



**MIXING AND INSTALLATION INSTRUCTIONS FOR
NAFTA SPECIAL CASTABLES**

SCOPE

This Engineering Standard provides the mixing and installation instructions for the following VESUVIUS Special Castables:

HOT TOP MOLDIT® CG MOLDIT® S
HOT TOP MOLDIT® E-DF QT MOLDIT® X
MOLDIT® D

STORAGE

Vesuvius castables must be stored on pallets in a dry location where temperatures can be kept between 40°F and 90°F (5°C and 30°C). If the pallets are covered with plastic sheeting or tarps, ventilation is required in order to prevent condensation.

Warm storage is recommended in extreme cold conditions.

Due to pressure and settlement in storage, it is possible for the materials to become compacted. These lumps can be easily broken down by hand. However, hard lumps indicate some setting has occurred. Do not use partially reacted castable.

EQUIPMENT

A 3-4 ft³ (85 – 115 liter) or larger paddle or high intensity pan type mixer is recommended. All mixing equipment must be clean and dry. Contaminants, such as Portland Cement, can adversely affect the setting rate and physical characteristics of castables. Drum mixers are not recommended for mixing Vesuvius castables.

Best results are obtained when the mixer capacity is large enough to complete a casting in a single pour. If multiple pours are required, they must be successive and completed before the materials begins to set (approximately 45-75 minutes).



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MIXING

Vesuvius recommends that installers check bag weights and calculated water requirements prior to the start of the installation.

Vesuvius Special Castables may be dry mixed for up to 30 seconds. However, dry mixing is not required and the mixer operator may add either the dry material or the water to the mixer first.

Mixer operators should start with the minimum percentage of water and wet mix for two to three minutes. If the material appears too dry or does not flow properly, add one half of the remaining water and mix for an additional minute. Total mixing time should not exceed four minutes.

Best results are obtained when installers use just enough water to allow the castable to flow. Water additions beyond the levels specified will adversely affect the physical properties of the castable.

The wet mixture temperature for Vesuvius Special Castables should be between 60°F to 85°F (15°C and 30°C).



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WATER

Use only clean, fresh potable water with a pH between 6 and 8, and a temperature between 40°F and 85°F (5°C and 30°C). Mixing water should be accurately weighed or measured. Refer to the chart provided herein for water requirements.

CASTABLE NAME	BAG SIZE Lbs. (Kg)	Recommended Wt% WATER	WATER Vol. per Bag quarts (liters)
HOT TOP MOLDIT® CG	55 (25)	13 - 15	3.4 – 4.0 (3.3 – 3.8)
HOT TOP MOLDIT® E-DF QT	55 (25)	14 - 15	3.7 – 4.0 (3.5 – 3.8)
MOLDIT® D	55 (25)	14 -16	3.7 – 4.2 (3.5 – 4.0)
MOLDIT® S	55 (25)	16 - 20	4.2 – 5.3 (4.0 – 5.0)
MOLDIT® X	55 (25)	22 -24	5.8 – 6.3 (5.5 – 6.0)

CAUTION

The following will adversely affect the density, strength and setting properties of Vesuvius castables.

- Dirty and/or hot water
- Excessive water
- Admixtures
- Vibration
- Over mixing
- Dirty mixing equipment
- Cement contamination
- Gunning or Pumping castables not designed for gunning or pumping

INSTALLATION

MOLDIT® S can be installed by pouring or troweling. All other are to be installed by pouring.

Vesuvius Special Castables should be used within 30 minutes after mixing.

Install the full thickness in one pour. Paddle or rod the castable to remove air pockets.



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GENERAL

1. All metallic anchoring should be painted or coated to allow for expansion of the metal. Wooden forms and/or porous backup materials should be waterproofed to prevent absorption of water from the castable.
2. The surfaces against which the Vesuvius castable is to be applied must be cleaned of all oil, grease, rust, loose mill scale and any foreign matter that might contaminate the castable.
3. During installation, ambient temperatures, including the temperature of the surface that the castable is to be applied against, must be kept between 50°F and 90°F (10°C and 30°C).

Extreme temperatures during the setting and curing periods will adversely affect the physical properties of the castable. When the temperature falls below 50°F (10°C) or exceeds 90°F (30°C), corrective action is necessary.

Vesuvius Special Castables must be protected from freezing from the time of placement until the full thickness has been dried to a minimum 230°F (110°C). Depending on the extent of setting or curing, castables that freeze prior to the removal of the free moisture can crack. Furthermore, castables should be protected from freezing until the firing schedule has been completed.

4. Forms should not be removed for 15-24 hours after casting.
5. The curing instructions for Vesuvius Special Castables are provided in Vesuvius Engineering Standard LEA.1601.
6. The drying and firing instructions for Vesuvius Special Castables are provided in Vesuvius Engineering Standard LEA.1801.
7. If you have any questions concerning this or any other Vesuvius Engineering Standard document, please contact the Vesuvius Advanced Refractories Engineering Department.