

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

Production for Week Ending 2011:	2-Oct	9-Oct	16-Oct	23-Oct	30-Oct	6-Nov	13-Nov	20-Nov	27-Nov	4-Dec	11-Dec	18-Dec	25-Dec	
<b><u>CHEMICAL ANALYSIS</u></b>														
SiO <sub>2</sub>	%	20.9	21.3	21.5	21.5	21.3	21.3	21.5	20.8	21.1	21.1	21.0	20.9	21.4
Al <sub>2</sub> O <sub>3</sub>	%	3.7	3.5	3.4	3.4	3.5	3.5	3.5	3.6	3.7	3.7	3.6	3.6	3.7
Fe <sub>2</sub> O <sub>3</sub>	%	4.5	4.5	4.3	4.5	4.4	4.4	4.4	4.5	4.4	4.4	4.4	4.5	4.4
CaO	%	62.5	62.2	62.5	62.1	62.3	62.0	62.1	62.2	62.0	62.2	62.1	62.0	62.0
MgO	%	2.63	2.68	2.96	3.10	3.14	3.20	2.96	3.68	3.56	3.53	3.56	3.52	2.99
SO <sub>3</sub>	%	2.24	2.23	2.19	2.15	2.18	2.21	2.15	2.26	2.23	2.20	2.19	2.23	2.24
Loss on Ignition	%	1.31	1.39	1.31	1.40	1.12	1.27	1.46	1.14	1.24	1.35	1.23	1.31	1.31
Na <sub>2</sub> O	%	0.33	0.34	0.29	0.31	0.31	0.30	0.31	0.33	0.33	0.33	0.33	0.33	0.31
K <sub>2</sub> O	%	0.54	0.57	0.54	0.49	0.50	0.54	0.49	0.46	0.47	0.49	0.51	0.51	0.52
Insoluble Residue	%	0.22	0.44	0.34	0.43	0.35	0.38	0.41	0.28	0.40	0.52	0.35	0.35	0.37
T. Alk.	%	0.69	0.72	0.64	0.64	0.64	0.65	0.64	0.64	0.64	0.66	0.67	0.66	0.65
C <sub>3</sub> S	%	57	55	56	54	55	55	53	58	55	55	56	56	52
C <sub>2</sub> S	%	17	19	20	21	20	20	21	16	19	19	18	17	22
C <sub>3</sub> A	%	2.2	1.7	1.6	1.3	1.8	1.8	1.9	1.8	2.2	2.3	2.1	2.0	2.4
C <sub>4</sub> AF	%	13.8	13.7	13.1	13.8	13.4	13.3	13.4	13.8	13.5	13.4	13.5	13.5	13.4
<b><u>PHYSICAL PROPERTIES</u></b>														
Blaine	m <sup>2</sup> /kg	429	433	428	428	430	429	421	436	423	430	438	423	435
Retained on 45µ sieve	%	2.54	2.43	2.99	3.57	2.26	4.09	3.34	4.69	3.57	5.18	5.32	3.35	2.97
Autoclave Expansion	%	0.055	0.066	0.071	0.037	0.050	0.059	0.064	0.058	0.058	0.086	0.086	0.086	0.051
Sulphate Expansion	%	0.029	0.031	0.031	0.025	0.025	0.030	0.027	0.025	0.028	0.030	0.030	0.030	0.028
Vicat Initial Set	min	81	78	77	79	82	82	81	84	84	98	98	98	74
False Set	%	68	73	75	80	82	74	63	91	91	97	97	97	70
Air Content	%	7.90	8.30	8.50	9.20	9.00	8.73	8.50	9.10	9.10	9.20	9.20	9.20	9.20
3 Day	MPa	21.0	19.6	19.8	19.4	20.8	20.2	18.8	19.0	19.5	18.3	19.1	21.3	18.5
7 Day	MPa	27.1	26.0	27.1	25.5	27.9	26.8	24.1	27.4	26.2	25.4	27.0	26.0	24.7
28 Day	MPa	39.7	40.1	39.3	41.0	40.6	38.9	36.7	41.6	40.8	40.2	42.5	38.5	42.8

Manufactured cement conforms to CSA Standard A3001-08.

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