

**Plico Gun Mix Super Tuff Mix**

Product Number 14150

Date 2/10/2014

**Product Description**

An intermediate duty, high strength, low iron refractory gun mix.

**Service limit -** 2600°F 1,426 °C

**Std. package** 55 # / 25 kg Bag

**Density to place** 122 pcf 1,954 kg/m<sup>3</sup>

**Water range per std. package:**

**Density in service** 122 pcf 1,954 kg/m<sup>3</sup>

**Casting** to qts 0.0 to 0.0 l

**Min time before firing** 24 hr

**Pumping** to qts 0.0 to 0.0 l

**Chemistry % (calcined)**

|                                |      |                               |     |
|--------------------------------|------|-------------------------------|-----|
| Al <sub>2</sub> O <sub>3</sub> | 46.8 | P <sub>2</sub> O <sub>5</sub> |     |
| SiO <sub>2</sub>               | 39.3 | Alk.                          | 0.5 |
| Fe <sub>2</sub> O <sub>3</sub> | 1.2  | MgO                           | 0.2 |
| CaO                            | 9.9  | SiC                           |     |
| TiO <sub>2</sub>               | 2.1  | ZrO <sub>2</sub>              |     |
|                                |      | Other                         |     |

**Thermal Conductivity**

|               | btu*in/hr*ff <sup>2</sup> *°F | w/m°C |
|---------------|-------------------------------|-------|
| 500F / 260C   | 6.0                           | 0.86  |
| 1000F / 540C  | 6.1                           | 0.87  |
| 1500F / 815C  | 6.3                           | 0.9   |
| 2000F / 1090C | 6.8                           | 0.97  |

**Abrasion Loss**

per ASTM C 704  
after 1500 F

cc

**Coefficient of Thermal Expansion**  
(reversible)

3.1 x 10<sup>-6</sup> in/in F

5.5 x 10<sup>-6</sup> m/m C

| Temperature<br>per<br><u>ASTM C113 / C865</u> | Linear Change<br>per<br><u>ASTM C113 / C179</u> | Cold MOR                    |            | CCS                         |            | Hot MOR                     |            |
|---|---|-----------------------------|------------|-----------------------------|------------|-----------------------------|------------|
|   |   | per ASTM C133<br><u>psi</u> | <u>MPa</u> | per ASTM C133<br><u>psi</u> | <u>MPa</u> | per ASTM C583<br><u>psi</u> | <u>MPa</u> |
| 230 F / 110 C                                 | -0.1%   | 850                         | 5.9        | 4000                        | 28         |                             |            |
| 1500 F / 815 C                                | -0.3%   | 600                         | 4.1        | 3800                        | 26         | 500                         | 3.4        |
| 2000 F / 1090C                                | -0.5%   | 650                         | 4.5        |                             | 0          | 550                         | 3.8        |
| 2500 F / 1370 C                               | -1.0%   | 1100                        | 7.6        |                             | 0          |                             | 0.0        |
|   |   |                             | 0.0        |                             | 0          |                             | 0.0        |

**Other Data**

**Heat Up Guide**

Schedule B

**ASTM Class**

C 401 Class C

Regular Castable

**Note:**

All data are averaged results of ASTM tests (where applicable) on laboratory gunned specimens. Reasonable variations in data can be expected. Data is not to be used for specification purposes. Product data is periodically updated to reflect product / raw material / process / testing changes. Please consult your Plico representative to make sure you have the most current data.

*Plico Refractories are manufactured by Plibrico Company LLC, USA.*