

Thermbond®

REFRACTORY SOLUTIONS

INSTRUCTIONS FOR PREPARING THERMBOND® REFRACTORIES FOR LABORATORY TESTING

INTRODUCTION

The Thermbond binder system is very unique, and certain special procedures are necessary when mixing Thermbond refractories. Most of these procedures differ only slightly from those used when mixing traditional refractory products.

Unless otherwise indicated, ASTM procedures are to be strictly followed. Where variations from ASTM procedures are indicated, they are considered necessary and appropriate for the unique characteristics of the Thermbond binder system.

In order to fully understand these mixing and placing instructions, the Installation Guide should be read in its entirety. Some of the terminology herein is written with the assumption that the reader has done so. Be sure to read this entire procedure before beginning.

Thermbond's® technical support staff is available to provide assistance for laboratory testing at 561.330.9300 weekdays from 9am to 5pm Eastern Standard Time, or at support@thermbond.com.

MIXING PROPORTIONS

Thermbond products are packaged to be mixed in full "unit" quantities. In other words, depending on the particular family of products, one or two complete bags is packaged to be mixed with one or two complete jugs. See the products associated Technical Data Sheet for details.

Since most laboratory testing will require less than full unit quantities, it will likely be necessary to weigh out the appropriate amount of dry material and the corresponding amount of Liquid Activator.

The amount of dry material to be used should be enough to fill approximately 40% of the mixing bowl.

Before weighing out a portion of the dry material, it is necessary to dry mix the entire bag as packaged to compensate for any intra-bag settling or segregation which may have occurred in shipping.

In order to determine the necessary amount of liquid required for the dry material to be mixed, call Unifrax at 716.768.6500 with the lot number stamped on the bottom of the bag and request the "wet-to-dry ratio" for that particular lot.

These percentages should be calculated as a percentage of the dry material. For instance, if the wet-to-dry ratio is 12%, then for every 10 lbs of dry mix, use 1.20 lbs of Liquid Activator.

NOTE: Thermbond Liquid Activators are HEAVIER THAN WATER and must be measured by weight and NOT BY VOLUME.

Before weighing out a portion of the liquid material, it is necessary to agitate the entire jug thoroughly to compensate for any intra-jug settling.



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FORMS AND MOLDS

Thermbond materials bond tenaciously to most inorganic substrates. Molds must be **PLASTIC or SILICONE** and completely clean and smooth to achieve proper results. **FORM RELEASE SHOULD NOT BE USED**. If you have problems releasing the materials from the molds, the plastic molds should be replaced with new molds. If you do not have plastic molds or have any other issues using plastic molds please contact Unifrax technical support at 716.768.6500 to discuss options.

MATERIAL MIXING

Once the dry and liquid components are properly proportioned, and the molds are properly prepared, the material may be mixed.

For all Thermbond materials, a Hobart-type lab mixer should be used on low speed, and the materials should be mixed at ambient conditions of 70-80 degrees Fahrenheit and 40-60% relative humidity.

The following steps should be followed exactly in the order indicated. Read the entire procedure before beginning.

1. Pour all the liquid to be mixed into the mixer bowl.
2. Pour all the dry material into the liquid in the mixer bowl.
3. Immediately mount the mixer bowl onto the mixer.
4. Immediately connect a **stainless steel** mixing blade to the mixer.
5. Immediately turn on the mixer at low speed. Let the mixer run until the material

“folds.” When mixing Formula Series castable products, this folding should occur within sixty seconds. When mixing Formula Series Rammable products, this folding should occur within 1-4 minutes.

When mixing Thermbreak 402, no folding will occur. Mix the material until it is completely wetted-out and the consistency of pancake batter. This should take no more than twenty seconds.

When mixing Thermbreak or Heatbreak Series hand castable products, no folding will occur. The material should be mixed until the blades are leaving the sides of the mixing bowl almost entirely clean of material with each pass. This should occur within sixty seconds.

MATERIAL PLACEMENT

Once the material is mixed properly, it should be immediately placed into the molds or forms per ASTM procedures. **Do not cover the samples**. Once completely placed in the molds, do not move the samples until they are ready to be removed.

REMOVAL FROM MOLDS

Thermbond® materials should be allowed to set for a minimum of 24 hours prior to removal from molds.



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SAMPLE PREPARATION

Test samples must **never** be wet-cut green. When obtaining test samples from large panels, the following procedures apply:

Materials with densities less than 110 lbs/ft³ - dry cut from green material before firing. If dry cutting is not desired then fire the panels prior to wet cutting. If the panel size is too large for the firing oven it is possible to cut the panel to a manageable size by wet cutting the green sample. The smaller sample panel then must be fired before wet cutting test samples. Avoid using the edge of the smaller panel that was wet cut green as part of the test samples.

Materials with densities greater than 110 lbs/ft³ **must be fired** prior to wet cutting. Again if the panel size is too large for the firing oven it is possible to cut the panel to a manageable size by wet cutting the green sample. The smaller sample panel then must be fired before wet cutting test samples. Avoid using the edge of the smaller panel that was wet cut green as part of the test samples.

Wet cut test samples should then be dried to 230 F for five hours before testing.

FIRING THE MATERIAL

Follow ASTM firing procedures.

