



# Plibrico Company, LLC

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# Technical Data Sheet Plicast AI-Shield 55M KK

Product # 14924

Available Internationally As: Plico Castable A-S 55M KK

### Product Description:

Plicast® AI-Shield™ 55 M KK is a 57% alumina, mullite based, low cement castable that incorporates a high temperature aluminum resistant additive system. Benefits include good aluminum reaction/wetting, corundum resistance to 2000°F, hot MOR from 1500°F to 2300°F, hot load resistance, hot fracture resistance, improved thermal cycling resistance, and can be installed by casting or pumping.

**Standard Packaging:** 55 # / 25 kg Bag

**Shelf Life:** 6 months

**Service Limit:** 3000 °F 1650 °C

**Contact Limit:** 2000 °F 1093 °C

**Bulk Density - In Service:** 155 pcf 2483 kg/m<sup>3</sup>

**Bulk Density - To Place:** 155 pcf 2483 kg/m<sup>3</sup>

**Minimum Time To Firing:** 16 hr

**Abrasion Loss after 1500°F / 815°C**  
 per ASTM C704

10 cc

| Chemistry (calcined) %         |      |                               |     |                  |     |
|--------------------------------|------|-------------------------------|-----|------------------|-----|
| Al <sub>2</sub> O <sub>3</sub> | 57.0 | Alk                           | 0.2 | MgO              | 0.1 |
| SiO <sub>2</sub>               | 31.3 | TiO <sub>2</sub>              | 1.5 | ZrO <sub>2</sub> |     |
| CaO                            | 1.6  | P <sub>2</sub> O <sub>5</sub> |     | Other            | 7.5 |
| Fe <sub>2</sub> O <sub>3</sub> | 0.8  | SiC                           |     |                  |     |

| Water Range Per Standard Package |     | %   | Quarts | Liters |
|----------------------------------|-----|-----|--------|--------|
| Vib Casting                      | min |     |        |        |
|                                  | max |     |        |        |
| Casting                          | min | 6.4 | 1.7    | 1.6    |
|                                  | max | 7.2 | 1.9    | 1.8    |
| Pumping                          | min | 6.4 | 1.7    | 1.6    |
|                                  | max | 7.2 | 1.9    | 1.8    |

**Coefficient of Thermal Expansion (reversible):**

3.4 x 10<sup>-6</sup> in/in/°F / 6.1 x 10<sup>-6</sup> mm/mm/°C

| Thermal Conductivity | btu*in/hr*ft <sup>2</sup> *°F | W/m°C |
|----------------------|-------------------------------|-------|
| 500°F / 260°C        | 10.5                          | 1.5   |
| 1000°F / 540°C       | 11.2                          | 1.6   |
| 1500°F / 815°C       | 11.8                          | 1.7   |
| 2000°F / 1090°C      | 12.6                          | 1.8   |

| Temperature |      | Linear Change%<br>per ASTM C113 | CCS<br>per ASTM C133 |      | Cold MOR<br>per ASTM C133 |      | Hot MOR<br>per ASTM C583 |      |
|-------------|------|---------------------------------|----------------------|------|---------------------------|------|--------------------------|------|
| °F          | °C   |                                 | psi                  | MPa  | psi                       | MPa  | psi                      | MPa  |
| 230         | 110  | 0.0                             | 4500                 | 31.0 | 1000                      | 6.9  |                          |      |
| 1500        | 820  | -0.2                            | 4500                 | 31.0 | 1050                      | 7.2  | 2500                     | 17.2 |
| 1800        | 980  | -0.3                            |                      |      | 1600                      | 11.0 | 3000                     | 20.7 |
| 2000        | 1090 | -0.5                            |                      |      | 1800                      | 12.4 | 2600                     | 17.9 |
| 2300        | 1260 | -0.2                            |                      |      | 2200                      | 15.2 | 1250                     | 8.6  |

Other Data:

Release Date: 1 Aug 2019

Heat Up Guide: Schedule AT AS or AT AS

ASTM Class: C 401 Class E Low Cement Castable

Refractory material should be stored in a cool, dry environment.

**Note:** All data are averaged results of ASTM tests (where applicable) on laboratory 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 and/or testing changes. Please consult your Plibrico representative to make sure you have the most current data.