

### Product Description

Higun 160 is a 1600°C (2912°F) grade, low iron, low cement gunning material. Higun combines the superior physical properties of a low cement monolithic with the practical advantages of a gunning material. The Higun range of low cement gun mixes are designed to be installed with conventional gunning equipment with some accessories to maximize the product properties.

### Instructions for using

Gunning: Higun products must be installed under closely controlled conditions using the proper gunite equipment.

- Rotary gun recommended
- Water booster pump capable of delivering up to 15 quarts/minute at >200 psi pressure
- 18" - 24" nozzle extension ("whip") past the water ring
- 16 hole minimum water ring with  $\leq 1$ mm holes
- Large air compressor to prevent surging
- 50 – 75 psi air pressure

Do not pre-dampen material before gunning. Material sets very quickly so cutback should be within 5 - 10 minutes after gunning.

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

Properties	Higun 160
Region of Manufacture	Americas
Bond type	Hydraulic
Raw material base	Chamotte
Method of installation	Gun
Maximum grain size, mm	6
Maximum service temperature, °C (°F)	1600 (2912)
Net material requirement, kg/m <sup>3</sup> (pcf)	2195 (137)
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.

# Higun<sup>®</sup> 160 Monolithic

## Product Data Sheet



Properties	Higun 160
<b>Bulk Density, kg/m<sup>3</sup> (pcf), ASTM C134</b>	
dried 24 hours @ 105°C (220°F)	2275 (142)
fired 5 hours @ 816°C (1500°F)	2114-2291 (132-143)
<b>Cold Crushing Strength, MPa (psi), ASTM C133</b>	
dried 24 hours @ 110°C	62.1-96.6 (9000-14000)
fired 5 hours @ 816°C	55.2-69.0 (8000-10000)
fired 5 hours @ 1000°C	72.4-96.6 (10500-14000)
fired 5 hours @ 1600°C	75.9-124.1 (11000-18000)
<b>Permanent Linear Change, %, ASTM C113</b>	
dried 24 hours @ 105°C (220°F)	0 to -0.2
fired 5 hours @ 816°C (1500°F)	-0.1 to -0.3
fired 5 hours @ 1000°C (1832°F)	-0.1 to -0.4
fired 5 hours @ 1600°C (2912°F)	-0.5 to -1.5
<b>Abrasion loss, cm<sup>3</sup>, ASTM C704</b>	
fired @ 1500°F (816°C)	8-14
<b>Chemical Analysis, %, Calcined Basis</b>	
Alumina, Al <sub>2</sub> O <sub>3</sub>	47
Silica, SiO <sub>2</sub>	48
Ferric Oxide, Fe <sub>2</sub> O <sub>3</sub>	0.5
Titanium Oxide, TiO <sub>2</sub>	1.5
Calcium Oxide, CaO	2.9
Alkali as, K <sub>2</sub> O+Na <sub>2</sub> O	0.5
<b>Thermal Conductivity, W/m·K (BTU·in/hr·ft<sup>2</sup>·°F), ASTM C417</b>	
600°C (1112°F)	1.55 (10.8)

### 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 6 months from date of manufacture when properly stored.

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