



## CEMENTITIOUS FIREPROOFING PRODUCTS

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### TYPE 7TB APPLICATION MANUAL

Simply stated, product yield from a bag of Carboline / Southwest is basically a function of 4 items:

1. Machinery and job "set up"
2. Applied Density and thickness control
3. Amount of overspray, ie: waste
4. Sprayer/crew effectiveness

Let us take the project from start to finish:

#### **A. Description:**

A 22 lbs./ft<sup>3</sup> density cementitious thermal barrier fire protection material designed primarily to be used over foam plastics. Type 7TB is specifically formulated to resist exposure to high humidity and for direct application to rigid urethane and polystyrene.

#### **B. Delivery and Storage:**

**Delivery:** All material is to be delivered in original unopened packages bearing the name of the manufacturer, the brand and proper Underwriters' Laboratories, Inc. label for fire resistance classification.

**Storage:** The material shall be kept dry until ready for use. Packages of material shall be kept off the ground, under cover and away from sweating walls and other damp surfaces. All bags which have become wet before use shall be discarded. Stock of material is to be rotated and used before its expiration date.

#### **C. Project Set Up:**

Using the right and functioning equipment is paramount. Too many contractors are lax in this area, expect performance from smaller application units, and are as a result disappointed. Again, assuming the above medium size project, the following are what we suggest as an optimum set up: Also see last page of the current application manual for further details.

- Pumps: Sunspray 320 E or Diesel piston pumps(no longer in production) Putzmeister: Tommy gun, also electric or diesel piston pumps “Big Blue” high production pumps  
Mayco: FP 30-piston pump  
Excalibur  
Western
- Mixers: Sunspray Continuous units, Big Blue Continuous units  
Stone Hydro Blend FP continuous mixer  
Various paddle mixers, 12 –16 cu. ft. size with rubber tipped blades
- Water: An uninterrupted potable water supply of at least 5 gallons per minute flow. If using a paddle mixer use a 55-gallon barrel surge supply, with automatic shut off valve, water meter and pump to supply mixer. Also available from pump distributors.
- Hoses: Always use a 3” or larger I.D. surge hose from the manifold, for the 1<sup>st</sup> 15 -25 feet of the material transfer hose. Then use a 16” tapered fitting to a 2” I.D. hose until reaching the spray area, then taper to 1 ¼” or 1” whip hose no longer than 25 feet. If running short lengths of hoses, using 2” lines will be acceptable, but always use a larger surge hose. Do not use a smaller ID whip hose.
- Note: The I.D. of material transfer hoses is important, as restrictions will cause excess back pressures and increase maintenance of pumps.
- Standpipe: Use 2” aluminum tubing with quick external disconnections. Use large radius elbows at the ground floor to standpipe as well as at other end of standpipe.
- Airlines: Minimum 30 psi required. Tape airline to material hose whenever practical.
- Staging: Typically it is best to build a large platform as close as possible to the building at an area where materials can be delivered conveniently, and most importantly trailers can be switched. This platform should be at least 10’ x 15’ and covered for rainy days. Equally, the rolling scaffold on the floor should be of similar size, but not smaller than 6” x 10’ whenever practical, meet OSHA guidelines, and have large wheels for ease of mobility.

#### **D. Mixing and Pumping Station:**

The entire working and storage area should be covered from rain and construction water with the material stored to prevent contact with water on the floor. All wet bags must be discarded. The pump should be as close as possible to the work. This permits hose length to be minimized. Place the mixer next to and above the pump hopper. It should be high enough to permit full rotation to the complete dump position. Wash water should be drained away from the pump area.

## E. Mixing Procedure

1. Check to make sure mixer bowl and blades are clean.
2. Adjust the mixer speed to 30-40 rpm.
3. Add water to the mixer first. Use approximately 10 U.S. gallons per bag of Type 7TB™ Thermal Barrier. This is the recommended starting point of water addition.
4. Add bags of Type 7TB™ Thermal Barrier with the mixer blades turning.
5. Mix for approximately 60 seconds. Adjust the water as required to obtain the desired mix consistency for spraying or trowelling.
6. Let the mixer blades turn for approximately 10 seconds to re-blend before dumping. Dump entire batch. The mixer must empty completely when dumped to avoid leaving any old mix to be reworked in succeeding batches.
7. Wait until enough material has been pumped out of the hopper to allow sufficient room for the addition of the entire new batch from the mixer.
8. If the pump hopper will not take an entire batch, stop the mixer until the remaining material can be discharged. Restart the mixer for 10 seconds before dumping the remaining material.
9. Mixing by hand is specifically not recommended for Type 7TB™ Thermal Barrier.
10. Type 7TB™ Thermal Barrier should not be reworked. Normal working time is 30 minutes at 75°F (24°C). Always clean mixer to prevent contamination of fresh material with partially set material.

**Note:** The immediate mixing area is likely to be dusty so mixing personnel should wear approved dust masks and work in a ventilated area.

## F. Pump Start-up

1. About 2 gallons of water should be added to the mixer with the blades turning then dumped into the pump hopper.
2. The first Type 7TB™ Thermal Barrier mix should be prepared and the pump started. The mix is to be dumped into the pump hopper when the last of the water enters the pump intake. **DO NOT LET THE PUMP RUN DRY.**
3. Pumping should continue until the water and a small amount of Thermal Barrier has passed out of the end of the hose.
4. The nozzle is to be attached to the whip hose with the air stem pulled back and the air reduced at the nozzle. This leaves an unrestricted path for material to flow through the orifice.
5. After material flow has started, the air pressure is to be increased and the air stem adjusted to give an acceptable spray pattern.
6. If a blockage occurs at the orifice, the pump should be stopped, the rubber cap removed and the orifice cleaned.

## G. Application of Fireproofing: Density and Thickness Control

### Proper Water Ratios:

Having the right equipment, the proper amount of water, proper mix and proper nozzle set up is crucial to obtaining correct density and maximum yield. The water content should be about 9-11 gallons per bag. Use as much water as possible to apply thicknesses not to exceed 1/2" per single pass. It is less expensive to double - back than to try to spray excessive thicknesses per pass. This will usually result in excess overspray - waste and uneven applications, resulting in excessive corrections to the applied material to "fill in" low areas. Type 7TB will thicken as they are conveyed thru the hose, but may look "too wet" in the pump hopper. Hence, there is a tendency by mixer personnel to use less water than recommended.

## Thickness Control:

**¾" thickness provides 15 minute thermal barrier over foam plastic insulation (polystyrene and urethane).**

This part of the application process is very crucial, and is controlled by several factors:

1. Air pressure and spray pattern
2. Amount of water
3. Thickness Control and size of spray tip (use of shield is always recommended)
4. Distance from substrate
5. The sprayer should have a thickness gauge in his hands at all times

## Air Pressure:

When too much air is used (observed by a high pitch sound) to create a beautiful smooth spray pattern, chances are that the impingement of material to the substrate will substantially increase the density. Use minimum amount of air to break up product, and create a reasonably smooth pattern.

## Spray Tips:

Use 9/16" to 5/8" spray tips. We prefer 5/8", with a mini-shield.

## Distance from spray substrate:

Although this is not necessarily relative to density, the distance a sprayer is from the substrate will determine both the smoothness of the application and most importantly the amount of waste. Good applications will be less than 5% waste. In excess of 5% usually means lack of control, interest or training. A good nozzle distance from the substrate is 12 – 14".

## Application Steps:

1. Minimum air and substrate temperatures of 400°F (4°C) shall be maintained for 24 hours before and after application of fireproofing.
2. Type 7TB™ Thermal Barrier must be applied to a firm base material which has set to form a sound substrate for the Thermal Barrier.
3. Type 7TB™ Thermal Barrier **MUST NOT BE APPLIED OVER A DIRTY OR DETERIORATED SUBSTRATE**. If the substrate is not in a sound condition free of grease, oil, dirt or other contaminants that would prevent adhesion of the Thermal Barrier, it must be cleaned, scraped or otherwise treated to provide a sound substrate.
4. The texture of the Type 7TB™ Thermal Barrier can be varied by the air pressure and air stem position at the nozzle. The recommended pressure is 15 psi, although a slightly higher pressure will result in a finer texture. Small orifices will also provide a lightly textured surface.
5. Type 7TB™ Thermal Barrier can be finish trowelled or dry brushed immediately after application to a smooth finish. Avoid overworking the trowelled surface.
6. Do not use additional water to finish the Thermal Barrier.
7. Type 7TB™ Thermal Barrier is to be applied in a nominal ½" thickness per coat.
8. Type 7TB™ Thermal Barrier may be painted to achieve a specific color once material is dry.
9. Masking is required to protect sensitive equipment, aluminum and other surfaces not scheduled to be coated which can not be easily cleaned.
10. Over-spray of Thermal Barrier may be cleaned up with water before the material sets. Type 7TB™ Thermal Barrier adheres tenaciously to most surfaces when set and cured. Therefore, Thermal Barrier over-spray must be removed before it sets.

**Pump Shut Down Procedures:**

1. After the last mix of the day has cleared the hopper, the pumping speed should be reduced and large amounts of water pumped through the system. A sponge can also be pumped through the hose by removing the hose at the pump manifold and placing the sponge directly into the hose.
2. At least two minutes of clear water should pass through the nozzle before the pump is shut off.
3. After the pump is shut off, all fittings should be disassembled and cleaned.

**Note:** Thorough washing and flushing is necessary to prevent material from setting and accumulating in the hose and fittings.

**H. Spray Crew Effectiveness:**

This is an area often not as controllable as other application portions outlined above. Personnel are crucial to the success of any endeavor and project. So pick your lead sprayer carefully. Use incentive programs to achieve required daily bag counts (at the correct thickness)

Target daily productivity, and make sure you stay on track with a predetermined schedule. Use the minimum crew size. The above project example should not require more than 3 men. A mixer, a hose/clean up man and a sprayer. The hose man should be able to spray to relieve the sprayer.

**I. Safety:**

Type 7TB™ Fireproofing is slippery when wet. The general contractor and applicator shall be responsible for posting appropriate cautionary "SLIPPERY WHEN WET" signs. Signs should be posted in all areas in contact with wet fireproofing material. Anti-slip surfaces should be used on working surfaces such as scaffolding. Read and post the Material Safety Data Sheet.

**Attitude is best judged by performance. Let this be your guide to achieving maximum efficiency and production.**