



# Suwannee American Cement Branford Plant

**Portland Cement Type IL (10)**

**Silo: 4**

Production Period : 3/21/2019

## STANDARD REQUIREMENTS

| Chemical Data                                  |             |         | Physical Data                            |                    |             |
|--|-------------|---------|--|--------------------|-------------|
| Item   | Spec. Limit | Results | Item                                     | Spec. Limit        | Results     |
| SiO <sub>2</sub> (%)                           | A           | 19.9    | Air Content of mortar (volume %)         | 12 max             | C           |
| Al <sub>2</sub> O <sub>3</sub> (%)             | A           | 5.1     | Blaine fineness (m <sup>2</sup> /kg)     | A                  | 394         |
| Fe <sub>2</sub> O <sub>3</sub> (%)             | A           | 3.3     | Autoclave expansion (%)                  | -0.20 min/0.80 max | C           |
| CaO (%)  | A           | 64.7    | Fineness, retained in #325               | A                  | 3.9         |
| MgO (%)  | A           | 0.6     | Compressive strength (MPa/[psi]):        |                    |             |
| SO <sub>3</sub> (%)*                           | 3.0 max     | 2.9     | 1 day                                    |                    | 12.4 [1800] |
| Loss of ignition (%)                           | 10.0 max    | 4.8     | 3 days                                   | 13.0[1890] min     | C           |
| Na <sub>2</sub> O (%)                          | A           | 0.13    | 7 days                                   | 20.0[2900] min     | C           |
| K <sub>2</sub> O (%)                           | A           | 0.22    | 28 days (previous month)                 | 28.0[4060] min     | C           |
| Insoluble residue (%)                          | A           | C       | Time of setting (minutes)                |                    |             |
| CO <sub>2</sub> (%)                            | A           | 3.9     | (Vicat) Initial                          | 45 min             | 84          |
| Limestone (%)                                  | 15.0 max    | 9.8     | (Vicat) Final                            | 375 max            | C           |
| CaCO <sub>3</sub> in limestone (%)             | 70 min      | 91      | Sulfate Resistance (ASTM C1012 180d) (%) | 0.10 max           | 0.05        |
| Inorganic process addition (%)                 | 5.0 max     | --      | Heat of hydration (ASTM C1702 3d)        | B                  | C           |
| Sum of C <sub>3</sub> S + 4.75C <sub>3</sub> A | A           | 87      | Mortar Bar Expansion (ASTM C1038) (%)*   | 0.020 max          | 0.010       |
| Potential phase composition                    |             |         | Base Cement Phase Composition            |                    |             |
| C <sub>3</sub> S (%)                           | A           | 50      | C <sub>3</sub> S (%)                     |                    | 56          |
| C <sub>2</sub> S (%)                           | A           | 18      | C <sub>2</sub> S (%)                     |                    | 19          |
| C <sub>3</sub> A (%)                           | A           | 8       | C <sub>3</sub> A (%)                     |                    | 8           |
| C <sub>4</sub> AF (%)                          | A           | 10      | C <sub>4</sub> AF (%)                    |                    | 11          |

## OPTIONAL REQUIREMENTS

| Item                | Spec. Limit | Results | Item                                     | Spec. Limit | Results |
|---------------------|-------------|---------|--|-------------|---------|
| Equiv. Alkalies (%) | 0.60 max    | 0.27    | False Set (%)                            | 50 min      | C       |
| Chloride (%)        | B           | 0.01    | Density (ASTM C188) (g/cm <sup>3</sup> ) | B           | 3.15    |

### Additional Data

| Type                               | Limestone | Inorganic Processing Addition |
|------------------------------------|-----------|-------------------------------|
| Amount                             | 9.8       | --                            |
| SiO <sub>2</sub> (%)               | 5.8       | --                            |
| Al <sub>2</sub> O <sub>3</sub> (%) | 0.6       | --                            |
| Fe <sub>2</sub> O <sub>3</sub> (%) | 0.4       | --                            |
| CaO (%)                            | 50.7      | --                            |
| SO <sub>3</sub> (%)                | 0.3       | --                            |

*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.

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Brandford Cement Plant

Suwannee American Cement

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