

> CYCOM[®] 977-2 EPOXY RESIN SYSTEM

TECHNICAL DATA SHEET



DESCRIPTION

CYCOM[®] 977-2 is a 350°F (177°C) curing toughened epoxy resin with a 260 – 280°F (126 – 138°C) dry and 220°F (104°C) wet service capability. CYCOM 977-2 is formulated for autoclave or press molding. Unidirectional tape and woven fabric impregnated with CYCOM 977-2 resin will retain tack for at least 10 days at 72°F (22°C) and has a long mechanical out life suitable for fabrication of large structures.

The recommended lay-up procedure for this material is L-15. The recommended cure is C-50.

FEATURES & BENEFITS

- Toughened epoxy using Cytec Engineered Materials' proprietary "co-continuous" morphology
- 350°F (177°C) cure
- Available in a broad range of fibers and forms including tape, fabric and roving
- Excellent impact resistance
- Controlled flow
- 260 – 280°F (126 – 138°C) dry and 220°F (104°C) wet service temperature
- Autoclave or press mold processing
- Shelf life of 12 months at 0°F (-18°C), 42 days at 72°F (22°C)

SUGGESTED APPLICATIONS

- Aircraft primary and secondary structure
- Space structure
- Ballistics
- Cryogenic tanks
- Any application where impact resistance and light weight are required

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CHARACTERISTICS & PROPERTIES

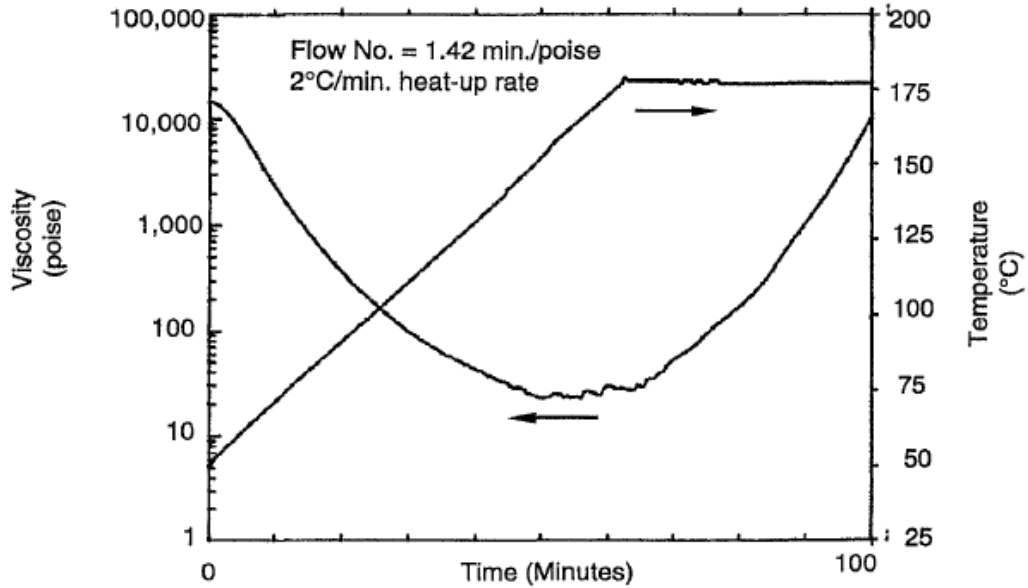


Figure 1 | Viscosity Profile: Straight Heat-up Cure Cycle to 350°F (177°C)

Table 1 | Typical Neat Resin Properties at Room Temperature

Tensile Strength, ksi (MPa)	11.8 ± 1.6 (81.4 ± 11)
Tensile Modulus, msi (GPa)	0.51 ± 0.02 (3.52 ± 0.14)
Flexural Strength, ksi (MPa)	28.6 ± 1.0 (197 ± 7)
Flexural Modulus, msi (GPa)	0.50 ± 0.01 (3.45 ± 0.07)
G _{1C} , in-lb/in ² (J/m ²)	2.73 ± 0.48 (478 ± 84)
K _{1C} , ksi·in ^{1/2} (MPa·m ^{1/2})	1.34 ± 0.15 (1.22 ± 0.14)
Tg, °C (RDS, 10°C/minute) *	212
Density, g/cc	1.31

* **NOTE:** Tg data is not applicable for U.S. export control classification or licensing. For export-related information please contact us.

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Table 2 | Typical Properties of 977-2 Composite Laminates
Intermediate Modulus [40 msi (276 GPa) Class] Carbon Fiber Reinforced Unidirectional Tape
Typical Cytec Engineered Materials Product Codes: Hy-E 1377-2T, Hy-E 1577-2E, Hy-E 5377-2A

Mechanical Property	-65°F (-55°C)	Room Temperature	180°F (82°C)	180°F (82°C) Wet ¹
0° Tensile Properties				
Strength, ksi (MPa)	390 (2690)	390 (2690)	-	-
Modulus, msi (GPa)	24.0 (165)	24.0 (165)	-	-
0° Compression Properties				
Strength, ksi (MPa)	-	230 (1580)	210 (1450)	180 (1240)
Modulus, msi (GPa)	-	22.0 (152)	22.0 (152)	22.0 (152)
Quasi Compression After Impact (1500 in-lb/in impact)				
Strength, ksi (MPa)	-	38 (262)	-	-
Quasi Open Hole Compression				
Strength, ksi (MPa)	-	45 (310)	39 (269)	37 (255)
Quasi Open Hole Tensile				
Strength, ksi (MPa)	-	65 (448)	-	-

¹ Wet: 7 day water immersion at 165°F (74°C)

Property values listed are typical for laminates with 57 to 63% fiber volume. All testing per BMS 8-276

Cure: 3 hours at 355°F (180°C)

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PRODUCT HANDLING AND SAFETY

Cytec Engineered Materials recommends wearing clean, impervious gloves when working with epoxy resin systems to reduce skin contact and to avoid contamination of the product.

Materials Safety Data Sheets (MSDS) and product labels are available upon request and can be obtained from any Cytec Engineered Materials Office.

DISPOSAL OF SCRAP MATERIAL

Disposal of scrap material should be in accordance with local, state, and federal regulations.

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