PRODUCT BULLETIN

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ALLIED MINERAL PRODUCTS, INC.

MINRO-FIRE CAST F80

General Information

MINRO-FIRE CAST F80 is a fireclay-based castable refractory designed for use in furnace covers, burner tunnels, exhaust ducts, starter block molds, coreless furnace rings, bases, and pedestals. This product offers the following benefits and features:

> Wide range of use and temperature applicability
> Ease and speed of installation
> Exhibits a good blend of insulating properties, strength, and durability

Technical Data

Chemical Analysis

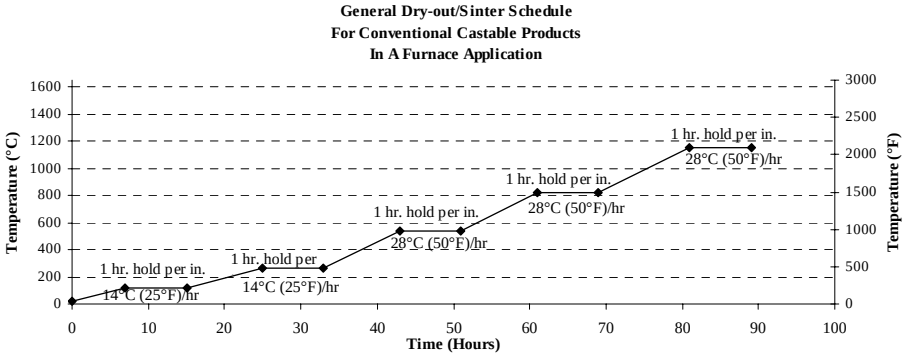
Al_2O_3	53.2%
SiO_2	39.3%
CaO	3.2%
Fe_2O_3	1.2%
Others	3.1%

Material Required	2.24 g/cm^3 (140 lb./ft^3)
Grain Size	5 mm (4 mesh) and finer
Maximum Use Temperature	1650°C (3000°F)
Installation Method	Casting - Vibration
Procedure(s)	G-33

Packaged in 55-lb. (25.0 kg) multi-wall paper bags. Storage beyond 24 months is not recommended. Store in a dry location to avoid moisture pickup.

Hydraulic Set

Water Required:	8-10% Vibrated
	10-12% Poured
Working Time:	Up to 45 minutes
Initial Set:	1-3 hours
Final Set:	4-6 hours



Allied Mineral Products, Inc. supplies a complete line of monolithic refractories for the metal industry. For more information or a complete evaluation of your refractory requirements, please contact your local Allied representative.

Warning: Contains aluminum oxide, aluminum silicates, calcium aluminate cement, and silica. The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite carcinogenic to humans. Refer to Material Safety Data Sheet for additional information and disposal instructions. Avoid breathing dust. Wear NIOSH approved respirator during installation, removal, and disposal of product to prevent inhalation of dust. Avoid contact with skin and eyes. Cement powder or freshly mixed castable may cause eye and skin irritation. Steam spalling, which can lead to personal injury, may result from improper drying and firing procedures. In case of eye contact, flush immediately and repeatedly with water and consult a physician. For safest use and optimum performance, proper practices must be followed.

F80
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MIXING INSTRUCTIONS FOR MINRO-AL CAST AND MINRO-FIRE CAST REFRACTORIES

CAST mixes are handled and placed in the same manner as concrete. The best mixer is a paddle type concrete mixer. However, castables can be mixed in mortar boxes, wheelbarrows and other stationary containers. Be sure the mixer used is clean of all foreign products.

Steel forms are best for casting shapes, but plaster, wood and cardboard forms can be used if coated with a product to make them impervious to moisture. Aluminum forms should not be used, due to reaction with the castable.

Clean all forms and coat with a release agent to prevent sticking. Suggested release agents are oil, oil and graphite, silicone oils or paraffin.

Vibration and pouring are the preferred installation methods, since CAST mixes are used primarily for the ease in placement. Mechanical vibrators allow lower water content and give the best results. However, care should be taken to avoid excessive vibration which brings the water, fine particles and bond to the surface, and forms films which can cause layering, spalling and low strength. Vibration also requires a closer control of the water content to insure removal of air pockets and proper placement. When pouring shapes, be sure that you do not use an excessive amount of water to get the desired consistency. Higher water content will reduce the strength and increase shrinkage of the cast product. For specific water requirements, see the other side of this bulletin.

When mixing, weigh both the CAST mix and water to be sure exact water content is obtained for best results. Clean water in a temperature range of 18-27°C (65-80°F) should be used. Colder water retards the set times and warmer water accelerates them. Add part of the water to the concrete mixer before adding dry mix, then add the balance of the water while mixing. When mixing in stationary mixers, add water slowly to dry CAST mix while mixing with hoe or paddle by hand. Keep the concrete mixer turning while placing the mix, or keep turning over by hand with hoe or paddle to keep mix in the same consistency for placement.

After casting, all exposed CAST surfaces should be covered with damp cloths or plastic covers to keep them moist. Initial set will take place in one-half to four hours, depending on water content, method of placement and the particular CAST mix used. For most products final set will occur in three to six hours. Forms may be removed anytime after final set has taken place, but all exposed CAST surfaces should be kept moist for 24 hours after casting to allow maximum strength development.

Air drying at room temperature is recommended for as long as practical after uncovering the refractory, with a minimum of 24 hours before application of heat. Attach thermocouples to the refractory surface. Bring the temperature on the refractory up to 121°C (250°F) at the rate of 14°C/hour (25°F/hour). Hold at 120°C (250°F) for 1 hour per inch of refractory thickness. The CAST lining should then be heated at a rate of 15°C/hour (25°F/hour) per hour to a minimum of 1100°C (2000°F). If there are any indications of forced steam evolving from the refractory, then a slower rate must be followed. After holding at this temperature, the cast refractory is ready for service.

This procedure may be substantially changed depending on the thickness and mass of the CAST refractory. See your Allied Mineral Products refractory engineer for additional details.

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