



Ash Grove Branford Plant

Portland Cement Type IL (13)

Silos: 2, 3, 4, 5

August 2023 Mill Certificate

Production Period: 7/01/2023 To 7/31/2023

STANDARD REQUIREMENTS

Chemical Data			Physical Data		
Item	Spec. Limit	Results	Item	Spec. Limit	Results
SiO ₂ (%)	A	18.6	Air Content of mortar (volume %)	12 max	4
Al ₂ O ₃ (%)	A	4.6	Blaine fineness (m ² /kg)**	A	507
Fe ₂ O ₃ (%)	A	3.1	Autoclave expansion (%)	-0.20 min/0.80 max	0.03
CaO (%)	A	62.8	Fineness, retained in #325	A	1.0
MgO (%)	A	0.6	Compressive strength (MPa/[psi]):		
SO ₃ (%)*	3.0 max	2.9	1 day		15.6 [2260]
Loss of ignition (%)	10.0 max	6.5	3 days	13.0[1890] min	29.3 [4250]
Na ₂ O (%)	A	0.15	7 days	20.0[2900] min	37.2 [5400]
K ₂ O (%)	A	0.20	28 days (previous month)	28.0[4060] min	48.4 [7020]
			Time of setting (minutes)		
CO ₂ (%)	A	5.2	(Vicat) Initial	45 min	89
Limestone (%)	15.0 max	13.3	(Vicat) Final	375 max	185
CaCO ₃ in limestone (%)	70 min	90	Sulfate Resistance (ASTM C1012 180d) (%)	0.10 max	0.05
Inorganic process addition (%)	5.0 max	--	Heat of hydration (ASTM C1702 3d)	B	284
			Mortar Bar Expansion (ASTM C1038) (%)*	0.020 max	0.001

OPTIONAL REQUIREMENTS

Item	Spec. Limit	Results	Item	Spec. Limit	Results
Equiv. Alkalies (%)	0.60 max	0.28	Density (ASTM C188) (g/cm ³)	B	3.05
Chloride (%)	B	0.01			

Additional Data

Type	Limestone	Inorganic Processing Addition
Amount	13.3	--
SiO ₂ (%)	7.4	--
Al ₂ O ₃ (%)	0.6	--
Fe ₂ O ₃ (%)	0.1	--
CaO (%)	50.3	--
SO ₃ (%)	0.1	--

This cement meets ASTM C595 and AASHTO M240 Specification for Type IL (MS) Portland Cement

This cement also meets all applicable FDOT (Facility ID: CMT 29), SCDOT, and NCDOT (Plant ID: CM69) specifications for Type IL cement

*It is permissible to exceed the max value for SO₃ content, provided it is demonstrated by ASTM C1038 that the cement will not develop expansion exceeding 0.020% in 14 Days

A Not applicable.

B Test result represents most recent value and is provided for information only.

C Test result is not yet available

August 20, 2023

Branford Cement Plant

Ash Grove

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