

CYCOM® 934 Epoxy Resin

Description:

CYCOM® 934 is a high flow, 350°F (177°C) curing, epoxy resin with good 200°F (93°C) wet and 350°F (177°C) dry service capability. CYCOM® 934 is formulated for autoclave processing, but it has been successfully processed by press molding. Unidirectional tape and woven fabric impregnated with CYCOM® 934 resin will retain good tack and drape for at least 10 days at 70°F (21°C). Standard cure is for two hours at 350°F (177°C). No post cure is required for 350°F (177°C) dry service capability.

Recommended lay-up procedure is L-3 or L-6. Recommended cure procedure is C-5 or C-9.

CYCOM® 934 can be impregnated via hot melt or solution technique on all available fibers and fabrics.

Typical applications for CYCOM® 934 include structural aircraft components and critical space structures. CYCOM® 934 meets all NASA outgassing requirements.

For more information, contact:

**Cytec Engineered Materials
Technical Service
Greenville, Texas
903 457-8500**

Features and benefits:

- **350°F (177°C) cure**
- **Available in a broad range of fibers and forms including tape, fabric and roving**
- **Large industry database**
- **Material widely used in aerospace, commercial and military structural applications**
- **350°F (177°C) dry and 200°F (93°C) wet service temperature**
- **Laminate and sandwich panel usage**
- **Autoclave or press-mold processing**
- **Shelf life 6 months at 0°F (-18°C)
10 days at 72°F (22°C)**

Typical neat resin properties

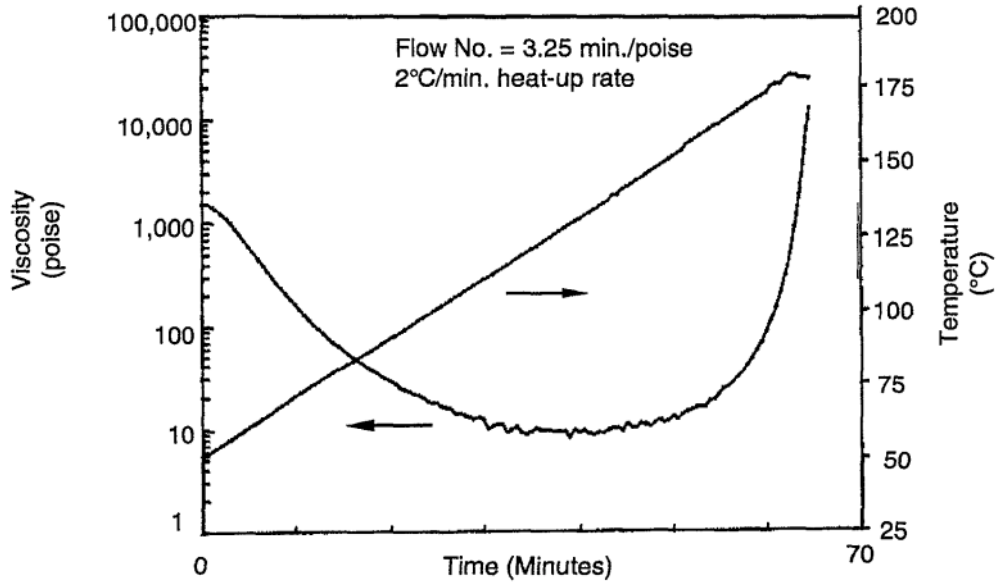
	RT	200°F (93°C)	200°F Wet (93°C Wet)
Tensile Strength, ksi	12		
Tensile Modulus, Msi	0.6		
Failure Strain, %	0.7		
Tensile Strength, MPa	82.7		
Tensile Modulus, GPa	4.1		
Failure Strain, %	0.7		
Flexural Strength, ksi	10.0	17	10.0
Flexural Modulus, Msi	0.6	.47	.40
Flexural Strength, MPa	68.9	117.2	68.9
Flexural Modulus, GPa	4.1	3.2	2.8
Tg, °C	Dry Wet	194 160	
Density, g/cc	1.30		

The data listed has been obtained from carefully controlled samples considered to be representative of the product described. Because the properties of this product can be significantly affected by the fabrication and testing techniques employed and since Cytec Engineered Materials does not control the conditions under which its products are tested and used, Cytec Engineered Materials cannot guarantee that the properties listed will be obtained with other processes and equipment.

*This information is provided for informational purposes only and without legal responsibility.
Users are expected to perform adequate verification and testing to ensure that materials meet required specifications.*

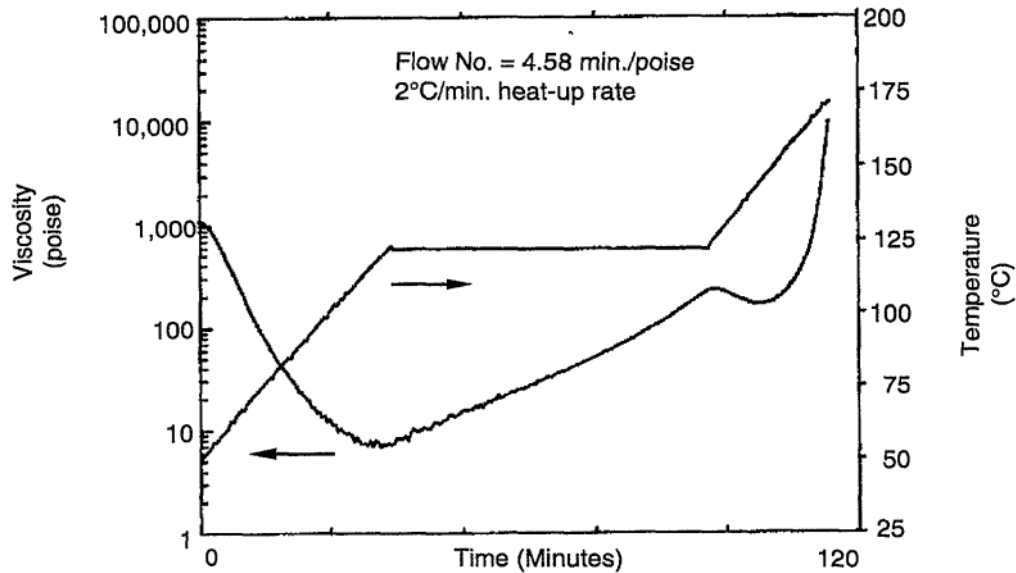
934 VISCOSITY PROFILE

Straight Heat-Up Cure Cycle to 350°F (177°C)



934 VISCOSITY PROFILE

Stepped Cure Cycle: Heat-up to 250°F (121°C), hold for 60 minutes, heat-up to 350°F (177°C)



Typical properties of 934 composite laminates

**STANDARD MODULUS (33 Msi/228 GPa CLASS)
CARBON FIBER REINFORCED
UNIDIRECTIONAL TAPE AND ROVING**

CEM Product Codes

Hy-E 1034K; Hy-E 3034K; Hy-E 1334G

Mechanical Properties	RT	160°F (71°C)
0° Tensile Properties		
Strength, ksi (Mpa)	230-260	230-260
Modulus, Msi (Gpa)	18-20	18-20
Failure Strain, %	1.0-1.2	1.0-1.3
Strength, MPa	1586-1792	1586-1792
Modulus, GPa	124-138	124-138
Failure Strain, %	1.0-1.2	1.0-1.3
0° Compressive Properties		
Strength, ksi	220-250	190-220
Modulus, Msi	17-20	17-20
Strength, MPa	1517-1724	1310-1517
Modulus, GPa	117-138	117-138
0° Flexural Properties		
Strength, ksi	250-300	240-270
Modulus, Msi	18-21	18-21
Strength, Mpa	1724-2068	1655-1861
Modulus, GPa	124-145	124-145
Interlaminar Shear Properties		
Strength, ksi	17-20	12-14
Strength, MPa	117-138	83-97

Property values listed are typical for laminates with 57 to 63% fiber volume.

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Typical properties of 934 composite laminates

**STANDARD MODULUS (33 Msi/228 GPa CLASS)
CARBON FIBER REINFORCED
PLAIN WEAVE FABRIC**

CEM Product Codes

HMF 322/34; HMF 322D/34

Mechanical Properties	-65°F (-54°F)	RT	160°F (71°C)	180°F WET (82°C WET)
0° Tensile Properties				
Strength, ksi (Mpa)	75-100	85-100	85-100	50-75
Modulus, Msi (Gpa)	8-10	9-11	8-10	6-8
Failure Strain, %	.8-1.0			
Strength, MPa	517-689	586-689	586-689	345-517
Modulus, GPa	55-69	62-76	55-69	41-55
Failure Strain, %	.8-1.0			
0° Compressive Properties				
Strength, ksi		85-100	85-100	75-90
Modulus, Msi	7-9	7-9		
Strength, MPa		586-689	586-689	517-620
Modulus, GPa	48-62	48-62		
0° Flexural Properties				
Strength, ksi		110-130		50-75
Modulus, Msi		8-10		6-8
Strength, Mpa		758-896		345-517
Modulus, GPa		55-69		41-55
Interlaminar Shear Properties				
Strength, ksi	10-13	8-12	8-10	8-10
Strength, MPa	69-90	55-83	55-69	55-69

Property values listed are typical for laminates with 55 to 60% fiber volume.

Wet = 7 day water immersion at 165°F (74°C).

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Typical properties of 934 composite laminates

**STANDARD MODULUS (33 Msi/228 GPa CLASS)
CARBON FIBER REINFORCED
8 HARNESS SATIN FABRIC**

CEM Product Codes
HMF 133/34

Mechanical Properties	RT	160°F (71°C)
0° Tensile Properties		
Strength, ksi (Mpa)	85-105	85-105
Modulus, Msi (Gpa)	9-12	9-11
<i>Strength, MPa</i>	<i>586-724</i>	<i>586-724</i>
<i>Modulus, GPa</i>	<i>62-83</i>	<i>62-76</i>
0° Compressive Properties		
Strength, ksi	80-100	65-90
Modulus, Msi	9-12	8-10
<i>Strength, MPa</i>	<i>552-689</i>	<i>448-620</i>
<i>Modulus, GPa</i>	<i>62-83</i>	<i>55-69</i>
0° Flexural Properties		
Strength, ksi	120-150	85-100
Modulus, Msi	8-11	6-8
Strength, Mpa	827-1034	586-689
Modulus, GPa	55-76	41-55

Property values listed are typical for laminates with 55 to 60% fiber volume.

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Typical properties of 934 composite laminates

**HIGH STRENGTH (>500 ksi/>3447 MPa)
STANDARD MODULUS (33Msi/228 GPa CLASS)
CARBON FIBER REINFORCED
UNIDIRECTIONAL TAPE AND ROVING**

CEM Product Codes

Hy-E 1034G; Hy-E 1334H; Hy-E 3334P; Hy-E 1634N

Mechanical Properties	RT	200°F (93°C)	200°F Wet (93°C Wet)
0° Tensile Properties			
Strength, ksi (Mpa)	280-310	280-310	240-270
Modulus, Msi (Gpa)	20-22	20-22	20-22
<i>Strength, MPa</i>	<i>1930-2137</i>	<i>1930-2137</i>	<i>1655-1861</i>
<i>Modulus, GPa</i>	<i>38-152</i>	<i>138-152</i>	<i>138-152</i>
0° Compressive Properties			
Strength, ksi	200-250	200-250	140-170
Modulus, Msi	18-20	18-20	18-19
<i>Strength, MPa</i>	<i>1379-1723</i>	<i>1379-1723</i>	<i>965-1172</i>
<i>Modulus, GPa</i>	<i>124-138</i>	<i>124-138</i>	<i>124-131</i>
0° Flexural Properties			
Strength, ksi	280-360	230-310	180-260
Modulus, Msi	18-20	18-20	18-19
<i>Strength, Mpa</i>	<i>1930-2482</i>	<i>1586-2137</i>	<i>1241-1792</i>
<i>Modulus, GPa</i>	<i>124-138</i>	<i>124-138</i>	<i>124-131</i>
Interlaminar Shear Properties			
Strength, ksi	18-20	16-18	8-10
Strength, MPa	124-138	110-124	55-69

Property values listed are typical for laminates with 57 to 63% fiber volume.

Wet = 7 day water immersion at 165°F (74°C).

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Typical properties of 934 composite laminates

**HIGH STRENGTH (>500 ksi/>3447 MPa)
STANDARD MODULUS (33Msi/228 GPa CLASS)
CARBON FIBER REINFORCED
PLAIN WEAVE FABRIC**

CEM Product Codes

HMF 2405/34; HMF 422/34; HMF 2461D/34

Mechanical Properties	RT	200°F (93°C)	200°F Wet (93°C Wet)
0° Tensile Properties			
Strength, ksi (Mpa)	100-130	100-130	
Modulus, Msi (Gpa)	9-11	9-11	
<i>Strength, MPa</i>	<i>689-896</i>	<i>689-896</i>	
<i>Modulus, GPa</i>	<i>62-76</i>	<i>62-76</i>	
0° Compressive Properties			
Strength, ksi	110-130	110-120	60-80
Modulus, Msi	9-11	9-11	9-10
<i>Strength, MPa</i>	<i>758-896</i>	<i>758-827</i>	<i>414-552</i>
<i>Modulus, GPa</i>	<i>62-76</i>	<i>62-76</i>	<i>62-69</i>
Interlaminar Shear Properties			
Strength, ksi	11-12		6-7
Strength, MPa	76-83		41-48

Property values listed are typical for laminates with 57 to 63% fiber volume.

Wet = 7 day water immersion at 165°F (74°C).

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Typical properties of 934 composite laminates

**HIGH STRENGTH (>500 ksi/>3447 MPa)
STANDARD MODULUS (33Msi/228 GPa CLASS)
CARBON FIBER REINFORCED
5 HARNESS SATIN FABRIC**

CEM Product Codes

HMF 398/34; HMF 2323/34; HMF 2454/34

Mechanical Properties	RT	250°F (121°C)	250°F Wet (121°C Wet)
0° Tensile Properties			
Strength, ksi (Mpa)	110-130	110-130	90-100
Modulus, Msi (Gpa)	11	11	8-10
<i>Strength, MPa</i>	<i>758-896</i>	<i>758-896</i>	<i>620-689</i>
<i>Modulus, GPa</i>	<i>76</i>	<i>76</i>	<i>55-69</i>
0° Compressive Properties			
Strength, ksi	110-120	90-100	60-70
Modulus, Msi	9-10	9-10	
<i>Strength, MPa</i>	<i>758-827</i>	<i>620-689</i>	<i>414-483</i>
<i>Modulus, GPa</i>	<i>62-69</i>	<i>62-69</i>	
0° Flexural Properties			
Strength, ksi	160-190	130-150	
Modulus, Msi	10	10	
<i>Strength, Mpa</i>	<i>1103-1310</i>	<i>896-1034</i>	
<i>Modulus, GPa</i>	<i>69</i>	<i>69</i>	
Interlaminar Shear Properties			
Strength, ksi	10-13	8-9	4-5
Strength, MPa	69-90	55-62	28-35

Property values listed are typical for laminates with 55 to 60% fiber volume.

Wet = 7 day water immersion at 165°F (74°C).

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Typical properties of 934 composite laminates

**HIGH MODULUS (50 Msi/345 GPa CLASS)
CARBON FIBER REINFORCED
UNIDIRECTIONAL TAPE**

CEM Product Codes

Hy-E 2134A; Hy-E 2134B

Mechanical Properties	RT
0° Tensile Properties	
Strength, ksi (Mpa)	155-170
Modulus, Msi (Gpa)	32-35
Failure Strain, %	.48- .50
<i>Strength, MPa</i>	<i>1069-1172</i>
<i>Modulus, GPa</i>	<i>221-241</i>
<i>Failure Strain, %</i>	<i>.48-.50</i>
0° Compressive Properties	
Strength, ksi	130-150
Modulus, Msi	29-33
<i>Strength, MPa</i>	<i>896-1034</i>
<i>Modulus, GPa</i>	<i>200-228</i>
0° Flexural Properties	
Strength, ksi	175-195
Modulus, Msi	30-33
<i>Strength, Mpa</i>	<i>1207-1344</i>
<i>Modulus, GPa</i>	<i>207-228</i>
Interlaminar Shear Properties	
Strength, ksi	8-12
Strength, MPa	55-83

Property values listed are typical for laminates with 57 to 63% fiber volume.

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Typical properties of 934 composite laminates

**HIGH MODULUS (70Msi/483 GPa CLASS)
CARBON FIBER REINFORCED
UNIDIRECTIONAL TAPE**

CEM Product Codes

HMF 398/34; HMF 2323/34; HMF 2454/34

Mechanical Properties	RT	350°F (177°C)
0° Tensile Properties		
Strength, ksi (Mpa)	100-115	95-110
Modulus, Msi (Gpa)	42-46	40-44
Failure Strain, %	0.24-0.25	
<i>Strength, MPa</i>	<i>680-793</i>	<i>655-758</i>
<i>Modulus, GPa</i>	<i>290-317</i>	<i>276-304</i>
<i>Failure Strain, %</i>	<i>0.24-0.25</i>	
0° Compressive Properties		
Strength, ksi	55-70	50-65
Modulus, Msi	35-38	34-39
<i>Strength, MPa</i>	<i>379-483</i>	<i>345-448</i>
<i>Modulus, GPa</i>	<i>241-262</i>	<i>234-269</i>
0° Flexural Properties		
Strength, ksi	110-125	105-20
Modulus, Msi	36-40	35-39
<i>Strength, Mpa</i>	<i>758-862</i>	<i>724-827</i>
<i>Modulus, GPa</i>	<i>248-276</i>	<i>241-269</i>
Interlaminar Shear Properties		
Strength, ksi	9-11	9-11
Strength, MPa	62-7	62-76

Property values listed are typical for laminates with 57 to 63% fiber volume.

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Typical properties of 934 composite laminates

**PITCH HIGH MODULUS (75 Msi/517 GPa CLASS)
CARBON FIBER REINFORCED
UNIDIRECTIONAL TAPE**

CEM Product Codes

Hy-E 2034D

Mechanical Properties	RT
0° Tensile Properties	
Strength, ksi (Mpa)	120-135
Modulus, Msi (Gpa)	38-44
<i>Strength, MPa</i>	<i>827-931</i>
<i>Modulus, GPa</i>	<i>262-304</i>
0° Compressive Properties	
Strength, ksi	50-60
Modulus, Msi	30-35
<i>Strength, MPa</i>	<i>345-414</i>
<i>Modulus, GPa</i>	<i>207-241</i>
0° Flexural Properties	
Strength, ksi	95-110
Modulus, Msi	35-40
<i>Strength, Mpa</i>	<i>655-758</i>
<i>Modulus, GPa</i>	<i>241-276</i>
Interlaminar Shear Properties	
Strength, ksi	710
Strength, MPa	48-69

Property values listed are typical for laminates with 57 to 63% fiber volume.

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Typical properties of 934 composite laminates

**E-GLASS FIBER REINFORCED
UNIDIRECTIONAL TAPE AND ROVING**

CEM Product Codes

Hy-E 9034C; Hy-E 9034E; Hy-E 9034F

Mechanical Properties	RT
0° Tensile Properties	
Strength, ksi (Mpa)	150-170
Modulus, Msi (Gpa)	6-8
Poisson's Ratio	.28-.32
<i>Strength, MPa</i>	<i>1034-1172</i>
<i>Modulus, GPa</i>	<i>41-55</i>
<i>Poisson's Ratio</i>	<i>.28-.32</i>
0° Compressive Properties	
Strength, ksi	70-90
Modulus, Msi	6-8
<i>Strength, MPa</i>	<i>483-620</i>
<i>Modulus, GPa</i>	<i>41-55</i>
0° Flexural Properties	
Strength, ksi	190-210
Modulus, Msi	6-8
<i>Strength, Mpa</i>	<i>1310-1448</i>
<i>Modulus, GPa</i>	<i>41-55</i>
Interlaminar Shear Properties	
Strength, ksi	13-17
Strength, MPa	90-117

Property values listed are typical for laminates with 50 to 55% fiber volume.

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Typical properties of 934 composite laminates

**S2-GLASS FIBER REINFORCED
UNIDIRECTIONAL TAPE AND ROVING**

CEM Product Codes

Hy-E 9134A; Hy-E 9134B; Hy-E 9134C; Hy-E 9134D

Mechanical Properties	RT
0° Tensile Properties	
Strength, ksi (Mpa)	180-200
Modulus, Msi (Gpa)	7-9
Poisson's Ratio	0.28-0.32
<i>Strength, MPa</i>	<i>1241-1379</i>
<i>Modulus, GPa</i>	<i>48-62</i>
<i>Poisson's Ratio</i>	<i>0.28-0.32</i>
0° Compressive Properties	
Strength, ksi	80-100
Modulus, Msi	6-8
<i>Strength, MPa</i>	<i>552-690</i>
<i>Modulus, GPa</i>	<i>41-55</i>
0° Flexural Properties	
Strength, ksi	220-240
Modulus, Msi	6-8
<i>Strength, Mpa</i>	<i>1517-1655</i>
<i>Modulus, GPa</i>	<i>41-55</i>
Interlaminar Shear Properties	
Strength, ksi	11-13
Strength, MPa	76-90

Property values listed are typical for laminates with 50 to 55% fiber volume.

The data listed has been obtained from carefully controlled samples considered to be representative of the product described. Because the properties of this product can be significantly affected by the fabrication and testing techniques employed and since Cytec Engineered Materials does not control the conditions under which its products are tested and used, Cytec Engineered Materials cannot guarantee that the properties listed will be obtained with other processes and equipment.

Product safety

Material Safety Data Sheets can be obtained from the Safety Health and Environmental Affairs Department in Winona, Minn. by calling (507) 454-3611.

Product handling

The wearing of clean, impervious gloves is recommended when working with prepreg materials. See Material Safety Data Sheet for more information.

Shipping

Prepreg is typically shipped as rolls in sealed aluminum or polyethylene bags in cardboard containers packed with dry ice.

Disposal of scrap material

Disposal of material should be in accordance with local, state, and federal regulations, which may vary by location. Questions concerning disposal should be directed to the Safety, Health, and Environmental Affairs Department in Winona, Minn. at (507) 454-3611 for evaluation on a case-by-case basis.

contact
US

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