

## PRODUCT DESCRIPTION

Medium cementitious castable refractory (MCC™) consists of components such as fillers, additives and 9 to 15 percent of cement (if high alumina cement is used). This type of refractory mass can remain in medium and high temperature without the slightest problem or damage and work well. The bonding in the Medium cementitious mass is of hydraulic type and is quickly set within 5 to 7 hours at a temperature of 35 degrees Celsius. A medium cement castable refractory is a refractory mass with a cao greater than 2.5% that provides performance between conventional and low-cement castables. This product is anti-wear and is used in all kinds of industries, including steel, copper, aluminum, etc., in induction furnaces, molten ducts, smoke exhaust ducts, etc.

## PRODUCT FEATURES

- High resistance to abrasion
- Resistant to high thermal shocks
- Ease of implementation
- Simple formulation
- High compressive strength
- Contains lime above 2.5%
- High flexural strength
- High stability and durability in the long term
- Resistant to washing
- quick setting
- Economic

## PRODUCT USES

Medium cementitious castable refractory (MCC™) are widely used in the following industries:

- steel industry
- cement industry
- Aluminum industry
- Lime kilns
- Oil and gas and petrochemical industry
- copper industry
- Induction furnaces
- Smoke exhaust ducts
- molten runner

## HOW TO USE

### SURFACE PREPARATION

Before Medium cementitious castable refractory (MCC™), the surface or wall of the mold should be cleaned and prepared from any contamination using a tool such as a wire brush. The mold used in the execution of pouring mass with medium amount of cement should not be rusted or corroded. In addition, it must be smooth and without unevenness. Also, it should be easy to open and close. Before applying the Medium cementitious castable, the wall of the mold should be lubricated before use so that the hardened mass does not stick to the wall of the mold.

### MIXING

Medium cementitious castable refractory (MCC™) is a pre-formulated, pre-packaged product. To use it, just mix the dry powder inside the package with the amount



Medium cementitious castable (MCC™)

of water specified in the table of mechanical specifications. Because the amount of water is different according to the product mixing plan, so pay attention to the amount of water consumption. To properly prepare the Medium cementitious castable refractory, go through the following steps step by step:

- empty the contents of the bag in the mixer and mix the dry powders for 1 minute.
- Water should be added to the mixture little by little with the amount specified in the mechanical data table of the product and mixed for 2 to 3 minutes.
- The masses stuck to the mixer body and paddle should be stirred again with a clean trowel for a maximum of 2 minutes.

**Note:** To ensure the water added to the mixture, after mass mixing and the homogenization process, take a large handful of the mass and throw it up to 30 cm and catch it again with the same hand, but this time with an open wrist. The right mass should not pour or crack from your palm.

### APPLICATION

The formulation of MCC™ is designed to be implemented by casting method. Therefore, the Medium cementitious castable refractory should be transferred to the pre-prepared mold in stages for execution. It is recommended to use a vibrator to remove the existing air bubbles. After 5 to 7 hours of casting, the casting mass becomes hard and adjusted, and the molds can be removed and the desired piece can be taken out and used.

### LIMITATIONS

- Rotary mixers should not be used to mix components of the casting mass. Because it disrupts the distribution of the mixture. Paddle mixers are the best option.
- The water used in the preparation of Medium cementitious castable refractory should not contain impurities and pollution. In addition, it should have a temperature between 15 and 25 degrees Celsius and a pH between 6 and 8. Drinking water can be the best option for preparing MCC casting mass.
- The mold used in pouring Medium cementitious castable amount of must be stable to withstand the stresses caused by vibration and the weight of the mass. In addition, it must be waterproof.
- Medium cementitious castable should be implemented or installed in 15 minutes.

- A trowel should not be used to smooth the final surface.
- MCC™ refractory and other types of refractory mass must be protected against freezing. Because freezing can destroy their structure.
- The use of the vibrator should not be too long, because it can lead to the separation of the particles.
- For applications below 10°C, adding an accelerator is recommended.
- The best temperature for the implementation of Medium cementitious castable refractory (MCC™) is the ambient temperature between 10 and 30 degrees Celsius.

### TECHNICAL DATA

	MCC™ 90	MCC™ 85	MCC™ 60	MCC™ 55
<b>Materials base</b>	Tubular alumina	Tubular alumina, bauxite	Fireclay, bauxite	Fireclay, bauxite
<b>Maximum service temperature</b>	1680	1680	1620	1580
<b>Installation Method</b>	vibration	vibration	Casting vibration	Casting vibration
<b>Grain dimensions (mm)</b>	0 - 6	0 - 5	0 - 6	0 - 6
<b>Amount of water required (%)</b>	6.6 - 7.6	5.8 - 6.8	7.5 - 8.5	7.9 - 8.9
<b>Al<sub>2</sub>O<sub>3</sub></b>	≥ 90.8	≥ 84.9	≥ 60.3	≥ 54.9
<b>SiO<sub>2</sub></b>	≤ 4.8	≤ 8	≤ 32	≤ 37.8
<b>Fe<sub>2</sub>O<sub>3</sub></b>	≤ 0.6	≤ 1.1	≤ 1.8	≤ 1.8
<b>TiO<sub>2</sub></b>	≤ 1.2	≤ 1.5	≤ 2.2	≤ 1.9
<b>CaO</b>	≤ 1.9	≤ 3.7	≤ 2.7	≤ 2.7
<b>Alkalis</b>	≤ 0.5	≤ 1	≤ 1	≤ 1
<b>apparent specific-gravity (After drying at 110 °C)</b>	2.8 g/cm <sup>3</sup>	2.75 g/cm <sup>3</sup>	2.42 g/cm <sup>3</sup>	2.35 g/cm <sup>3</sup>
<b>Ultimate resistance at room temperature</b>	650-800 kg/cm <sup>2</sup> (after drying at 110°C)	500-700 kg/cm <sup>2</sup> (after drying at 110°C)	550-700 kg/cm <sup>2</sup> (after drying at 110°C)	550-700 kg/cm <sup>2</sup> (after drying at 110°C)
	750-900 kg/cm <sup>2</sup> (after heating at a temperature of 1430°C)	800-1000 kg/cm <sup>2</sup> (after heating at a temperature of 1430°C)	600-800 kg/cm <sup>2</sup> (after heating at a temperature of 1430°C)	600-800 kg/cm <sup>2</sup> (after heating at a temperature of 1430°C)

### STORAGE

Medium Cement Casting should be stored in factory bags in a covered warehouse away from moisture and direct sunlight. Note that no more than 3 mortar pallets should be stacked on top of each other to prevent the dry powder mixture from hardening in pressurized cement bags. In addition, avoid dropping the bags during transport. Because, the granulation distribution of the mixture may be disturbed.

### CAUTION

Users should observe good industrial and personal hygiene. The use of hardhats, proper footwear, and ear protection should be evaluated on a site-by-site basis. In situations where installation is occurring in water, flotation devices should be utilized. In general, installers of products should wear long-sleeve shirts and pants and use safety glasses/goggles and gloves to minimize skin contact. Measures such as washing after handling the material and before eating, drinking, and/or smoking, as well as routinely washing work clothing and protective equipment to remove contaminants, should be employed.

### CLEANUP

Dispose of material in accordance with local disposal regulations. Uncured material can be removed with approved solvents. Cured materials can only be removed mechanically. In fact, the thinner can not

completely clean the equipment, Therefore, acetone or ketone solution can be used to clean equipment.

### FIRST AID

- In case of contact with skin, wash thoroughly with soap and water
- In case of contact with eyes, rinse immediately with plenty of water.
- Get out of space or use oxygen capsules if you have trouble breathing.
- Wash clothing before reuse

### DISCLAIMER OF LIABILITY

AFZIR, LLC warrants its products to be free from manufacturing defects. Buyer determines suitability of product for use and assumes all risks. Buyer's sole remedy shall be limited to replacement of product. Any claim for breach of this warranty must be brought within six months of the date of purchase.

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