

### Product Description

Plascast 90 is a 1760°C (3200°F) service limit casting plastic with 89% alumina. It exhibits excellent molten slag resistance in addition to thermal shock protection. Plascast monolithic refractory products employ a unique cement-free binder system that combines all the superior technical properties of a plastic refractory with all the practical properties of a conventional castable.

Compared with conventional plastics, Plascast significantly reduce installation time and costs, yet provides a high quality plastic with superior strength and greatly reduced drying shrinkage. The tighter texture and uniform consistency result in rapid strength development throughout the working temperature range.

Compared with conventional castables, Plascast eliminates the need for water curing, maintains intermediate strength, and allows for earlier furnace start-ups. Plascast castables are more resistant to thermal shock, impact, and slag attack than comparable conventional castables.

Plascast is supplied as a dry powder for use in conventional casting equipment.

### Instructions for Using

Ensure that the temperature of the dry material and the water are such as to give a final mix within 50°F to 80°F (10°C to 27°C). The lower the temperature, the longer the setting time; below 40°F (4°C) setting almost stops. The higher the temperature, the shorter the setting time; above 90°F (32°C), the material will be difficult to place.

Clean and wash down the mixer and all other tools immediately before use and allow to drain. Check the correct water addition from the product data sheet. For mechanical mixing (1) add the correct quantity of clean water to the mixer (2) set it in motion, (3) quickly add the Plascast (4) mix for a minimum of 4 minutes. Work the mixed material thoroughly into place, using vibration to give the mix mobility and to eliminate air.

Watertight forms must be used when placing material. All porous surfaces that will come in contact with the material must be waterproofed with a suitable coating or membrane. For in-situ casting and heavy preformed sections, use poker vibrators of about 1-1/4" - 2-1/4" diameter. Move the vibrators slowly through the mix, withdrawing slowly to prevent voids. Add batches of material progressively using vibration until the design thickness is achieved.

Trowel the surface only enough to make it level; avoid excessive troweling of the surface. After placing the material, the temperature may be allowed to rise but should not drop below 50°F (10°C). The placed material must not be allowed to freeze before it is thoroughly dried.

It is recommended that forms be left in position for 24 hours after casting, but this may not be necessary in every situation. Thin sections and/or ambient temperatures higher than 60°F to 70°F (16°C to 21°C) may allow earlier removal of forms. Plascast needs no curing under moist conditions; water spraying must not be used.

For optimum properties it is recommended that Plascast be allowed to air dry before initial heat up.

For detailed installation instructions and commissioning schedules, please contact your Morgan Advanced Materials-Thermal Ceramics representative.

Properties	Plascast 90	
Region of Manufacture	Americas	
Bond type	Ceramic	
Raw material base	Tabular Alumina	
Method of installation	Cast	
Maximum grain size, mm	7	
Maximum service temperature, °C (°F)	1760 (3200)	
Net material requirement, kg/m <sup>3</sup> (pcf)	2355 (147)	
Water addition, % by weight		
	casting by vibrating	8.5-10.0
Packaging in bags, kg (lbs)	25 (55)	

Whilst the values and application information in this datasheet are typical, they are given for guidance only. The values and the information given are subject to normal manufacturing variation and may be subject to change without notice. Morgan Advanced Materials – Thermal Ceramics makes no guarantees and gives no warranties about the suitability of a product and you should seek advice to confirm the product's suitability for use with Morgan Advanced Materials - Thermal Ceramics.

# Plascast™ 90 Monolithic

## Product Data Sheet



Properties		Plascast 90
<b>Bulk Density, kg/m<sup>3</sup> (pcf), ASTM C134</b>		
	dried 24 hours @ 105°C (220°F)	2387 (149)
	fired 5 hours @ 816°C (1500°F)	2275-2451 (142-153)
<b>Cold Crushing Strength, MPa (psi), ASTM C133</b>		
	dried 24 hours @ 105°C (220°F)	3.4-5.5 (500-800)
	fired 5 hours @ 1093°C (2000°F)	13.8-24.1 (2000-3500)
	fired 5 hours @ 1600°C (2912°F)	24.1-41.4 (3500-6000)
<b>Permanent Linear Change, %, ASTM C113</b>		
	dried 24 hours @ 105°C (220°F)	0.0 to -0.2
	fired 5 hours @ 1093°C (2000°F)	-0.1 to -0.4
	fired 5 hours @ 1600°C (2912°F)	-1.0 to +1.5
<b>Chemical Analysis, %, Calcined Basis</b>		
	Alumina, Al <sub>2</sub> O <sub>3</sub>	89
	Silica, SiO <sub>2</sub>	6.7
	Iron Oxide, Fe <sub>2</sub> O <sub>3</sub>	0.7
	Titania, TiO <sub>2</sub>	1.4
	Lime, CaO	1.8
	Alkali as, Na <sub>2</sub> O + K <sub>2</sub> O	0.2
<b>Thermal Conductivity, W.m•K (BTU•in/hr•ft<sup>2</sup>•°F) , ASTM C417</b>		
	260°C (500°F)	1.66 (11.5)
	538°C (1000°F)	1.57 (11.0)
	816°C (1500°F)	1.50 (10.4)
	1093°C (2000°F)	1.41 (9.8)

### Storage and Shelf Life

- Monolithics should be stored in a dry, well-ventilated area and held off the ground on pallets ideally with the original packaging intact. Keep out of rain and damp conditions.
- Normal shelf life is 9 months from date of manufacture when properly stored.

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