



SUBSIDIARIES:
ANCHORAGE SAND & GRAVEL CO., INC.
FAIRBANKS MATERIALS, INC.

Manufacturer's Certification

Report Date: 5/20/2024

We hereby certify that CalPortland Type III Cement meets the standard requirements of ASTM C150 and AASHTO M85 specification for Type III cement. Reported are the average chemical and physical data for the month.

Lot #: 24-121_III

Type III Cement

Source: SsangYong, So. Korea

Chemical Properties	ASTM C150 and AASHTO M85 Requirements	Analysis	Limestone
	Type III	Results	Analysis
Silicon dioxide (SiO ₂), %	---	20.3	8.4
Aluminum oxide (Al ₂ O ₃), max, %	---	4.8	3.1
Ferric oxide (Fe ₂ O ₃), max, %	---	3.1	1.5
Calcium oxide (CaO), %	---	62.4	4.1
Magnesium oxide (MgO), max, %	6.0	4.0	3.5
Sulfur trioxide (SO ₃), max, %	3.5	3.0	0.1
Loss on ignition (LOI), max, %	3.5	0.8	
Insoluble residue (IR), max, %	1.5	0.2	Base
Alkalies (Na ₂ O+0.658*K ₂ O), %	---	0.53	Cement
Tricalcium silicate (C ₃ S), %	---	55	56
Dicalcium silicate (C ₂ S), %	---	16	16
Tricalcium aluminate (C ₃ A), max, %	15	7	7
Tetracalcium aluminoferrite (C ₄ AF), %	---	9	9
CO ₂ , %	---	0.3	
Limestone addition, max, %	5.0	0.8	
CaCO ₃ in Limestone, min, %	70	87	
Physical Properties			
Air content of mortar, max, volume %	12	6	
Blaine Fineness, min, m ² /kg	---	556	
Autoclave expansion, max, %	0.80	0.09	
Compressive Strength, min			
1 Day, MPa	12.0	21.2	
1 Day, psi	1740	3070	
3 Day, MPa	24.0	32.8	
3 Day, psi	3480	4750	
7 Day, MPa	---	38.4	
7 Day, psi	---	5560	
28 Day (from previous lot), MPa	---	44.2	
28 Day (from previous lot), psi	---	6410	
Vicat Setting Time, min-max, minutes	45-375	115	
Reflectance by Hunter Lab, L-Value	---	56	

Apparatus and methods used in this laboratory have been checked by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology. A copy of the report detailing their findings is available upon request. Major oxides are analyzed in accordance with ASTM C114.

Xavier Schlee
Quality Control Manager