

**PORTLAND LIMESTONE CEMENT CONFORMING TO  
ASTM C595/C595M-21 TYPE IL(7.92), SCG Bangkok Thailand**

| Physical properties     | Unit               | Specification | Test Results   | Test Method      |
|-------------------------|--------------------|---------------|----------------|------------------|
| Air content of mortar   | %                  | 12 Max        | 7.6            | ASTM C 185       |
| Autoclave expansion     | %                  | 0.80 Max      | 0.03           | ASTM C151/C151M  |
| Blaine                  | cm <sup>2</sup> /g | A             | 4540           | 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       |
|                         |                    |               |                |                  |
|                         |                    |               |                |                  |
| Compressive Strength    |                    |               |                |                  |
| 3 days                  | PSI/MPa            | 1890 (13.0)   | 5050 (34.8)    | ASTM C 109/C109M |
| 7 days                  |                    | 2900 (20.0)   | 5810 (40.0)    |                  |
| 28 days                 |                    | 3620 (25.0)   | 7100 (48.9)    |                  |
| Time of setting (Vicat) |                    |               |                |                  |
| Initial set             | Minutes            | 45 Min        | 125            | ASTM C 191       |
| Final set               |                    | 420 Max       | 195            |                  |
| Retained content on     |                    |               |                |                  |
| .+Sieve 45µm            | %                  | 10.0 Max      | 2.9            | ASTM C 430       |
| Chemical properties     |                    |               |                |                  |
| MgO                     | %                  | A             | 0.95           | ASTM C114        |
| SO3                     | %                  | 3.0 Max*      | 2.6            |                  |
| Loss on ignition (LOI)  | %                  | 10 Max        | 4.8            |                  |
| Insoluble Residue       | %                  | A             | Mill Cert-0.20 |                  |
| Limestone in cement     | %                  | 5.0-15.0      | 7.92           |                  |
| CaCO2 in Limestone      | %                  | 70 or >       | 96.09          |                  |
| SiO2                    | %                  | A             | 19.8           |                  |
| Al2O3                   | %                  | A             | 4.3            |                  |
| Fe2O3                   | %                  | A             | 2.9            |                  |
| CaO                     | %                  | A             | 66.9           |                  |
| K2O                     | %                  | A             | 0.50           |                  |
| Na2O                    | %                  | A             | 0.16           |                  |
| R2O (Total alkalis)     | %                  | A             | 0.49           |                  |
| 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*

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