



# Plibrico Company, LLC

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# Technical Data Sheet Plicast Al-Shield 3223 C KK

Product # 3223

Available Internationally As: Plico Castable A-S 3223 C KK

### Product Description:

Plicast® Al-Shield™ 3223 C KK is a low cement, aluminum resistant castable, that utilizes a super coarse bauxite aggregate with a modified matrix and high temperature aluminum resistant additive system. Product advantages include good aluminum reaction/wetting resistance to 2000°F, high hot MOR from 1500° to 2000°F, wear and impact resistance, and improved thermal cycling resistance.

**Standard Packaging:** 500 # / 227 kg Super Sack

**Shelf Life:** 6 months

**Service Limit:** 2700 °F 1480 °C

**Contact Limit:** 2000 °F 1093 °C

**Bulk Density - In Service:** 170 pcf 2723 kg/m<sup>3</sup>

**Bulk Density - To Place:** 170 pcf 2723 kg/m<sup>3</sup>

**Minimum Time To Firing:** 16 hr

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

5 cc

Chemistry (calcined) %					
Al <sub>2</sub> O <sub>3</sub>	61.7	Alk	0.1	MgO	0.1
SiO <sub>2</sub>	19.8	TiO <sub>2</sub>	1.4	ZrO <sub>2</sub>	6.5
CaO	1.8	P <sub>2</sub> O <sub>5</sub>		Other	7.6
Fe <sub>2</sub> O <sub>3</sub>	1.0	SiC			

Water Range Per Standard Package		%	Quarts	Liters
<b>Vib Casting</b>	min	5.0	12.0	11.4
	max	5.5	13.2	12.5
<b>Casting</b>	min	5.8	13.9	13.2
	max	6.5	15.6	14.8
<b>Pumping</b>	min			
	max			

Coefficient of Thermal Expansion (reversible):	
3.5	x 10 <sup>-6</sup> in/in/°F / 6.3 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	12.3	1.8
1000°F / 540°C	13.3	1.9
1500°F / 815°C	14.2	2.0
2000°F / 1090°C	15.0	2.2

Temperature		Linear Change% per ASTM C113	CCS per ASTM C133		Cold MOR per ASTM C133		Hot MOR per ASTM C583	
°F	°C		psi	MPa	psi	MPa	psi	MPa
230	110	0.0	10000	69.0	1850	12.8		
1500	820	-0.2	10000	69.0	2000	13.8	3800	26.2
1800	980	-0.2			1800	12.4	3500	24.1
2000	1090	-0.3					2800	19.3

**Other Data:** Course aggregate mixing instructions if required: Per 50 lb package: mix one 44 lb bag with 6 lb of aggregate, per 500 lb package, mix on 440 lb bag with one 60 lb bag of aggregate. Any package larger than 500 lb will have the coarse aggregate inside of the bulk bag.

Release Date: 1 Aug 2019

Heat Up Guide: Schedule AT AS or AT AS

ASTM Class: C 401 Class D

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.