

3M™ Thermal Bonding Film AF42 (4 mil)

Product Description

3M™ Thermal Bonding Film AF42 (4 mil) is a thermosetting epoxy film adhesive. Its flexibility provides excellent drop and impact resistance as well as stress relief for joints encountering coefficient of thermal expansion (CTE) mismatch.

Key Features

- Excellent impact resistance
- Excellent chemical resistance
- Structural bond strength to metals and glass
- Low halogen content

Product Construction/Material Description

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

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Property	Value
Color	Translucent
Adhesive Thickness	4 mil (0.1 mm)
Liner Thickness	6.5 mil (0.17 mm)
Base Resin	Epoxy

Recommended Cure Conditions

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Bondline Temperature	Time (Minutes)
177°C	60
204°C	15
232°C	10

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Typical Physical Properties after Cure

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3M™ Thermal Bonding Film AF42 (4 mil)^a

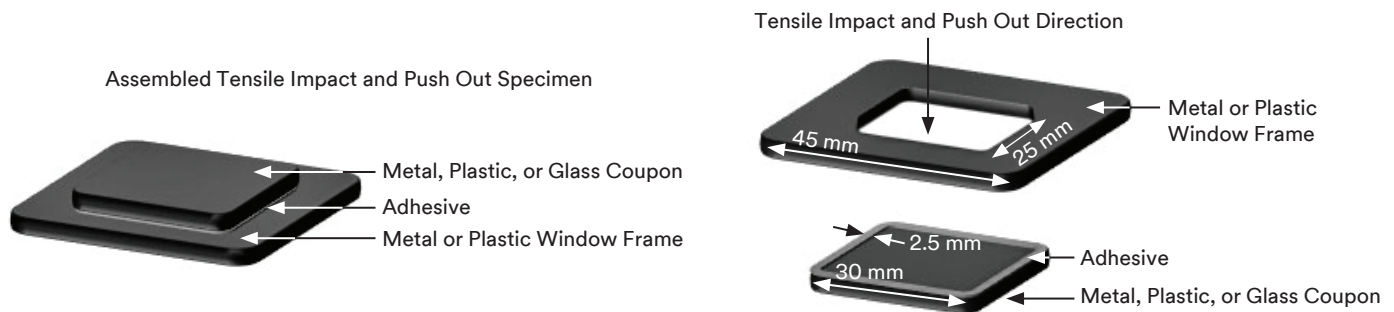
Property	Method	Value
Overlap Shear Strength, FPL Etched Aluminum	ASTM D1002	33 MPa
T-Peel, FPL Etched Aluminum	ASTM D1876	9.0 N/mm
Push Out Strength, FPL Etched Aluminum	3M Test Method ^b	6300 N
Tensile Impact Resistance, FPL Etched Aluminum	3M Test Method ^c	1.9 J
Ultimate Tensile Strength	ASTM D638 ^d	59 MPa
Elongation at Break	ASTM D638 ^d	350%
Young's Modulus	ASTM D638 ^d	100 MPa

^a Samples cured for 60 min + 10 min ramp time at 180°C.

^b See Figures 1 and 2. 30 mm x 30 mm square coupon bonded to window frame with 25 mm x 25 mm cutout (bond width 2.5 mm, bond area 279 mm²). Push out ran at 10 mm/min.

^c See Figures 1 and 2. 30 mm x 30 mm square coupon bonded to window frame with 25 mm x 25 mm cutout (bond width 2.5 mm, bond area 279 mm²). Drop mass 13.2 kg, drop height 115 mm.

^d Deviation in specimen geometry. Gauge length 20 mm, width 3 mm. Samples degassed (-90 KPa, 1 hour, 65°C).



Figures 1 and 2: Push Out and Tensile Impact Resistance sample configurations

Work Life, Storage and Shelf Life

3M™ Thermal Bonding Film AF42 has a work life of 4 weeks. Work life is defined as the time the product can be at room temperature, and will yield the performance data summarized in this data sheet if bonds are made and tested per instructions. Usage above 70°F (21°C) prior to bonding can reduce bonding performance.

While not in use, 3M film AF42 should be stored at or below 40°F (4°C).

The shelf life of 3M film AF42 is 15 months when stored at or below 40°F (4°C) in the original packaging materials.

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Special Note

Consult this product's safety data sheet (SDS) for additional relevant information relating to this product family.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is commercially available from 3M. The COA contains the 3M specifications and test methods for the products performance limits that the product will be supplied against. The 3M product is supplied to 3M COA test specifications and the COA test methods. Inquire with 3M for the COA for this product.

Safety Data Sheet: Consult Safety Data Sheet before use.

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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