

# 51-301



## 250-300°F (121-149°C) Cure Expanding Syntactic Epoxy Film Adhesive

### Typical applications

Aerospace  
Sporting goods  
Marine  
Wind energy  
Industrial manufacturing

### Out life

30 days at 70°F (21°C)

### Shelf life

6 months at 40°F (4°C)  
12 months at 0°F (-18°C)

### Description

51-301 is a 250-300°F (121-149°C) cure, expanding syntactic epoxy film adhesive. This adhesive is specifically designed as a core splice material, for strengthening the splice area where core joints meet. It is also suitable for inserts and edge member attachments as well as filling available space where bladder molding is difficult.

### Benefits/features

- Expansion ratio between 2:1 and 3:1
- Does not slump during cure (meets ASTM E-990)
- Uniform expansion and cell size for superior strength
- Humidity and chemically resistant
- Low exotherm
- Co-curable with most 250°F (121°C) epoxy systems

### Application

51-301 is suited for secondary bonding applications in aerospace, sporting goods, marine, wind energy, and industrial manufacturing. High shear strengths make 51-301 ideal for core splicing applications and other areas where expansion is needed to provide molding pressure.

51-301 is supplied in standard film weights from 0.25-0.5 psf (0.05-0.10" thick), and is supplied as an unsupported adhesive. The product is supplied in standard 24"x36" sheets (other sizes are available upon request). Contact MCCFC about any special requirements (color, size, thickness). Standard colors are natural, black, aqua, and blue.

### Recommended processing conditions

51-301 is typically cured at 250°F to 300°F (121°C - 149°C) depending on part size and complexity. Low, medium and high pressure molding techniques may be used depending on the desired level of expansion. Recommended cure cycle is 25 psi (172.5 kPa); 4-8°F/min (2.2-4.4°C/min) ramp to 250°F (121°C), hold for 60-90 minutes, cool to <140°F (60°C).



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Technical Data Sheet

## Neat resin [values are average and do not constitute a specification]

Property	Value
Gel time @ 275°F (135°C), minutes	5-9
Specific gravity      Uncured	1.21

## Mechanical data [values are average and do not constitute a specification]

51-301, oven cured, at 250°F for 60 min., results as tested

Property	Test method	Test condition	Result
Tube shear strength, psi (MPa)		RT	930 (6.4)
Tube shear strength, psi (MPa)		180°F (82°C)	840 (5.8)
Tube shear strength, psi (MPa)	ASTM E990	250°F (121°C)	490 (3.4)
Tube shear strength after 3-day water boil, psi (MPa)		RT	980 (6.7)
Tube shear strength after 7-day Skydrol soak, psi (MPa)		150°F (65°C)	1700 (11.7)
Beam shear strength, psi (MPa)	RMS 025	RT	730 (5.0)
Water migration, mL	ASTM E990	RT	<2



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The information contained herein has been obtained under controlled laboratory conditions and are typical or average values and do not constitute a specification, guarantee, or warranty. Results may vary under different processing conditions or in combination with other materials. The data is believed to be reliable but all suggestions or recommendations for use are made without guarantee. You should thoroughly and independently evaluate materials for your planned application and determine suitability under your own processing conditions before commercialization. Furthermore, no suggestion for use or material supplied shall be considered a recommendation or inducement to violate any law or infringe any patent.

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