HAWAIIAN CEMENT
A subsidiary of Knife River Corporation

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PORTLAND LIMESTONE CEMENT CONFORMING TO ASTM C595/C595M-21 TYPE IL, SCG Bangkok Thailand

Physical properties	Unit	Specification	Test Results	Test Method
Air content of mortar	%	12 Max	9.3	ASTM C 185
Autoclave expansion	%	0.80 Max	0.03	ASTM C151/C151M
Blaine	cm2/g	3800-4800	4830	ASTM C 204
Mass density	g/cm3	A	3.14	ASTM C 188
Heat of Hydration	J/g(cal/g)	**	301	ASTM C1702
Mortar Bar Expansion *	%	< 0.020	0.004	ASTM C1038
Sulfate Resistance	%	0.10 Max ***	0.07	ASTM C1012
Compressive Strength				
3 days	PSI/MPa	1890 (13.0)	5210 (35.9)	ASTM C 109/C109M
7 days		2900 (20.0)	5770 (39.8)	
28 days		3620 (25.0)	7110 (49.0)	
Time of setting (Vicat)				
Initial set	Minutes	45 Min	135	ASTM C 191
Final set		420 Max	205	
Retained content on				
.+Sieve 45µm	%	10.0 Max	1.52	ASTM C 430
Chemical properties				
MgO	%	A	1.3	ASTM C114
SO3	%	3.0 Max*	2.8	
Loss on ignition (LOI)	%	10 Max	4.7	
Insoluble Residue	%	A	Mill Cert-0.24	
Limestone in cement	%	5.0-15.0	7.81	
CaCO2 in Limestone	%	70 or >	97.11	
SiO2	%	A	19.3	
AI203	%	A	3.8	
Fe203	%	A	2.9	
CaO	%	A	66.1	
K2O	%	A	0.39	
Na2O	%	A	0.14	
R2O (Total alkalies)	%	A	0.40	
Chloride content	%	A	0.02	

Remark:

This cement meets ASTM C595 and AASHTO M240 Specification for Type IL Portland Limestone Cement.

A = Not applicable.
** = Default table maximum may be exceeded if C1038/C1038M limit is met.*
*** = Meets 3d Moderate Heat – MH*
****=Meets 180d Moderate Sulfate – MS*

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Chemist