86	10.2	0.12	319	148	475	0.05		2.38
T7-015	24	86.1	214	17.2	12444	98.9	4.47	14.1	0.122	322	150	538	0	2.27	2.33
T7-016	24	74.6	210	14.6	12681	101	3.55	12.2	0.119	335	147	543	0		2.36
T7-017	24	80.1	217	16.3	12549	108	3.95	13.4	0.103	333	151	556	0		2.34
T8-015	28	129	180	21.1	12670	89.6	6.24	16.5	0.15	225	166	420	0	2.18	2.25
T8-016	28	125	182	19	12737	92.7	5.53	15.3	0.156	243	165	436	0		2.27
T8-017	28	140	188	21.7	12479	93.3	6.55	17.1	0.144	242	166	438	0		2.23
T9-015	31	159	219	26	12219	87.9	8.78	21.5	0.14	332	166	485	0.005	2.18	2.23
T9-016	31	161	225	25.6	12181	92.4	8.66	21.5	0.129	349	168	506	0.005		2.24
T9-017	31	180	232	28.8	11835	92.6	9.75	23.9	0.137	349	165	516	0.005		2.20
T10-015	35	119	145	18.2	12765	67.2	5.4	15.2	0.14	242	168	324	0.05	2.10	2.50
T10-016	35	136	158	19.8	12754	73.9	6.06	16.3	0.133	261	170	357	0.05		2.49
T10-017	35	142	158	20.8	12599	72.7	6.5	17.4	0.143	260	168	353	0.05		2.46
T11-015	38	135	169	23.5	12738	73.3	7.38	19.1	0.138	208	165	362	0.05	2.62	2.25
T11-016	38	142	177	23.9	12674	76.6	7.65	19.6	0.138	219	166	378	0.05		2.24
T11-017	38	163	186	26.9	12461	80.3	8.83	22.1	0.131	229	165	400	0.009		2.22
T12-015	42	157	141	21	12938	62.2	7.79	17.7	0.141	181	170	295	0.05	2.54	2.17
T12-016	42	137	135	19.6	12918	59.6	7.14	16.5	0.133	172	164	282	0.05		2.18
T12-017	42	143	136	20.4	12951	59.7	7.41	17.2	0.126	172	165	281	0.05		2.18

Leaching Solution Results for WVNS Glass in 0.25 M Fe Cl2

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-015	21.29602	10946.57	8527.273	136489.4	8477.063	7194.444	7846.702	13.67357	10600.45	370.8609	10938.39	0
T1-016	30.01832	11086.91	8272.727	137753.4	8655.528	6962.963	7618.895	14.58514	10694.05	383.1599	10814.22	0
T1-017	18.03931	11760.55	9142.424	134772.2	9101.689	7037.037	8302.317	14.58514	11606.67	386.4711	12078.51	0
T2-015	29.73513	8111.692	5048.485	141819.7	6201.641	3259.259	4556.15	15.38276	8096.589	396.4049	7777.656	0
T2-016	68.5324	7550.329	4306.061	141330.8	5755.48	2861.111	3923.351	13.90146	7839.183	432.3557	7337.412	0
T2-017	39.36365	8308.169	4603.03	141569.3	6335.489	2898.148	4176.471	13.10384	8658.203	428.5714	8172.748	0
T3-015	24.86423	9683.508	6363.636	141521.6	7673.973	3555.556	5745.811	13.44567	9407.02	462.157	9470.905	0
T3-016	34.83258	9206.349	6193.939	143465.3	7138.579	3694.444	5669.875	13.90146	9009.211	445.1277	9075.814	0
T3-017	43.61153	8392.373	5345.455	144121.2	6513.954	3277.778	4935.829	14.2433	8588.001	447.9659	8263.054	0
T4-015	224.2879	6174.99	3478.788	149344.1	4640.077	2296.296	3493.048	12.30621	7932.786	539.2621	6411.769	0
T4-016	118.6573	6427.604	3924.242	147090.4	4863.157	2583.333	3746.168	13.44567	7371.173	487.228	6423.057	0
T4-017	272.9968	6034.65	3372.727	146673	4550.844	2296.296	3239.929	11.50859	7230.769	529.8013	6095.696	0
T5-015	792.9369	7662.602	2800	145230.1	5844.712	2703.704	3012.121	14.47119	10436.64	614.948	8150.171	5.279876
T5-016	253.1734	7690.67	3945.455	147340.8	5621.631	2953.704	3999.287	17.4338	9056.012	520.3406	7653.485	0
T5-017	744.7943	7971.351	3330.303	144168.9	5978.56	3120.37	3644.92	17.4338	10179.24	610.2176	8217.901	5.279876
T6-015	2809.262	5417.151	2757.576	149880.8	4171.607	3148.148	2759.002	16.18039	7675.38	728.4768	5666.739	0
T6-016	2041.812	4827.72	2503.03	152086.8	3810.217	2324.074	2478.039	13.44567	7956.186	704.825	5226.495	0
T6-017	2189.072	5136.469	2672.727	152110.7	3961.912	2648.148	2581.818	13.67357	7464.775	700.0946	5361.955	5.279876
T7-015	2438.281	6006.581	3648.485	148390.2	4412.534	4138.889	3568.984	13.90146	7534.976	709.5553	6073.119	0
T7-016	2112.61	5894.309	3096.97	151216.3	4506.228	3287.037	3088.057	13.55962	7839.183	695.3642	6129.561	0
T7-017	2268.366	6090.786	3457.576	149642.3	4818.541	3657.407	3391.8	11.73648	7792.382	714.2857	6276.309	0
T8-015	3653.173	5052.265	4475.758	151085.1	3997.605	5777.778	4176.471	17.09196	5265.123	785.2412	4741.097	0
T8-016	3539.897	5108.401	4030.303	151884.1	4135.914	5120.37	3872.727	17.77564	5686.333	780.5109	4921.71	0
T8-017	3964.684	5276.81	4603.03	148807.5	4162.684	6064.815	4328.342	16.40828	5662.933	785.2412	4944.287	0
T9-015	4502.749	6146.922	5515.152	145707.1	3921.757	8129.63	5442.068	15.9525	7768.982	785.2412	5474.838	0.527988
T9-016	4559.387	6315.331	5430.303	145254	4122.53	8018.519	5442.068	14.69909	8166.791	794.702	5711.893	0.527988
T9-017	5097.451	6511.808	6109.091	141128.1	4131.453	9027.778	6049.554	15.61066	8166.791	780.5109	5824.776	0.527988
T10-015	3369.982	4069.88	3860.606	152218	2998.203	5000	3847.415	15.9525	5662.933	794.702	3657.418	5.279876
T10-016	3851.408	4434.766	4200	152086.8	3297.131	5611.111	4125.847	15.15487	6107.543	804.1627	4029.932	5.279876
T10-017	4021.323	4434.766	4412.121	150238.5	3243.592	6018.519	4404.278	16.29433	6084.142	794.702	3984.779	5.279876
T11-015	3823.088	4743.515	4984.848	151896	3270.362	6833.333	4834.581	15.7246	4867.314	780.5109	4086.374	5.279876
T11-016	4021.323	4968.06	5069.697	151132.8	3417.595	7083.333	4961.141	15.7246	5124.72	785.2412	4266.987	5.279876
T11-017	4616.025	5220.674	5706.061	148592.9	3582.675	8175.926	5593.939	14.92698	5358.725	780.5109	4515.33	0.950378
T12-015	4446.11	3957.607	4454.545	154280.9	2775.123	7212.963	4480.214	16.06644	4235.499	804.1627	3330.056	5.279876
T12-016	3879.727	3789.199	4157.576	154042.5	2659.121	6611.111	4176.471	15.15487	4024.894	775.7805	3183.308	5.279876
T12-017	4049.642	3817.267	4327.273	154436	2663.582	6861.111	4353.654	14.35725	4024.894	780.5109	3172.02	5.279876

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL2	3	23.11789	11264.68	8647.475	136338.3	8744.76	7064.815	7922.638	14.28128	10967.06	380.164	11277.04	0
T2-WVNSHCL2	7	45.87706	7990.063	4652.525	141573.3	6097.537	3006.173	4218.657	14.12935	8197.992	419.1107	7762.605	0
T3-WVNSHCL2	10	34.43612	9094.077	5967.677	143036	7108.835	3509.259	5450.505	13.86348	9001.411	451.7502	8936.591	0
T4-WVNSHCL2	14	205.314	6212.415	3591.919	147702.5	4684.693	2391.975	3493.048	12.42016	7511.576	518.7638	6310.174	0
T5-WVNSHCL2	17	596.9682	7774.874	3358.586	145579.9	5814.968	2925.926	3552.109	16.44626	9890.631	581.8354	8007.186	3.519918
T6-WVNSHCL2	21	2346.716	5127.113	2644.444	151359.4	3981.245	2706.79	2606.286	14.43321	7698.78	711.1321	5418.396	1.759959
T7-WVNSHCL2	24	2273.086	5997.225	3401.01	149749.6	4579.101	3694.444	3349.614	13.06585	7722.181	706.4018	6159.663	0
T8-WVNSHCL2	28	3719.251	5145.825	4369.697	150592.3	4098.734	5654.321	4125.847	17.09196	5538.13	783.6645	4869.031	0
T9-WVNSHCL2	31	4719.862	6324.687	5684.848	144029.7	4058.58	8391.975	5644.563	15.42075	8034.188	786.818	5670.502	0.527988
T10-WVNSHCL2	35	3747.571	4313.137	4157.576	151514.4	3179.642	5543.21	4125.847	15.80057	5951.539	797.8556	3890.71	5.279876
T11-WVNSHCL2	38	4153.479	4977.416	5253.535	150540.6	3423.544	7364.198	5129.887	15.45873	5116.92	782.0877	4289.564	3.83671
T12-WVNSHCL2	42	4125.16	3854.691	4313.131	154253.1	2699.275	6895.062	4336.78	15.19285	4095.096	786.818	3228.461	5.279876

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL2	3	23.11789	11264.68	8647.475	136338.3	8744.76	7064.815	7922.638	14.28128	10967.06	380.164	11277.04	0
T2-WVNSHCL2	7	68.99495	19254.74	13300	277911.6	14842.3	10070.99	12141.3	28.41063	19165.05	799.2747	19039.64	0
T3-WVNSHCL2	10	103.4311	28348.82	19267.68	420947.6	21951.13	13580.25	17591.8	42.27411	28166.46	1251.025	27976.23	0
T4-WVNSHCL2	14	308.7451	34561.23	22859.6	568650.1	26635.82	15972.22	21084.85	54.69427	35678.04	1769.789	34286.41	0
T5-WVNSHCL2	17	905.7133	42336.11	26218.18	714230.1	32450.79	18898.15	24636.96	71.14053	45568.67	2351.624	42293.59	3.519918
T6-WVNSHCL2	21	3252.429	47463.22	28862.63	865589.5	36432.04	21604.94	27243.24	85.57374	53267.45	3062.756	47711.99	5.279876
T7-WVNSHCL2	24	5525.514	53460.45	32263.64	1015339	41011.14	25299.38	30592.86	98.6396	60989.63	3769.158	53871.65	5.279876
T8-WVNSHCL2	28	9244.766	58606.27	36633.33	1165931	45109.87	30953.7	34718.7	115.7316	66527.76	4552.822	58740.68	5.279876
T9-WVNSHCL2	31	13964.63	64930.96	42318.18	1309961	49168.45	39345.68	40363.27	131.1523	74561.95	5339.64	64411.19	5.807864
T10-WVNSHCL2	35	17712.2	69244.1	46475.76	1461475	52348.1	44888.89	44489.11	146.9529	80513.48	6137.496	68301.9	11.08774
T11-WVNSHCL2	38	21865.68	74221.51	51729.29	1612016	55771.64	52253.09	49619	162.4116	85630.4	6919.584	72591.46	14.92445
T12-WVNSHCL2	42	25990.84	78076.2	56042.42	1766269	58470.91	59148.15	53955.78	177.6045	89725.5	7706.402	75819.92	20.20433

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-WVNSHCL2	3	0.00385	1.87745	1.441246	22.72306	1.45746	1.177469	1.32044	0.00238	1.827843	0.063361	1.879506	0	2.47	3.16
T2-WVNSHCL2	4	0.00573	0.99876	0.581566	17.69666	0.762192	0.375772	0.527332	0.001766	1.024749	0.052389	0.970326	0	2.47	3.11
T3-WVNSHCL2`	3	0.00574	1.51568	0.994613	23.83934	1.184806	0.584877	0.908418	0.002311	1.500235	0.075292	1.489432	0	2.42	2.91
T4-WVNSHCL2	4	0.02566	0.77655	0.44899	18.46282	0.585587	0.298997	0.436631	0.001553	0.938947	0.064845	0.788772	0	2.21	2.606667
T5-WVNSHCL2	3	0.09949	1.29581	0.559764	24.26332	0.969161	0.487654	0.592018	0.002741	1.648439	0.096973	1.334531	0.00059	2.16	2.793333
T6-WVNSHCL2	4	0.29334	0.64089	0.330556	18.91993	0.497656	0.338349	0.325786	0.001804	0.962348	0.088892	0.6773	0.00022	2.3	2.406667
T7-WVNSHCL2	3	0.37885	0.99954	0.566835	24.95826	0.763184	0.615741	0.558269	0.002178	1.28703	0.117734	1.026611	0	2.27	2.343333
T8-WVNSHCL2	4	0.46491	0.64323	0.546212	18.82403	0.512342	0.70679	0.515731	0.002136	0.692266	0.097958	0.608629	0	2.18	2.25
T9-WVNSHCL2	3	0.78664	1.05411	0.947475	24.00496	0.67643	1.398663	0.940761	0.00257	1.339031	0.131136	0.945084	8.8E-05	2.18	2.223333
T10-WVNSHCL2	4	0.46845	0.53914	0.519697	18.9393	0.397455	0.692901	0.515731	0.001975	0.743942	0.099732	0.486339	0.00066	2.1	2.483333
T11-WVNSHCL2	3	0.69225	0.82957	0.875589	25.0901	0.570591	1.227366	0.854981	0.002576	0.85282	0.130348	0.714927	0.00064	2.62	2.236667
T12-WVNSHCL2	4	0.51564	0.48184	0.539141	19.28164	0.337409	0.861883	0.542097	0.001899	0.511887	0.098352	0.403558	0.00066	2.54	2.176667

2.56
±0.35

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL2	3	0.06081	29.6311	22.7467	358.6303	23.0026	18.5836	20.84005	0.037566	28.84823	1	29.66361	0
T2-WVNSHCL2	4	0.10946	19.0643	11.10095	337.7944	14.54875	7.172742	10.06574	0.033713	19.56045	1	18.52161	0
T3-WVNSHCL2	3	0.07623	20.1308	13.21012	316.6263	15.73621	7.76814	12.06531	0.030688	19.92564	1	19.78215	0
T4-WVNSHCL2	4	0.39578	11.9754	6.923997	284.7202	9.030493	4.610914	6.733408	0.023942	14.47976	1	12.16387	0
T5-WVNSHCL2	3	1.02601	13.3627	5.772399	250.2081	9.994181	5.028787	6.105007	0.028266	16.99902	1	13.76194	0.00605
T6-WVNSHCL2	4	3.29997	7.20979	3.71864	212.8429	5.598461	3.806311	3.664982	0.020296	10.82609	1	7.619395	0.00247
T7-WVNSHCL2	3	3.21784	8.48982	4.814555	211.9893	6.48229	5.229948	4.741797	0.018496	10.93171	1	8.719773	0
T8-WVNSHCL2	4	4.74597	6.56636	5.57598	192.1642	5.230216	7.215232	5.264813	0.02181	7.066965	1	6.213158	0
T9-WVNSHCL2	3	5.99867	8.03831	7.225112	183.0534	5.158219	10.66571	7.173912	0.019599	10.21099	1	7.206879	0.00067
T10-WVNSHCL2	4	4.69705	5.40591	5.210938	189.9021	3.985235	6.947636	5.17117	0.019804	7.459419	1	4.876459	0.00662
T11-WVNSHCL2	3	5.31076	6.36427	6.717323	192.4856	4.377442	9.416077	6.559223	0.019766	6.542642	1	5.484761	0.00491
T12-WVNSHCL2	4	5.24284	4.89909	5.481739	196.0468	3.430622	8.763223	5.511795	0.019309	5.204629	1	4.103186	0.00671

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-018	3	441	882	251	4364	689	276	472	0.095	1282	144	2396	0	1.34	0.98
T1-019	3	436	870	252	4358	683	276	462	0.125	1267	144	2364	0		0.95
T1-020	3	438	874	249	4319	690	274	464	0.082	1288	145	2370	0		0.96
T2-018	7	154	230	64.7	8878	177	66.1	155	0.155	313	144	606	0	1.4	0.77
T2-019	7	146	229	65.6	8925	175	66.3	154	0.139	312	143	605	0		0.75
T2-020	7	171	257	72.6	8741	197	73.3	167	0.129	352	143	683	0		0.76
T3-018	10	297	352	101	8021	284	109	218	0.139	502	155	1000	0	1.42	0.67
T3-019	10	294	349	98.9	8019	279	107	214	0.137	504	154	1001	0		0.67
T3-020	10	305	361	103	7921	289	111	219	0.131	521	153	1034	0		0.67
T4-018	14	271	292	83	8259	223	93.6	184	0.123	405	150	816	0	1.28	0.68
T4-019	14	264	289	81.1	8293	218	92.2	182	0.133	397	147	797	0		0.67
T4-020	14	260	282	80.1	8385	213	90.7	179	0.135	386	148	781	0		0.68
T5-018	17	319	322	94.7	8151	241	108	207	0.155	503	145	909	0	1.27	0.88
T5-019	17	322	327	94.5	8222	241	108	207	0.164	515	148	933	0		0.88
T5-020	17	305	307	88.9	8399	229	102	199	0.157	485	147	873	0		0.83
T6-018	21	188	172	52.4	9283	128	58.4	133	0.147	253	139	455	0	1.48	0.75
T6-019	21	195	180	54.4	9349	134	60.7	137	0.156	265	139	477	0		0.74
T6-020	21	183	169	51.3	9323	125	57.1	131	0.166	248	139	444	0		0.73
T7-018	24	167	137	40.7	10212	101	46.3	109	0.139	212	156	365	0	1.49	0.73
T7-019	24	165	138	41.8	9494	100	47.3	108	0.148	209	149	375	0		0.73
T7-020	24	159	132	40.2	9601	98.4	45.5	104	0.141	200	148	359	0		0.74
T8-018	28	83.4	64.3	20.3	10138	52.9	22.3	75.6	0.179	103	146	201	0	1.44	0.73
T8-019	28	88.5	69.8	22.5	10135	57.8	24.8	78.8	0.186	116	145	221	0		0.72
T8-020	28	86.3	67.8	21.9	10031	56.1	24.2	78	0.167	112	144	210	0		0.72
T9-018	31	61.4	41.6	12.1	10060	31.4	14.1	59.5	0.169	74.5	148	128	0.005	1.46	0.76
T9-019	31	67.5	47	13.8	10059	36.2	16.2	62.4	0.147	85.2	148	149	0.005		0.7
T9-020	31	66.9	45.7	13.5	10080	35.4	15.8	62	0.166	83.1	147	145	0.005		0.74
T10-018	35	35.7	19.8	6.24	9788	14.5	6.19	39.2	0.131	34.9	143	59.5	0.05	1.48	0.74
T10-019	35	40.1	23.4	7.59	9750	17.8	7.26	41.3	0.128	42.3	142	72.3	0.05		0.74
T10-020	35	39.4	22.8	7.13	9770	17.4	7.17	41	0.125	41.2	142	70.6	0.05		0.73
T11-018	38	31.1	16.4	4.86	9846	10.2	5.1	36.2	0.122	24.8	145	48.1	0.005	1.49	0.75
T11-019	38	35.7	19	6.2	9972	13.1	6.41	38.5	0.129	32	146	53.7	0.006		0.75
T11-020	38	34.7	17.9	5.77	9812	12.5	6.2	37.8	0.11	30.9	143	51.4	0.006		0.75
T12-018	42	23.2	9.07	2.56	10028	4.88	2.86	31.4	0.114	12.2	135	21.9	0.05	1.53	0.74
T12-019	42	26	10.2	3.2	10132	6.54	3.64	32.7	0.106	16.5	134	29.1	0.05		0.73
T12-020	42	22	9.64	3.17	10134	6.51	3.55	32.7	0.116	16.4	135	28.9	0.05		0.72

Leaching Solution for SRS Glass in 0.25M Fe Cl3

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-018	20024.04	35304.35	34116.5	57142.86	33509.92	32624.11	36420.4	#DIV/0!	41983	554.9133	35371.21	0
T1-019	19797.01	34824.02	34252.43	57064.29	33218.11	32624.11	35648.78	#DIV/0!	41491.78	554.9133	34898.8	0
T1-020	19887.82	34984.13	33844.66	56553.62	33558.56	32387.71	35803.1	#DIV/0!	42179.49	558.7669	34987.38	0
T2-018	6992.521	9206.349	8794.175	116249.8	8608.5	7813.239	11960.09	#DIV/0!	10250.14	554.9133	8946.14	0
T2-019	6629.274	9166.322	8916.505	116865.3	8511.229	7836.879	11882.93	#DIV/0!	10217.39	551.0597	8931.378	0
T2-020	7764.423	10287.09	9867.961	114455.9	9581.212	8664.303	12886.03	#DIV/0!	11527.31	551.0597	10082.86	0
T3-018	13485.58	14089.72	13728.16	105028.2	13812.51	12884.16	16821.29	#DIV/0!	16439.52	597.3025	14762.61	0
T3-019	13349.36	13969.63	13442.72	105002	13569.33	12647.75	16512.64	#DIV/0!	16505.02	593.4489	14777.37	0
T3-020	13848.82	14449.97	14000	103718.7	14055.69	13120.57	16898.45	#DIV/0!	17061.73	589.5954	15264.54	0
T4-018	12305.02	11688.06	11281.55	108144.6	10845.74	11063.83	14197.78	#DIV/0!	13262.96	578.0347	12046.29	0
T4-019	11987.18	11567.98	11023.3	108589.8	10602.56	10898.35	14043.46	#DIV/0!	13000.98	566.474	11765.8	0
T4-020	11805.56	11287.78	10887.38	109794.4	10359.38	10721.04	13811.97	#DIV/0!	12640.75	570.3276	11529.6	0
T5-018	14484.51	12888.89	12871.84	106730.4	11721.18	12765.96	15972.51	#DIV/0!	16472.27	558.7669	13419.21	0
T5-019	14620.73	13089.03	12844.66	107660.1	11721.18	12765.96	15972.51	#DIV/0!	16865.25	570.3276	13773.51	0
T5-020	13848.82	12288.47	12083.5	109977.7	11137.55	12056.74	15355.21	#DIV/0!	15882.8	566.474	12887.76	0
T6-018	8536.325	6884.748	7122.33	121553	6225.356	6903.073	10262.53	#DIV/0!	8285.256	535.6455	6716.987	0
T6-019	8854.167	7204.969	7394.175	122417.2	6517.169	7174.941	10571.18	#DIV/0!	8678.233	535.6455	7041.764	0
T6-020	8309.295	6764.665	6972.816	122076.7	6079.449	6749.409	10108.2	#DIV/0!	8121.516	535.6455	6554.598	0
T7-018	7582.799	5483.782	5532.039	133717.4	4912.195	5472.813	8410.643	#DIV/0!	6942.586	601.1561	5388.352	0
T7-019	7491.987	5523.81	5681.553	124315.8	4863.559	5591.017	8333.481	#DIV/0!	6844.342	574.1811	5535.978	0
T7-020	7219.551	5283.644	5464.078	125716.9	4785.742	5378.251	8024.834	#DIV/0!	6549.61	570.3276	5299.776	0
T8-018	3786.859	2573.775	2759.223	132748.5	2572.823	2635.934	5833.437	#DIV/0!	3373.049	562.6204	2967.284	0
T8-019	4018.429	2793.927	3058.252	132709.2	2811.137	2931.442	6080.355	#DIV/0!	3798.774	558.7669	3262.536	0
T8-020	3918.536	2713.872	2976.699	131347.4	2728.457	2860.52	6018.625	#DIV/0!	3667.781	554.9133	3100.148	0
T9-018	2787.927	1665.148	1644.66	131727.1	1527.158	1666.667	4591.131	#DIV/0!	2439.73	570.3276	1889.614	4.827316
T9-019	3064.904	1881.297	1875.728	131714	1760.608	1914.894	4814.9	#DIV/0!	2790.134	570.3276	2199.629	4.827316
T9-020	3037.66	1829.262	1834.951	131989	1721.7	1867.612	4784.035	#DIV/0!	2721.363	566.474	2140.578	4.827316
T10-018	1620.994	792.5466	848.1553	128165.5	705.2161	731.6785	3024.745	#DIV/0!	1142.907	551.0597	878.3752	48.27316
T10-019	1820.78	936.646	1031.65	127667.9	865.7135	858.156	3186.785	#DIV/0!	1385.242	547.2062	1067.337	48.27316
T10-020	1788.996	912.6294	969.1262	127929.8	846.2593	847.5177	3163.636	#DIV/0!	1349.22	547.2062	1042.24	48.27316
T11-018	1412.126	656.4527	660.5825	128925	496.083	602.8369	2793.259	#DIV/0!	812.1516	558.7669	710.0814	4.827316
T11-019	1620.994	760.5245	842.7184	130574.8	637.1263	757.6832	2970.732	#DIV/0!	1047.938	562.6204	792.752	5.792779
T11-020	1575.588	716.4941	784.2718	128479.8	607.9449	732.8605	2916.718	#DIV/0!	1011.915	551.0597	758.798	5.792779
T12-018	1053.419	363.0504	347.9612	131308.1	237.3417	338.0615	2422.882	#DIV/0!	399.5262	520.2312	323.3011	48.27316
T12-019	1180.556	408.2816	434.9515	132669.9	318.0768	430.26	2523.193	#DIV/0!	540.3428	516.3776	429.5919	48.27316
T12-020	998.9316	385.8661	430.8738	132696.1	316.6177	419.6217	2523.193	#DIV/0!	537.068	520.2312	426.6394	48.27316

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSHCL3	3	19902.96	35037.5	34071.2	56920.26	33428.86	32545.31	35957.43	#DIV/0!	41884.75	556.1978	35085.8	0
T2-SRSHCL3	7	7128.739	9553.255	9192.88	115857	8900.313	8104.807	12243.02	#DIV/0!	10664.95	552.3443	9320.126	0
T3-SRSHCL3	10	13561.25	14169.77	13723.62	104583	13812.51	12884.16	16744.12	#DIV/0!	16668.76	593.4489	14934.84	0
T4-SRSHCL3	14	12032.59	11514.61	11064.08	108842.9	10602.56	10894.41	14017.74	#DIV/0!	12968.23	571.6121	11780.56	0
T5-SRSHCL3	17	14318.02	12755.46	12600	108122.7	11526.64	12529.55	15766.74	#DIV/0!	16406.77	565.1895	13360.16	0
T6-SRSHCL3	21	8566.595	6951.461	7163.107	122015.6	6273.991	6942.474	10313.97	#DIV/0!	8361.669	535.6455	6771.116	0
T7-SRSHCL3	24	7431.446	5430.412	5559.223	127916.7	4853.832	5480.693	8256.319	#DIV/0!	6778.846	581.8882	5408.035	0
T8-SRSHCL3	28	3907.942	2693.858	2931.392	132268.3	2704.139	2809.299	5977.472	#DIV/0!	3613.201	558.7669	3109.989	0
T9-SRSHCL3	31	2963.497	1791.902	1785.113	131810	1669.822	1816.391	4730.022	#DIV/0!	2650.409	569.043	2076.607	4.827316
T10-SRSHCL3	35	1743.59	880.6073	949.644	127921.1	805.7296	812.4507	3125.055	#DIV/0!	1292.456	548.4907	995.9839	48.27316
T11-SRSHCL3	38	1536.236	711.1571	762.5243	129326.5	580.3847	697.7935	2893.57	#DIV/0!	957.3346	557.4823	753.8772	5.470958
T12-SRSHCL3	42	1077.635	385.7327	404.5955	132224.7	290.6787	395.9811	2489.756	#DIV/0!	492.3123	518.9467	393.1775	48.27316

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSHCL3	3	19902.96	35037.5	34071.2	56920.26	33428.86	32545.31	35957.43	#DIV/0!	41884.75	556.1978	35085.8	0
T2-SRSHCL3	7	27031.7	44590.75	43264.08	172777.3	42329.18	40650.12	48200.44	#DIV/0!	52549.7	1108.542	44405.92	0
T3-SRSHCL3	10	40592.95	58760.52	56987.7	277360.2	56141.69	53534.28	64944.57	#DIV/0!	69218.46	1701.991	59340.76	0
T4-SRSHCL3	14	52625.53	70275.13	68051.78	386203.1	66744.24	64428.68	78962.31	#DIV/0!	82186.69	2273.603	71121.32	0
T5-SRSHCL3	17	66943.55	83030.6	80651.78	494325.9	78270.88	76958.23	94729.05	#DIV/0!	98593.46	2838.793	84481.48	0
T6-SRSHCL3	21	75510.15	89982.06	87814.89	616341.5	84544.87	83900.71	105043	#DIV/0!	106955.1	3374.438	91252.6	0
T7-SRSHCL3	24	82941.6	95412.47	93374.11	744258.2	89398.7	89381.4	113299.3	#DIV/0!	113734	3956.326	96660.63	0
T8-SRSHCL3	28	86849.54	98106.33	96305.5	876526.6	92102.84	92190.7	119276.8	#DIV/0!	117347.2	4515.093	99770.62	0
T9-SRSHCL3	31	89813.03	99898.23	98090.61	1008337	93772.66	94007.09	124006.8	#DIV/0!	119997.6	5084.136	101847.2	4.827316
T10-SRSHCL3	35	91556.62	100778.8	99040.26	1136258	94578.39	94819.54	127131.9	#DIV/0!	121290	5632.627	102843.2	53.10047
T11-SRSHCL3	38	93092.86	101490	99802.78	1265584	95158.78	95517.34	130025.5	#DIV/0!	122247.4	6190.109	103597.1	58.57143
T12-SRSHCL3	42	94170.5	101875.7	100207.4	1397809	95449.46	95913.32	132515.2	#DIV/0!	122739.7	6709.056	103990.3	106.8446

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-SRSHCL3	3	3.317159	5.839583	5.678533	9.486709	5.571477	5.424219	5.992905	#DIV/0!	6.980792	0.0927	5.847633	0	1.34	0.963333
T2-SRSHCL3	4	0.891092	1.194157	1.14911	14.48213	1.112539	1.013101	1.530377	#DIV/0!	1.333118	0.069043	1.165016	0	1.4	0.76
T3-SRSHCL3	3	2.260209	2.361629	2.287271	17.43049	2.302085	2.14736	2.790687	#DIV/0!	2.778126	0.098908	2.48914	0	1.42	0.67
T4-SRSHCL3	4	1.504073	1.439326	1.38301	13.60536	1.32532	1.361801	1.752217	#DIV/0!	1.621028	0.071452	1.47257	0	1.28	0.676667
T5-SRSHCL3	3	2.386337	2.125911	2.1	18.02046	1.921106	2.088258	2.62779	#DIV/0!	2.734462	0.094198	2.226693	0	1.27	0.863333
T6-SRSHCL3	4	1.070824	0.868933	0.895388	15.25195	0.784249	0.867809	1.289246	#DIV/0!	1.045209	0.066956	0.84639	0	1.48	0.74
T7-SRSHCL3	3	1.238574	0.905069	0.926537	21.31945	0.808972	0.913449	1.376053	#DIV/0!	1.129808	0.096981	0.901339	0	1.49	0.733333
T8-SRSHCL3	4	0.488493	0.336732	0.366424	16.53354	0.338017	0.351162	0.747184	#DIV/0!	0.45165	0.069846	0.388749	0	1.44	0.723333
T9-SRSHCL3	3	0.493916	0.29865	0.297519	21.96834	0.278304	0.302732	0.788337	#DIV/0!	0.441735	0.094841	0.346101	0.0008	1.46	0.733333
T10-SRSHCL3	4	0.217949	0.110076	0.118706	15.99014	0.100716	0.101556	0.390632	#DIV/0!	0.161557	0.068561	0.124498	0.00603	1.48	0.736667
T11-SRSHCL3	3	0.256039	0.118526	0.127087	21.55442	0.096731	0.116299	0.482262	#DIV/0!	0.159556	0.092914	0.125646	0.00091	1.49	0.75
T12-SRSHCL3	4	0.134704	0.048217	0.050574	16.52809	0.036335	0.049498	0.31122	#DIV/0!	0.061539	0.064868	0.049147	0.00603	1.53	0.73

0.76
±0.08

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSHCL3	3	35.78395	62.99467	61.25734	102.3382	60.10247	58.51391	64.64863	#DIV/0!	75.3055	1	63.08151	0
T2-SRSHCL3	4	12.90633	17.29584	16.64339	209.7551	16.11371	14.67347	22.16555	#DIV/0!	19.30852	1	16.87376	0
T3-SRSHCL3	3	22.85159	23.87699	23.1252	176.2291	23.27497	21.71065	28.21494	#DIV/0!	28.08794	1	25.16617	0
T4-SRSHCL3	4	21.05026	20.14409	19.35592	190.414	18.54852	19.05909	24.52317	#DIV/0!	22.68711	1	20.60936	0
T5-SRSHCL3	3	25.33313	22.56847	22.29341	191.3035	20.39429	22.16876	27.89638	#DIV/0!	29.0288	1	23.63837	0
T6-SRSHCL3	4	15.99303	12.97773	13.37285	227.7918	11.71296	12.96095	19.25522	#DIV/0!	15.61045	1	12.64104	0
T7-SRSHCL3	3	12.77126	9.332396	9.553765	219.8304	8.341519	9.418808	14.18884	#DIV/0!	11.64974	1	9.293941	0
T8-SRSHCL3	4	6.993868	4.821077	5.24618	236.7147	4.839476	5.027676	10.69761	#DIV/0!	6.466385	1	5.565809	0
T9-SRSHCL3	3	5.207861	3.148975	3.137044	231.6346	2.934439	3.19201	8.31224	#DIV/0!	4.65766	1	3.649297	0.00848
T10-SRSHCL3	4	3.178887	1.60551	1.731377	233.2238	1.468994	1.481248	5.697554	#DIV/0!	2.356387	1	1.815863	0.08801
T11-SRSHCL3	3	2.755667	1.275659	1.3678	231.9832	1.041082	1.251687	5.190424	#DIV/0!	1.717247	1	1.352289	0.00981
T12-SRSHCL3	4	2.076582	0.743299	0.779647	254.7944	0.560132	0.763048	4.797711	#DIV/0!	0.948676	1	0.757645	0.09302

Leaching Solution Results for WVNS Glass in 0.25 M Fe Cl3

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-021	3	1684	2235	270	383	1075	94	261	0.137	2660	156	5597	0.167	1.34	1.88
T1-022	3	1682	2221	266	406	1068	92.8	260	0.122	2646	158	5574	0.163		1.89
T1-023	3	1654	2229	268	373	1061	93.3	259	0.128	2644	157	5553	0.166		1.89
T2-021	7	1431	1142	163	3756	521	62.4	177	0.133	1469	162	2494	0.133	1.4	0.99
T2-022	7	1464	1176	170	3622	539	64.6	181	0.15	1481	162	2591	0.129		0.98
T2-023	7	1555	1212	173	3246	561	66.5	184	0.232	1546	165	2729	0.152		1.01
T3-021	10	512	353	49.8	8738	156	19.3	83.5	4.37	443	172	807	0.093	1.42	0.66
T3-022	10	516	359	50.9	8510	159	19.6	83.2	4.07	445	170	815	0.099		0.69
T3-023	10	475	327	46.6	8596	145	17.8	79.4	3.96	412	169	740	0.093		0.66
T4-021	14	113	68.4	9.51	10266	25.5	3.31	48.5	5.53	114	162	153	0.092	1.28	0.65
T4-022	14	115	69.6	9.7	10140	26.4	3.38	48.4	5.06	117	161	158	0.093		0.64
T4-023	14	102	60.2	8.67	10250	22.7	3.02	47.6	4.7	104	159	136	0.084		0.65
T5-021	17	49.4	21.3	2.87	10849	7.89	1.8	42.9	5.93	30.9	160	46.9	0.121	1.27	0.79
T5-022	17	48.5	20.5	2.81	10766	7.79	1.73	42.7	5.76	30.1	160	46.5	0.112		0.8
T5-023	17	42.9	16.9	2.49	10595	6.33	1.56	42.5	5.16	25	158	44	0.115		0.79
T6-021	21	20.9	6.02	1.06	11053	2.9	1.06	43.2	2.82	9.39	149	15.4	0.161	1.48	0.73
T6-022	21	20.6	5.65	1.01	11065	2.87	1.07	43.2	2.72	9.39	149	14.8	0.153		0.73
T6-023	21	18.6	4.29	0.854	11224	2.19	1.06	43.7	2.58	7.51	149	11.2	0.151		0.73
T7-021	24	16.1	3.65	0.758	10919	1.58	0.84	40.9	2.41	5.44	156	9.54	0.239	1.49	0.73
T7-022	24	15	3.2	0.719	11077	1.46	0.817	41.1	2.31	5.03	157	8.91	0.236		0.74
T7-023	24	13.2	2.26	0.601	11028	0.941	0.698	40.6	2.16	3.65	155	6.29	0.224		0.73
T8-021	28	10.3	1.72	0.555	11089	0.669	0.82	43.4	1.53	2.73	156	5	0.34	1.44	0.74
T8-022	28	9.79	1.32	0.518	11020	0.548	0.775	43.4	1.56	2.39	157	4.14	0.353		0.75
T8-023	28	8.94	0.968	0.471	10959	0.39	0.777	43.2	1.47	1.99	154	3.12	0.333		0.74
T9-021	31	9.12	1.28	0.442	10721	0.492	0.971	39.6	1.18	2.27	158	3.23	0.385	1.46	0.74
T9-022	31	8.46	0.997	0.412	10748	0.394	0.968	39.4	1.25	2	157	2.62	0.414		0.74
T9-023	31	7.88	0.728	0.389	10809	0.283	0.945	39.4	1.28	1.73	158	2.07	0.383		0.73
T10-021	35	10	0.486	0.451	10373	0.269	1.01	29.8	0.623	1.31	153	3.49	0.471	1.48	0.75
T10-022	35	9.65	0.4	0.447	10370	0.213	1.01	29.8	0.69	1.15	152	2.81	0.465		0.76
T10-023	35	9.44	0.4	0.426	10349	0.158	1.02	30	0.696	1.04	151	2.29	0.442		0.76
T11-021	38	10.3	0.685	0.453	10356	0.204	1.12	28.8	0.614	1.08	155	2.68	0.56	1.49	0.78
T11-022	38	9.98	0.519	0.47	10333	0.164	1.1	28.9	0.735	0.989	155	2.44	0.579		0.78
T11-023	38	9.85	0.4	0.447	10928	0.133	1.09	28.9	0.661	0.955	154	2.26	0.527		0.78
T12-021	42	7.78	0.603	0.399	10463	0.113	1.04	27.9	0.32	0.823	140	1.93	0.571	1.53	0.76
T12-022	42	8.79	0.465	0.414	10447	0.101	1.05	27.8	0.359	0.79	141	1.85	0.581		0.76
T12-023	42	7.59	0.4	0.395	10560	0.09	1.04	28.4	0.355	0.784	144	1.86	0.538		0.76

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-021	47689.49	62732.29	57272.73	4567.136	47962.33	87037.04	66064.17	15.61066	62245.46	737.9376	63180.76	17.63479
T1-022	47632.85	62339.33	56424.24	4841.402	47650.02	85925.93	65811.05	13.90146	61917.85	747.3983	62921.13	17.2124
T1-023	46839.91	62563.88	56848.48	4447.889	47337.71	86388.89	65557.93	14.58514	61871.05	742.6679	62684.07	17.52919
T2-021	40524.74	32053.81	34575.76	44788.93	23245	57777.78	44802.14	15.15487	34375.4	766.3198	28153.08	14.04447
T2-022	41459.27	33008.13	36060.61	43191.03	24048.09	59814.81	45814.62	17.09196	34656.21	766.3198	29248.05	13.62208
T2-023	44036.32	34018.58	36696.97	38707.37	25029.64	61574.07	46573.98	26.43556	36177.25	780.5109	30805.84	16.05082
T3-021	14499.42	9908.053	10563.64	104197.5	6960.115	17870.37	21135.47	497.9458	10366.44	813.6235	9109.679	9.82057
T3-022	14612.69	10076.46	10796.97	101478.7	7093.963	18148.15	21059.54	463.7618	10413.24	804.1627	9199.985	10.45416
T3-023	13451.61	9178.281	9884.848	102504.2	6469.338	16481.48	20097.68	451.2277	9641.026	799.4324	8353.361	9.82057
T4-021	3200.067	1919.861	2017.273	122418.3	1137.711	3064.815	12276.29	630.1236	2667.662	766.3198	1727.114	9.714973
T4-022	3256.705	1953.542	2057.576	120915.8	1177.866	3129.63	12250.98	576.5688	2737.864	761.5894	1783.555	9.82057
T4-023	2888.556	1689.702	1839.091	122227.5	1012.786	2796.296	12048.48	535.5481	2433.657	752.1287	1535.212	8.870192
T5-021	1398.967	597.8513	608.7879	129370.4	352.0212	1666.667	10858.82	675.7021	723.0769	756.859	529.4225	12.7773
T5-022	1373.48	575.3968	596.0606	128380.6	347.5596	1601.852	10808.2	656.3312	704.3565	756.859	524.9071	11.82692
T5-023	1214.893	474.3515	528.1818	126341.5	282.4201	1444.444	10757.58	587.9634	585.0137	747.3983	496.6863	12.14372
T6-021	591.8707	168.9702	224.8485	131803	129.3868	981.4815	10934.76	321.3288	219.7311	704.825	173.8402	17.0012
T6-022	583.375	158.585	214.2424	131946.1	128.0483	990.7407	10934.76	309.9342	219.7311	704.825	167.0672	16.15642
T6-023	526.7366	120.4123	181.1515	133842.1	97.70931	981.4815	11061.32	293.9817	175.7381	704.825	126.4292	15.94523
T7-021	455.9387	102.4487	160.7879	130205.1	70.49347	777.7778	10352.58	274.6108	127.299	737.9376	107.6906	25.23781
T7-022	424.7876	89.81804	152.5152	132089.2	65.13954	756.4815	10403.21	263.2162	117.7048	742.6679	100.579	24.92102
T7-023	373.8131	63.43399	127.4848	131504.9	41.98377	646.2963	10276.65	246.1242	85.412	733.2072	71.00357	23.65385
T8-021	291.6875	48.2772	117.7273	132232.3	29.84819	759.2593	10985.38	174.338	63.8835	737.9376	56.44163	35.90316
T8-022	277.2447	37.04994	109.8788	131409.5	24.44963	717.5926	10985.38	177.7564	55.92731	742.6679	46.73367	37.27593
T8-023	253.1734	27.16996	99.90909	130682.1	17.40029	719.4444	10934.76	167.5012	46.56709	728.4768	35.21958	35.16398
T9-021	258.2709	35.92722	93.75758	127844	21.95113	899.0741	10023.53	134.4567	53.11924	747.3983	36.46129	40.65505
T9-022	239.5802	27.98393	87.39394	128166	17.57875	896.2963	9972.906	142.433	46.8011	742.6679	29.57541	43.71738
T9-023	223.1551	20.4336	82.51515	128893.4	12.62636	875	9972.906	145.8514	40.48295	747.3983	23.36683	40.44385
T10-021	283.1917	13.64111	95.66667	123694.3	12.00174	935.1852	7542.959	70.98861	30.65472	723.7465	39.39626	49.73644
T10-022	273.28	11.22726	94.81818	123658.5	9.503234	935.1852	7542.959	78.62301	26.91063	719.0161	31.7202	49.10285
T10-023	267.333	11.22726	90.36364	123408.1	7.049347	944.4444	7593.583	79.30669	24.33657	714.2857	25.85027	46.67411
T11-021	291.6875	19.22667	96.09091	123491.5	9.101689	1037.037	7289.84	69.96309	25.27259	733.2072	30.25271	59.13462
T11-022	282.6254	14.56736	99.69697	123217.3	7.317044	1018.519	7315.152	83.7506	23.14314	733.2072	27.54351	61.14097
T11-023	278.9439	11.22726	94.81818	130312.4	5.933944	1009.259	7315.152	75.31857	22.34752	728.4768	25.51162	55.6499
T12-021	220.3232	16.92509	84.63636	124767.5	5.041622	962.963	7062.032	36.46285	19.25865	662.2517	21.78647	60.29619
T12-022	248.9255	13.05168	87.81818	124576.7	4.506228	972.2222	7036.72	40.90676	18.48643	666.982	20.8834	61.35216
T12-023	214.9425	11.22726	83.78788	125924.2	4.015451	962.963	7188.592	40.45097	18.34603	681.1731	20.99629	56.81147

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL3	3	47387.42	62545.17	56848.48	4618.809	47650.02	86450.62	65811.05	14.69909	62011.45	742.6679	62928.65	17.45879
T2-WVNSHCL3	7	42006.77	33026.84	35777.78	42229.11	24107.58	59722.22	45730.24	19.5608	35069.62	771.0501	29402.33	14.57246
T3-WVNSHCL3	10	14187.91	9720.932	10415.15	102726.8	6841.139	17500	20764.23	470.9784	10140.24	805.7395	8887.675	10.03177
T4-WVNSHCL3	14	3115.109	1854.368	1971.313	121853.9	1109.454	2996.914	12191.92	580.7468	2613.061	760.0126	1681.961	9.468578
T5-WVNSHCL3	17	1329.113	549.1999	577.6768	128030.8	327.3336	1570.988	10808.2	639.9989	670.8157	753.7055	517.0053	12.24931
T6-WVNSHCL3	21	567.3274	149.3225	206.7475	132530.4	118.3814	984.5679	10976.95	308.4149	205.0668	704.825	155.7789	16.36762
T7-WVNSHCL3	24	418.1798	85.23358	146.9293	131266.4	59.20559	726.8519	10344.15	261.3171	110.1386	737.9376	93.09106	24.60422
T8-WVNSHCL3	28	274.0352	37.49903	109.1717	131441.3	23.89937	732.0988	10968.51	173.1985	55.4593	736.3608	46.13162	36.11435
T9-WVNSHCL3	31	240.3354	28.11492	87.88889	128301.1	17.38542	890.1235	9989.78	140.9137	46.8011	745.8215	29.80118	41.60543
T10-WVNSHCL3	35	274.6016	12.03188	93.61616	123586.9	9.518106	938.2716	7559.834	76.3061	27.30064	719.0161	32.32224	48.50446
T11-WVNSHCL3	38	284.4189	15.0071	96.86869	125673.7	7.450892	1021.605	7306.714	76.34409	23.58775	731.6304	27.76928	58.64183
T12-WVNSHCL3	42	228.0637	13.73468	85.41414	125089.4	4.5211	966.0494	7095.781	39.27352	18.69704	670.1356	21.22205	59.48661

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL3	3	47387.42	62545.17	56848.48	4618.809	47650.02	86450.62	65811.05	14.69909	62011.45	742.6679	62928.65	17.45879
T2-WVNSHCL3	7	89394.19	95572.01	92626.26	46847.92	71757.6	146172.8	111541.3	34.25988	97081.07	1513.718	92330.98	32.03125
T3-WVNSHCL3	10	103582.1	105292.9	103041.4	149574.7	78598.73	163672.8	132305.5	505.2383	107221.3	2319.458	101218.7	42.06302
T4-WVNSHCL3	14	106697.2	107147.3	105012.7	271428.6	79708.19	166669.8	144497.4	1085.985	109834.4	3079.47	102900.6	51.53159
T5-WVNSHCL3	17	108026.3	107696.5	105590.4	399459.4	80035.52	168240.7	155305.6	1725.984	110505.2	3833.176	103417.6	63.78091
T6-WVNSHCL3	21	108593.6	107845.8	105797.2	531989.8	80153.9	169225.3	166282.6	2034.399	110710.3	4538.001	103573.4	80.14852
T7-WVNSHCL3	24	109011.8	107931.1	105944.1	663256.2	80213.11	169952.2	176626.7	2295.716	110820.4	5275.938	103666.5	104.7527
T8-WVNSHCL3	28	109285.9	107968.6	106053.3	794697.5	80237.01	170684.3	187595.2	2468.915	110875.9	6012.299	103712.6	140.8671
T9-WVNSHCL3	31	109526.2	107996.7	106141.1	922998.6	80254.39	171574.4	197585	2609.828	110922.7	6758.12	103742.4	182.4725
T10-WVNSHCL3	35	109800.8	108008.7	106234.8	1046586	80263.91	172512.7	205144.9	2686.134	110950	7477.137	103774.7	230.977
T11-WVNSHCL3	38	110085.2	108023.7	106331.6	1172259	80271.36	173534.3	212451.6	2762.478	110973.5	8208.767	103802.5	289.6188
T12-WVNSHCL3	42	110313.3	108037.5	106417	1297349	80275.88	174500.3	219547.4	2801.752	110992.2	8878.903	103823.7	349.1054

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-WVNSHCL3	3	7.8979	10.4242	9.474747	0.769802	7.94167	14.40844	10.96851	0.00245	10.33524	0.123778	10.48811	0.00291	1.34	1.886667
T2-WVNSHCL3	4	5.25085	4.12836	4.472222	5.278639	3.013447	7.465278	5.71628	0.002445	4.383703	0.096381	3.675291	0.001822	1.4	0.993333
T3-WVNSHCL3	3	2.36465	1.62016	1.735859	17.12113	1.14019	2.916667	3.460705	0.078496	1.69004	0.13429	1.481279	0.001672	1.42	0.67
T4-WVNSHCL3	4	0.38939	0.2318	0.246414	15.23174	0.138682	0.374614	1.52399	0.072593	0.326633	0.095002	0.210245	0.001184	1.28	0.646667
T5-WVNSHCL3	3	0.22152	0.09153	0.096279	21.33847	0.054556	0.261831	1.801367	0.106666	0.111803	0.125618	0.086168	0.002042	1.27	0.793333
T6-WVNSHCL3	4	0.07092	0.01867	0.025843	16.5663	0.014798	0.123071	1.372118	0.038552	0.025633	0.088103	0.019472	0.002046	1.48	0.73
T7-WVNSHCL3	3	0.0697	0.01421	0.024488	21.87773	0.009868	0.121142	1.724025	0.043553	0.018356	0.12299	0.015515	0.004101	1.49	0.733333
T8-WVNSHCL3	4	0.03425	0.00469	0.013646	16.43016	0.002987	0.091512	1.371064	0.02165	0.006932	0.092045	0.005766	0.004514	1.44	0.743333
T9-WVNSHCL3	3	0.04006	0.00469	0.014648	21.38352	0.002898	0.148354	1.664963	0.023486	0.0078	0.124304	0.004967	0.006934	1.46	0.736667
T10-WVNSHCL3	4	0.03433	0.0015	0.011702	15.44837	0.00119	0.117284	0.944979	0.009538	0.003413	0.089877	0.00404	0.006063	1.48	0.756667
T11-WVNSHCL3	3	0.0474	0.0025	0.016145	20.94562	0.001242	0.170267	1.217786	0.012724	0.003931	0.121938	0.004628	0.009774	1.49	0.78
T12-WVNSHCL3	4	0.02851	0.00172	0.010677	15.63618	0.000565	0.120756	0.886973	0.004909	0.002337	0.083767	0.002653	0.007436	1.53	0.76

0.85
± 0.34

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL3	3	63.807	84.2169	76.5463	6.219212	64.1606	116.4055	88.61437	0.019792	83.49822	1	84.73323	0.023508
T2-WVNSHCL3	4	54.48	42.8336	46.40136	54.76831	31.2659	77.45569	59.30904	0.025369	45.48293	1	38.13283	0.018899
T3-WVNSHCL3	3	17.6086	12.0646	12.9262	127.4938	8.490509	21.71918	25.7704	0.584529	12.58501	1	11.03046	0.01245
T4-WVNSHCL3	4	4.09876	2.43992	2.59379	160.3314	1.459784	3.943242	16.04173	0.764128	3.438181	1	2.213069	0.012458
T5-WVNSHCL3	3	1.76344	0.72867	0.766449	169.8685	0.434299	2.084352	14.34008	0.849137	0.890024	1	0.685951	0.016252
T6-WVNSHCL3	4	0.80492	0.21186	0.293332	188.0331	0.167959	1.396897	15.574	0.437577	0.290947	1	0.221018	0.023222
T7-WVNSHCL3	3	0.56669	0.1155	0.199108	177.8828	0.080231	0.984977	14.01765	0.354118	0.149252	1	0.12615	0.033342
T8-WVNSHCL3	4	0.37215	0.05092	0.148258	178.5012	0.032456	0.994212	14.89556	0.235209	0.075315	1	0.062648	0.049044
T9-WVNSHCL3	3	0.32224	0.0377	0.117842	172.0266	0.02331	1.193481	13.39433	0.188938	0.062751	1	0.039958	0.055785
T10-WVNSHCL3	4	0.38191	0.01673	0.1302	171.8834	0.013238	1.304938	10.51414	0.106126	0.037969	1	0.044953	0.067459
T11-WVNSHCL3	3	0.38875	0.02051	0.132401	171.7722	0.010184	1.39634	9.986893	0.104348	0.03224	1	0.037955	0.080152
T12-WVNSHCL3	4	0.34032	0.0205	0.127458	186.6629	0.006747	1.441573	10.58858	0.058605	0.0279	1	0.031668	0.088768

Leaching Solution Results for SRS Glass in 0.0025M $FeCl_2$

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-024	3	0.736	36.9	0.242	0	17.7	0.179	0.037	0.025	17.8	66.4	64.8	0.007	3.95	9
T1-025	3	0.651	27.3	0.228	0	17.7	0.159	0.019	0	17.7	65.7	63.8	0.006		9
T1-026	3	0.63	23.3	0.258	0	17.8	0.164	0.018	0	17.7	66.6	64.9	0.006		9
T2-024	7	0.406	25.3	0.521	0.172	15.1	0.432	0.054	0	20.8	72.6	54.7	0.017	3.88	8.72
T2-025	7	0.442	22.2	0.445	0.171	15.3	0.422	0.071	0	20.5	73.1	56.1	0.017		8.73
T2-026	7	0.413	20.6	0.493	0.143	15.2	0.43	0.045	0	20.6	73.3	54.9	0.016		8.72
T3-024	10	0.228	19.9	1.5	0.116	13.5	1.71	0.076	0	23.2	77	53	0.008	3.85	8.25
T3-025	10	0.233	19	1.36	0.124	13.6	1.53	0.069	0	23.4	74.9	53.4	0.008		8.29
T3-026	10	0.235	18.6	1.45	0.129	13.4	1.64	0.074	0	23.3	75.6	52.8	0.009		8.26
T4-024	14	0.241	16.4	1.35	0.254	14	1.61	0.082	0	22.4	76.7	55.9	0.015	3.75	8.19
T4-025	14	0.234	16.1	1.24	0.254	14.2	1.42	0.076	0	22.3	76.3	56.8	0.015		8.21
T4-026	14	0.235	15.7	1.29	0.253	14	1.49	0.079	0	22.3	76.2	55.8	0.015		8.19
T5-024	17	0.14	17.5	3.08	0.161	11.5	3.8	0.324	0	22.6	75.4	45.7	0.007	3.65	7.77
T5-025	17	0.126	17.5	3.04	0.15	11.5	3.67	0.282	0	22.9	76.4	45.3	0.006		7.61
T5-026	17	0.137	17.5	3.33	0.167	11.2	4.03	0.343	0	22.9	76.3	44.7	0.007		7.59
T6-024	21	0.175	16.9	2.7	0.143	11.5	3.49	0.324	0	22.6	70.3	53.4	0.006	3.78	7.56
T6-025	21	0.179	16.9	2.46	0.16	11.7	3.13	0.257	0	22.3	72	53.5	0.007		7.48
T6-026	21	0.194	16.7	2.46	0.185	11.7	3.13	0.276	0	22	70.6	53.3	0.008		7.66
T7-024	24	0.098	15.4	5.52	0	9.84	6.96	1.81	0	24.2	66.1	50.4	0	3.75	6.51
T7-025	24	0.086	15.4	5.72	0	9.7	7.16	1.78	0	24.3	67.8	50	0		6.4
T7-026	24	0.089	15.3	6.26	0	9.26	7.72	2.3	0	24.4	65.8	47.8	0		6.7
T8-024	28	0.154	17	3.36	0	13.1	4.17	0.869	0	20	64	51.6	0	3.69	7.08
T8-025	28	0.13	16.9	3.52	0	12.8	4.33	0.897	0	19.7	64.2	50.4	0		7.08
T8-026	28	0.121	17	3.56	0	12.8	4.35	1.05	0	19.7	63.7	50.5	0		7.01
T9-024	31	0.05	14.5	9.19	0.1	10.7	7.13	4.6	0.02	21.8	65.3	51.2	0.005	3.7	6.26
T9-025	31	0.05	14.5	7.09	0.1	9.99	7.24	4.28	0.02	21.8	64.3	47.3	0.005		6.35
T9-026	31	0.05	14.6	7.14	0.1	10	7.15	5	0.02	21.8	63.8	47.6	0.005		6.37
T10-024	35	0.061	16.9	3.38	0.164	11.5	4.02	1.81	0.02	19.4	62.3	55.3	0.005	3.68	6.77
T10-025	35	0.069	16.9	3.55	0.1	11.5	4.14	1.87	0.02	20	63.1	54.5	0.005		6.74
T10-026	35	0.076	17.2	3.45	0.1	11.7	4.01	1.99	0.02	20.2	63.4	63.5	0.005		6.75
T11-024	38	0.05	14.7	7.4	0.1	8.76	7.1	7.7	0.02	23.3	61.2	44.7	0.005	4.31	6.5
T11-025	38	0.05	14.7	7.36	0.1	8.68	7.07	7.6	0.02	23.2	61.7	44.4	0.005		6.45
T11-026	38	0.05	14.3	7.23	0.1	8.71	6.83	8.08	0.02	22.8	61.9	44.5	0.005		6.35
T12-024	42	0.05	16.8	3.47	0.293	11.3	3.8	3.08	0.02	22.6	63.9	49.6	0.005	4.21	6.3
T12-025	42	0.05	17.1	3.45	0.1	11.3	3.79	3.02	0.02	22.4	64.4	49.7	0.005		6.42
T12-026	42	0.05	17.3	3.39	0.1	11.6	3.69	3.17	0.02	22.3	66.1	50.7	0.005		6.4

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-024	33.4188	1477.019	32.8932	0	860.85	21.15839	2.854989	#DIV/0!	582.9153	255.8767	956.617	6.758242
T1-025	29.55929	1092.754	30.99029	0	860.85	18.79433	1.466075	#DIV/0!	579.6405	253.1792	941.8544	5.792779
T1-026	28.60577	932.6432	35.06796	0	865.7135	19.38534	1.388914	#DIV/0!	579.6405	256.6474	958.0932	5.792779
T2-024	18.43483	1012.698	70.81553	2.252193	734.3974	51.06383	4.166741	#DIV/0!	681.1594	279.7688	807.5146	16.41287
T2-025	20.06944	888.6128	60.48544	2.239099	744.1246	49.8818	5.478492	#DIV/0!	671.335	281.6956	828.1823	16.41287
T2-026	18.75267	824.5687	67.00971	1.872463	739.261	50.82742	3.472284	#DIV/0!	674.6098	282.4663	810.4672	15.44741
T3-024	10.35256	796.5493	203.8835	1.518921	656.5805	202.1277	5.864302	#DIV/0!	759.7547	296.7245	782.4182	7.723705
T3-025	10.57959	760.5245	184.8544	1.623674	661.4441	180.8511	5.324169	#DIV/0!	766.3043	288.632	788.3233	7.723705
T3-026	10.67041	744.5135	197.0874	1.689145	651.7169	193.8534	5.709978	#DIV/0!	763.0295	291.3295	779.4657	8.689168
T4-024	10.94284	656.4527	183.4951	3.325913	680.8983	190.3073	6.327273	#DIV/0!	733.5563	295.5684	825.2298	14.48195
T4-025	10.625	644.4444	168.5437	3.325913	690.6254	167.8487	5.864302	#DIV/0!	730.2815	294.027	838.5161	14.48195
T4-026	10.67041	628.4334	175.3398	3.312819	680.8983	176.1229	6.095787	#DIV/0!	730.2815	293.6416	823.7535	14.48195
T5-024	6.356838	700.4831	418.6408	2.108158	559.3093	449.1726	25.00044	#DIV/0!	740.1059	290.5588	674.6512	6.758242
T5-025	5.721154	700.4831	413.2039	1.964122	559.3093	433.8061	21.75965	#DIV/0!	749.9303	294.4123	668.7461	5.792779
T5-026	6.22062	700.4831	452.6214	2.186723	544.7186	476.3593	26.46652	#DIV/0!	749.9303	294.027	659.8886	6.758242
T6-024	7.946047	676.4665	366.9903	1.872463	559.3093	412.5296	25.00044	#DIV/0!	740.1059	270.9056	788.3233	5.792779
T6-025	8.127671	676.4665	334.3689	2.095064	569.0364	369.9764	19.8306	#DIV/0!	730.2815	277.4566	789.7995	6.758242
T6-026	8.808761	668.461	334.3689	2.422417	569.0364	369.9764	21.29667	#DIV/0!	720.4571	272.0617	786.847	7.723705
T7-024	4.449786	616.4251	750.2913	0	478.5742	822.695	139.663	#DIV/0!	792.5028	254.7206	744.0354	0
T7-025	3.904915	616.4251	777.4757	0	471.7652	846.3357	137.3481	#DIV/0!	795.7776	261.2717	738.1304	0
T7-026	4.041132	612.4224	850.8738	0	450.3656	912.5296	177.4723	#DIV/0!	799.0524	253.5645	705.6527	0
T8-024	6.992521	680.4693	456.699	0	637.1263	492.9078	67.05366	#DIV/0!	654.961	246.6281	761.7506	0
T8-025	5.902778	676.4665	478.4466	0	622.5356	511.8203	69.21419	#DIV/0!	645.1366	247.3988	744.0354	0
T8-026	5.494124	680.4693	483.8835	0	622.5356	514.1844	81.01996	#DIV/0!	645.1366	245.4721	745.5117	0
T9-024	2.270299	580.4003	1249.126	1.309415	520.4008	842.7896	354.9446	#DIV/0!	713.9075	251.6378	755.8455	4.827316
T9-025	2.270299	580.4003	963.6893	1.309415	485.8696	855.792	330.2528	#DIV/0!	713.9075	247.7842	698.2713	4.827316
T9-026	2.270299	584.403	970.4854	1.309415	486.3559	845.1537	385.8093	#DIV/0!	713.9075	245.8574	702.7001	4.827316
T10-024	2.769765	676.4665	459.4175	2.14744	559.3093	475.1773	139.663	#DIV/0!	635.3122	240.0771	816.3722	4.827316
T10-025	3.133013	676.4665	482.5243	1.309415	559.3093	489.3617	144.2927	#DIV/0!	654.961	243.1599	804.5621	4.827316
T10-026	3.450855	688.4748	468.932	1.309415	569.0364	473.9953	153.5521	#DIV/0!	661.5106	244.316	937.4256	4.827316
T11-024	2.270299	588.4058	1005.825	1.309415	426.0478	839.2435	594.1463	#DIV/0!	763.0295	235.8382	659.8886	4.827316
T11-025	2.270299	588.4058	1000.388	1.309415	422.1569	835.6974	586.4302	#DIV/0!	759.7547	237.7649	655.4598	4.827316
T11-026	2.270299	572.3948	982.7184	1.309415	423.616	807.3286	623.4678	#DIV/0!	746.6555	238.5356	656.936	4.827316
T12-024	2.270299	672.4638	471.6505	3.836585	549.5822	449.1726	237.6585	#DIV/0!	740.1059	246.2428	732.2253	4.827316
T12-025	2.270299	684.472	468.932	1.309415	549.5822	447.9905	233.0288	#DIV/0!	733.5563	248.1696	733.7016	4.827316
T12-026	2.270299	692.4776	460.7767	1.309415	564.1729	436.1702	244.6031	#DIV/0!	730.2815	254.7206	748.4642	4.827316

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-SRSLCL2	3	30.52796	1167.472	32.98382	0	862.4712	19.77935	1.903326	#DIV/0!	580.7321	255.2344	952.1882	6.1146	
T2-SRSLCL2	7	19.08565	908.6266	66.10356	2.121252	739.261	50.59102	4.372506	#DIV/0!	675.7014	281.3102	815.388	16.09105	
T3-SRSLCL2	10	10.53419	767.1958	195.2751	1.61058	656.5805	192.2774	5.632816	#DIV/0!	763.0295	292.2286	783.4024	8.045526	
T4-SRSLCL2	14	10.74608	643.1102	175.7929	3.321549	684.1407	178.093	6.095787	#DIV/0!	731.3731	294.4123	829.1665	14.48195	
T5-SRSLCL2	17	6.099537	700.4831	428.1553	2.086334	554.4458	453.1127	24.40887	#DIV/0!	746.6555	292.9994	667.762	6.436421	
T6-SRSLCL2	21	8.29416	673.798	345.2427	2.129981	565.7941	384.1608	22.04257	#DIV/0!	730.2815	273.4746	788.3233	6.758242	
T7-SRSLCL2	24	4.131944	615.0909	792.8803	0	466.9017	860.5201	151.4945	#DIV/0!	795.7776	256.5189	729.2728	0	
T8-SRSLCL2	28	6.129808	679.135	473.0097	0	627.3991	506.3042	72.42927	#DIV/0!	648.4114	246.4997	750.4326	0	
T9-SRSLCL2	31	2.270299	581.7345	1061.1	1.309415	497.5421	847.9117	357.0022	#DIV/0!	713.9075	248.4265	718.939	4.827316	
T10-SRSLCL2	35	3.117877	680.4693	470.2913	1.588756	562.5517	479.5114	145.8359	#DIV/0!	650.5946	242.5177	852.7866	4.827316	
T11-SRSLCL2	38	2.270299	583.0688	996.3107	1.309415	423.9402	827.4232	601.3481	#DIV/0!	756.4799	237.3796	657.4281	4.827316	
T12-SRSLCL2	42	2.270299	683.1378	467.1197	2.151805	554.4458	444.4444	238.4302	#DIV/0!	734.6479	249.711	738.1304	4.827316	

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-SRSLCL2	3	30.52796	1167.472	32.98382	0	862.4712	19.77935	1.903326	#DIV/0!	580.7321	255.2344	952.1882	6.1146	
T2-SRSLCL2	7	49.6136	2076.098	99.08738	2.121252	1601.732	70.37037	6.275831	#DIV/0!	1256.433	536.5446	1767.576	22.20565	
T3-SRSLCL2	10	60.14779	2843.294	294.3625	3.731832	2258.313	262.6478	11.90865	#DIV/0!	2019.463	828.7733	2550.979	30.25118	
T4-SRSLCL2	14	70.89387	3486.404	470.1553	7.05338	2942.453	440.7407	18.00443	#DIV/0!	2750.836	1123.186	3380.145	44.73312	
T5-SRSLCL2	17	76.99341	4186.888	898.3107	9.139715	3496.899	893.8534	42.4133	#DIV/0!	3497.492	1416.185	4047.907	51.16954	
T6-SRSLCL2	21	85.28757	4860.686	1243.553	11.2697	4062.693	1278.014	64.45588	#DIV/0!	4227.773	1689.66	4836.23	57.92779	
T7-SRSLCL2	24	89.41952	5475.776	2036.434	11.2697	4529.595	2138.534	215.9503	#DIV/0!	5023.551	1946.179	5565.503	57.92779	
T8-SRSLCL2	28	95.54932	6154.911	2509.443	11.2697	5156.994	2644.838	288.3796	#DIV/0!	5671.962	2192.678	6315.936	57.92779	
T9-SRSLCL2	31	97.81962	6736.646	3570.544	12.57911	5654.536	3492.75	645.3818	#DIV/0!	6385.87	2441.105	7034.875	62.7551	
T10-SRSLCL2	35	100.9375	7417.115	4040.835	14.16787	6217.088	3972.262	791.2177	#DIV/0!	7036.464	2683.622	7887.661	67.58242	
T11-SRSLCL2	38	103.2078	8000.184	5037.146	15.47728	6641.028	4799.685	1392.566	#DIV/0!	7792.944	2921.002	8545.089	72.40973	
T12-SRSLCL2	42	105.4781	8683.322	5504.265	17.62909	7195.474	5244.129	1630.996	#DIV/0!	8527.592	3170.713	9283.22	77.23705	

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-SRSLCL2	3	0.005088	0.194579	0.005497	0	0.143745	0.003297	0.000317	#DIV/0!	0.096789	0.042539	0.158698	0.001019	3.95	9
T2-SRSLCL2	4	0.002386	0.113578	0.008263	0.000265	0.092408	0.006324	0.000547	#DIV/0!	0.084463	0.035164	0.101924	0.002011	3.88	8.723333
T3-SRSLCL2	3	0.001756	0.127866	0.032546	0.000268	0.10943	0.032046	0.000939	#DIV/0!	0.127172	0.048705	0.130567	0.001341	3.85	8.266667
T4-SRSLCL2	4	0.001343	0.080389	0.021974	0.000415	0.085518	0.022262	0.000762	#DIV/0!	0.091422	0.036802	0.103646	0.00181	3.75	8.196667
T5-SRSLCL2	3	0.001017	0.116747	0.071359	0.000348	0.092408	0.075519	0.004068	#DIV/0!	0.124443	0.048833	0.111294	0.001073	3.65	7.656667
T6-SRSLCL2	4	0.001037	0.084225	0.043155	0.000266	0.070724	0.04802	0.002755	#DIV/0!	0.091285	0.034184	0.09854	0.000845	3.78	7.566667
T7-SRSLCL2	3	0.000689	0.102515	0.132147	0	0.077817	0.14342	0.025249	#DIV/0!	0.13263	0.042753	0.121545	0	3.75	6.536667
T8-SRSLCL2	4	0.000766	0.084892	0.059126	0	0.078425	0.063288	0.009054	#DIV/0!	0.081051	0.030812	0.093804	0	3.69	7.056667
T9-SRSLCL2	3	0.000378	0.096956	0.17685	0.000218	0.082924	0.141319	0.0595	#DIV/0!	0.118985	0.041404	0.119823	0.000805	3.7	6.326667
T10-SRSLCL2	4	0.00039	0.085059	0.058786	0.000199	0.070319	0.059939	0.018229	#DIV/0!	0.081324	0.030315	0.106598	0.000603	3.68	6.753333
T11-SRSLCL2	3	0.000378	0.097178	0.166052	0.000218	0.070657	0.137904	0.100225	#DIV/0!	0.12608	0.039563	0.109571	0.000805	4.31	6.433333
T12-SRSLCL2	4	0.000284	0.085392	0.05839	0.000269	0.069306	0.055556	0.029804	#DIV/0!	0.091831	0.031214	0.092266	0.000603	4.21	6.373333

7.41
± 0.96

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSLCL2	3	0.119608	4.574116	0.12923	0	3.379133	0.077495	0.007457	#DIV/0!	2.275289	1	3.730642	0.023957
T2-SRSLCL2	4	0.067846	3.229981	0.234985	0.007541	2.627921	0.179841	0.015543	#DIV/0!	2.40198	1	2.898537	0.0572
T3-SRSLCL2	3	0.036048	2.625327	0.668227	0.005511	2.246804	0.657969	0.019275	#DIV/0!	2.61107	1	2.680786	0.027532
T4-SRSLCL2	4	0.0365	2.184386	0.597098	0.011282	2.32375	0.60491	0.020705	#DIV/0!	2.48418	1	2.816344	0.049189
T5-SRSLCL2	3	0.020818	2.390733	1.461284	0.007121	1.89231	1.546463	0.083307	#DIV/0!	2.548318	1	2.279056	0.021967
T6-SRSLCL2	4	0.030329	2.463841	1.262431	0.007789	2.068909	1.40474	0.080602	#DIV/0!	2.670381	1	2.882619	0.024712
T7-SRSLCL2	3	0.016108	2.397838	3.090923	0	1.820145	3.354606	0.590578	#DIV/0!	3.102218	1	2.842959	0
T8-SRSLCL2	4	0.024867	2.755115	1.918906	0	2.545233	2.053975	0.293831	#DIV/0!	2.630476	1	3.044355	0
T9-SRSLCL2	3	0.009139	2.341677	4.271285	0.005271	2.002774	3.41313	1.437054	#DIV/0!	2.873718	1	2.893971	0.019432
T10-SRSLCL2	4	0.012856	2.805855	1.939204	0.006551	2.319632	1.977223	0.601341	#DIV/0!	2.682669	1	3.51639	0.019905
T11-SRSLCL2	3	0.009564	2.456272	4.19712	0.005516	1.785917	3.485654	2.533277	#DIV/0!	3.186795	1	2.769523	0.020336
T12-SRSLCL2	4	0.009092	2.735714	1.870642	0.008617	2.22035	1.779835	0.954824	#DIV/0!	2.941993	1	2.955939	0.019332

2/18/2000

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-027	3	3.31	56.5	0.092	2.65	20.8	0	0.041	0.837	22.9	39.9	107	0.389	3.95	9.34
T1-028	3	3.34	58	0.087	2.54	21.7	0	0.043	0.893	23.2	41.3	111	0.388		9.36
T1-029	3	4.13	55.8	0.064	4.37	21	0	0.063	0.961	23	40.9	108	0.408		9.34
T2-027	7	3.23	46.1	0.054	1.4	18.3	0	0.026	0.972	23.1	34.9	91.2	0.216	3.88	9.27
T2-028	7	3.13	46.5	0.052	1.39	18.5	0	0.029	1.02	22.8	35.2	93.8	0.257		9.28
T2-029	7	3.26	46.4	0.069	1.44	18.7	0	0.03	1	23.1	36.1	93.5	0.262		9.3
T3-027	10	2.84	35.3	0	2.01	15.3	0	0.021	0.923	21.2	31	80.1	0.159	3.85	8.92
T3-028	10	2.92	35.7	0	1.87	15.3	0	0.024	0.9	20.8	31.6	77.9	0.135		8.94
T3-029	10	2.92	36.5	0.069	1.84	15.8	0	0.023	0.902	20.7	32.5	81	0.151		8.94
T4-027	14	2.89	38	0.061	1.03	16.6	0	0.014	0.994	21.1	32.8	89.4	0.076	3.75	8.97
T4-028	14	3.01	38.5	0.06	1.18	16.6	0	0.015	1.01	21.2	33.3	91.4	0.075		8.97
T4-029	14	2.99	38.8	0.051	1.02	16.6	0	0.016	0.996	21.7	33.4	91.3	0.085		8.96
T5-027	17	2.21	33.2	0.084	1.37	13.5	0	0.013	0.964	18.4	29.8	72.4	0.106	3.65	8.69
T5-028	17	2.29	33	0.063	1.38	13.5	0	0.014	0.967	18.2	29.6	72.6	0.125		8.69
T5-029	17	2.2	32.3	0.061	1.17	13.3	0	0.012	0.958	19.4	29.5	71.7	0.144		8.67
T6-027	21	2.44	36.6	0.066	1.44	13.9	0	0.016	1.12	21	31.2	71.4	0.155	3.78	8.67
T6-028	21	2.57	37.6	0.061	1.24	12.2	0	0.016	1.14	21.4	27.5	72.6	0.145		8.7
T6-029	21	2.52	37.9	0.059	1.19	14.2	0	0.015	1.15	21	31.6	72.1	0.139		8.72
T7-027	24	1.91	29.5	0.059	1.03	12.6	0	0.011	0.875	21.5	29.2	72.8	0.219	3.75	8.41
T7-028	24	2.07	30.1	0.055	1.04	12.8	0	0.012	0.917	21.8	29.4	75.2	0.212		8.5
T7-029	24	2	29.8	0.051	1.06	12.7	0	0.01	0.924	21.5	28.6	75.1	0.327		8.46
T8-027	28	2.18	36.2	0	1.31	15.1	0	0.014	1.12	19.5	30.8	73.1	0.113	3.69	8.57
T8-028	28	2.29	36.6	0.052	1.26	15.2	0	0.014	1.12	19.9	30.9	75	0.119		8.6
T8-029	28	2.27	35.9	0.067	1.2	15.1	0	0.014	1.11	20.4	30.6	74.2	0.158		8.58
T9-027	31	1.6	28.7	0.06	1.13	13.3	0.05	0.01	0.954	20.5	28.8	68.3	0.199	3.7	8.27
T9-028	31	1.65	29.2	0.054	1.02	13.5	0.05	0.01	0.938	20.5	28.9	68.6	0.143		8.35
T9-029	31	1.64	29.1	0.058	0.994	13.3	0.05	0.01	0.926	20.2	28.4	68.3	0.159		8.34
T10-027	35	1.73	34.2	0.063	1.28	13.1	0.05	0.013	1.12	19.9	29.1	68.9	0.216	3.68	8.44
T10-028	35	1.8	34.8	0.066	1.04	13.4	0.05	0.011	1.14	19.8	29.2	69.7	0.191		8.46
T10-029	35	1.86	34.9	0.059	1.12	13.4	0.05	0.013	1.06	20.1	29.3	70.3	0.158		8.42
T11-027	38	1.18	25.8	0.055	1.13	11.3	0.05	0.042	0.794	21.6	26.8	69.4	0.155	4.31	8.21
T11-028	38	1.24	26	0.05	1.07	11.4	0.05	0.009	0.812	21.4	26.4	69.5	0.212		8.24
T11-029	38	1.24	26.1	0.056	1.05	11.3	0.05	0.009	0.734	21.5	26.4	69.4	0.106		8.22
T12-027	42	1.36	31.1	0.053	1.17	12.1	0.05	0.01	1.01	22.8	28.6	73.9	0.105	4.21	8.24
T12-028	42	1.43	31.3	0.059	1.27	12.2	0.05	0.011	1.07	22.5	28.4	72.8	0.217		8.31
T12-029	42	1.4	31.2	0.059	1.22	12.1	0.05	0.012	1.03	22.2	28	72.2	0.224		8.3

2/18/2000

Leaching Solution Results for WVNS Glass in 0.0025 M $FeCl_3$

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-027	93.73647	1585.85	19.51515	31.60029	928.0153	0	10.3779	95.37313	535.8725	188.7417	1207.851	41.07744
T1-028	94.58604	1627.952	18.45455	30.28858	968.1698	0	10.88414	101.7541	542.8927	195.3642	1253.004	40.97184
T1-029	116.9582	1566.202	13.57576	52.11066	936.9386	0	15.94652	109.5025	538.2126	193.4721	1219.139	43.08379
T2-027	91.47093	1293.941	11.45455	16.69449	816.475	0	6.581105	110.7559	540.5527	165.0899	1029.495	22.80907
T2-028	88.63901	1305.168	11.0303	16.57524	825.3983	0	7.340463	116.2253	533.5325	166.509	1058.845	27.13856
T2-029	92.32051	1302.362	14.63636	17.17148	834.3215	0	7.593583	113.9464	540.5527	170.7663	1055.458	27.66655
T3-027	80.42645	990.8053	0	23.96852	682.6267	0	5.315508	105.1725	496.0916	146.6414	904.1949	16.79001
T3-028	82.69199	1002.033	0	22.29907	682.6267	0	6.074866	102.5518	486.7314	149.4797	879.3606	14.25567
T3-029	82.69199	1024.487	14.63636	21.94133	704.9347	0	5.821747	102.7797	484.3913	153.737	914.3544	15.94523
T4-027	81.84241	1066.589	12.93939	12.28238	740.6276	0	3.543672	113.2627	493.7516	155.1561	1009.176	8.025412
T4-028	85.24071	1080.623	12.72727	14.07107	740.6276	0	3.796791	115.0859	496.0916	157.5213	1031.753	7.919815
T4-029	84.67433	1089.044	10.81818	12.16313	740.6276	0	4.049911	113.4906	507.7919	157.9943	1030.624	8.97579
T5-027	62.58537	931.8622	17.81818	16.33675	602.3176	0	3.290553	109.8443	430.5701	140.965	817.2748	11.19334
T5-028	64.85091	926.2485	13.36364	16.456	602.3176	0	3.543672	110.1862	425.89	140.0189	819.5324	13.19969
T5-029	62.30218	906.6009	12.93939	13.95182	593.3944	0	3.037433	109.1606	453.9706	139.5459	809.373	15.20604
T6-027	69.09878	1027.294	14	17.17148	620.1641	0	4.049911	127.62	491.4115	147.5875	805.9865	16.36762
T6-028	72.78028	1055.362	12.93939	14.78655	544.3167	0	4.049911	129.8989	500.7717	130.0851	819.5324	15.31164
T6-029	71.36432	1063.782	12.51515	14.19032	633.5489	0	3.796791	131.0384	491.4115	149.4797	813.8883	14.67806
T7-027	54.08962	828.0101	12.51515	12.28238	562.1631	0	2.784314	99.7031	503.1118	138.1268	821.7901	23.12586
T7-028	58.62069	844.8509	11.66667	12.40162	571.0864	0	3.037433	104.4888	510.1319	139.0728	848.8821	22.38668
T7-029	56.63835	836.4305	10.81818	12.64011	566.6247	0	2.531194	105.2865	503.1118	135.2886	847.7533	34.53039
T8-027	61.7358	1016.067	0	15.62127	673.7034	0	3.543672	127.62	456.3107	145.6954	825.1766	11.93252
T8-028	64.85091	1027.294	11.0303	15.02504	678.165	0	3.543672	127.62	465.6709	146.1684	846.6244	12.56611
T8-029	64.28452	1007.646	14.21212	14.30956	673.7034	0	3.543672	126.4805	477.3712	144.7493	837.5938	16.68441
T9-027	45.31068	805.5556	12.72727	13.47484	593.3944	46.2963	2.531194	108.7049	479.7112	136.2346	770.9926	21.01391
T9-028	46.72664	819.5896	11.45455	12.16313	602.3176	46.2963	2.531194	106.8817	479.7112	136.7077	774.3791	15.10045
T9-029	46.44344	816.7828	12.30303	11.85309	593.3944	46.2963	2.531194	105.5144	472.6911	134.3425	770.9926	16.79001
T10-027	48.99217	959.9303	13.36364	15.26353	584.4712	46.2963	3.290553	127.62	465.6709	137.6537	777.7656	22.80907
T10-028	50.97451	976.7712	14	12.40162	597.856	46.2963	2.784314	129.8989	463.3308	138.1268	786.7963	20.16913
T10-029	52.67366	979.578	12.51515	13.35559	597.856	46.2963	3.290553	120.7832	470.351	138.5998	793.5693	16.68441
T11-027	33.41663	724.158	11.66667	13.47484	504.1622	46.2963	10.63102	90.47344	505.4518	126.7739	783.4098	16.36762
T11-028	35.11578	729.7716	10.60606	12.75936	508.6238	46.2963	2.278075	92.52447	500.7717	124.8817	784.5386	22.38668
T11-029	35.11578	732.5784	11.87879	12.52087	504.1622	46.2963	2.278075	83.63666	503.1118	124.8817	783.4098	11.19334
T12-027	38.51408	872.9191	11.24242	13.95182	539.8551	46.2963	2.531194	115.0859	533.5325	135.2886	834.2073	11.08774
T12-028	40.49642	878.5327	12.51515	15.14429	544.3167	46.2963	2.784314	121.9226	526.5123	134.3425	821.7901	22.91466
T12-029	39.64684	875.7259	12.51515	14.54806	539.8551	46.2963	3.037433	117.3648	519.4922	132.4503	815.0171	23.65385

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-WVNSLCL2	3	101.7602	1593.335	17.18182	37.99984	944.3746	0	12.40285	102.2099	538.9926	192.526	1226.665	41.71102	
T2-WVNSLCL2	7	90.81015	1300.49	12.37374	16.81374	825.3983	0	7.171717	113.6425	538.2126	167.4551	1047.933	25.87139	
T3-WVNSLCL2	10	81.93681	1005.775	4.878788	22.73631	690.0627	0	5.737374	103.5013	489.0714	149.9527	899.3033	15.66363	
T4-WVNSLCL2	14	83.91915	1078.752	12.16162	12.83886	740.6276	0	3.796791	113.9464	499.2117	156.8906	1023.851	8.307005	
T5-WVNSLCL2	17	63.24615	921.5705	14.70707	15.58152	599.3432	0	3.290553	109.7304	436.8102	140.1766	815.3934	13.19969	
T6-WVNSLCL2	21	71.08113	1048.813	13.15152	15.38278	599.3432	0	3.965538	129.5191	494.5316	142.3841	813.1357	15.45244	
T7-WVNSLCL2	24	56.44955	836.4305	11.66667	12.44137	566.6247	0	2.784314	103.1595	505.4518	137.4961	839.4752	26.68098	
T8-WVNSLCL2	28	63.62374	1017.002	8.414141	14.98529	675.1906	0	3.543672	127.2401	466.4509	145.5377	836.4649	13.72768	
T9-WVNSLCL2	31	46.16025	813.976	12.16162	12.49702	596.3688	46.2963	2.531194	107.0336	477.3712	135.7616	772.1215	17.63479	
T10-WVNSLCL2	35	50.88012	972.0932	13.29293	13.67358	593.3944	46.2963	3.121806	126.1007	466.4509	138.1268	786.0437	19.88753	
T11-WVNSLCL2	38	34.54939	728.836	11.38384	12.91836	505.6494	46.2963	5.062389	88.87819	503.1118	125.5125	783.7861	16.64921	
T12-WVNSLCL2	42	39.55245	875.7259	12.09091	14.54806	541.3423	46.2963	2.784314	118.1244	526.5123	134.0271	823.6715	19.21875	

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-WVNSLCL2	3	101.7602	1593.335	17.18182	37.99984	944.3746	0	12.40285	102.2099	538.9926	192.526	1226.665	41.71102	
T2-WVNSLCL2	7	192.5704	2893.825	29.55556	54.81358	1769.773	0	19.57457	215.8525	1077.205	359.9811	2274.598	67.58242	
T3-WVNSLCL2	10	274.5072	3899.6	34.43434	77.54988	2459.836	0	25.31194	319.3538	1566.277	509.9338	3173.901	83.24605	
T4-WVNSLCL2	14	358.4263	4978.352	46.59596	90.38874	3200.463	0	29.10873	433.3002	2065.488	666.8243	4197.752	91.55306	
T5-WVNSLCL2	17	421.6725	5899.923	61.30303	105.9703	3799.806	0	32.39929	543.0305	2502.299	807.0009	5013.145	104.7527	
T6-WVNSLCL2	21	492.7536	6948.735	74.45455	121.353	4399.15	0	36.36482	672.5496	2996.83	949.3851	5826.281	120.2052	
T7-WVNSLCL2	24	549.2032	7785.166	86.12121	133.7944	4965.774	0	39.14914	775.7091	3502.282	1086.881	6665.756	146.8862	
T8-WVNSLCL2	28	612.8269	8802.168	94.53535	148.7797	5640.965	0	42.69281	902.9492	3968.733	1232.419	7502.221	160.6138	
T9-WVNSLCL2	31	658.9872	9616.144	106.697	161.2767	6237.334	46.2963	45.224	1009.983	4446.104	1368.18	8274.343	178.2486	
T10-WVNSLCL2	35	709.8673	10588.24	119.9899	174.9503	6830.728	92.59259	48.34581	1136.084	4912.555	1506.307	9060.386	198.1362	
T11-WVNSLCL2	38	744.4167	11317.07	131.3737	187.8687	7336.378	138.8889	53.4082	1224.962	5415.667	1631.82	9844.173	214.7854	
T12-WVNSLCL2	42	783.9691	12192.8	143.4646	202.4167	7877.72	185.1852	56.19251	1343.086	5942.179	1765.847	10667.84	234.0041	

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-WVNSLCL2	3	0.01696	0.265556	0.002864	0.006333	0.157396	0	0.002067	0.017035	0.089832	0.032088	0.204444	0.006952	3.95	9.346667
T2-WVNSLCL2	4	0.011351	0.162561	0.001547	0.002102	0.103175	0	0.000896	0.014205	0.067277	0.020932	0.130992	0.003234	3.88	9.283333
T3-WVNSLCL2	3	0.013656	0.167629	0.000813	0.003789	0.11501	0	0.000956	0.01725	0.081512	0.024992	0.149884	0.002611	3.85	8.933333
T4-WVNSLCL2	4	0.01049	0.134844	0.00152	0.001605	0.092578	0	0.000475	0.014243	0.062401	0.019611	0.127981	0.001038	3.75	8.966667
T5-WVNSLCL2	3	0.010541	0.153595	0.002451	0.002597	0.099891	0	0.000548	0.018288	0.072802	0.023363	0.135899	0.0022	3.65	8.683333
T6-WVNSLCL2	4	0.008885	0.131102	0.001644	0.001923	0.074918	0	0.000496	0.01619	0.061816	0.017798	0.101642	0.001932	3.78	8.696667
T7-WVNSLCL2	3	0.009408	0.139405	0.001944	0.002074	0.094437	0	0.000464	0.017193	0.084242	0.022916	0.139913	0.004447	3.75	8.456667
T8-WVNSLCL2	4	0.007953	0.127125	0.001052	0.001873	0.084399	0	0.000443	0.015905	0.058306	0.018192	0.104558	0.001716	3.69	8.583333
T9-WVNSLCL2	3	0.007693	0.135663	0.002027	0.002083	0.099395	0.0077	0.000422	0.017839	0.079562	0.022627	0.128687	0.002939	3.7	8.32
T10-WVNSLCL2	4	0.00636	0.121512	0.001662	0.001709	0.074174	0.0058	0.00039	0.015763	0.058306	0.017266	0.098255	0.002486	3.68	8.44
T11-WVNSLCL2	3	0.005758	0.121473	0.001897	0.002153	0.084275	0.0077	0.000844	0.014813	0.083852	0.020919	0.130631	0.002775	4.31	8.223333
T12-WVNSLCL2	4	0.004944	0.109466	0.001511	0.001819	0.067668	0.0058	0.000348	0.014766	0.065814	0.016753	0.102959	0.002402	4.21	8.283333

8.68
± 0.38

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSLCL2	3	0.528553	8.275944	0.089244	0.197375	4.905179	0	0.064422	0.530889	2.799583	1	6.371423	0.216651
T2-WVNSLCL2	4	0.542296	7.766205	0.073893	0.100407	4.929073	0	0.042828	0.678645	3.214072	1	6.257995	0.154498
T3-WVNSLCL2	3	0.546418	6.707281	0.032536	0.151623	4.601869	0	0.038261	0.690226	3.261505	1	5.997246	0.104457
T4-WVNSLCL2	4	0.53489	6.875825	0.077517	0.081833	4.720664	0	0.0242	0.726279	3.18191	1	6.525893	0.052948
T5-WVNSLCL2	3	0.451189	6.574354	0.104918	0.111156	4.27563	0	0.023474	0.782801	3.116142	1	5.816901	0.094165
T6-WVNSLCL2	4	0.499221	7.36608	0.092366	0.108037	4.209341	0	0.027851	0.909646	3.473222	1	5.71086	0.108526
T7-WVNSLCL2	3	0.410554	6.083305	0.084851	0.090485	4.121025	0	0.02025	0.750272	3.676119	1	6.105449	0.194049
T8-WVNSLCL2	4	0.437163	6.987896	0.057814	0.102965	4.639284	0	0.024349	0.874276	3.205018	1	5.747411	0.094324
T9-WVNSLCL2	3	0.34001	5.995628	0.089581	0.092051	4.392766	0.341	0.018644	0.788394	3.516246	1	5.687334	0.129895
T10-WVNSLCL2	4	0.368358	7.037688	0.096237	0.098993	4.296013	0.3352	0.022601	0.912934	3.376977	1	5.690741	0.14398
T11-WVNSLCL2	3	0.275267	5.806882	0.090699	0.102925	4.028679	0.3689	0.040334	0.708122	4.008461	1	6.244688	0.13265
T12-WVNSLCL2	4	0.295108	6.533945	0.090212	0.108546	4.03905	0.3454	0.020774	0.881347	3.928401	1	6.145558	0.143394

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-030	3	0.21	25.3	0.625	0.179	23.6	0.597	0.026	0.127	25.3	67.7	87.7	0.007	2.22	8.47
T1-031	3	0.209	24.3	0.572	0.15	23.5	0.561	0.022	0.052	25.2	68	87.2	0.005		8.52
T1-032	3	0.194	23.3	0.704	0.13	23.2	0.797	0.025	0.022	24.8	67	85.5	0		8.42
T2-030	7	0.193	25.3	1.83	0.728	20.4	2.4	0.145	0.024	31.1	80.5	77.4	0.011	2.22	8.18
T2-031	7	0.181	24.7	1.71	0.446	20.2	2.31	0.157	0	31	77.1	75.4	0.008		8.11
T2-032	7	0.175	24.8	1.89	0.277	19.7	2.69	0.253	0	30.7	73.4	74.1	0.006		7.98
T3-030	10	0.168	24.2	5.69	0.228	16.7	8.01	2.55	0	34.7	95.3	67	0.005	2.28	7.17
T3-031	10	0.176	23.8	5.39	0.213	16.7	7.77	2	0	34.8	92.7	67.2	0		7.27
T3-032	10	0.145	23.8	5.51	0.144	16.9	7.84	2.66	0	33.7	93.6	68.9	0		6.86
T4-030	14	0.113	21.3	5.01	0	17.7	6.74	3.06	0	32.9	91.1	73.9	0	2.13	7.03
T4-031	14	0.12	21.4	5.09	0	17.7	6.83	2.84	0	33.3	93.9	74	0		7.03
T4-032	14	0.097	21.1	5.2	0	17.4	6.84	3.39	0	32.3	93	73.4	0		6.98
T5-030	17	0	22.9	8.78	0	14.4	7.94	11.8	0	31.1	86.7	58.2	0	2.12	6.56
T5-031	17	0.055	23.1	8.8	0	14.3	8.25	11	0	31.3	89.9	58.5	0		6.51
T5-032	17	0	22.3	9.62	0	13.7	7.99	14.8	0	31.1	93.5	55.5	0		6.36
T6-030	21	0	23.4	5.6	0	16.1	5.7	7.56	0	30.5	78.3	61.2	0	2.26	6.37
T6-031	21	0.051	23.7	4.71	0	16.7	5.35	5.22	0	30.4	77.1	62.8	0		5.53
T6-032	21	0	23.9	4.68	0	16.9	5.15	6.13	0	30.4	77	63.2	0		6.47
T7-030	24	0	18.7	11.1	0	11.7	5.87	27.7	0	32.8	91.4	51.3	0	2.16	5.29
T7-031	24	0	20.5	10.1	0	12.9	6.71	22.9	0	33.6	85.7	55.9	0		5.74
T7-032	24	0	18.8	10.6	0	12	6.03	25.3	0	32.9	85.6	52.6	0		5.35
T8-030	28	0.052	25.1	4.86	0	18.7	4.69	8.94	0	29.2	89	66.8	0	2.23	5.97
T8-031	28	0.05	24.9	4.45	0	19.3	4.62	7.16	0	29.8	77.1	69	0		6.24
T8-032	28	0	25	4.73	0	18.8	4.71	8.38	0	29.8	85.3	68.4	0		5.98
T9-030	31	0.153	18.5	9.47	0.172	14	5.22	19.7	0.02	33.2	91.4	53.1	0.005	2.24	4.52
T9-031	31	0.05	19.1	10.3	0.1	13.7	5.85	23.9	0.02	32.4	79.3	52.9	0.005		5.53
T9-032	31	0.123	17.7	9.78	0.133	13.6	5.01	21.1	0.02	33	84.2	51.5	0.005		4.61
T10-030	35	0.079	22.8	6.48	0.1	15.5	4.92	11.1	0.02	31.1	89.9	60.7	0.005	2.21	4.89
T10-031	35	0.05	24.1	6.02	0.1	16.4	4.64	11	0.02	30.8	80	63.3	0.005		5.57
T10-032	35	0.12	22.2	6.58	0.136	15.1	4.78	11.3	0.02	30.9	90.8	59.2	0.005		4.75
T11-030	38	6.55	15.8	5.28	1.65	10.6	4.06	8.92	0.02	27.5	82.8	44.9	0.005	2.43	3.42
T11-031	38	0.679	16.2	8.7	0.586	11.2	4.06	17.2	0.02	33.9	80.6	49.5	0.005		4.19
T11-032	38	8.13	15.5	5.03	1.82	10.1	4.15	8.51	0.02	26.6	92.7	43.5	0.005		3.36
T12-030	42	2.82	20	5.45	1.34	13.4	5.05	9.79	0.02	29.9	102	57	0.005	2.34	3.72
T12-031	42	1.14	20.1	5.61	1.05	13.6	4.23	10.4	0.02	31.7	97.3	57.9	0.005		4
T12-032	42	3.49	19.2	5.61	1.5	12.9	5.34	9.64	0.02	30.1	109	57.4	0.005		3.67

Leaching Solution Results for SPS Glass in 0.0025 M Fe Cl3

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-030	9.535256	1012.698	84.95146	2.343852	1147.8	70.56738	2.006208	#DIV/0!	828.5256	260.8863	1294.681	6.758242
T1-031	9.48985	972.6708	77.74757	1.964122	1142.936	66.31206	1.697561	#DIV/0!	825.2508	262.0424	1287.299	4.827316
T1-032	8.808761	932.6432	95.68932	1.702239	1128.346	94.20804	1.929047	#DIV/0!	812.1516	258.1888	1262.203	0
T2-030	8.763355	1012.698	248.7379	9.532539	992.1661	283.6879	11.18847	#DIV/0!	1018.464	310.2119	1142.626	10.62009
T2-031	8.218483	988.6818	232.4272	5.83999	982.439	273.0496	12.11441	#DIV/0!	1015.19	297.1098	1113.101	7.723705
T2-032	7.946047	992.6846	256.8932	3.627079	958.1212	317.9669	19.52195	#DIV/0!	1005.365	282.8516	1093.909	5.792779
T3-030	7.628205	968.668	773.3981	2.985465	812.2144	946.8085	196.7627	#DIV/0!	1136.357	367.2447	989.0947	4.827316
T3-031	7.991453	952.657	732.6214	2.789053	812.2144	918.4397	154.3237	#DIV/0!	1139.632	357.2254	992.0472	0
T3-032	6.583868	952.657	748.932	1.885557	821.9415	926.7139	205.2506	#DIV/0!	1103.609	360.6936	1017.144	0
T4-030	5.130876	852.588	680.9709	0	860.85	796.6903	236.1153	#DIV/0!	1077.411	351.0597	1090.957	0
T4-031	5.448718	856.5908	691.8447	0	860.85	807.3286	219.1397	#DIV/0!	1090.51	361.8497	1092.433	0
T4-032	4.40438	844.5825	706.7961	0	846.2593	808.5106	261.5787	#DIV/0!	1057.762	358.3815	1083.575	0
T5-030	0	916.6322	1193.398	0	700.3525	938.5343	910.51	#DIV/0!	1018.464	334.104	859.1838	0
T5-031	2.497329	924.6377	1196.117	0	695.489	975.1773	848.7805	#DIV/0!	1025.014	346.4355	863.6126	0
T5-032	0	892.6156	1307.573	0	666.3076	944.4444	1141.996	#DIV/0!	1018.464	360.3083	819.3247	0
T6-030	0	936.646	761.165	0	783.033	673.7589	583.3437	#DIV/0!	998.8155	301.7341	903.4716	0
T6-031	2.315705	948.6542	640.1942	0	812.2144	632.3877	402.7849	#DIV/0!	995.5407	297.1098	927.0918	0
T6-032	0	956.6598	636.1165	0	821.9415	608.747	473.0022	#DIV/0!	995.5407	296.7245	932.9968	0
T7-030	0	748.5162	1508.738	0	569.0364	693.8534	2137.384	#DIV/0!	1074.136	352.2158	757.3218	0
T7-031	0	820.5659	1372.816	0	627.3991	793.1442	1767.007	#DIV/0!	1100.334	330.2505	825.2298	0
T7-032	0	752.519	1440.777	0	583.6271	712.766	1952.195	#DIV/0!	1077.411	329.8651	776.5132	0
T8-030	2.361111	1004.693	660.5825	0	909.4856	554.3735	689.8271	#DIV/0!	956.243	342.9672	986.1422	0
T8-031	2.270299	996.6874	604.8544	0	938.6669	546.0993	552.4789	#DIV/0!	975.8919	297.1098	1018.62	0
T8-032	0	1000.69	642.9126	0	914.3491	556.7376	646.6164	#DIV/0!	975.8919	328.7091	1009.762	0
T9-030	6.947115	740.5107	1287.184	2.252193	680.8983	617.0213	1520.089	#DIV/0!	1087.235	352.2158	783.8945	4.827316
T9-031	2.270299	764.5273	1400	1.309415	666.3076	691.4894	1844.169	#DIV/0!	1061.037	305.5877	780.9419	4.827316
T9-032	5.584936	708.4886	1329.32	1.741522	661.4441	592.1986	1628.115	#DIV/0!	1080.686	324.4701	760.2743	4.827316
T10-030	3.587073	912.6294	880.7767	1.309415	753.8517	581.5603	856.4967	#DIV/0!	1018.464	346.4355	896.0903	4.827316
T10-031	2.270299	964.6653	818.2524	1.309415	797.6237	548.4634	848.7805	#DIV/0!	1008.64	308.2852	934.4731	4.827316
T10-032	5.448718	888.6128	894.3689	1.780804	734.3974	565.0118	871.929	#DIV/0!	1011.915	349.9037	873.9464	4.827316
T11-030	297.4092	632.4362	717.6699	21.60534	515.5373	479.9054	688.2838	#DIV/0!	900.5713	319.0751	662.8411	4.827316
T11-031	30.83066	648.4472	1182.524	7.67317	544.7186	479.9054	1327.184	#DIV/0!	1110.159	310.5973	730.7491	4.827316
T11-032	369.1506	620.4279	683.6893	23.83135	491.2195	490.5437	656.6475	#DIV/0!	871.0981	357.2254	642.1734	4.827316
T12-030	128.0449	800.5521	740.7767	17.54616	651.7169	596.9267	755.4146	#DIV/0!	979.1667	393.0636	841.4686	4.827316
T12-031	51.76282	804.5549	762.5243	13.74885	661.4441	500	802.4834	#DIV/0!	1038.113	374.9518	854.755	4.827316
T12-032	158.4669	768.53	762.5243	19.64122	627.3991	631.2057	743.8404	#DIV/0!	985.7163	420.0385	847.3737	4.827316

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-SRSLCL3	3	9.277956	972.6708	86.12945	2.003404	1139.694	77.02916	1.877605	#DIV/0!	821.976	260.3725	1281.394	3.861852	
T2-SRSLCL3	7	8.309295	998.0216	246.0194	6.333202	977.5754	291.5682	14.27494	#DIV/0!	1013.006	296.7245	1116.545	8.045526	
T3-SRSLCL3	10	7.401175	957.994	751.6505	2.553359	815.4568	930.6541	185.4457	#DIV/0!	1126.533	361.7213	999.4285	1.609105	
T4-SRSLCL3	14	4.994658	851.2537	693.2039	0	855.9864	804.1765	238.9446	#DIV/0!	1075.228	357.097	1088.988	0	
T5-SRSLCL3	17	0.832443	911.2951	1232.362	0	687.383	952.7187	967.0953	#DIV/0!	1020.648	346.9493	847.3737	0	
T6-SRSLCL3	21	0.771902	947.32	679.1586	0	805.7296	638.2979	486.3769	#DIV/0!	996.6323	298.5228	921.1867	0	
T7-SRSLCL3	24	0	773.867	1440.777	0	593.3542	733.2545	1952.195	#DIV/0!	1083.96	337.4438	786.3549	0	
T8-SRSLCL3	28	1.543803	1000.69	636.1165	0	920.8339	552.4035	629.6408	#DIV/0!	969.3423	322.9287	1004.842	0	
T9-SRSLCL3	31	4.934117	737.8422	1338.835	1.76771	669.55	633.5697	1664.124	#DIV/0!	1076.319	327.4245	775.0369	4.827316	
T10-SRSLCL3	35	3.768697	921.9692	864.466	1.466544	761.9576	565.0118	859.0687	#DIV/0!	1013.006	334.8748	901.5032	4.827316	
T11-SRSLCL3	38	232.4635	633.7704	861.2945	17.70329	517.1585	483.4515	890.7051	#DIV/0!	960.6094	328.966	678.5879	4.827316	
T12-SRSLCL3	42	112.7582	791.2123	755.2751	16.97874	646.8534	576.0441	767.2461	#DIV/0!	1000.999	396.018	847.8658	4.827316	

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	
T1-SRSLCL3	3	9.277956	972.6708	86.12945	2.003404	1139.694	77.02916	1.877605	#DIV/0!	821.976	260.3725	1281.394	3.861852	
T2-SRSLCL3	7	17.58725	1970.692	332.1489	8.336607	2117.269	368.5973	16.15255	#DIV/0!	1834.982	557.097	2397.94	11.90738	
T3-SRSLCL3	10	24.98843	2928.686	1083.799	10.88997	2932.726	1299.251	201.5982	#DIV/0!	2961.515	918.8182	3397.368	13.51648	
T4-SRSLCL3	14	29.98308	3779.94	1777.003	10.88997	3788.713	2103.428	440.5428	#DIV/0!	4036.743	1275.915	4486.356	13.51648	
T5-SRSLCL3	17	30.81553	4691.235	3009.366	10.88997	4476.096	3056.147	1407.638	#DIV/0!	5057.39	1622.864	5333.73	13.51648	
T6-SRSLCL3	21	31.58743	5638.555	3688.524	10.88997	5281.825	3694.444	1894.015	#DIV/0!	6054.023	1921.387	6254.917	13.51648	
T7-SRSLCL3	24	31.58743	6412.422	5129.301	10.88997	5875.18	4427.699	3846.21	#DIV/0!	7137.983	2258.831	7041.272	13.51648	
T8-SRSLCL3	28	33.13123	7413.112	5765.417	10.88997	6796.013	4980.102	4475.851	#DIV/0!	8107.325	2581.76	8046.113	13.51648	
T9-SRSLCL3	31	38.06535	8150.955	7104.252	12.65768	7465.563	5613.672	6139.975	#DIV/0!	9183.645	2909.184	8821.15	18.3438	
T10-SRSLCL3	35	41.83405	9072.924	7968.718	14.12422	8227.521	6178.684	6999.044	#DIV/0!	10196.65	3244.059	9722.653	23.17111	
T11-SRSLCL3	38	274.2975	9706.694	8830.013	31.82751	8744.679	6662.136	7889.749	#DIV/0!	11157.26	3573.025	10401.24	27.99843	
T12-SRSLCL3	42	387.0557	10497.91	9585.288	48.80625	9391.533	7238.18	8656.995	#DIV/0!	12158.26	3969.043	11249.11	32.82575	

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-SRSLCL3	3	0.001546	0.162112	0.014355	0.000334	0.189949	0.012838	0.000313	#DIV/0!	0.136996	0.043395	0.213566	0.000644	2.22	8.47
T2-SRSLCL3	4	0.001039	0.124753	0.030752	0.000792	0.122197	0.036446	0.001784	#DIV/0!	0.126626	0.037091	0.139568	0.001006	2.22	8.09
T3-SRSLCL3	3	0.001234	0.159666	0.125275	0.000426	0.135909	0.155109	0.030908	#DIV/0!	0.187755	0.060287	0.166571	0.000268	2.28	7.1
T4-SRSLCL3	4	0.000624	0.106407	0.08665	0	0.106998	0.100522	0.029868	#DIV/0!	0.134403	0.044637	0.136124	0	2.13	7.013333
T5-SRSLCL3	3	0.000139	0.151883	0.205394	0	0.114564	0.158786	0.161183	#DIV/0!	0.170108	0.057825	0.141229	0	2.12	6.476667
T6-SRSLCL3	4	9.65E-05	0.118415	0.084895	0	0.100716	0.079787	0.060797	#DIV/0!	0.124579	0.037315	0.115148	0	2.26	6.123333
T7-SRSLCL3	3	0	0.128978	0.240129	0	0.098892	0.122209	0.325366	#DIV/0!	0.18066	0.056241	0.131059	0	2.16	5.46
T8-SRSLCL3	4	0.000193	0.125086	0.079515	0	0.115104	0.06905	0.078705	#DIV/0!	0.121168	0.040366	0.125605	0	2.23	6.063333
T9-SRSLCL3	3	0.000822	0.122974	0.223139	0.000295	0.111592	0.105595	0.277354	#DIV/0!	0.179387	0.054571	0.129173	0.000805	2.24	4.886667
T10-SRSLCL3	4	0.000471	0.115246	0.108058	0.000183	0.095245	0.070626	0.107384	#DIV/0!	0.126626	0.041859	0.112688	0.000603	2.21	5.07
T11-SRSLCL3	3	0.038744	0.105628	0.143549	0.002951	0.086193	0.080575	0.148451	#DIV/0!	0.160102	0.054828	0.113098	0.000805	2.43	3.656667
T12-SRSLCL3	4	0.014095	0.098902	0.094409	0.002122	0.080857	0.072006	0.095906	#DIV/0!	0.125125	0.049502	0.105983	0.000603	2.34	3.796667

6.02
± 1.53

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-SRSLCL3	3	0.035633	3.735689	0.330793	0.007694	4.377167	0.295842	0.007211	#DIV/0!	3.156923	1	4.921389	0.014832
T2-SRSLCL3	4	0.028003	3.363462	0.829117	0.021344	3.294556	0.982623	0.048108	#DIV/0!	3.413963	1	3.762902	0.027114
T3-SRSLCL3	3	0.020461	2.648432	2.077983	0.007059	2.254379	2.572849	0.512676	#DIV/0!	3.114367	1	2.76298	0.004448
T4-SRSLCL3	4	0.013987	2.383817	1.94122	0	2.39707	2.251984	0.669131	#DIV/0!	3.011024	1	3.049559	0
T5-SRSLCL3	3	0.002399	2.626595	3.551996	0	1.981221	2.745988	2.787426	#DIV/0!	2.941777	1	2.442356	0
T6-SRSLCL3	4	0.002586	3.173359	2.275064	0	2.699056	2.138188	1.629279	#DIV/0!	3.338547	1	3.085817	0
T7-SRSLCL3	3	0	2.293321	4.269679	0	1.758379	2.172968	5.785245	#DIV/0!	3.212269	1	2.330328	0
T8-SRSLCL3	4	0.004781	3.098796	1.969836	0	2.851508	1.710605	1.949783	#DIV/0!	3.001722	1	3.111651	0
T9-SRSLCL3	3	0.015069	2.253473	4.088988	0.005399	2.044899	1.93501	5.082466	#DIV/0!	3.287228	1	2.36707	0.014743
T10-SRSLCL3	4	0.011254	2.753176	2.581461	0.004379	2.275351	1.687233	2.565343	#DIV/0!	3.02503	1	2.692061	0.014415
T11-SRSLCL3	3	0.706649	1.926553	2.618187	0.053815	1.572073	1.46961	2.70759	#DIV/0!	2.920088	1	2.062791	0.014674
T12-SRSLCL3	4	0.28473	1.99792	1.907174	0.042874	1.633394	1.454591	1.937402	#DIV/0!	2.52766	1	2.140978	0.01219

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-033	3	1.94	71	0.069	2.2	28.2	0	0.046	2.4	30.9	39.8	136	0.098	2.22	9.09
T1-034	3	1.94	70.3	0.121	2.62	27.8	0	0.054	2.4	30.7	39.5	134	0.101		9.11
T1-035	3	2.08	70.7	0.083	4.04	27.8	0	0.077	2.42	30.6	40	137	0.103		9.12
T2-033	7	2.66	61.8	0.083	1.33	25.1	0	0.03	1.35	31.4	36.5	126	0.152	2.22	9.1
T2-034	7	2.6	61.1	0.081	1.03	24.5	0	0.03	1.34	30.8	35.8	123	0.138		9.1
T2-035	7	2.65	60.9	0.107	1.12	24.8	0	0.036	1.25	31.6	36.8	126	0.167		9.09
T3-033	10	2.88	50.8	0.076	1.08	22.4	0	0.025	0.834	32	29.3	127	0.064	2.28	8.7
T3-034	10	2.89	51.3	0.082	1.08	22.5	0	0.025	0.859	30.7	29.3	127	0.09		8.72
T3-035	10	2.88	51.3	0.095	1.11	22.5	0	0.026	0.827	29.7	29	125	0.092		8.72
T4-033	14	2.48	53	0.082	1.4	22.6	0	0.027	1.1	29.2	28.3	118	0.075	2.13	8.73
T4-034	14	2.47	53.8	0.102	0.658	22.7	0	0.022	1.08	29.3	28.2	120	0.047		8.75
T4-035	14	2.57	53.7	0.085	0.748	22.7	0	0.025	1.07	30.8	28.4	123	0.056		8.75
T5-033	17	1.86	48.7	0.116	0.865	19.6	0	0.026	1.15	26	26.9	111	0.103	2.12	8.49
T5-034	17	1.8	48.1	0.125	1.24	19.5	0	0.029	1.07	23.8	27.3	111	0.094		8.48
T5-035	17	1.82	47.9	0.096	1.07	19.2	0	0.023	1.06	29.1	27.4	115	0.083		8.45
T6-033	21	1.87	51	0.081	1.04	19.6	0	0.023	1.26	30.5	28.4	103	0.086	2.26	8.69
T6-034	21	1.88	51.5	0.068	1.19	19.8	0	0.024	1.24	31.2	28.6	103	0.093		8.5
T6-035	21	1.92	52.9	0.072	0.983	20	0	0.022	1.3	30.1	28.8	106	0.091		8.5
T7-033	24	1.35	42.8	0.066	1.02	18.4	0	0.017	0.923	31.1	27.1	110	0.207	2.16	8.22
T7-034	24	1.37	43.2	0.063	0.801	18.7	0	0.018	0.904	32.5	27.5	106	0.151		8.22
T7-035	24	1.39	42.9	0.072	0.97	18.6	0	0.017	0.909	31.4	27.1	106	0.176		8.18
T8-033	28	1.62	50.2	0.074	1.38	21.4	0	0.024	1.21	29.7	28.6	108	0.141	2.23	8.32
T8-034	28	1.67	51	0.075	1.37	21.3	0	0.025	1.21	30.4	29.3	108	0.096		8.33
T8-035	28	1.62	51.5	0.066	1.43	21.2	0	0.023	1.24	29.1	29.4	107	0.142		8.32
T9-033	31	1.04	41.2	0.08	1.4	19.3	0.05	0.02	0.954	29.7	27.5	101	0.213	2.24	8.01
T9-034	31	0.975	41	0.075	0.954	17.4	0.05	0.02	0.935	29.7	26.6	100	0.148		8.02
T9-035	31	1.09	40.9	0.08	2.15	17.4	0.05	0.023	0.938	29.4	27	100	0.194		7.96
T10-033	35	1.19	47.9	0.897	1.46	18.4	0.074	0.028	1.11	28.8	27.3	101	0.149	2.21	8.14
T10-034	35	1.26	48.3	0.088	1.51	18.5	0.05	0.028	1.11	30.2	27.7	102	0.133		8.13
T10-035	35	1.25	48.3	0.082	1.69	18.4	0.05	0.028	1.13	29	27.6	101	0.158		8.14
T11-033	38	0.714	36.5	0.076	1.83	16.2	0.053	0.025	0.76	31.5	26.2	102	0.196	2.43	7.86
T11-034	38	0.659	36.6	0.098	1.48	16.2	0.058	0.024	0.729	31.5	26.1	102	0.126		7.89
T11-035	38	0.69	36.5	0.077	1.71	16	0.054	0.023	0.723	31.8	26.3	102	0.165		7.87
T12-033	42	0.828	42.7	0.075	1.49	17.4	0.051	0.024	0.97	32.2	27.9	104	0.111	2.34	7.92
T12-034	42	0.847	42.5	0.091	1.5	17.1	0.051	0.023	0.977	32.3	27.7	104	0.112		7.95
T12-035	42	0.775	42.7	0.072	1.38	17.2	0.054	0.023	0.953	31.9	27.7	104	0.104		7.97

Leaching Solution Results for WVNS Glass w/ 0.0025M Fe_2O_3

Normalized Concentration (g-glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-033	54.9392	1992.838	14.63636	26.2342	1258.175	0	11.64349	273.4714	723.0769	188.2687	1535.212	10.34856
T1-034	54.9392	1973.19	25.66667	31.24255	1240.328	0	13.66845	273.4714	718.3968	186.8496	1512.636	10.66535
T1-035	58.90388	1984.417	17.60606	48.17553	1240.328	0	19.4902	275.7503	716.0568	189.2148	1546.501	10.87655
T2-033	75.329	1734.611	17.60606	15.85977	1119.865	0	7.593583	153.8276	734.7772	172.6585	1422.329	16.05082
T2-034	73.62985	1714.963	17.18182	12.28238	1093.095	0	7.593583	152.6882	720.7369	169.3472	1388.464	14.57246
T2-035	75.04581	1709.35	22.69697	13.35559	1106.48	0	9.112299	142.433	739.4573	174.0776	1422.329	17.63479
T3-033	81.55922	1425.861	16.12121	12.87861	999.4011	0	6.327986	95.0313	748.8175	138.5998	1433.617	6.758242
T3-034	81.84241	1439.895	17.39394	12.87861	1003.863	0	6.327986	97.87996	718.3968	138.5998	1433.617	9.503777
T3-035	81.55922	1439.895	20.15152	13.23635	1003.863	0	6.581105	94.23367	694.9963	137.1807	1411.041	9.714973
T4-033	70.23155	1487.611	17.39394	16.69449	1008.324	0	6.834225	125.341	683.296	133.8694	1332.022	7.919815
T4-034	69.94836	1510.066	21.63636	7.846411	1012.786	0	5.568627	123.0621	685.636	133.3964	1354.599	4.963084
T4-035	72.78028	1507.259	18.0303	8.919628	1012.786	0	6.327986	121.9226	720.7369	134.3425	1388.464	5.913462
T5-033	52.67366	1366.918	24.60606	10.31481	874.476	0	6.581105	131.0384	608.4142	127.2469	1253.004	10.87655
T5-034	50.97451	1350.077	26.51515	14.78655	870.0144	0	7.340463	121.9226	556.933	129.1391	1253.004	9.926168
T5-035	51.5409	1344.464	20.36364	12.75936	856.6295	0	5.821747	120.7832	680.9559	129.6121	1298.157	8.764595
T6-033	52.95685	1431.475	17.18182	12.40162	874.476	0	5.821747	143.5725	713.7167	134.3425	1162.698	9.081387
T6-034	53.24005	1445.509	14.42424	14.19032	883.3992	0	6.074866	141.2935	730.0971	135.2886	1162.698	9.82057
T6-035	54.37281	1484.804	15.27273	11.72192	892.3224	0	5.568627	148.1303	704.3565	136.2346	1196.563	9.609375
T7-033	38.23088	1201.316	14	12.16313	820.9366	0	4.30303	105.1725	727.757	128.193	1241.716	21.85869
T7-034	38.79727	1212.544	13.36364	9.551634	834.3215	0	4.55615	103.0075	760.5178	130.0851	1196.563	15.94523
T7-035	39.36365	1204.123	15.27273	11.5669	829.8599	0	4.30303	103.5773	734.7772	128.193	1196.563	18.58516
T8-033	45.87706	1409.021	15.69697	16.456	954.785	0	6.074866	137.8751	694.9963	135.2886	1219.139	14.88925
T8-034	47.29302	1431.475	15.90909	16.33675	950.3234	0	6.327986	137.8751	711.3766	138.5998	1219.139	10.13736
T8-035	45.87706	1445.509	14	17.05223	945.8618	0	5.821747	141.2935	680.9559	139.0728	1207.851	14.99485
T9-033	29.45194	1156.407	16.9697	16.69449	861.0911	46.2963	5.062389	108.7049	694.9963	130.0851	1140.121	22.49227
T9-034	27.61119	1150.794	15.90909	11.3761	776.3205	46.2963	5.062389	106.5399	694.9963	125.8278	1128.833	15.62843
T9-035	30.8679	1147.987	16.9697	25.63797	776.3205	46.2963	5.821747	106.8817	687.9761	127.72	1128.833	20.48592
T10-033	33.69982	1344.464	190.2727	17.40997	820.9366	68.51852	7.087344	126.4805	673.9358	129.1391	1140.121	15.73403
T10-034	35.68216	1355.691	18.66667	18.0062	825.3983	46.2963	7.087344	126.4805	706.6965	131.0312	1151.409	14.04447
T10-035	35.39897	1355.691	17.39394	20.15264	820.9366	46.2963	7.087344	128.7594	678.6159	130.5582	1140.121	16.68441
T11-033	20.21989	1024.487	16.12121	21.82208	722.7812	49.07407	6.327986	86.59926	737.1173	123.9357	1151.409	20.69712
T11-034	18.66234	1027.294	20.78788	17.64846	722.7812	53.7037	6.074866	83.06692	737.1173	123.4626	1151.409	13.30529
T11-035	19.54023	1024.487	16.33333	20.39113	713.8579	50	5.821747	82.38325	744.1374	124.4087	1151.409	17.42359
T12-033	23.44828	1198.509	15.90909	17.76771	776.3205	47.22222	6.074866	110.528	753.4976	131.9773	1173.986	11.72133
T12-034	23.98634	1192.896	19.30303	17.88695	762.9357	47.22222	5.821747	111.3256	755.8377	131.0312	1173.986	11.82692
T12-035	21.94736	1198.509	15.27273	16.456	767.3973	50	5.821747	108.5909	746.4775	131.0312	1173.986	10.98214

Average normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSLCL3	3	56.26076	1983.482	19.30303	35.21743	1246.277	0	14.93405	274.231	719.1768	188.111	1531.45	10.63015
T2-WVNSLCL3	7	74.66822	1719.641	19.16162	13.83258	1106.48	0	8.099822	149.6496	731.6571	172.0278	1411.041	16.08602
T3-WVNSLCL3	10	81.65362	1435.217	17.88889	12.99785	1002.376	0	6.412359	95.71497	720.7369	138.1268	1426.092	8.658997
T4-WVNSLCL3	14	70.98673	1501.645	19.0202	11.15351	1011.299	0	6.243613	123.4419	696.5563	133.8694	1358.362	6.265453
T5-WVNSLCL3	17	51.72969	1353.82	23.82828	12.62024	867.04	0	6.581105	124.5814	615.4344	128.666	1268.055	9.855769
T6-WVNSLCL3	21	53.52324	1453.93	15.62626	12.77129	883.3992	0	5.821747	144.3321	716.0568	135.2886	1173.986	9.503777
T7-WVNSLCL3	24	38.79727	1205.994	14.21212	11.09389	828.3727	0	4.387403	103.9191	741.0173	128.8237	1211.614	18.79636
T8-WVNSLCL3	28	46.34905	1428.668	15.20202	16.61499	950.3234	0	6.074866	139.0146	695.7763	137.6537	1215.376	13.34049
T9-WVNSLCL3	31	29.31034	1151.729	16.61616	17.90285	804.5774	46.2963	5.315508	107.3755	692.6562	127.8776	1132.595	19.53554
T10-WVNSLCL3	35	34.92698	1351.949	75.44444	18.52294	822.4238	53.7037	7.087344	127.2401	686.4161	130.2428	1143.884	15.48764
T11-WVNSLCL3	38	19.47415	1025.423	17.74747	19.95389	719.8068	50.92593	6.074866	84.01648	739.4573	123.9357	1151.409	17.142
T12-WVNSLCL3	42	23.12733	1196.638	16.82828	17.37022	768.8845	48.14815	5.90612	110.1482	751.9376	131.3466	1173.986	11.51013

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSLCL3	3	56.26076	1983.482	19.30303	35.21743	1246.277	0	14.93405	274.231	719.1768	188.111	1531.45	10.63015
T2-WVNSLCL3	7	130.929	3703.123	38.46465	49.05	2352.757	0	23.03387	423.8806	1450.834	360.1388	2942.49	26.71617
T3-WVNSLCL3	10	212.5826	5138.34	56.35354	62.04786	3355.132	0	29.44623	519.5956	2171.571	498.2655	4368.582	35.37517
T4-WVNSLCL3	14	283.5693	6639.986	75.37374	73.20137	4366.431	0	35.68984	643.0375	2868.127	632.135	5726.944	41.64063
T5-WVNSLCL3	17	335.299	7993.806	99.20202	85.82161	5233.471	0	42.27094	767.6189	3483.562	760.801	6994.999	51.49639
T6-WVNSLCL3	21	388.8223	9447.735	114.8283	98.59289	6116.87	0	48.09269	911.951	4199.618	896.0896	8168.985	61.00017
T7-WVNSLCL3	24	427.6195	10653.73	129.0404	109.6868	6945.243	0	52.4801	1015.87	4940.636	1024.913	9380.599	79.79653
T8-WVNSLCL3	28	473.9686	12082.4	144.2424	126.3018	7895.566	0	58.55496	1154.885	5636.412	1162.567	10595.98	93.13702
T9-WVNSLCL3	31	503.2789	13234.13	160.8586	144.2046	8700.144	46.2963	63.87047	1262.26	6329.068	1290.445	11728.57	112.6726
T10-WVNSLCL3	35	538.2059	14586.08	236.303	162.7276	9522.568	100	70.95781	1389.5	7015.484	1420.687	12872.45	128.1602
T11-WVNSLCL3	38	557.68	15611.5	254.0505	182.6815	10242.37	150.9259	77.03268	1473.517	7754.941	1544.623	14023.86	145.3022
T12-WVNSLCL3	42	580.8074	16808.14	270.8788	200.0517	11011.26	199.0741	82.9388	1583.665	8506.879	1675.97	15197.85	156.8123

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-WVNSLCL3	3	0.009377	0.33058	0.003217	0.00587	0.207713	0	0.002489	0.045705	0.119863	0.031352	0.255242	0.001772	2.22	9.106667
T2-WVNSLCL3	4	0.009334	0.214955	0.002395	0.001729	0.13831	0	0.001012	0.018706	0.091457	0.021503	0.17638	0.002011	2.22	9.096667
T3-WVNSLCL3	3	0.013609	0.239203	0.002981	0.002166	0.167063	0	0.001069	0.015952	0.120123	0.023021	0.237682	0.001443	2.28	8.713333
T4-WVNSLCL3	4	0.008873	0.187706	0.002378	0.001394	0.126412	0	0.00078	0.01543	0.08707	0.016734	0.169795	0.000783	2.13	8.743333
T5-WVNSLCL3	3	0.008622	0.225637	0.003971	0.002103	0.144507	0	0.001097	0.020764	0.102572	0.021444	0.211343	0.001643	2.12	8.473333
T6-WVNSLCL3	4	0.00669	0.181741	0.001953	0.001596	0.110425	0	0.000728	0.018042	0.089507	0.016911	0.146748	0.001188	2.26	8.563333
T7-WVNSLCL3	3	0.006466	0.200999	0.002369	0.001849	0.138062	0	0.000731	0.01732	0.123503	0.021471	0.201936	0.003133	2.16	8.206667
T8-WVNSLCL3	4	0.005794	0.178584	0.0019	0.002077	0.11879	0	0.000759	0.017377	0.086972	0.017207	0.151922	0.001668	2.23	8.323333
T9-WVNSLCL3	3	0.004885	0.191955	0.002769	0.002984	0.134096	0.0077	0.000886	0.017896	0.115443	0.021313	0.188766	0.003256	2.24	7.996667
T10-WVNSLCL3	4	0.004366	0.168994	0.009431	0.002315	0.102803	0.0067	0.000886	0.015905	0.085802	0.01628	0.142985	0.001936	2.21	8.136667
T11-WVNSLCL3	3	0.003246	0.170904	0.002958	0.003326	0.119968	0.0085	0.001012	0.014003	0.123243	0.020656	0.191902	0.002857	2.43	7.873333
T12-WVNSLCL3	4	0.002891	0.14958	0.002104	0.002171	0.096111	0.006	0.000738	0.013769	0.093992	0.016418	0.146748	0.001439	2.34	7.946667

8.43
± 0.42

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSLCL3	3	0.299083	10.54421	0.102615	0.187216	6.625221	0	0.07939	1.457815	3.823151	1	8.141201	0.05651
T2-WVNSLCL3	4	0.434048	9.996301	0.111387	0.080409	6.431984	0	0.047084	0.869915	4.253134	1	8.202402	0.093508
T3-WVNSLCL3	3	0.59115	10.39058	0.129511	0.094101	7.256924	0	0.046424	0.69295	5.217937	1	10.32451	0.062689
T4-WVNSLCL3	4	0.530268	11.21724	0.14208	0.083316	7.554366	0	0.04664	0.922107	5.203251	1	10.14692	0.046803
T5-WVNSLCL3	3	0.402046	10.52197	0.185195	0.098085	6.738686	0	0.051149	0.968254	4.783192	1	9.8554	0.0766
T6-WVNSLCL3	4	0.395623	10.74688	0.115503	0.0944	6.529741	0	0.043032	1.066846	5.292811	1	8.677644	0.070248
T7-WVNSLCL3	3	0.301166	9.361586	0.110322	0.086117	6.430281	0	0.034057	0.806677	5.752181	1	9.405206	0.145908
T8-WVNSLCL3	4	0.336708	10.37871	0.110437	0.120701	6.903724	0	0.044132	1.009886	5.05454	1	8.829229	0.096913
T9-WVNSLCL3	3	0.229206	9.006494	0.129938	0.14	6.291775	0.362	0.041567	0.839674	5.416554	1	8.856868	0.152767
T10-WVNSLCL3	4	0.268168	10.38022	0.57926	0.142218	6.314542	0.4123	0.054416	0.976946	5.270279	1	8.7827	0.118914
T11-WVNSLCL3	3	0.157131	8.27383	0.143199	0.161002	5.807906	0.4109	0.049016	0.677904	5.966461	1	9.290378	0.138314
T12-WVNSLCL3	4	0.176079	9.11054	0.128121	0.132247	5.85386	0.3666	0.044966	0.838607	5.724836	1	8.938077	0.087632

Leaching Solution Results for WVNS Glass in 0.25M HCl

Leachate Analysis for PCT Tests (mg/L) (mg of element/Liter of Leachant)

* Numbers in parentheses are instrument detection limits.

Test ID	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-036	3	34.7	1078	92.8	70.7	486	18.9	64.8	0.041	1283	105	2298	0.018	0.69	3.48
T1-037	3	32.2	1079	82.2	62.7	490	16.9	63.8	0.044	1187	96	2311	0.017	0.69	3.53
T2-036	7	548	615	63.7	303	289	18.3	56.5	1.97	887	192	1429	0.236	0.71	1.76
T2-037	7	553	624	72.6	300	294	21.3	57.9	2.26	1035	196	1454	0.289	0.71	1.75
T3-036	10	607	538	81.3	727	234	29.8	65.4	6.81	714	188	1109	0.232	0.67	1.71
T3-037	10	606	553	82	664	242	30	67.0	7.23	758	192	1140	0.269	0.67	1.71
T4-036	14	681	531	85.9	359	227	33.1	69.3	0.439	681	185	1077	0.095	0.67	1.50
T4-037	14	681	536	86.6	341	229	33.5	70.2	0.349	711	189	1077	0.086	0.67	1.51
T5-036	21	769	538	94.8	432	227	38.5	74.7	4.87	691	184	1086	0.387	0.66	1.67
T5-037	21	792	563	98.5	196	237	40.4	78.9	0.195	735	182	1124	0.077	0.66	1.64
T6-036	24	570	266	53.2	1057	110	25.7	41.3	15.2	340	185	534	0.249	0.66	1.14
T6-037	24	565	258	49.4	1047	107	24.3	40.9	13.2	325	178	508	0.173	0.66	1.15
T7-036	28	317	93.2	23	872	39	13.5	18.2	9.47	126	171	191	0.071	0.66	0.84
T7-037	28	292	82.7	21	852	34.5	12	16.6	10.5	126	154	168	0.120	0.66	0.86
T8-036	35	127	40.3	9.25	608	16.3	4.47	7.0	6.37	55.1	166	98.9	0.013	0.64	0.75
T8-037	35	132	41	9.56	640	16.7	4.75	7.2	6.42	58.4	161	105	0.014	0.64	0.75
T9-036	38	25.8	8.75	1.85	287	3.95	0.9	1.4	5.99	11.6	141	18.9	0.009	0.78	0.71
T9-037	38	26	8.92	2.57	335	3.97	0.913	1.3	6.34	12.3	155	20.5	0.006	0.78	0.72
T10-036	42	14.2	4.31	0.932	212	1.84	0.431	0.7	5.87	4.84	150	8.73	0.005	0.68	0.67
T10-037	42	13.8	4.5	0.882	265	1.75	0.409	0.6	5.9	4.62	161	8.19	0.005	0.68	0.68

Normalized Concentration (gm glass/m^3)

Test ID	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-036	982.6753	30257.45	19684.85	843.0718	21683.44	17500	16402.14	4.671802	30022.9	496.6887	25940.57	1.900755
T1-037	911.8774	30285.52	17436.36	747.6747	21861.9	15648.15	16149.02	5.013641	27776.45	454.1154	26087.32	1.795158
T2-036	15518.91	17261.9	13512.12	3613.165	12894.06	16944.44	14301.25	224.4744	20756.29	908.2308	16131.02	24.92102
T2-037	15660.5	17514.52	15400	3577.391	13117.14	19722.22	14655.61	257.5189	24219.57	927.1523	16413.23	30.51769
T3-036	17189.74	15100.66	17245.45	8669.211	10440.17	27592.59	16554.01	775.975	16707.99	889.3094	12518.75	24.49863
T3-037	17161.42	15521.68	17393.94	7917.959	10797.1	27777.78	16959	823.8325	17737.62	908.2308	12868.69	28.40573
T4-036	19285.36	14904.18	18221.21	4280.944	10127.86	30648.15	17541.18	50.02247	15935.77	875.1183	12157.53	10.03177
T4-037	19285.36	15044.52	18369.7	4066.301	10217.09	31018.52	17768.98	39.76729	16637.79	894.0397	12157.53	9.081387
T5-036	21777.44	15100.66	20109.09	5151.443	10127.86	35648.15	18908.02	554.919	16169.78	870.3879	12259.12	40.86624
T5-037	22428.79	15802.36	20893.94	2337.229	10574.02	37407.41	19971.12	22.21955	17199.4	860.9272	12688.08	8.13101
T6-036	16141.93	7466.125	11284.85	12604.34	4907.773	23796.3	10453.83	1731.985	7956.186	875.1183	6027.966	26.29378
T6-037	16000.33	7241.58	10478.79	12485.09	4773.925	22500	10352.58	1504.092	7605.178	842.0057	5734.469	18.26837
T7-036	8977.178	2615.95	4878.788	10398.28	1740.029	12500	4606.774	1079.072	2948.469	808.8931	2156.07	7.497424
T7-037	8269.199	2321.235	4454.545	10159.79	1539.256	11111.11	4201.783	1196.437	2948.469	728.4768	1896.439	12.6717
T8-036	3596.535	1131.146	1962.121	7250.179	727.2428	4138.889	1769.305	725.8385	1289.37	785.2412	1116.415	1.372768
T8-037	3738.131	1150.794	2027.879	7631.767	745.0892	4398.148	1830.053	731.5359	1366.592	761.5894	1185.274	1.478365
T9-036	730.6347	245.5962	392.4242	3422.371	176.2337	833.3333	341.7112	682.5389	271.4464	666.982	213.3494	0.950378
T9-037	736.2985	250.3678	545.1515	3994.753	177.126	845.3704	339.18	722.4202	287.8267	733.2072	231.4107	0.633585
T10-036	402.1323	120.9737	197.697	2528.023	82.09366	399.0741	169.59	668.8654	113.2587	709.5553	98.54708	0.527988
T10-037	390.8046	126.3066	187.0909	3160.029	78.07821	378.7037	161.4902	672.2837	108.1105	761.5894	92.45139	0.527988

Average normalized Concentration(g-glass/m^3)

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL	3	947.2764	30271.49	18560.61	795.3732	21772.67	16574.07	16275.58	4.842722	28899.68	475.4021	26013.95	1.847957
T2-WVNSHCL	7	15589.71	17388.21	14456.06	3595.278	13005.6	18333.33	14478.43	240.9966	22487.93	917.6916	16272.12	27.71935
T3-WVNSHCL	10	17175.58	15311.17	17319.7	8293.585	10618.64	27685.19	16756.51	799.9037	17222.8	898.7701	12693.72	26.45218
T4-WVNSHCL	14	19285.36	14974.35	18295.45	4173.623	10172.48	30833.33	17655.08	44.89488	16286.78	884.579	12157.53	9.556576
T5-WVNSHCL	21	22103.12	15451.51	20501.52	3744.336	10350.94	36527.78	19439.57	288.5693	16684.59	865.6575	12473.6	24.49863
T6-WVNSHCL	24	16071.13	7353.852	10881.82	12544.72	4840.849	23148.15	10403.21	1618.039	7780.682	858.562	5881.218	22.28108
T7-WVNSHCL	28	8623.188	2468.593	4666.667	10279.04	1639.642	11805.56	4404.278	1137.755	2948.469	768.685	2026.254	10.08456
T8-WVNSHCL	35	3667.333	1140.97	1995	7440.973	736.166	4268.519	1799.679	728.6872	1327.981	773.4153	1150.845	1.425567
T9-WVNSHCL	38	733.4666	247.982	468.7879	3708.562	176.6798	839.3519	340.4456	702.4795	279.6365	700.0946	222.38	0.791981
T10-WVNSHCL	42	396.4684	123.6401	192.3939	2844.026	80.08594	388.8889	165.5401	670.5745	110.6846	735.5724	95.49924	0.527988

Accumulated normalized Concentration

	Accumulated Time (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL	3	947.2764	30271.49	18560.61	795.3732	21772.67	16574.07	16275.58	4.842722	28899.68	475.4021	26013.95	1.847957
T2-WVNSHCL	7	16536.98	47659.7	33016.67	4390.651	34778.27	34907.41	30754.01	245.8394	51387.6	1393.094	42286.07	29.56731
T3-WVNSHCL	10	33712.56	62970.87	50336.36	12684.24	45396.9	62592.59	47510.52	1045.743	68610.41	2291.864	54979.79	56.01949
T4-WVNSHCL	14	52997.92	77945.22	68631.82	16857.86	55569.38	93425.93	65165.6	1090.638	84897.19	3176.443	67137.32	65.57606
T5-WVNSHCL	21	75101.03	93396.73	89133.33	20602.19	65920.32	129953.7	84605.17	1379.207	101581.8	4042.1	79610.92	90.07469
T6-WVNSHCL	24	91172.16	100750.6	100015.2	33146.91	70761.17	153101.9	95008.38	2997.246	109362.5	4900.662	85492.13	112.3558
T7-WVNSHCL	28	99795.35	103219.2	104681.8	43425.95	72400.81	164907.4	99412.66	4135.001	112310.9	5669.347	87518.39	122.4403
T8-WVNSHCL	35	103462.7	104360.1	106676.8	50866.92	73136.98	169175.9	101212.3	4863.688	113638.9	6442.763	88669.23	123.8659
T9-WVNSHCL	38	104196.2	104608.1	107145.6	54575.48	73313.66	170015.3	101552.8	5566.168	113918.5	7142.857	88891.61	124.6579
T10-WVNSHCL	42	104592.6	104731.8	107338	57419.51	73393.74	170404.2	101718.3	6236.742	114029.2	7878.43	88987.11	125.1859

Average normalized Leach rate(g-glass/m^2-day)

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)	Initial pH	Final pH
T1-WVNSHCL	3	0.157879	5.045248	3.093434	0.132562	3.628778	2.762346	2.712597	0.000807	4.816613	0.079234	4.335658	0.000308	0.692	3.507
T2-WVNSHCL	4	1.948713	2.173526	1.807008	0.44941	1.6257	2.291667	1.809804	0.030125	2.810991	0.114711	2.034015	0.003465	0.714	1.7565
T3-WVNSHCL	3	2.862596	2.551862	2.886616	1.382264	1.769773	4.614198	2.792751	0.133317	2.870467	0.149795	2.11562	0.004409	0.667	1.706
T4-WVNSHCL	4	2.41067	1.871794	2.286932	0.521703	1.271559	3.854167	2.206885	0.005612	2.035848	0.110572	1.519691	0.001195	0.667	1.501
T5-WVNSHCL	7	1.578794	1.103679	1.464394	0.267453	0.739353	2.609127	1.388541	0.020612	1.191756	0.061833	0.890971	0.00175	0.66	1.6535
T6-WVNSHCL	3	2.678522	1.225642	1.813636	2.090786	0.808808	3.858025	1.733868	0.269673	1.296678	0.143094	0.980203	0.003714	0.661	1.142
T7-WVNSHCL	4	1.077899	0.308574	0.583333	1.28488	0.204955	1.475694	0.550535	0.142219	0.368559	0.096086	0.253282	0.001261	0.661	0.849
T8-WVNSHCL	7	0.261952	0.081498	0.1425	0.531498	0.052583	0.304894	0.128549	0.052049	0.094856	0.055244	0.082203	0.000102	0.638	0.749
T9-WVNSHCL	3	0.122244	0.041133	0.078131	0.618094	0.029447	0.139892	0.056741	0.11708	0.046606	0.116682	0.037063	0.000132	0.776	0.7145
T10-WVNSHCL	4	0.049559	0.015455	0.024049	0.355503	0.010011	0.048611	0.020693	0.083822	0.013836	0.091947	0.011937	6.6E-05	0.675	0.675

1.42 ±0.85

Element/Si Leach rate ratio

	Test Duration (days)	Al (0.05)*	B (1)	Ca (0.05)	Fe (0.02)	Li (0.005)	Mg (0.05)	Mn (0.005)	P (0.01)	K (0.05)	Si (0.02)	Na (0.2)	Zr (0.005)
T1-WVNSHCL	3	1.992579	63.67555	39.04191	1.673054	45.79843	34.86328	34.2354	0.010187	60.78997	1	54.71988	0.003887
T2-WVNSHCL	4	16.98796	18.94777	15.75264	3.917741	14.17208	19.97766	15.77701	0.262612	24.50488	1	17.73158	0.030206
T3-WVNSHCL	3	19.11009	17.03569	19.27044	9.227704	11.81463	30.80341	18.64382	0.889998	19.16263	1	14.12344	0.029432
T4-WVNSHCL	4	21.80174	16.92822	20.68267	4.718202	11.49979	34.85651	19.95874	0.050753	18.4119	1	13.74386	0.010804
T5-WVNSHCL	7	25.53333	17.84945	23.68317	4.325424	11.95732	42.19657	22.45642	0.333353	19.27389	1	14.40939	0.028301
T6-WVNSHCL	3	18.71866	8.565313	12.67447	14.61131	5.638322	26.96153	12.11702	1.884592	9.062458	1	6.850079	0.025952
T7-WVNSHCL	4	11.2181	3.211449	6.070974	13.37224	2.133049	15.35812	5.729627	1.480131	3.835731	1	2.636001	0.013119
T8-WVNSHCL	7	4.741738	1.475236	2.579468	9.620928	0.951838	5.519051	2.326925	0.942168	1.717035	1	1.488004	0.001843
T9-WVNSHCL	3	1.047668	0.354212	0.669606	5.29723	0.252366	1.198912	0.486285	1.003407	0.399427	1	0.317643	0.001131
T10-WVNSHCL	4	0.538993	0.168087	0.261557	3.866412	0.108876	0.528689	0.225049	0.911636	0.150474	1	0.12983	0.000718

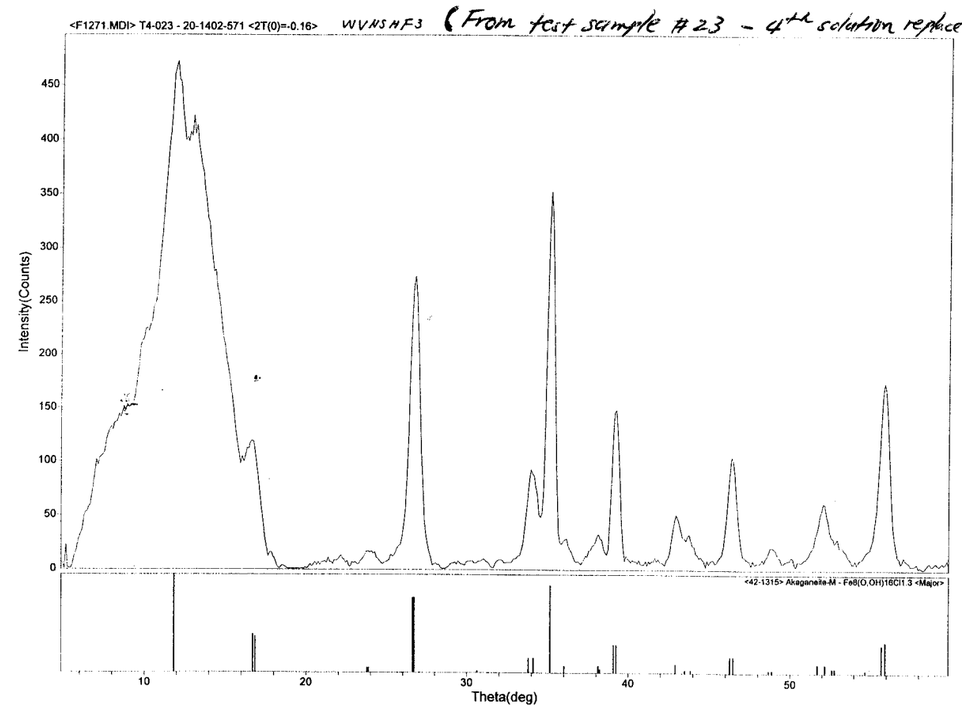
7/25/2000

Solid Precipitates Analysis

1. Procedures

Solid precipitates contained in the leaching solutions were collected and air-dried. Precipitate samples were then mounted on glass slides for X-ray diffraction analysis. Chemical compositions of the precipitates were analyzed by energy dispersive X-ray spectroscopy, an attachment to scanning electron microscopy.

2. Representative XRD pattern of solid precipates from the leaching test of the WVNS glass in 0.25 M $FeCl_3$ suggests the dominant occurrence of akaganeite (β-FeOOH).



(From test sample #23 - 4th solution replacement)

9/24/99 for analysis
4/11/2000

3. Chemical compositions of precipitates from the leaching tests of the WVNS glass in different solutions.

Test Solution	Al	Fe	K	Na	P	Si	Ti	S	Cl	Mn
0.0025 M $FeCl_3$	6.20	48.93	4.95	4.75	2.10	28.14	0.90	0.29	1.69	0.87
0.25 M $FeCl_2$	0.73	77.92	0.32	1.59	0.32	1.75	—	—	17.37	—
0.25 M $FeCl_3$	0.38	76.72	—	—	0.56	0.62	—	1.08	20.64	—

Z. Pa
12/3/99 for analysis
4/11/2000

Glass Surface Analysis

1. Procedures

The WVNS glasses, both before and after leaching, were collected and rinsed with methanol, followed by air-dry. The surface morphology of the glasses was observed using SEM and the chemical compositions were analyzed by EDS.

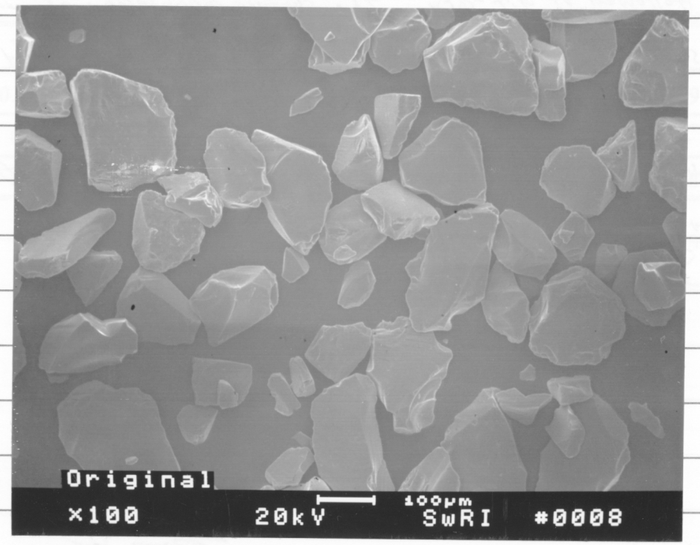
2. Chemical compositions of the WVNS glasses before leaching, and after leaching in deionized water and in 0.25 M $FeCl_3$

Test Solution	Al	Fe	K	Na	P	Si	Ti	Zr	Cl	O
Before Leaching	5.25	2.73	2.97	11.10	1.14	22.78	0.36	3.39	—	50.28
DI Water	5.01	8.57	5.68	3.47	1.35	32.23	0.89	4.56	—	37.06
0.25 M $FeCl_3$	1.56	5.63	—	—	—	45.22	0.41	6.86	1.81	38.51

Z. Pa
4/14/2000

3. Representative microstructures of the WVNS glass

a. Before leaching



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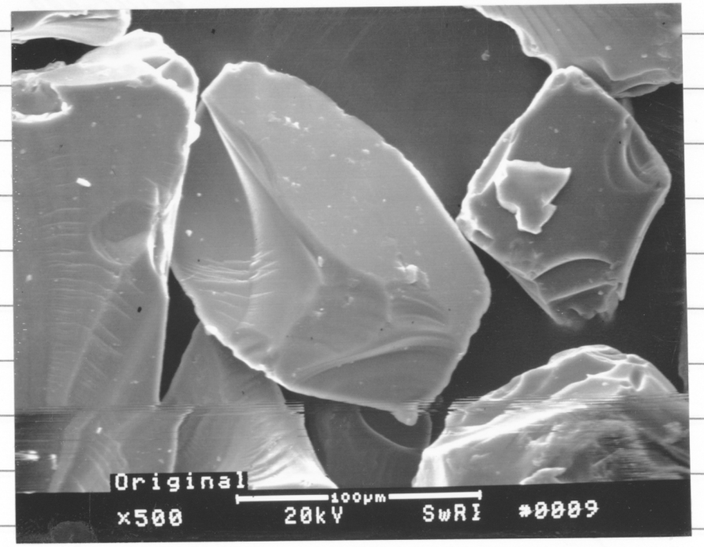
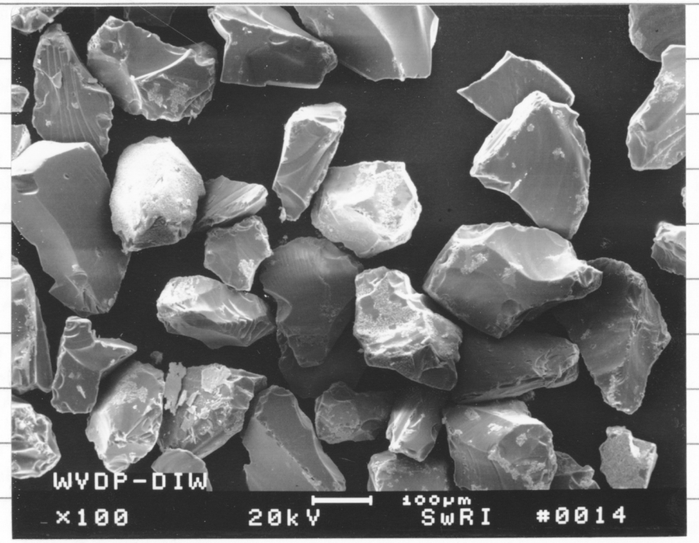


photo No. 01

4/19/2000

b. After leaching in deionized water



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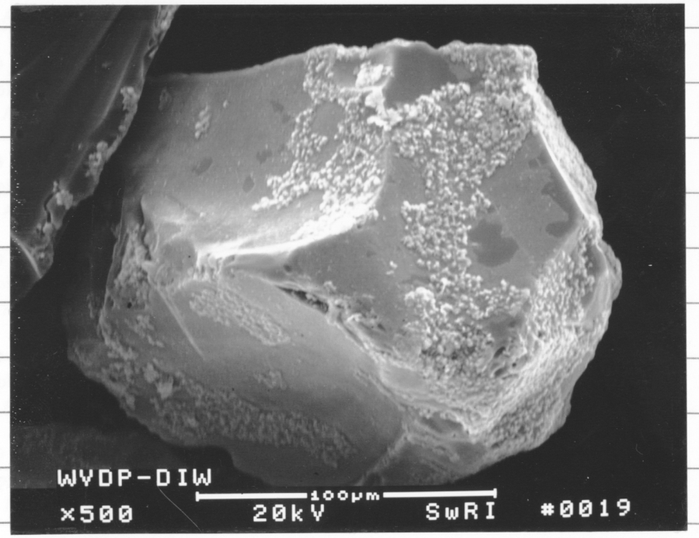
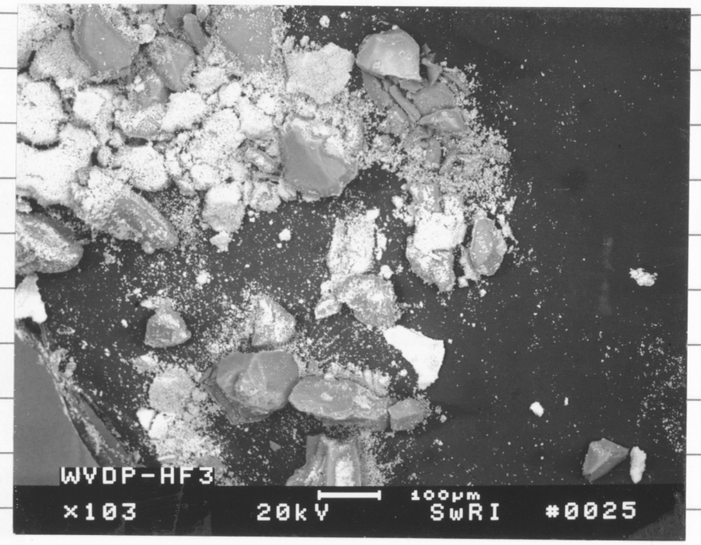


photo No. 5943

4/19/2000

C After leaching in 0.25 M $FeCl_3$



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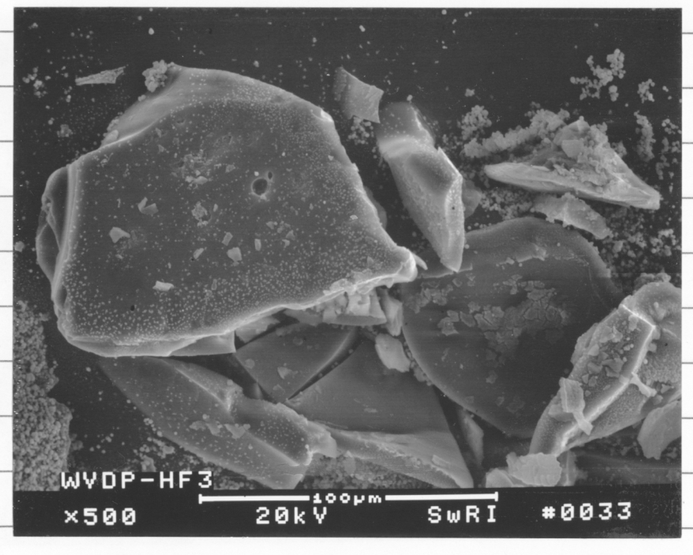

photo No. S947

4/19/2000

Submitted for QA Review on 8/18/2000

LONG-TERM TEST DATA SHEET
(#51 Leachant Replacement)

Leachant Replacement Date and Time (d:hr:min) 8/1/00 10:00

Test ID BLANKL-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID BLANKL-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID EAW-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID EAW-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID EAW-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSW-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRS-W-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSW-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSW-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSW-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSW-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRS HF2-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

8/25/2000

Test ID SRSHF2-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSHF2-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSHF2-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSHF2-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSHF2-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSHF3-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSHF3-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSHF3-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSHF3-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSHF3-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSHF3-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSLF2-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSLF2-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

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Test ID SRSLF2-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSLF2-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSLF2-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSLF2-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSLF3-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSLF3-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID SRSLF3-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSLF3-T1
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSLF3-T2
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Test ID WVNSLF3-T3
Initial pH of Leachant _____ Final pH of Leachate _____
Cation Analysis No. _____ Dilution Factor _____

Final pH of leachates from #51 solution replacement recorded in the data sheets of #50 replacement.

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QA Review 9/20/00

Long-Term Test Data Sheet (Test No. 037)

LONG-TERM TEST DATA SHEET

Test ID WVNS0.25 HCl - T2

37 Leachant Replacement Date and Time(d:hr:min) 7-18-00 10:30
Initial pH of Leachant .630 Final pH of Leachate .655
Cation Analysis No. T38-037 Dilution Factor

38 Leachant Replacement Date and Time(d:hr:min) 8-1-00 10:00
Initial pH of Leachant .649 Final pH of Leachate .650
Cation Analysis No. T39-037 Dilution Factor

39 Leachant Replacement Date and Time(d:hr:min) 8-15-00 9:30
Initial pH of Leachant .647 Final pH of Leachate .717
Cation Analysis No. T40-037 Dilution Factor

40 Leachant Replacement Date and Time(d:hr:min) 8-29-00 9:00
Initial pH of Leachant .650 Final pH of Leachate .793
Cation Analysis No. T41-037 Dilution Factor

41 Leachant Replacement Date and Time(d:hr:min) 9-12-00 9:30
Initial pH of Leachant .641 Final pH of Leachate .741
Cation Analysis No. T42-037 Dilution Factor

42 Leachant Replacement Date and Time(d:hr:min) 9-26-00 9:30
Initial pH of Leachant .635 Final pH of Leachate .553
Cation Analysis No. T43-037 Dilution Factor

43 Leachant Replacement Date and Time(d:hr:min) 10-10-00 9:00
Initial pH of Leachant .630 Final pH of Leachate .532
Cation Analysis No. T44-037 Dilution Factor

44 Leachant Replacement Date and Time(d:hr:min) 10-24-00 9:30
Initial pH of Leachant .626 Final pH of Leachate .705
Cation Analysis No. T45-037 Dilution Factor

45 Leachant Replacement Date and Time(d:hr:min)
Initial pH of Leachant Final pH of Leachate
Cation Analysis No. Dilution Factor

BJ Pa 10/26/2000

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Test Matrix for the Effect of Temperature on Glass Dissolution

Vessel ID	Temperature	Solution	Glass	# Tests	Test ID
001, 002	40°C	Deionized water	SRS	2	SRSW40-1,2
003, 004	40°C	Deionized water	WVNS	2	WVNSW40-1,2
005, 006, 007	40°C	0.25 M $FeCl_3$	SRS	3	SRSHF40-1,2,3
008, 009, 010	40°C	0.25 M $FeCl_3$	WVNS	3	WVNSHF40-1,2,3
011, 012, 013	40°C	0.0025 M $FeCl_3$	SRS	3	SRSLF40-1,2,3
014, 015, 016	40°C	0.0025 M $FeCl_3$	WVNS	3	WVNSLF40-1,2,3
017, 018	70°C	Deionized water	SRS	2	SRSW70-1,2
019, 020	70°C	Deionized water	WVNS	2	WVNSW70-1,2
021, 022, 023	70°C	0.25 M $FeCl_3$	SRS	3	SRSHF70-1,2,3
024, 025, 026	70°C	0.25 M $FeCl_3$	WVNS	3	WVNSHF70-1,2,3
027, 028, 029	70°C	0.0025 M $FeCl_3$	SRS	3	SRSLF70-1,2,3
030, 031, 032	70°C	0.0025 M $FeCl_3$	WVNS	3	WVNSLF70-1,2,3

BJ Pa 9/25/2000

Temperature Effect Test Data sheets (40°C)

Test ID SRSW40-1

Vessel ID No. 001 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00330
Sample Preparation Date 9-26-00

Type of Solution DI H_2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 127.82480
Weight of Vessel + Sample (g) 130.82985
2nd Weight of Sample (Difference of the last two items) (g) 3.00505
Total Weight of Vessel + Sample + Solution (g) 160.00005

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10/09/00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 9.467
Cation Analysis No. TA1-001 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 6.416 Final pH of Leachate 9.580
Cation Analysis No. TA2-001 Dilution Factor

Recd pH meter

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 6.411 Final pH of Leachate 9.266
Cation Analysis No. TA3-001 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 6.405 Final pH of Leachate 9.286
Cation Analysis No. TA4-001 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 6.327 Final pH of Leachate 9.291
Cation Analysis No. TA5-001 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 5.901 Final pH of Leachate 9.017
Cation Analysis No. TA6-001 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 5.522 Final pH of Leachate 8.315
Cation Analysis No. TA7-001 Dilution Factor

Recd pH

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 6.102 Final pH of Leachate 8.578
Cation Analysis No. TA8-001 Dilution Factor

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Test ID SRSW40-2

Vessel ID No. 002 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00032
Sample Preparation Date 9-26-00

Type of Solution DI H_2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 127.09990
Weight of Vessel + Sample (g) 130.10145
2nd Weight of Sample (Difference of the last two items) (g) 3.00155
Total Weight of Vessel + Sample + Solution (g) 159.44715

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 9.466
Cation Analysis No. TA1-002 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 6.416 Final pH of Leachate 9.628
Cation Analysis No. TA2-002 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 6.41 Final pH of Leachate 9.164
Cation Analysis No. TA3-002 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 6.405 Final pH of Leachate 9.468
Cation Analysis No. TA4-002 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 6.327 Final pH of Leachate 9.363
Cation Analysis No. TA5-002 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 5.901 Final pH of Leachate 8.918
Cation Analysis No. TA6-002 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 5.522 Final pH of Leachate 9.035
Cation Analysis No. TA7-002 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 6.102 Final pH of Leachate 8.297
Cation Analysis No. TA8-002 Dilution Factor

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Test ID WVNS W40-1

Vessel ID No. 003 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00035 (3.00035)
Sample Preparation Date 9-26-00

Type of Solution DI H2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 126.95095
Weight of Vessel + Sample (g) 129.95325
2nd Weight of Sample (Difference of the last two items) (g) 3.00230
Total Weight of Vessel + Sample + Solution (g) 159.04870

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 9.624
Cation Analysis No. TA1-003 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 6.416 Final pH of Leachate 9.623
Cation Analysis No. TA2-003 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 6.411 Final pH of Leachate 9.149
Cation Analysis No. TA3-003 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:30
Initial pH of Leachant 6.405 Final pH of Leachate 9.396
Cation Analysis No. TA4-003 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 6.327 Final pH of Leachate 9.270
Cation Analysis No. TA5-003 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 5.901 Final pH of Leachate 8.969 (8.985)
Cation Analysis No. TA6-003 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 5.522 Final pH of Leachate 8.597
Cation Analysis No. TA7-003 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 6.102 Final pH of Leachate 8.013
Cation Analysis No. TA8-003 Dilution Factor

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Test ID WVNS W40-2

Vessel ID No. 004 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00323
Sample Preparation Date 9-26-00

Type of Solution DI H2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 126.16450
Weight of Vessel + Sample (g) 129.16960
2nd Weight of Sample (Difference of the last two items) (g) 3.00510
Total Weight of Vessel + Sample + Solution (g) 158.59365

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 9.559
Cation Analysis No. TA1-004 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 6.416 Final pH of Leachate 9.638
Cation Analysis No. TA2-004 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 6.411 Final pH of Leachate 8.763
Cation Analysis No. TA3-004 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 6.405 Final pH of Leachate 9.386
Cation Analysis No. TA4-004 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 6.327 Final pH of Leachate 9.239
Cation Analysis No. TA5-004 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 5.901 Final pH of Leachate 8.706
Cation Analysis No. TA6-004 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 5.522 Final pH of Leachate 8.657
Cation Analysis No. TA7-004 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 6.102 Final pH of Leachate 8.928
Cation Analysis No. TA8-004 Dilution Factor

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Test ID SRSHF40-1

Vessel ID No. 005 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00375
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.402

Weight of Empty Vessel (g) 125.88855
Weight of Vessel + Sample (g) 128.89495
2nd Weight of Sample (Difference of the last two items) (g) 3.00640
Total Weight of Vessel + Sample + Solution (g) 158.71030

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 1.234
Cation Analysis No. TA1-005 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 1.324 Final pH of Leachate 1.165
Cation Analysis No. TA2-005 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 1.329 Final pH of Leachate 1.284
Cation Analysis No. TA3-005 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 1.331 Final pH of Leachate 1.222
Cation Analysis No. TA4-005 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 1.429 Final pH of Leachate 1.258
Cation Analysis No. TA5-005 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 1.412 Final pH of Leachate 1.310
Cation Analysis No. TA6-005 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 1.458 Final pH of Leachate 1.264
Cation Analysis No. TA7-005 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 1.440 Final pH of Leachate 1.315
Cation Analysis No. TA8-005 Dilution Factor

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Test ID SRSHF40-2

Vessel ID No. 006 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00317
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.402

Weight of Empty Vessel (g) 127.37805
Weight of Vessel + Sample (g) 130.38475
2nd Weight of Sample (Difference of the last two items) (g) 3.00670
Total Weight of Vessel + Sample + Solution (g) 160.10360

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 1.237
Cation Analysis No. TA1-006 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 1.324 Final pH of Leachate 1.172
Cation Analysis No. TA2-006 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 1.329 Final pH of Leachate 1.284
Cation Analysis No. TA3-006 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 1.331 Final pH of Leachate 1.211
Cation Analysis No. TA4-006 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 1.429 Final pH of Leachate 1.241
Cation Analysis No. TA5-006 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 1.412 Final pH of Leachate 1.259
Cation Analysis No. TA6-006 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 1.458 Final pH of Leachate 1.255
Cation Analysis No. TA7-006 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 1.440 Final pH of Leachate 1.292
Cation Analysis No. TA8-006 Dilution Factor

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Test ID SRSHF40-3

Vessel ID No. 007 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00156
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.402

Weight of Empty Vessel (g) 126.99595
Weight of Vessel + Sample (g) 129.99905
2nd Weight of Sample (Difference of the last two items) (g) 3.00310
Total Weight of Vessel + Sample + Solution (g) 159.69275

Test Temperature 40°c
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 1.241
Cation Analysis No. TA1-007 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 1.324 Final pH of Leachate 1.163
Cation Analysis No. TA2-007 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 1.329 Final pH of Leachate 1.285
Cation Analysis No. TA3-007 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 1.331 Final pH of Leachate 1.215
Cation Analysis No. TA4-007 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 1.429 Final pH of Leachate 1.234
Cation Analysis No. TA5-007 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30 00 9:30
Initial pH of Leachant 1.412 Final pH of Leachate 1.277
Cation Analysis No. TA6-007 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 1.458 Final pH of Leachate 1.243
Cation Analysis No. TA7-007 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 1.440 Final pH of Leachate 1.250
Cation Analysis No. TA8-007 Dilution Factor

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Test ID WVNS HF40-1

Vessel ID No. 008 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00389
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.402

Weight of Empty Vessel (g) 126.63625
Weight of Vessel + Sample (g) 129.64210
2nd Weight of Sample (Difference of the last two items) (g) 3.00585
Total Weight of Vessel + Sample + Solution (g) 159.24590

Test Temperature 40°c
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 1.351
Cation Analysis No. TA1-008 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 1.324 Final pH of Leachate 1.302
Cation Analysis No. TA2-008 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 1.329 Final pH of Leachate 1.398
Cation Analysis No. TA3-008 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 1.331 Final pH of Leachate 1.328
Cation Analysis No. TA4-008 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 1.429 Final pH of Leachate 1.311
Cation Analysis No. TA5-008 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 1.412 Final pH of Leachate 1.343
Cation Analysis No. TA6-008 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 1.458 Final pH of Leachate 1.285
Cation Analysis No. TA7-008 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 1.440 Final pH of Leachate 1.325
Cation Analysis No. TA8-008 Dilution Factor

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Test ID WVNSHF40-2

Vessel ID No. 009 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00383
Sample Preparation Date 9-26-00

Type of Solution .25M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.402

Weight of Empty Vessel (g) 126.17205
Weight of Vessel + Sample (g) 129.17925
2nd Weight of Sample (Difference of the last two items) (g) 3.00720
Total Weight of Vessel + Sample + Solution (g) 159.08445

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 1.368
Cation Analysis No. TA1-009 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 1.324 Final pH of Leachate 1.311
Cation Analysis No. TA2-009 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 1.329 Final pH of Leachate 1.364
Cation Analysis No. TA3-009 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 1.331 Final pH of Leachate 1.318
Cation Analysis No. TA4-009 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 1.429 Final pH of Leachate 1.309
Cation Analysis No. TA5-009 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 1.412 Final pH of Leachate 1.352
Cation Analysis No. TA6-009 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 1.458 Final pH of Leachate 1.292
Cation Analysis No. TA7-009 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 1.440 Final pH of Leachate 1.323
Cation Analysis No. TA8-009 Dilution Factor

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Test ID WVNSHF40-3

Vessel ID No. 010 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00367
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.402

Weight of Empty Vessel (g) 126.20945
Weight of Vessel + Sample (g) 129.21615
2nd Weight of Sample (Difference of the last two items) (g) 3.00670
Total Weight of Vessel + Sample + Solution (g) 158.97260

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 1.373
Cation Analysis No. TA1-010 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 1.324 Final pH of Leachate 1.313
Cation Analysis No. TA2-010 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 1.329 Final pH of Leachate 1.380
Cation Analysis No. TA3-010 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10 23 00 9:00
Initial pH of Leachant 1.331 Final pH of Leachate 1.311
Cation Analysis No. TA4-010 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 1.429 Final pH of Leachate 1.302
Cation Analysis No. TA5-010 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 1.412 Final pH of Leachate 1.350
Cation Analysis No. TA6-010 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 1.458 Final pH of Leachate 1.283
Cation Analysis No. TA7-010 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 1.440 Final pH of Leachate 1.313
Cation Analysis No. TA8-010 Dilution Factor

11/9/2000

Test ID SRSLF40-1

Vessel ID No. 011 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00214
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.361

Weight of Empty Vessel (g) 128.10360
Weight of Vessel + Sample (g) 131.10700
2nd Weight of Sample (Difference of the last two items) (g) 3.00340
Total Weight of Vessel + Sample + Solution (g) 160.23355

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 2.736
Cation Analysis No. TA1-011 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 2.310 Final pH of Leachate 2.729
Cation Analysis No. TA2-011 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 2.230 Final pH of Leachate 2.552
Cation Analysis No. TA3-011 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 2.237 Final pH of Leachate 2.736
Cation Analysis No. TA4-011 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 2.310 Final pH of Leachate 2.614
Cation Analysis No. TA5-011 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 2.292 Final pH of Leachate 2.739
Cation Analysis No. TA6-011 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 2.284 Final pH of Leachate 2.593
Cation Analysis No. TA7-011 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 2.279 Final pH of Leachate 2.744
Cation Analysis No. TA8-011 Dilution Factor

11/9/2000

Test ID SRSLF40-2

Vessel ID No. 012 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00324
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.361

Weight of Empty Vessel (g) 128.32160
Weight of Vessel + Sample (g) 131.32625
2nd Weight of Sample (Difference of the last two items) (g) 3.00465
Total Weight of Vessel + Sample + Solution (g) 160.56620

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 2.691
Cation Analysis No. TA1-012 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 2.310 Final pH of Leachate 2.705
Cation Analysis No. TA2-012 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 2.230 Final pH of Leachate 2.560
Cation Analysis No. TA3-012 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 2.237 Final pH of Leachate 2.757
Cation Analysis No. TA4-012 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 2.310 Final pH of Leachate 2.668
Cation Analysis No. TA5-012 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 2.292 Final pH of Leachate 2.810
Cation Analysis No. TA6-012 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 2.284 Final pH of Leachate 2.604
Cation Analysis No. TA7-012 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 2.279 Final pH of Leachate 2.768
Cation Analysis No. TA8-012 Dilution Factor

11/9/2000

Test ID SRSLF 40-3

Vessel ID No. 013 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00090
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.361

Weight of Empty Vessel (g) 126.93735
Weight of Vessel + Sample (g) 129.93935
2nd Weight of Sample (Difference of the last two items) (g) 3.00200
Total Weight of Vessel + Sample + Solution (g) 159.05955

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 2.778
Cation Analysis No. TA1-013 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 2.310 Final pH of Leachate 2.783
Cation Analysis No. TA2-013 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 2.230 Final pH of Leachate 2.639
Cation Analysis No. TA3-013 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 2.237 Final pH of Leachate 2.737
Cation Analysis No. TA4-013 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 2.310 Final pH of Leachate 2.648
Cation Analysis No. TA5-013 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 2.292 Final pH of Leachate 2.786
Cation Analysis No. TA6-013 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 2.284 Final pH of Leachate 2.618
Cation Analysis No. TA7-013 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 2.279 Final pH of Leachate 2.751
Cation Analysis No. TA8-013 Dilution Factor

11/9/2000

Test ID WVNSLF 40-1

Vessel ID No. 014 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00221
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.361

Weight of Empty Vessel (g) 125.71435
Weight of Vessel + Sample (g) 128.71970
2nd Weight of Sample (Difference of the last two items) (g) 3.00535
Total Weight of Vessel + Sample + Solution (g) 157.90175

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 ~~12:3~~ 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 3.658
Cation Analysis No. TA1-014 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 2.310 Final pH of Leachate 3.243
Cation Analysis No. TA2-014 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 2.230 Final pH of Leachate 3.921
Cation Analysis No. TA3-014 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 2.237 Final pH of Leachate 3.293
Cation Analysis No. TA4-014 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 2.310 Final pH of Leachate 3.058
Cation Analysis No. TA5-014 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 2.292 Final pH of Leachate 3.305
Cation Analysis No. TA6-014 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 2.284 Final pH of Leachate 2.988
Cation Analysis No. TA7-014 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 2.279 Final pH of Leachate 3.254
Cation Analysis No. TA8-014 Dilution Factor

11/9/2000

Test ID WVNSLF40-2

Vessel ID No. 015 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00217
Sample Preparation Date 9-26-00

Type of Solution .0025M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.361

Weight of Empty Vessel (g) 126.82775
Weight of Vessel + Sample (g) 129.82900
2nd Weight of Sample (Difference of the last two items) (g) 3.00125
Total Weight of Vessel + Sample + Solution (g) 158.96905

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 3.614
Cation Analysis No. TA1-015 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:30
Initial pH of Leachant 2.310 Final pH of Leachate 3.214
Cation Analysis No. TA2-015 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 2.230 Final pH of Leachate 2.886
Cation Analysis No. TA3-015 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 2.237 Final pH of Leachate 3.359
Cation Analysis No. TA4-015 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 2.310 Final pH of Leachate 3.078
Cation Analysis No. TA5-015 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 2.292 Final pH of Leachate 3.301
Cation Analysis No. TA6-015 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 2.284 Final pH of Leachate 2.974
Cation Analysis No. TA7-015 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 2.279 Final pH of Leachate 3.236
Cation Analysis No. TA8-015 Dilution Factor

11/9/2000

Test ID WVNSLF40-3

Vessel ID No. 016 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00333
Sample Preparation Date 9-26-00

Type of Solution .0025M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.361

Weight of Empty Vessel (g) 126.40600
Weight of Vessel + Sample (g) 129.41130
2nd Weight of Sample (Difference of the last two items) (g) 3.00530
Total Weight of Vessel + Sample + Solution (g) 158.61675

Test Temperature 40°C
Date and Time Test Started (d:hr:min) 10-9-00 9:20

1 Leachant Replacement Date and Time(d:hr:min) 10-12-00 12:30
Final pH of Leachate 3.495
Cation Analysis No. TA1-016 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 10-16-00 12:36
Initial pH of Leachant 2.310 Final pH of Leachate 3.164
Cation Analysis No. TA2-016 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 10-19-00 12:30
Initial pH of Leachant 2.230 Final pH of Leachate 2.828
Cation Analysis No. TA3-016 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 10-23-00 9:00
Initial pH of Leachant 2.237 Final pH of Leachate 3.344
Cation Analysis No. TA4-016 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 10-26-00 9:30
Initial pH of Leachant 2.310 Final pH of Leachate 3.048
Cation Analysis No. TA5-016 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 10-30-00 9:30
Initial pH of Leachant 2.292 Final pH of Leachate 3.270
Cation Analysis No. TA6-016 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 11-2-00 9:00
Initial pH of Leachant 2.284 Final pH of Leachate 3.000
Cation Analysis No. TA7-016 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 11-6-00 9:00
Initial pH of Leachant 2.279 Final pH of Leachate 3.236
Cation Analysis No. TA8-016 Dilution Factor

11/9/2000

Temperature Effect Test Data sheets (70°C)

Test ID SRSW70-1

Vessel ID No. 017 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00984
Sample Preparation Date 9-26-00

Type of Solution DI H_2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 127.06200
Weight of Vessel + Sample (g) 130.07020
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.50745

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-07-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 10.126
Cation Analysis No. TA1-017 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 6.230 Final pH of Leachate 10.024
Cation Analysis No. TA2-017 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 6.346 Final pH of Leachate 9.611
Cation Analysis No. TA3-017 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 5.990 Final pH of Leachate 9.919
Cation Analysis No. TA4-017 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 5.943 Final pH of Leachate 9.823
Cation Analysis No. TA5-017 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant 6.202 Final pH of Leachate 9.474
Cation Analysis No. TA6-017 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant 6.180 Final pH of Leachate 9.499
Cation Analysis No. TA7-017 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant 6.221 Final pH of Leachate 9.924
Cation Analysis No. TA8-017 Dilution Factor _____

Mitty Pa
12/8/2000

Test ID SRSW70-2

Vessel ID No. 018 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00586
Sample Preparation Date 9-26-00

Type of Solution DI H_2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 126.93430
Weight of Vessel + Sample (g) 129.94275
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.38445

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 10.091
Cation Analysis No. TA1-018 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 6.230 Final pH of Leachate 9.988
Cation Analysis No. TA2-018 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 6.346 Final pH of Leachate 9.678
Cation Analysis No. TA3-018 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 5.990 Final pH of Leachate 9.960
Cation Analysis No. TA4-018 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 5.943 Final pH of Leachate 9.817
Cation Analysis No. TA5-018 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 9.454
Cation Analysis No. TA6-018 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 9.791
Cation Analysis No. TA7-018 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate 9.960
Cation Analysis No. TA8-018 Dilution Factor _____

Mitty Pa
12/8/2000

Test ID WVNSW70-1

Vessel ID No. 019 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00435
Sample Preparation Date 9-26-00

Type of Solution DI H_2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 126.91730
Weight of Vessel + Sample (g) 129.92410
2nd Weight of Sample (Difference of the last two items) (g)
Total Weight of Vessel + Sample + Solution (g) 159.27800

Test Temperature 70 °C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 10.072
Cation Analysis No. TA1-019 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 6.230 Final pH of Leachate 9.953
Cation Analysis No. TA2-019 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 6.340 Final pH of Leachate 9.679
Cation Analysis No. TA3-019 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 5.990 Final pH of Leachate 9.681
Cation Analysis No. TA4-019 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 5.943 Final pH of Leachate 9.426
Cation Analysis No. TA5-019 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant 6.202 Final pH of Leachate 8.361
Cation Analysis No. TA6-019 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant 6.180 Final pH of Leachate 8.966
Cation Analysis No. TA7-019 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant 6.221 Final pH of Leachate 9.657
Cation Analysis No. TA8-019 Dilution Factor

Ming Pan
12/8/2000

Test ID WVNSW70-2

Vessel ID No. 020 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00731
Sample Preparation Date 9-26-00

Type of Solution DI H_2O
Leachant Volume (ml) 30 ml
Initial pH of Leachant 6.272

Weight of Empty Vessel (g) 126.65920
Weight of Vessel + Sample (g) 129.66650
2nd Weight of Sample (Difference of the last two items) (g)
Total Weight of Vessel + Sample + Solution (g) 159.12495

Test Temperature 70 °C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 10.146
Cation Analysis No. TA1-020 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 6.230 Final pH of Leachate 9.949
Cation Analysis No. TA2-020 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 6.340 Final pH of Leachate 9.605
Cation Analysis No. TA3-020 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 5.990 Final pH of Leachate 9.643
Cation Analysis No. TA4-020 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 5.943 Final pH of Leachate 9.518
Cation Analysis No. TA5-020 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant Final pH of Leachate 9.358
Cation Analysis No. TA6-020 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant Final pH of Leachate 9.289
Cation Analysis No. TA7-020 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant Final pH of Leachate 9.636
Cation Analysis No. TA8-020 Dilution Factor

Ming Pan
12/8/2000

Test ID SRS HF 70-1

Vessel ID No. 021 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00103
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.446

Weight of Empty Vessel (g) 126.83395
Weight of Vessel + Sample (g) 129.83405
2nd Weight of Sample (Difference of the last two items) (g)
Total Weight of Vessel + Sample + Solution (g) 159.78410

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 1.205
Cation Analysis No. TA1-021 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 1.454 Final pH of Leachate .967
Cation Analysis No. TA2-021 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 1.465 Final pH of Leachate .955
Cation Analysis No. TA3-021 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 1.432 Final pH of Leachate .925
Cation Analysis No. TA4-021 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 1.442 Final pH of Leachate .914
Cation Analysis No. TA5-021 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant 1.432 Final pH of Leachate .941
Cation Analysis No. TA6-21 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant 1.440 Final pH of Leachate .900
Cation Analysis No. TA7-21 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant 1.447 Final pH of Leachate .888
Cation Analysis No. TA8-21 Dilution Factor

Yiqing Pan
12/8/2000

Test ID SRS HF 70-2

Vessel ID No. 022 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00183
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.446

Weight of Empty Vessel (g) 126.31625
Weight of Vessel + Sample (g) 129.32020
2nd Weight of Sample (Difference of the last two items) (g)
Total Weight of Vessel + Sample + Solution (g) 159.14950

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate .998
Cation Analysis No. TA1-022 Dilution Factor

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 1.454 Final pH of Leachate .958
Cation Analysis No. TA2-022 Dilution Factor

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 1.465 Final pH of Leachate .941
Cation Analysis No. TA3-022 Dilution Factor

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 1.432 Final pH of Leachate .921
Cation Analysis No. TA4-022 Dilution Factor

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 1.442 Final pH of Leachate .900
Cation Analysis No. TA5-022 Dilution Factor

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant Final pH of Leachate .932
Cation Analysis No. TA6-022 Dilution Factor

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant Final pH of Leachate .881
Cation Analysis No. TA7-022 Dilution Factor

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant Final pH of Leachate .876
Cation Analysis No. TA8-022 Dilution Factor

Yiqing Pan
12/8/2000

Test ID SRSHF70-3

Vessel ID No. 023 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00843
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.446

Weight of Empty Vessel (g) 126.73185
Weight of Vessel + Sample (g) 129.74105
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.73750

Test Temperature 70 °C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate .995
Cation Analysis No. TA1-023 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 1.454 Final pH of Leachate .956
Cation Analysis No. TA2-023 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 1.465 Final pH of Leachate .928
Cation Analysis No. TA3-023 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 1.432 Final pH of Leachate .927
Cation Analysis No. TA4-023 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 1.442 Final pH of Leachate .895
Cation Analysis No. TA5-023 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate .926
Cation Analysis No. TA6-023 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate .879
Cation Analysis No. TA7-023 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate .874
Cation Analysis No. TA8-023 Dilution Factor _____

Yiqing Pan
12/8/2000

Test ID WVNSHF70-1

Vessel ID No. 024 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00476
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.446

Weight of Empty Vessel (g) 126.80795
Weight of Vessel + Sample (g) 129.81340
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.83145

Test Temperature 70 °C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 1.203
Cation Analysis No. TA1-024 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 1.454 Final pH of Leachate 1.058
Cation Analysis No. TA2-024 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 1.465 Final pH of Leachate .999
Cation Analysis No. TA3-024 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 1.432 Final pH of Leachate .969
Cation Analysis No. TA4-024 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 1.442 Final pH of Leachate .911
Cation Analysis No. TA5-024 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant 1.432 Final pH of Leachate .923
Cation Analysis No. TA6-024 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant 1.440 Final pH of Leachate .881
Cation Analysis No. TA7-024 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant 1.447 Final pH of Leachate .871
Cation Analysis No. TA8-024 Dilution Factor _____

Yiqing Pan
12/8/2000

Test ID WVNSHF70-2

Vessel ID No. 025 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00464
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.446

Weight of Empty Vessel (g) 127.12760
Weight of Vessel + Sample (g) 130.13340
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 160.14475

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 1.230
Cation Analysis No. TA1-025 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 1.454 Final pH of Leachate 1.049
Cation Analysis No. TA2-025 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 1.465 Final pH of Leachate 1.002
Cation Analysis No. TA3-025 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 1.432 Final pH of Leachate .977
Cation Analysis No. TA4-025 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 1.442 Final pH of Leachate .913
Cation Analysis No. TA5-025 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate .918
Cation Analysis No. TA6-025 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate .880
Cation Analysis No. TA7-025 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate .879
Cation Analysis No. TA8-025 Dilution Factor _____

Jing Pan
12/8/2000

Test ID WVNSHF70-3

Vessel ID No. 026 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00537
Sample Preparation Date 9-26-00

Type of Solution .25 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 1.446

Weight of Empty Vessel (g) 126.43620
Weight of Vessel + Sample (g) 129.44290
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.36665

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 1.229
Cation Analysis No. TA1-026 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 1.454 Final pH of Leachate 1.037
Cation Analysis No. TA2-026 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 1.465 Final pH of Leachate 1.003
Cation Analysis No. TA3-026 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 1.432 Final pH of Leachate .980
Cation Analysis No. TA4-026 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 1.442 Final pH of Leachate .907
Cation Analysis No. TA5-026 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate .909
Cation Analysis No. TA6-026 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate .879
Cation Analysis No. TA7-026 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate .867
Cation Analysis No. TA8-026 Dilution Factor _____

Jing Pan
12/8/2000

Test ID SRSLF70-1

Vessel ID No. 027 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00716
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.396

Weight of Empty Vessel (g) 126.87845
Weight of Vessel + Sample (g) 129.88750
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.01920

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 5.596
Cation Analysis No. TA1-027 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 2.400 Final pH of Leachate 3.561
Cation Analysis No. TA2-027 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 2.407 Final pH of Leachate 2.988
Cation Analysis No. TA3-027 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 2.344 Final pH of Leachate 3.327
Cation Analysis No. TA4-027 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 2.314 Final pH of Leachate 2.910
Cation Analysis No. TA5-027 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant 2.335 Final pH of Leachate 3.190
Cation Analysis No. TA6-027 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant 2.336 Final pH of Leachate 2.981
Cation Analysis No. TA7-027 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant 2.337 Final pH of Leachate 3.250
Cation Analysis No. TA8-027 Dilution Factor _____

Yiqing Pan
12/8/2000

Test ID SRSLF70-2

Vessel ID No. 028 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00744
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.396

Weight of Empty Vessel (g) 127.06905
Weight of Vessel + Sample (g) 130.07805
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 159.19160

Test Temperature 70°C
Date and Time Test Started (d:hr:min) _____

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 5.844
Cation Analysis No. TA1-028 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 2.400 Final pH of Leachate 3.616
Cation Analysis No. TA2-028 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 2.407 Final pH of Leachate 3.002
Cation Analysis No. TA3-028 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 2.344 Final pH of Leachate 3.348
Cation Analysis No. TA4-028 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 2.314 Final pH of Leachate 2.922
Cation Analysis No. TA5-028 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 3.243
Cation Analysis No. TA6-028 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 2.981
Cation Analysis No. TA7-028 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate 3.195
Cation Analysis No. TA8-028 Dilution Factor _____

Yiqing Pan
12/8/2000

Test ID SRSLF 70-3

Vessel ID No. 029 Batch Cleaning No. 9-28-00

Glass Sample ID SRS
Sample Weight (g) 3.00630
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.396

Weight of Empty Vessel (g) 126.65690
Weight of Vessel + Sample (g) 129.66545
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 158.75015

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 5.958
Cation Analysis No. TA1-029 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 2.400 Final pH of Leachate 3.582
Cation Analysis No. TA2-029 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 2.407 Final pH of Leachate 3.056
Cation Analysis No. TA3-029 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant TA4-029) Final pH of Leachate 3.326
Cation Analysis No. 2.344 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 2.314 Final pH of Leachate 2.943
Cation Analysis No. TA5-029 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 3.235
Cation Analysis No. TA6-029 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 2.985
Cation Analysis No. TA7-029 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate 3.242
Cation Analysis No. TA8-029 Dilution Factor _____

Ying Pan
12/8/2000

Test ID WVNSLF70-1

Vessel ID No. 030 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00864
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.396

Weight of Empty Vessel (g) 127.90240
Weight of Vessel + Sample (g) 130.91280
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 160.05595

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 7.970
Cation Analysis No. TA1-030 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 2.400 Final pH of Leachate 7.455
Cation Analysis No. TA2-030 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 2.407 Final pH of Leachate 6.130
Cation Analysis No. TA3-030 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 2.344 Final pH of Leachate 6.859
Cation Analysis No. TA4-030 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 2.314 Final pH of Leachate 5.982
Cation Analysis No. TA5-030 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant 2.335 Final pH of Leachate 5.936
Cation Analysis No. TA6-030 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant 2.336 Final pH of Leachate —
Cation Analysis No. TA7-030 Dilution Factor _____

pH Sample bottled. Accidentally rinsed pH probe over sample & dilute w/DI

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant 2.337 Final pH of Leachate 5.850
Cation Analysis No. TA8-030 Dilution Factor _____

Ying Pan
12/8/2000

Test ID WVNSLF70-2

Vessel ID No. 031 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00484
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.396

Weight of Empty Vessel (g) 126.71420
Weight of Vessel + Sample (g) 129.72065
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 158.97775

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 8.103
Cation Analysis No. TA1-031 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 2.400 Final pH of Leachate 7.563
Cation Analysis No. TA2-031 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 2.407 Final pH of Leachate 6.314
Cation Analysis No. TA3-031 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 2.344 Final pH of Leachate 6.755
Cation Analysis No. TA4-031 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 2.314 Final pH of Leachate 5.958
Cation Analysis No. TA5-031 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 6.235
Cation Analysis No. TA6-031 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 5.780
Cation Analysis No. TA7-031 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate 5.999
Cation Analysis No. TA8-031 Dilution Factor _____

Yiqi Pan
12/8/2000

Test ID WVNSLF70-3

Vessel ID No. 032 Batch Cleaning No. 9-28-00

Glass Sample ID WVNS
Sample Weight (g) 3.00422
Sample Preparation Date 9-26-00

Type of Solution .0025 M $FeCl_3$
Leachant Volume (ml) 30 ml
Initial pH of Leachant 2.396

Weight of Empty Vessel (g) 126.23365
Weight of Vessel + Sample (g) 129.23995
2nd Weight of Sample (Difference of the last two items) (g) _____
Total Weight of Vessel + Sample + Solution (g) 158.40020
(158.40120)

Test Temperature 70°C
Date and Time Test Started (d:hr:min) 11-7-00 12:30

1 Leachant Replacement Date and Time(d:hr:min) 11-10-00 1:00
Final pH of Leachate 8.075
Cation Analysis No. TA1-032 Dilution Factor _____

2 Leachant Replacement Date and Time(d:hr:min) 11-14-00 1:00
Initial pH of Leachant 2.400 Final pH of Leachate 7.638
Cation Analysis No. TA2-032 Dilution Factor _____

3 Leachant Replacement Date and Time(d:hr:min) 11-17-00 1:00
Initial pH of Leachant 2.407 Final pH of Leachate 6.425
Cation Analysis No. TA3-032 Dilution Factor _____

4 Leachant Replacement Date and Time(d:hr:min) 11-21-00 1:30
Initial pH of Leachant 2.344 Final pH of Leachate 6.756
Cation Analysis No. TA4-032 Dilution Factor _____

5 Leachant Replacement Date and Time(d:hr:min) 11-24-00 1:00
Initial pH of Leachant 2.314 Final pH of Leachate 6.080
Cation Analysis No. TA5-032 Dilution Factor _____

6 Leachant Replacement Date and Time(d:hr:min) 11-28-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 6.303
Cation Analysis No. TA6-032 Dilution Factor _____

7 Leachant Replacement Date and Time(d:hr:min) 12-1-00 1:00
Initial pH of Leachant _____ Final pH of Leachate 5.852
Cation Analysis No. TA7-032 Dilution Factor _____

8 Leachant Replacement Date and Time(d:hr:min) 12-5-00 1:30
Initial pH of Leachant _____ Final pH of Leachate 6.099
Cation Analysis No. TA8-032 Dilution Factor _____

Yiqi Pan
12/8/2000