

Thermosil T7000

Heat-Resistant Abradable Silicone Sealant

Technical Data and Instructions



PRODUCT DESCRIPTION

Thermosil T7000 is a two-part (A/B), low-density silicone sealant used to create an abradable air seal for high-speed compressor blades in jet aircraft engines. T7000 meets the requirements of Pratt & Whitney specification PWA 407 and is primarily used in operations at temperatures up to 525°F (274°C).

Thermosil T7000 produces a securely cross-linked glass-polymer matrix for maximum durability. Glass agglomerates, that can clog turbine vane cooling holes and contribute to premature erosion and seal failure, are eliminated during the manufacturing process for optimum sealing and compressor performance.

Thermosil T7000 is available in a 2.74 kg two-part (A/B) kit, or in pre-measured void-free A/B component injection cartridges. Thermosil T7000 is a non-toxic, non-hazardous material. **Please read the Safety Data Sheet before use.**

IMPORTANT APPLICATION INFORMATION

Kit Matching

Thermosil T7000 is supplied as a two-part (A/B) kit. The product should be mixed using the specific Part A and Part B components supplied with the kit. Using a different Part A or Part B component may affect product properties.

Curing Inhibition

Thermosil T7000 is a platinum-catalyzed addition reaction silicone rubber. The curing mechanism is sensitive to inhibition by amines, sulfur, or tin-catalyzed rubbers.

High Adhesion

Thermosil T7000 exhibits enhanced adhesion capabilities. All molds and tooling coming in contact with T7000 must be pre-treated with a suitable mold release.

Mixing, Containers, and Tools

Thermosil T7000 is designed to be mixed by automated mixing equipment specific to that purpose. The following materials/tools are approved for mixing and handling:

- Stainless steel, glass, or high-density polyethylene (HDPE) containers
- Stainless steel or HDPE hand tools
- Stainless steel mixing equipment

All tools and equipment must be thoroughly cleaned after use. Clean with mineral spirits, followed by a solvent rinse.

Storage, Shelf Life, and Recertification

Thermosil T7000 has a shelf-life of nine (9) months from the date of manufacture when stored in its original, unopened containers at temperatures not exceeding 90°F. FMI Chemical offers free recertification of its products where permitted. Please contact FMI Chemical for details.

THERMOSIL T7000 A/B TECHNICAL DATA*

UNCURED PROPERTIES	Part A	Part B
Viscosity	2800 - 3200 Poise	N/A
Color	Black	Clear
Parts A and B mixed at 75°F (24°C) at 50% relative humidity		
Mix ratio A:B (Parts by weight)	10:1	
Viscosity	1900 - 2100 Poise	
Working Life	> 24 Hours	
CURED PROPERTIES	Cured 1 hour at 300°F (149°C) in mold Cured 1 hour at 400°F (204°C) out of mold	
Color	Black	
Specific Gravity	0.75 - 0.76	
Tensile Strength	315 psi	
Elongation	120%	
Lap Shear Strength	230 psi	
Cohesive Failure	100%	
Hardness	56 Duro A	
Hardness (24 hours at 600°F (316°C)—Mold A)	60 Duro A	
Weight Loss (24 hours at 600°F (316°C))	10%	

* Typical manufactured properties should not be used as specifications.

MIXING FULL 2.74 kg THERMOSIL T7000 KITS

Step 1: Transferring Components

Transfer the contents of Part A to a mixing vessel that is 4 to 5 times larger than the total amount of material to be mixed. Scrape the interior sides and bottom of the container with a high-density polyethylene (HDPE) spatula to ensure all the material is transferred. The use of HDPE utensils is recommended to prevent scratching the container surface.

Add the contents of the Part B container to the mixing vessel. Use (1) full Part B component for every (1) full Part A component being mixed. Only use the A and B components from the same kit.

Step 2: Mixing

There are two methods for mixing Thermosil T7000. The preferred method is to mix the components and vacuum simultaneously (see Step 2a, below). The other method is to mix the components together first, then vacuum out the excess air to eliminate any voids in the final material (see Step 2b, below).

Step 2a: Simultaneous Mechanical Mixing and Vacuuming

Once the A and B components have been transferred to the mixing vessel, activate the vacuum unit before turning on the mixer. Pull a vacuum of <1 Torr (-29.9 in. Hg gauge) minimum. When the proper vacuum is reached, start the mixer and mix at 90 RPM for 15 minutes, maintaining the vacuum as specified. Ensure that the temperature of the product does not exceed 90°F (32°C). Properly mixed and vacuumed material will appear glassy, with no evidence of bubbles, pin-holes, or other imperfections.†

Step 2b: Sequential Mechanical Mixing Then Vacuuming

Once the A and B components have been transferred to the mixing vessel, activate the mixer and mix at 90 RPM for 15 minutes taking care not to mix air into the material. Ensure that the temperature of the product does not exceed 90°F (32°C).

After the mixing period is complete, place the material under vacuum at a minimum <1 Torr (-29.9 in. Hg gauge). During the vacuum process, the material will rise and fall indicating that air is being evacuated.

IMPORTANT: If the material does not rise and fall on its own, you must interrupt/release the vacuum and restart it, several times if necessary, until the material begins to rise and fall by itself under full vacuum.

Continue to vacuum the mixed material at a minimum <1 Torr (-29.9 in. Hg gauge) until the surface appears glassy, with no evidence of bubbles, pin-holes, or other imperfections.†

†**Note:** *The exact time required to achieve completely void-free material will vary as a function of the mass of the material being processed, the vacuum pressure, the leak rate of the entire vacuum system, and the temperature of the material.*

MIXING PARTIAL THERMOSIL T7000 KITS

The most accurate and optimum results are achieved by mixing a full Thermosil T7000 kit. However, smaller quantities can be prepared with careful measuring and mixing as follows:

Preparing Part A

Before dispensing the desired amount of component A from its container, the entire container of material must be mixed thoroughly. This will homogenize the material, evenly dispersing any glass microspheres that may have risen to the surface during storage. Use a suitable mixing blade, turning at 40 RPM. Once thoroughly mixed, a measured quantity (by weight) of component A can be transferred to a mixing vessel.

Adding Part B

Add the appropriate proportional amount of component B to the vessel (A:B ratio-by-weight = 10:1). Then, follow the mixing instructions for a full kit as described in Steps 1 - 2 above.

MIXING THERMOSIL T7000 CARTRIDGES

Thread the Part B dasher rod into the Part A cartridge. Use a ramrod to inject Part B into the middle of the cartridge containing Part A. Install the cartridge on an automatic mixer and set the mixer's stroke length so that the open spoke mixer will contact the plunger without displacing it. Mix for 2 1/2 minutes. When mixing is complete, unthread the dasher rod and install the cartridge in a pneumatic or mechanical dispensing gun.

Have a question? Please contact us at:

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ISO 9001:2015 and AS9100D certified • Nadcap® accredited (nonmetallic testing) • ANAB® accredited per ISO/IEC 17025:2017

