

**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	9.2	ASTM C 185
Autoclave expansion	%	0.80 Max	0.03	ASTM C151/C151M
Blaine	cm <sup>2</sup> /g	A	4430	ASTM C 204
Mass density	g/cm <sup>3</sup>	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
<b>Compressive Strength</b>				
3 days	PSI/MPa	1890 (13.0)	5670 (39.1)	ASTM C 109/C109M
7 days		2900 (20.0)	6360 (43.8)	
28 days		3620 (25.0)	7480 (51.5)	
<b>Time of setting (Vicat)</b>				
Initial set	Minutes	45 Min	110	ASTM C 191
Final set		420 Max	200	
<b>Retained content on</b>				
.+Sieve 45µm	%	10.0 Max	0.75	ASTM C 430
<b>Chemical properties</b>				
MgO	%	A	1.1	ASTM C114
SO <sub>3</sub>	%	3.0 Max*	2.6	
Loss on ignition (LOI)	%	10 Max	4.78	
Insoluble Residue	%	A	Mill Cert-0.27	
Limestone in cement	%	5.0-15.0	8.47	
CaCO <sub>2</sub> in Limestone	%	70 or >	94.11	
SiO <sub>2</sub>	%	A	19.0	
Al <sub>2</sub> O <sub>3</sub>	%	A	4.1	
Fe <sub>2</sub> O <sub>3</sub>	%	A	2.9	
CaO	%	A	64.7	
K <sub>2</sub> O	%	A	0.44	
Na <sub>2</sub> O	%	A	0.14	
R <sub>2</sub> O (Total alkalies)	%	A	0.43	
Chloride content	%	A	0.04	

**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*

April 22, 2025



**Daniel K. Paaaina III**

Chemist