SWIFTBOND® 4006AFR/SWIFTHARDENER® 4006BFR Data Sheet

Flame Retardant Encapsulation Foam

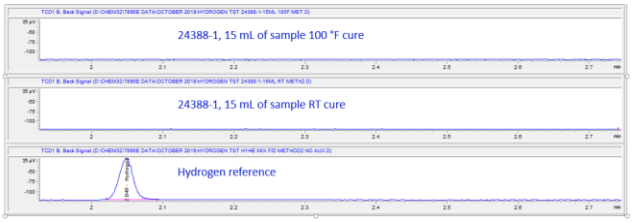
Material Description

SWIFTBOND® 4006AFR/SWIFTHARDENER® 4006BFR is a two-component flame retardant, low density polyurethane foam.

SWIFTBOND® 4006AFR/SWIFTHARDENER® 4006BFR material is designed for potting and encapsulation of battery cell in EV battery modules. But it can also be used in other potting applications where low density and flame retardency is desired.

Features & Benefits

- Low odor and non-corrosive
- Low viscosity for fast flow in around intricate parts for encapsulation
- Low density for light weight
- Conforms to flammability requirements of UL94 Flammability of Plastic Materials of V0 at 6.35 mm.
- Conforms to flammability requirements of UL94 Flammability of Plastic Materials of HBF at 3.2 mm.
- Good impact resistance properties
- No outgassing of Hydrogen gas during curing



Curing Profile

SWIFTBOND® 4006AFR/SWIFTHARDENER® 4006BFR cures at room temperature or heat accelerated.

The curing speed varies with temperature and humidity. Contact HB Fuller technical support for additional recommendations.

Properties

Typical Uncured Properties			
Property	**4006AFR**	**4006BFR**	**Blend**
Color	Off White	Clear Amber	Lt. Amber
Specific gravity D792/D1475	1.17	1.25	
Viscosity at 25°C (cPs)	750	160	
Mix ratio by weight	100	86	
Mix ratio by volume	100	81	
Working time at 25 °C (sec)			60
Cream time at 25 °C (sec)			90
Tack Free time at 25 °C (min)			40

Cured Properties	
Operating Temperature Range (°C)	-60 - 120
Hardness @ 24 hours (Shore A)	35 - 45
Foam Density – Free Rise (g/cm^3)	0.16 – 0.19
Foam Density – Free Rise (pcf)	10 - 12
Thermal Conductivity (W/m-K)	0.10

Electrical Properties		
Property	**Test Method**	**Value**
Dielectric Strength (kV/mm)	ASTM D149	3.0

Instructions for use

SWIFTBOND® 4006AFR/SWIFTHARDENER® 4006BFR is a two-component material. Hand mixing may be difficult. It is recommended that an automated dispensing unit be used with dynamic mixer to mix material. Prior to use, stir the individual parts to ensure they are uniform and homogeneous.

Surface must be clean, dry, and free from grease, oil, wax and other surface contaminates.

Hand mixing instruction for foams

1. Per the stated mix ratio, measure out (either by weight or volume) the appropriate portions of Part A and Part B as into a flat sided container.
2. The mixing container should be larger than the amount of total material being mixed to allow for vigorous mixing. For example, for 75 grams of total material we suggest a minimum size of 150 ml container for mixing. For larger amounts, adjust container size appropriately.
3. Generally it's recommended to add the higher density part into the flat sided mixing container first and then add the other part gently on top of the first part. This helps limit pre-reaction of the materials to just the interphase. Scrape the side and bottom of the individual parts container's to ensure nearly all the measured materials are added to the mixing container.
4. Start timer and immediately mix vigorously for 20-30 seconds with a spatula or flat sided stir stick. Thoroughly scraping the sides and bottom of cup while mixing. Mixed material should be homogeneous and uniform in appearance.
5. At end of mixing time, immediately pour mixed material into mold.
6. Immediately clean all tools used in preparations that you wish to reuse with IPA or MEK.

Storage & Shelf Life

SWIFTBOND® 4006AFR/SWIFTHARDENER® 4006BFR should be stored in a cool, dry place above 15°C (60°F). Purge open containers with dry nitrogen. Shelf life is a minimum of one year in unopened containers when stored at 25ºC.

Clean Up

Methyl ethyl ketone, isopropanol and denatured alcohol are useful in any cleanup of SWIFTBOND® 4006AFR /SWIFTHARDENER® 4006BFR.

Health & Safety Precautions

Please see the Safety Data Sheet (SDS) for proper handling and disposal instructions.

Note

The values noted in this data sheet are typical properties only and are not intended to be used as material specifications.

For assistance in writing a material specification, please contact HB Fuller for assistance.