



# Ash Grove Branford Plant

Portland Cement Type IL (13)

Silos: 2, 3, 4, 5

October 2023 Mill Certificate

Production Period: 9/01/2023 To 9/30/2023

## STANDARD REQUIREMENTS

Chemical Data			Physical Data		
Item	Spec. Limit	Results	Item	Spec. Limit	Results
SiO <sub>2</sub> (%)	A	18.4	Air Content of mortar (volume %)	12 max	4
Al <sub>2</sub> O <sub>3</sub> (%)	A	4.6	Blaine fineness (m <sup>2</sup> /kg)**	A	490
Fe <sub>2</sub> O <sub>3</sub> (%)	A	3.2	Autoclave expansion (%)	-0.20 min/0.80 max	0.03
CaO (%)	A	62.9	Fineness, retained in #325	A	1.3
MgO (%)	A	0.6	Compressive strength (MPa/[psi]):		
SO <sub>3</sub> (%)*	3.0 max	2.9	1 day		16.1 [2330]
Loss of ignition (%)	10.0 max	6.1	3 days	13.0[1890] min	29.7 [4300]
Na <sub>2</sub> O (%)	A	0.16	7 days	20.0[2900] min	38.5 [5580]
K <sub>2</sub> O (%)	A	0.20	28 days (previous month)	28.0[4060] min	50.2 [7280]
			Time of setting (minutes)		
CO <sub>2</sub> (%)	A	5.0	(Vicat) Initial	45 min	96
Limestone (%)	15.0 max	12.4	(Vicat) Final	375 max	200
CaCO <sub>3</sub> in limestone (%)	70 min	89	Sulfate Resistance (ASTM C1012 180d) (%)	0.10 max	0.05
Inorganic process addition (%)	5.0 max	--	Heat of hydration (ASTM C1702 3d)	B	278
			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	0.29	Density (ASTM C188) (g/cm <sup>3</sup> )	B	3.05
Chloride (%)	B	0.00			

## Additional Data

Type	Limestone	Inorganic Processing Addition
Amount	12.4	--
SiO <sub>2</sub> (%)	6.6	--
Al <sub>2</sub> O <sub>3</sub> (%)	0.6	--
Fe <sub>2</sub> O <sub>3</sub> (%)	0.2	--
CaO (%)	51.0	--
SO <sub>3</sub> (%)	1.7	--

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 SO<sub>3</sub> 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

October 18, 2023

Branford Cement Plant

Ash Grove

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