

- Cement mortar with MSWI fly ash NL
- ◆ Cement mortar with MSWI fly ash NL 1
- Cement mortar with MSWI fly ash NL 2
- ▲ Cement mortar with MSWI fly ash NL (col1)
- Cement mortar with MSWI fly ash NL (col2)
- - - Model at L/S=10
- - - Model at L/S=0.4

Object pH Dependent Leaching Test Model  
 Name Cement mortar with MSWI fly ash (11 % dw)

pH Dependent Leaching Test Scenario



Lab Test

Extra L/S Simulation

Lab Test

Model Parameters

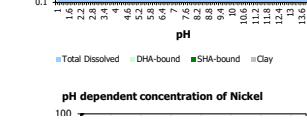
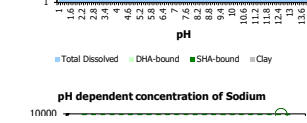
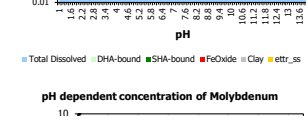
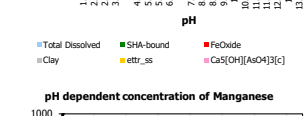
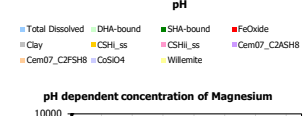
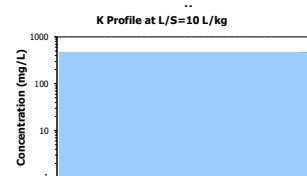
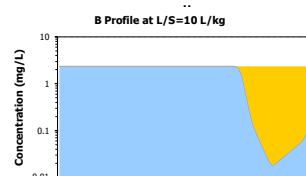
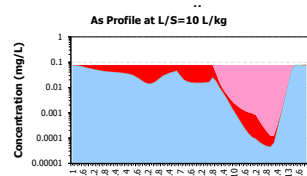
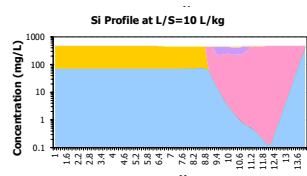
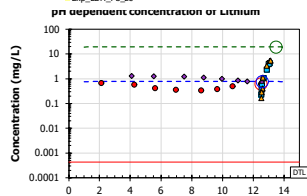
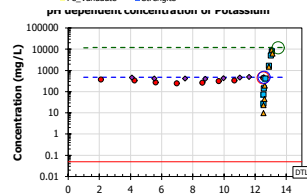
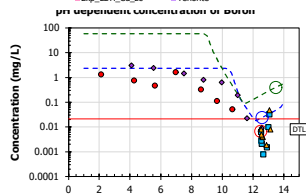
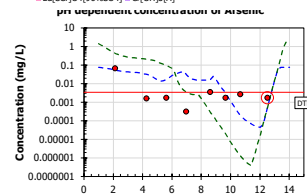
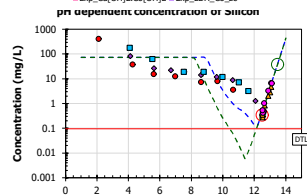
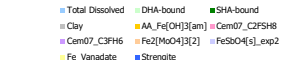
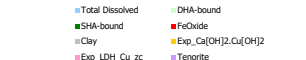
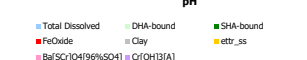
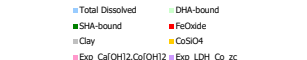
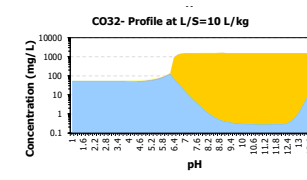
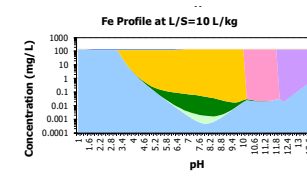
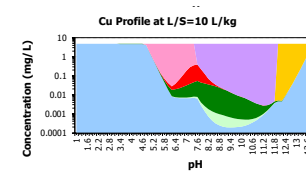
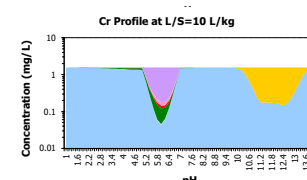
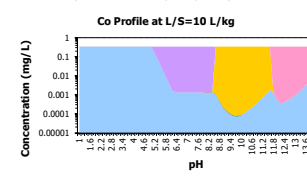
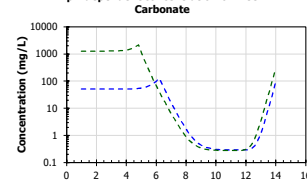
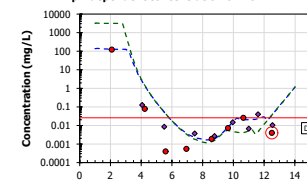
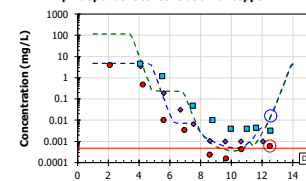
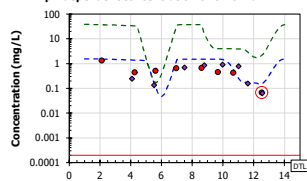
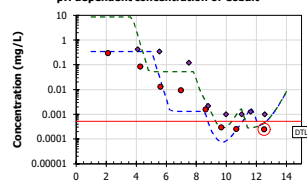
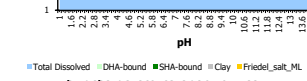
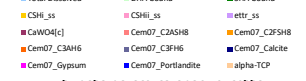
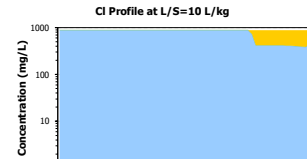
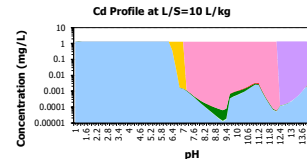
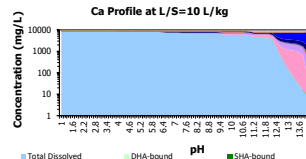
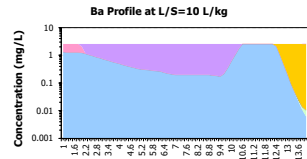
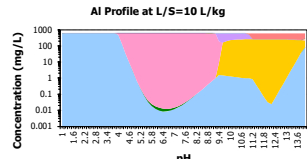
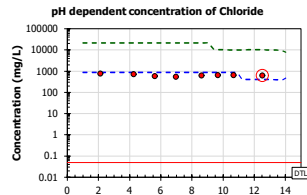
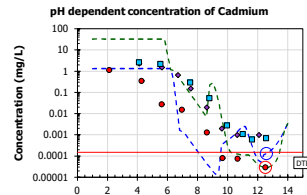
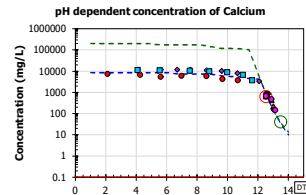
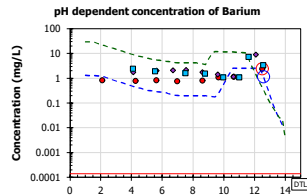
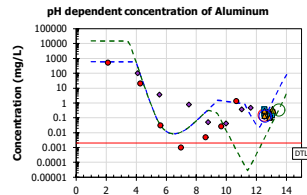
Entity	Unit	Default	Entity	mg/kg	Entity	mg/kg	Entity	mg/kg
L/S	L/kg	10.00	Ag	1.079E-07	Si	4730	P	73.07
c0		-6.876	Al	6133	As	0.7709	Sb	2.245
c1		-0.3239	Ba	25.90	B	23.67	Se	0.5386
c2		0.09001	Br	7.990E-08	Hg	2.006E-07	Sn	2.144
c3		-0.01016	Ca	8.725E+04	K	4758	Sr	4473
c4		0.0004199	Cd	13.38	Li	7.739	Sr	233.2
c5		0	Cl	8850	Mg	1821	Th	2.320E-07
Clay	mg/kg	1000	Co	3.443	Mn	61.75	U	2.380E-07
Hydrous Ferric Oxide	mg/kg	90.00	Cr	15.59	Mo	1.178	V	6.357
Solid Humic Acid	mg/kg	43.99	Cu	47.10	Na	3846	W	8.930
Dissolved Humic Acid	mg/L	0.2000	F	1.900E-08	Ni	6.180	Zn	883.4
pE		3.200	Fe	1416	NO3	6.200E-08		
pH		12.80	CO32-	1.590E+04	Pb	274.3		
Extra L/S	L/kg	0.4000						

Solid Solutions

Name	End Member	Log(K)	Reaction
CSHi_ss	Cem07_SiO2[am]_ss	24.21	Cem07_SiO2[am]_ss + 2 H2O -> 1 CSHi_ss + 2 H+ + 1 H2SiO4-2
	Cem07_Tob_l_ss	23.87	Cem07_Tob_l_ss -> 1 CSHi_ss + 2 Ca+2 + 0.8 H+ + 1.2 H2O + 2.4 H2SiO4-2
CSHii_ss	Cem07_Jenn_ss	-7.799	Cem07_Jenn_ss + 1.33333 H+ -> 1 CSHii_ss + 1.66667 Ca+2 + 1.76667 H2O + 1 H2SiO4-2
	Cem07_Tob_ii_ss	10.36	Cem07_Tob_ii_ss -> 1 CSHii_ss + 0.83333 Ca+2 + 0.33333 H+ + 0.16667 H2O + 1 H2SiO4-2
ettr_ss	AsO4_Ettringite_ss	-35.00	AsO4_Ettringite_ss + 10 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 H3AsO4 + 1 ettr_ss
	Ba_Ettringite_ss	4.008	Ba_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ba+2 + 3 SO4-2 + 1 ettr_ss
	BO3_Ettringite_ss	-75.30	BO3_Ettringite_ss + 10 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 H3BO3 + 1 ettr_ss
	CrO4_Ettringite_ss	-9.296	CrO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 CrO4-2 + 1 ettr_ss
	Ettringite_ss	-11.69	Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 SO4-2 + 1 ettr_ss
	Fe_Ettringite_ss	-49.51	Fe_Ettringite_ss + 4 H+ + 8 H2O -> 6 Ca+2 + 2 Fe[OH]4- + 3 SO4-2 + 1 ettr_ss
	Mn[OH]4-2_Ettringite_ss	-58.19	Mn[OH]4-2_Ettringite_ss + 8 H+ + 4 H2O -> 2 Al[OH]4- + 6 Ca+2 + 1 Mn+2 + 2 SO4-2 + 1 ettr_ss
	MoO4_Ettringite_ss	-9.592	MoO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 MoO4-2 + 1 ettr_ss
	PO4_Ettringite_ss	39.41	PO4_Ettringite_ss + 1 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 PO4-3 + 1 ettr_ss
	Sb[OH]6-_Ettringite	-35.44	Sb[OH]6-_Ettringite_ss + 7 H+ + 17 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 Sb[OH]6- + 1 ettr_ss
	SeO4-2_Ettringite_s	-8.592	SeO4-2_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 SeO4-2 + 1 ettr_ss
	Sr_Ettringite_ss	4.008	Sr_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 3 SO4-2 + 6 Sr+2 + 1 ettr_ss
	VO3_Ettringite_ss	-53.34	VO3_Ettringite_ss + 13 H+ + 2 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 VO2+ + 1 ettr_ss
	WO4_Ettringite_ss	-7.456	WO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 WO4-2 + 1 ettr_ss

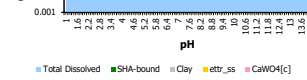
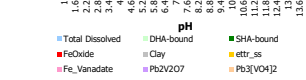
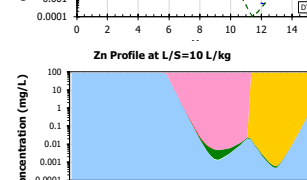
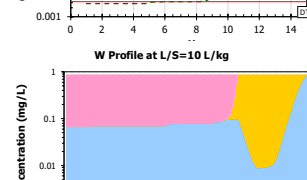
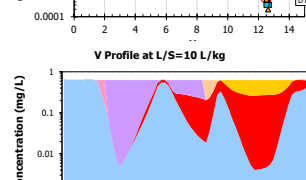
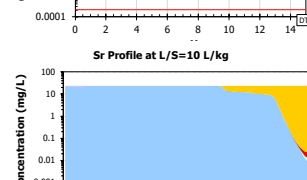
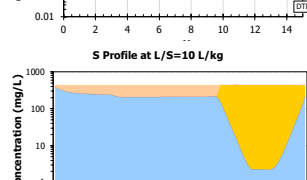
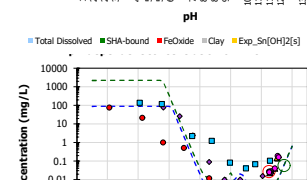
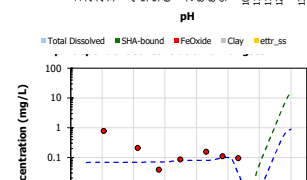
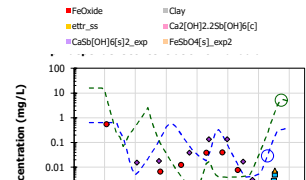
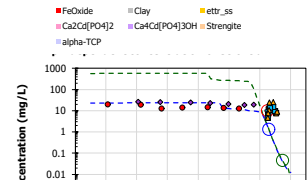
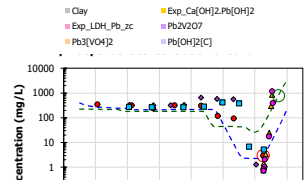
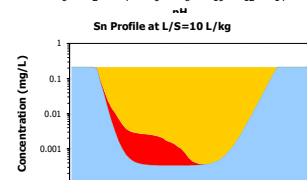
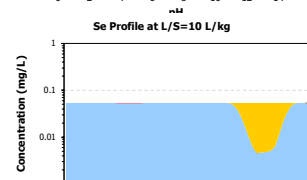
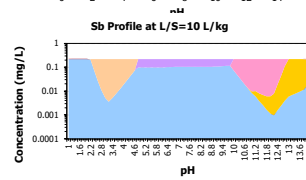
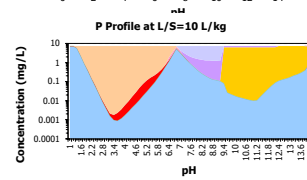
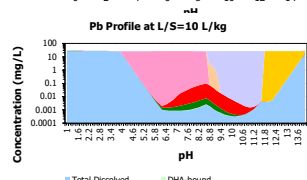
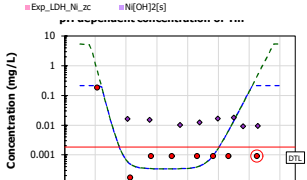
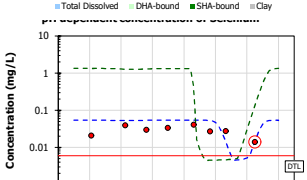
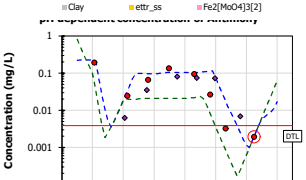
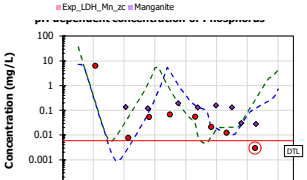
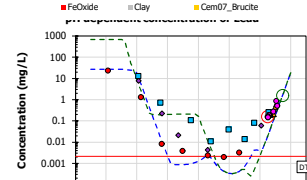
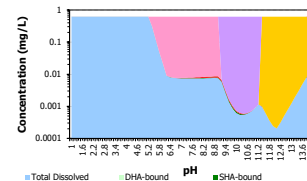
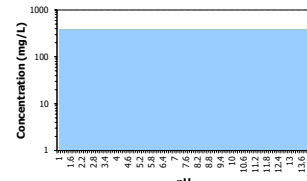
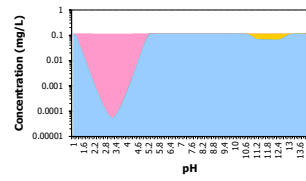
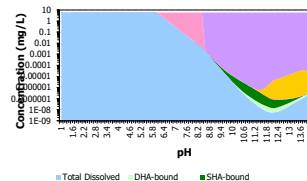
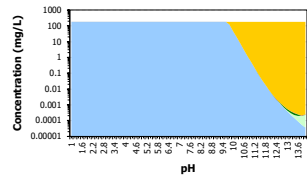
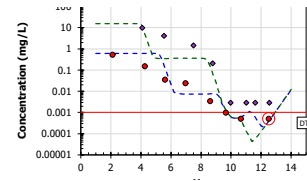
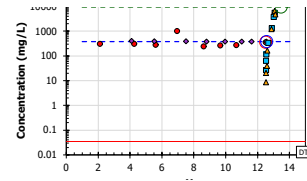
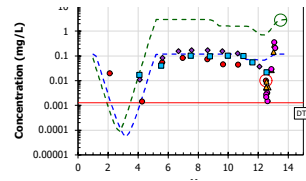
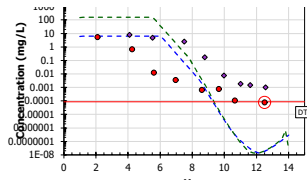
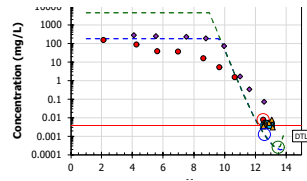
Minerals

Name	Log(K)	Reaction	Name	Log(K)	Reaction
AA_Fe[OH]3[am]	16.60	AA_Fe[OH]3[am] + 1 H2O -> 1 Fe[OH]4- + 1 H+	Exp_Ca[OH]2.Cu[OH]2	-30.00	Exp_Ca[OH]2.Cu[OH]2 + 4 H+ -> 1 Ca+2 + 1 Cu+2 + 4 H2O
alpha-TCP	25.50	alpha-TCP -> 3 Ca+2 + 2 PO4-3	Exp_Ca[OH]2.Ni[OH]2	-32.00	Exp_Ca[OH]2.Ni[OH]2 + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Ni+2
Ba[Scr]O4[96%SO4]	9.790	Ba[Scr]O4[96%SO4] -> 1 Ba+2 + 0.04 CrO4-2 + 0.96 SO4-2	Exp_Ca[OH]2.Pb[OH]2	-30.00	Exp_Ca[OH]2.Pb[OH]2 + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Pb+2
BaSrSO4[50%Ba]	8.221	BaSrSO4[50%Ba] -> 0.5 Ba+2 + 1 SO4-2 + 0.5 Sr+2	Exp_Ca[OH]2.Zn[OH]2	-30.52	Exp_Ca[OH]2.Zn[OH]2 + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Zn+2
Ca2[OH]2.2Sb[OH]6	1.079	Ca2[OH]2.2Sb[OH]6[c] + 2 H+ -> 2 Ca+2 + 2 H2O + 2 Sb[OH]6-	Exp_LDH_Co_zc	9.963	Exp_LDH_Co_zc + 5 H+ + 1 H2O -> 1 Al[OH]4- + 3 Co+2 + 3 H2CO3
Ca2Cd[PO4]2	32.95	Ca2Cd[PO4]2 -> 2 Ca+2 + 1 Cd+2 + 2 PO4-3	Exp_LDH_Cu_zc	8.163	Exp_LDH_Cu_zc + 5 H+ + 1 H2O -> 1 Al[OH]4- + 3 Cu+2 + 3 H2CO3
Ca4Cd[PO4]3OH	39.23	Ca4Cd[PO4]3OH + 1 H+ -> 4 Ca+2 + 1 Cd+2 + 1 H2O + 3 PO4-3	Exp_LDH_Mn_zc	-6.475	Exp_LDH_Mn_zc + 5 H+ -> 1 Al[OH]4- + 3 H2CO3 + 3 H2O + 3 Mn+2
Ca5[OH][AsO4]3[c]	-35.66	Ca5[OH][AsO4]3[c] + 10 H+ -> 5 Ca+2 + 1 H2O + 3 H3AsO4	Exp_LDH_Ni_zc	7.863	Exp_LDH_Ni_zc + 5 H+ + 1 H2O -> 1 Al[OH]4- + 3 H2CO3 + 3 Ni+2
CaSb[OH]6[s]2_exp	19.41	CaSb[OH]6[s]2_exp -> 1 Ca+2 + 2 Sb[OH]6-	Exp_LDH_Pb_zc	12.96	Exp_LDH_Pb_zc + 5 H+ + 1 H2O -> 1 Al[OH]4- + 3 H2CO3 + 3 Pb+2
CaWO4[c]	8.000	CaWO4[c] -> 1 Ca+2 + 1 WO4-2	Exp_Sn[OH]2[s]	1.447	Exp_Sn[OH]2[s] + 2 H+ -> 2 H2O + 1 Sn+2
Cem07_Al[OH]3[am]	13.76	Cem07_Al[OH]3[am] + 1 H2O -> 1 Al[OH]4- + 1 H+	Fe_Vanadate	19.18	Fe_Vanadate + 1 H2O -> 0.5 Fe[OH]4- + 1 VO2+ + 0.5 e-
Cem07_Brucite	-16.83	Cem07_Brucite + 2 H+ -> 2 H2O + 1 Mg+2	Fe2[MoO4]3[2]	86.35	Fe2[MoO4]3[2] + 8 H2O -> 2 Fe[OH]4- + 8 H+ + 3 MoO4-2
Cem07_C2ASH8	17.40	Cem07_C2ASH8 -> 2 Al[OH]4- + 2 Ca+2 + 3 H2O + 1 H2SiO4-2	FeSbO4[s]_exp2	30.48	FeSbO4[s]_exp2 + 6 H2O -> 1 Fe[OH]4- + 2 H+ + 1 Sb[OH]6-
Cem07_C2FSH8	21.41	Cem07_C2FSH8 -> 2 Ca+2 + 2 Fe[OH]4- + 3 H2O + 1 H2SiO4-2	Friedel_salt_ML	-25.96	Friedel_salt_ML + 4 H+ -> 2 Al[OH]4- + 4 Ca+2 + 2 Cl- + 4 H2O
Cem07_C3AH6	-35.14	Cem07_C3AH6 + 4 H+ -> 2 Al[OH]4- + 3 Ca+2 + 4 H2O	Manganite	-25.27	Manganite + 3 H+ + 1 e- -> 2 H2O + 1 Mn+2
Cem07_C3FH6	-30.82	Cem07_C3FH6 + 4 H+ -> 3 Ca+2 + 2 Fe[OH]4- + 4 H2O	Ni[OH]2[s]	-10.80	Ni[OH]2[s] + 2 H+ -> 2 H2O + 1 Ni+2
Cem07_Calcite	-8.196	Cem07_Calcite + 2 H+ -> 1 Ca+2 + 1 H2CO3	Pb[OH]2[C]	-8.150	Pb[OH]2[C] + 2 H+ -> 2 H2O + 1 Pb+2
Cem07_Gypsum	4.583	Cem07_Gypsum -> 1 Ca+2 + 2 H2O + 1 SO4-2	Pb2V2O7	0.9500	Pb2V2O7 + 3 H+ -> 1.5 H2O + 1 Pb+2 + 1 VO2+
Cem07_Portlandite	-22.79	Cem07_Portlandite + 2 H+ -> 1 Ca+2 + 2 H2O	Pb3[VO4]2	-3.070	Pb3[VO4]2 + 4 H+ -> 2 H2O + 1.5 Pb+2 + 1 VO2+
CoSiO4	6.289	CoSiO4 + 2 H+ -> 2 Co+2 + 1 H2SiO4-2	Strengite	48.00	Strengite + 2 H2O -> 1 Fe[OH]4- + 4 H+ + 1 PO4-3
Cr[OH]3[A]	68.13	Cr[OH]3[A] + 1 H2O -> 1 CrO4-2 + 5 H+ + 3 e-	Tenorite	-7.620	Tenorite + 2 H+ -> 1 Cu+2 + 1 H2O
Exp_Ca[OH]2.Cd[OH]	-34.00	Exp_Ca[OH]2.Cd[OH]2 + 4 H+ -> 1 Ca+2 + 1 Cd+2 + 4 H2O	Willemite	6.289	Willemite + 2 H+ -> 1 H2SiO4-2 + 2 Zn+2
Exp_Ca[OH]2.Co[OH]	-33.22	Exp_Ca[OH]2.Co[OH]2 + 4 H+ -> 1 Ca+2 + 1 Co+2 + 4 H2O			



Cement mortar with MSWI fly ash

COMPARISON AND PARTITIONING



**Model Comparison: residuals - Concentration**

**Name** Cement mortar with MSWI fly ash (11 % dw) **Report Info**  
**Legend**

**Total Average Deviation** Square root of the sum of the squared values of residuals divided by the number of values, over the entire X range.  
**User Average Deviation** Square root of the sum of the squared values of residuals divided by the number of values, over the user defined X range.  
**Fractional Average Deviation** Square root of the sum of the squared values of residuals divided by the number of values, over the fraction.  
 Note that the Total and User Average Deviation columns are averages as well.

Yellow = own pH All residuals within + 1 or - 1 are considered to represent a good fit.

**Residual details, concentrations**

Residuals as log(model/sample)									
Fraction	8	7	6	5	4	3	2	1	Total Avg
pH	2.10	4.25	5.60	6.95	8.60	9.65	10.7	12.5	Deviation
Al	0.06	0.63	0.02	1.03	1.70	1.73	-0.12	-0.22	0.34
Ba	0.15	-0.25	-0.45	-0.58	-0.62	-0.65	0.35	-0.21	0.16
Br	-	-	-	-	-	-	-	-	-
Ca	0.05	0.08	0.19	0.08	0.09	0.14	0.17	0.17	0.05
Cd	0.06	0.58	1.68	-1.02	-1.47	0.67	1.28	0.62	0.37
Cl	0.06	0.09	0.17	0.20	0.14	0.13	0.12	-0.18	0.05
Co	0.06	0.61	0.27	-0.85	-0.18	-0.59	-0.04	0.26	0.16
Cr	0.05	0.49	-0.65	0.26	0.34	0.51	0.14	0.36	0.14
Cu	0.06	0.98	1.02	0.31	0.67	0.54	0.09	1.32	0.27
F	-	-	-	-	-	-	-	-	-
Fe	0.02	1.20	2.02	0.84	-0.03	0.07	-0.09	0.97	0.33
CO32-	-	-	-	-	-	-	-	-	-
Si	-0.76	0.27	0.66	0.75	1.01	0.01	-0.58	0.13	0.22
As	-0.09	1.30	0.99	2.02	0.64	0.25	-1.12	-0.55	0.37
B	0.24	0.49	0.70	0.15	0.85	1.31	1.35	0.53	0.29
Hg	-	-	-	-	-	-	-	-	-
K	0.10	0.14	0.23	0.27	0.25	0.17	0.15	0.03	0.07
Li	0.06	0.11	0.27	0.32	0.35	0.30	0.19	0.10	0.08
Mg	0.06	0.31	0.66	0.68	1.05	1.48	0.19	-0.71	0.27
Mn	0.06	0.95	2.70	1.99	0.46	-1.68	-2.53	-3.63	0.74
Mo	-1.05	0.15	0.33	0.15	0.20	0.41	0.40	0.85	0.19
Na	0.09	0.10	0.13	-0.42	0.20	0.15	0.14	0.03	0.07
Ni	0.06	0.60	0.54	-0.51	0.33	0.08	0.08	-0.11	0.13
NO3	-	-	-	-	-	-	-	-	-
Pb	0.06	0.63	0.17	-0.66	0.06	-0.68	-0.88	-0.91	0.21
P	-1.47	-0.40	0.20	1.76	0.46	0.08	-0.02	1.60	0.36
Sb	0.05	0.12	0.16	-0.11	0.04	0.64	0.72	0.01	0.12
Se	0.41	0.13	0.25	0.20	0.12	0.30	-0.30	0.02	0.09
Sn	0.05	0.46	-0.43	-0.44	-0.37	0.01	0.85	2.37	0.33
S	-0.10	-0.17	-0.07	-0.18	-0.15	0.08	-1.04	0.02	0.14
Sr	0.05	0.08	0.27	0.22	0.21	0.00	-0.03	-0.74	0.11
Th	-	-	-	-	-	-	-	-	-
U	-	-	-	-	-	-	-	-	-
V	0.06	1.05	1.31	1.25	-0.33	0.68	0.22	1.53	0.34
W	-1.06	-0.48	0.25	-0.04	-0.29	-0.05	-0.52	0.47	0.18
Zn	0.06	0.61	1.94	0.64	-0.71	0.22	1.22	-1.34	0.36
Avg Deviat	0.08	0.11	0.17	0.15	0.11	0.13	0.14	0.20	0.23