

MILL TEST CERTIFICATE FOR CSA PORTLAND CEMENT TYPE HS

Production for Week Ending 2009:	4-Oct	11-Oct	18-Oct	25-Oct	1-Nov	8-Nov	15-Nov	22-Nov	6-Dec	13-Dec	20-Dec	27-Dec	3-Jan	
<u>CHEMICAL ANALYSIS</u>														
SiO ₂	%	21.7	21.4	21.4	21.4	21.1	21.0	21.2	21.1	20.9	21.2	21.1	21.5	21.6
Al ₂ O ₃	%	3.9	3.8	3.9	4.2	4.1	4.0	4.0	4.0	4.0	4.1	4.0	4.1	4.2
Fe ₂ O ₃	%	4.5	4.5	4.4	4.4	4.5	4.5	4.6	4.5	4.5	4.5	4.4	4.4	4.4
CaO	%	62.5	62.7	62.7	63.0	62.6	63.4	63.1	63.1	63.5	63.2	62.8	63.0	62.8
MgO	%	3.13	3.09	3.17	2.57	2.66	2.79	2.88	2.90	2.74	2.63	2.56	2.55	2.55
SO ₃	%	2.34	2.46	2.41	2.35	2.43	2.40	2.45	2.36	2.42	2.46	2.88	2.36	2.38
Loss on Ignition	%	1.03	1.12	1.30	1.18	1.20	1.26	0.90	1.43	1.15	0.89	1.20	1.10	1.15
Na ₂ O	%	0.21	0.21	0.21	0.28	0.25	0.27	0.24	0.22	0.28	0.27	0.26	0.27	0.27
K ₂ O	%	0.54	0.57	0.57	0.52	0.47	0.47	0.47	0.46	0.51	0.50	0.50	0.52	0.53
Insoluble Residue	%	0.88	0.38	0.31	0.27	0.30	0.25	0.28	0.24	0.27	0.16	0.28	0.18	0.20
T. Alk.	%	0.57	0.59	0.58	0.62	0.56	0.58	0.55	0.52	0.62	0.59	0.59	0.61	0.61
C ₃ S	%	50	54	53	52	54	58	56	56	60	55	54	53	51
C ₂ S	%	25	21	21	22	20	17	19	18	15	19	20	22	24
C ₃ A	%	2.8	2.4	2.9	3.5	3.1	3.1	2.9	3.2	2.9	3.2	3.2	3.4	3.5
C ₄ AF	%	13.5	13.5	13.3	13.5	13.7	13.6	13.9	13.5	13.7	13.6	13.4	13.5	13.4
<u>PHYSICAL PROPERTIES</u>														
Blaine	m ² /kg	421	423	422	424	424	424	427	418	411	445	423	420	423
Retained on 45µ sieve	%	2.07	4.68	3.60	4.15	3.44	5.13	3.54	4.09	4.66	1.92	10.87	3.54	2.12
Autoclave Expansion	%	0.025	0.028	0.027	0.024	0.022	0.034	0.030	0.017	0.034	0.020	0.020	0.020	0.020
Sulphate Expansion	%	0.025	0.030	0.030	0.030	0.030	0.030	0.030	0.035	0.035	0.035	0.034	0.034	0.034
Vicat Initial Set	min	89	90	76	78	79	73	71	66	77	94	94	94	94
False Set	%	82	81	67	79	87	82	86	97	73	69	69	69	69
Air Content	%	7.65	8.10	8.20	7.90	7.70	7.70	7.60	7.30	7.70	7.70	7.70	7.70	7.70
3 Day	MPa	21.8	21.0	21.3	19.4	21.2	22.7	22.6	20.5	22.9	21.2	21.5	20.0	19.1
7 Day	MPa	27.1	27.0	27.0	25.8	27.8	28.1	27.7	27.2	28.3	29.6	24.6	27.3	27.1
28 Day	MPa	39.6	36.0	37.0	36.5	38.6	36.8	38.9	37.0	35.5	39.4	35.2	38.5	36.5

Manufactured cement conforms to CSA Standard A3001-08.

Date: February 01, 2010

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