

## ***Technical Information***

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### **GENERAL GUIDELINES - GUNNING RESCO CASTABLES**

#### **A. STORAGE:**

1. Resco Castables are packaged in moisture resistant bags, however, they should be stored in a dry place free from excess dampness. Storage on dry concrete, asphalt, or other impervious surface will prevent moisture from the ground condensing under the plastic pallet cover and wetting the bags of material which may result in loss of strength.

#### **B. PREPARATION:**

1. Use clean tools and equipment. Contamination can affect setting and strength of castables.
2. Gunning surfaces should be clean and free of foreign matter.
3. Use only clean water suitable for drinking.
4. A paddle-type mechanical mixer is preferred for pre-dampening.
5. The most commonly used guns are the Double Chamber and Rotary Type. A continuous feed at the gunning nozzle is important to allow for uniform mixing of water and material. The Hamme and Double Bubble nozzles can be used. An extension between the water ring and the nozzle will improve the mixing of material and water. A continuous supply of water to the nozzle at a constant pressure is also important.
6. For best results, material and ambient temperatures should be 60° - 85°F (16-29°C) during mixing, gunning, and curing.
7. If gunning over old refractory, this surface should be moistened prior to gunning so that the old refractory pulls less moisture from the gunned refractory. This does not apply to RESCOBOND products.

#### **C. PRE-DAMPENING:**

1. Pre-dampen in a paddle-type mixer prior to loading gun for a minimum of 90 seconds. This will minimize dusting at nozzle.
2. Pre-dampening water will vary for each product. Too much pre-damp water will result in lumping which can cause blockage in the hoses between the gun and nozzle.
3. If metal fibers are to be added, they should be slowly and uniformly distributed into the mixer during the beginning of the mixing interval.
4. After the material is uniformly mixed, material should be gunned as soon as possible. Excess aging will reduce strength

#### **D. GUNNING:**

1. The gun operator and nozzleman adjust the air and material feed pressures for proper application and minimum rebound. Pressures and feed rates vary for different material.

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2. Once the parameters are set and the material is flowing smoothly, the nozzleman will start at the bottom of the wall and work the nozzle in a circular motion covering an area 2-3 ft (60-90 cm) wide and 1-2 ft (30-60 cm) high. Gradually build up to full thickness from the bottom up. This will support the material and prevent rebound entrapment at the base of the wall.
2. Rebound is that material that does not adhere to the wall during the gunning process. It normally falls to the floor and collects at the base of the wall. Discard this material as hydration of the cement has already started.
3. Do not gun over rebound. Do not reuse rebound.
4. Do not entrap rebound in nozzle stream.
5. On larger applications where it may not be practical to continuously gun the full area, construction joints are necessary. These are made by cutting the already applied material at a 90° angle to the wall through the full thickness of the material. The construction joints are usually made midway between anchors. When gunning is continued, the existing material at the joint should be wet down with water.
6. A rough, sandpaper like, gunned surface or excessive dusting means that not enough water is being added at the nozzle.
7. If the sheen on the material lasts more than 5 seconds or slumping occurs, the nozzle water should be reduced.

### **E. CURING:**

1. Gunned lining should be cut back to specified thickness immediately after placement.
2. Don't excessively trowel the surface. A smooth surface inhibits moisture during curing and drying by bringing fines to the surface.
3. The gunned material should cure for a minimum of 24 hours before drying can commence. Use wet burlap, plastic sheet or resin-based curing compound to minimize moisture loss during the curing stage.
4. Water spraying should be avoided.
5. The material should not be disturbed, allowed to freeze, or be heated above 120° F during the curing stage. The material should have a noticeable "ring" sound when tapped with a piece of metal after this proper cure.

### **F. EXTREME WEATHER PRECAUTIONS**

1. Extreme Cold Weather:
  - Keep the material, and installation area above 60°F (16°C) during installation and 24 hour curing period.
  - Do not allow lining to freeze during 24 hour curing period. After the curing period, the lining may be subjected to freezing conditions, however, the castable should be at least 60°F (16°C) before dry out is started.

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### 2. Extreme Hot Weather:

- Keep the material, and installation area below 85°F (29°C) during installation and 24 hour curing period. Elevated temperatures may reduce working time, and cause cracking due to surface dryout.
- Store the dry castable in a cool area prior to mixing.
- Use cold water, less than 45°F (7°C) during mixing.
- Shade or water spray the exterior surface of the unit.