



REFRACTORY DEPOT, Inc.

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**MIXING INSTRUCTIONS FOR LOW or
ULTRA-LOW CEMENT CASTABLES**

Storage:

Store material in a 60° - 85° F environment for at least 48 hours prior to use. Do not store material in direct sunlight or in areas that include high humidity. The environment must be dry.

Water:

1. Water must be clean, fresh and potable (clean enough to drink).
2. Refer to the data sheet for the correct amount of mixing water.

Mixing:

1. All tools and equipment must be clean, especially mixers.
NOTE: Portland Cement will make low cement castables flash set
2. Refractory paddle mixer, vertical shaft turbine mixer or other high intensity mixer should be used. A concrete mixing truck can be used if properly cleaned out.
NOTE: Mixers must operate like new. Slow moving, worn out mixers may not provide the necessary agitation required to thoroughly mix the fine additives used in low cement castables.

Sequence:

1. Dry mix for 30 seconds.
2. Add total water required, refer to the data sheet for correct amount.
3. Mix four to five minutes.
4. Add additional water, if necessary.
5. Mix two more minutes after final water is added or no less than 5 total minutes.
6. Recommended wet mix temperature is 60-85°F.
7. Hose or slick pipe must be lubricated prior to pumping, if pumping or shotcreting.

Additions:

Metal fibers can be added slowly during wet mixing. Use of a shaker box is recommended to permit even distribution of fibers.

Working Time:

20 to 60 minutes after mixing at correct water level, at 70°F mix temperature.

Pumps (for pumping or shotcreting):

Castable Pumps:

Swing tube (S Valve) type or ball valve pump. Use swing tube (S Valve) type if metal fiber additions are included. Typical pump pressures should range from 750-3000psi, dependent on length of pipe/hose, elevation, etc...

Additive Pumps:

Typical additive pumps used are rotorstater, diaphragm, or pressure tanks. Additive should be pre-mixed at a ratio of 60 pounds of sodium nitrite per 15 gallons of water. Pre-mixed additive should be continuously stirred to prevent settling, if not used immediately. Average additive usage is 1-2 gallons per 1 ton of castable. **Only sodium nitride supplied by Refractory Depot, Inc. is recommended.** Various types of sodium nitride are available on the market and should not be purchased separately. The nozzle assembly should contain a needle valve for metering the additive. Gate valves are not recommended.

Vibration:

1. External vibrators are more efficient than immersion vibrators and will result in superior properties of the installed material, but ineffective with wood forms.
2. When the proper amount of water is used, mixes should not segregate due to over vibration. Be careful not to over vibrate. Stop when small bubbles no longer appear on the surface.

Forms:

1. Self-flow mixes generate high hydrostatic forces.
2. Forms must be sturdy and securely anchored to prevent shifting or lifting and joints must be sealed tight.
3. Steel forms are preferred. When wooden forms are used; presoak or seal to prevent water loss from the castable. Do not burn out wooden forms.
4. Forms should be coated with a parting material.

Contact your Refractory Depot, Inc. representative for answering any further installation questions.