

**MILL TEST CERTIFICATE FOR CSA PORTLAND CEMENT TYPE HS**

Production for Week Ending 2010:	11-Apr	18-Apr	25-Apr	2-May	9-May	16-May	23-May	30-May	6-Jun	13-Jun	20-Jun	27-Jun	
<b><u>CHEMICAL ANALYSIS</u></b>													
SiO <sub>2</sub>	%	20.8	20.6	20.6	20.6	20.6	20.7	20.8	20.7	20.7	20.6	20.9	21.1
Al <sub>2</sub> O <sub>3</sub>	%	3.9	3.8	3.7	3.8	3.8	4.0	4.0	4.0	4.0	4.0	3.9	4.1
Fe <sub>2</sub> O <sub>3</sub>	%	4.5	4.6	4.6	4.7	4.6	4.7	4.6	4.6	4.6	4.5	4.6	4.7
CaO	%	62.5	62.8	63.0	62.8	63.0	62.3	62.5	62.4	62.1	62.2	62.4	62.5
MgO	%	3.28	3.14	3.10	3.08	3.00	3.25	3.27	3.14	3.19	3.15	3.15	3.23
SO <sub>3</sub>	%	2.44	2.39	2.41	2.41	2.40	2.42	2.37	2.41	2.44	2.43	2.43	2.26
Loss on Ignition	%	1.30	1.32	1.23	1.18	1.36	1.14	0.92	1.47	1.50	1.42	1.39	1.30
Na <sub>2</sub> O	%	0.21	0.21	0.20	0.20	0.20	0.21	0.22	0.21	0.22	0.25	0.25	0.23
K <sub>2</sub> O	%	0.51	0.57	0.57	0.54	0.54	0.51	0.54	0.55	0.56	0.48	0.45	0.43
Insoluble Residue	%	0.18	0.15	0.22	0.20	0.13	0.28	0.27	0.25	1.75	0.27	0.22	0.21
T. Alk.	%	0.55	0.59	0.58	0.56	0.56	0.55	0.57	0.57	0.59	0.56	0.54	0.52
C <sub>3</sub> S	%	57	59	61	60	61	55	56	57	55	56	55	53
C <sub>2</sub> S	%	17	14	13	14	13	18	17	17	18	17	18	20
C <sub>3</sub> A	%	2.7	2.3	1.9	2.2	2.2	2.9	2.9	2.8	2.9	3.1	2.5	2.9
C <sub>4</sub> AF	%	13.7	14.1	14.1	14.2	14.1	14.2	14.0	14.1	13.9	13.6	13.9	14.2
<b><u>PHYSICAL PROPERTIES</u></b>													
Blaine	m <sup>2</sup> /kg	423	418	425	418	423	423	421	417	422	421	413	423
Retained on 45µ sieve	%	3.59	5.00	4.14	3.99	4.13	2.97	3.41	3.71	3.84	3.62	3.60	3.28
Autoclave Expansion	%	0.024	0.024	0.042	0.048	0.055	0.055	0.055	0.066	0.056	0.056	0.039	0.031
Sulphate Expansion	%	0.037	0.029	0.028	0.033	0.036	0.036	0.036	0.038	0.042	0.043	0.034	0.036
Vicat Initial Set	min	63	63	68	70	58	58	58	73	82	82	81	80
False Set	%	96	96	92	90	97	97	97	88	69	69	76	80
Air Content	%	5.90	5.90	6.28	6.40	7.60	7.60	7.60	7.70	8.50	8.50	8.91	9.11
3 Day	MPa	21.0	24.4	24.9	23.8	24.4	18.8	18.7	19.8	20.0	20.6	21.1	18.3
7 Day	MPa	27.4	29.3	30.1	30.3	29.1	25.0	27.4	26.0	27.4	26.7	28.7	24.5
28 Day	MPa	37.5	37.7	37.6	40.7	37.7	40.4	39.9	38.1	37.7	38.5	40.6	39.4

Manufactured cement conforms to CSA Standard A3001-08 as an HS cement except for the production weeks of April 11th, May 9th thru 30th, June 6th, 13th and 27th.

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