

E-752-MTS Epoxy Prepreg

Park's E-752-MTS is a toughened; 177°C cure epoxy system designed with improved mechanical properties and damage tolerance that is suitable for primary aircraft structures. Consistent with the E-752 family of epoxies, the E-752-MTS allows flexible and robust processing in Autoclave, Out-of-Autoclave and Press cures. It exhibits improved toughness and impact strength while maintaining good tack and drapeability for ease of layup.

Key Features & Benefits

- Autoclave, Out-of-Autoclave and Press Cure with low void content
- Service temperatures up to 132°C - Wet
- Controlled resin flow enables robust processing
- Optimized for medium level tack for hand lay-up and automated processes
- Used for both laminate and honeycomb core structures
- Low outgassing, meets ASTM E-595 requirements

Product Forms

- Available on a wide variety of reinforcements, including Fabrics and Unidirectional Tape available up to 1.5m wide
- Precision slit tape for Automated Fiber Placement (AFP) (0.638 cm), (0.317 cm) and other widths upon request
- Compatible with Autoclave, Vacuum Bag/Oven or Press Molding processes
- Data available for wide array of reinforcements including T800 12K UD, IMS65 12K UD, IM7 12K UD, HTS45 12K UD, AS4 3KPW, HTS40 3KPW, T830 6KPW, T830 6K8HS

Applications / Qualifications

- Primary and Secondary Aircraft Structures
- Control Surfaces
- Wings
- Fairings
- Nacelles / Thrust Reversers
- Satellite Structures & Space Applications

For more information about E-752-MTS:

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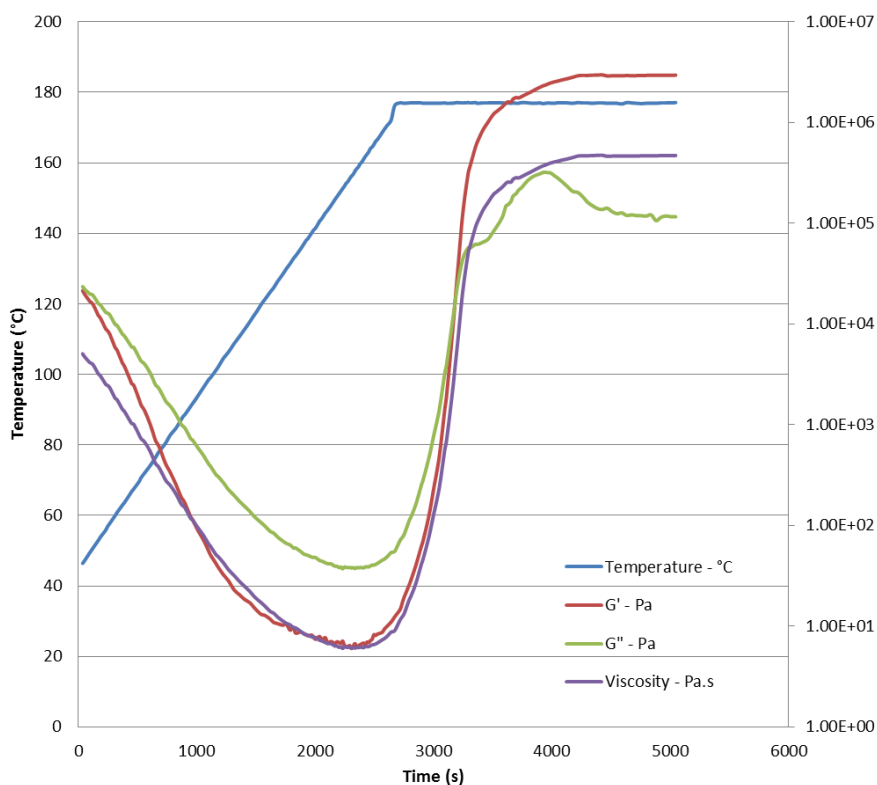
E-752-MTS Epoxy Prepregs

Nominal Prepreg and Laminate Physical Properties

Reinforcement	HTS45 UDT	IM7 UDT	HTS40 3KPW	AS4 3KPW
Fabric Areal Weight (gsm)	145	145	193	193
Prepreg Resin Content (%)	35	35	38	38
Resin Flow (177°C, 689kPa, 20 min) (%)	18	15	22	23
Volatiles (177°C, 8 min) (%)	< 0.5	< 0.5	< 0.5	< 0.5
Gel Time (seconds)	600	600	600	600
Dry Tg / Wet Tg (DMA)	209°C dry / 160°C wet			

**Note: All values are nominal, actual values will vary*

E-752-MTS Resin Rheology Curve

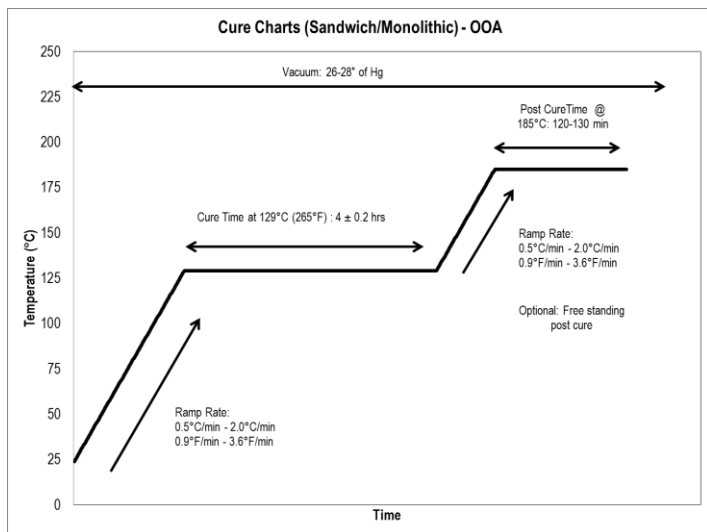


All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a Park representative directly. Park reserves the right to change these typical values as a natural process of refining our testing equipment and techniques

Aerospace Composite Materials

Processing Guidelines

E-752-MTS Out-of-Autoclave and Autoclave Example Cure Cycles



Oven Cure Cycle

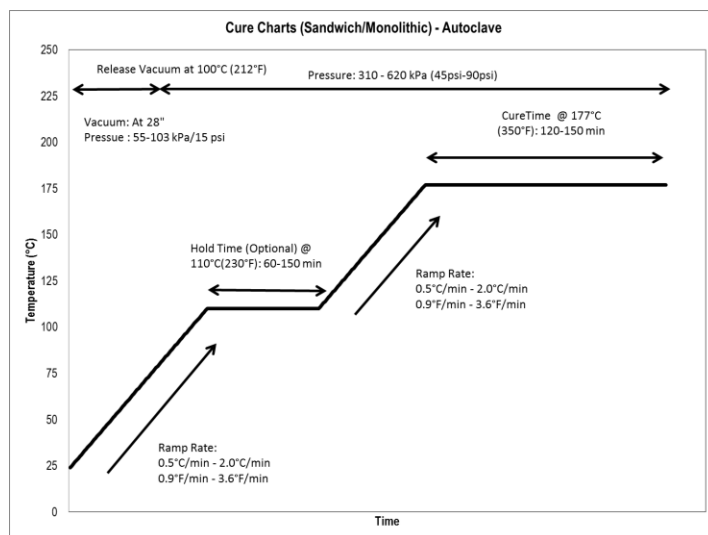
- Apply 660-711 mmHg vacuum
- Increase from room temperature to 129 °C at a rate of 0.5-2.0 °C/min
- Hold cure temperature for 4 hrs +/- 0.2 hrs
- Cool down to 65°C prior to removal

Optional Free Standing Post Cure

- Increase from 129 °C to 185 °C at a rate of 0.5-2.0 °C/min
- Hold cure temperature for 120 to 130 minutes
- Cool down to 65°C prior to removal

Autoclave Cure Cycle

- Apply 711 mmHg vacuum and 100 kPa PRESSURE
- Increase from room temperature to 110 °C at a rate of 0.5-2.0 °C/min
- Vent Vacuum when temperature reaches 100 °C
- Increase pressure from 1 bar to 3.1 bar
- Increase from 110 °C to 177 °C at a rate of 0.5-2.0 °C/min
- Hold cure temperature for 120 to 150 minutes
- Cool down to 65°C and relieve pressure prior to removal



BAGGING SCHEME

Prepreg Storage Life

Tack Life: 18 days @ 24°C

Shelf Life: 12 months @ -18°C

- **WL7400 Bagging film.**
- **One layer of N-10 breather material.**
- **0.063 inch thick aluminum pressure plate treated with release agent.**
- **WL5200 Solid Release Film – blue film. (Cut 2 inches larger than the panel)**
- **-----Test laminate-----**
- **90° Edge Dam Released with Teflon Tape, Release, or Solid release film.**
- **WL5200 Solid Release Film – blue film. (Cut 2 inches larger than the panel)**
- **Autoclave tray or aluminum base plate 0.5 inch minimum thickness, treated with release agent.**

Note: These guidelines are provided to assist Park material users with general recommendations for successful processing. The recommendations are for general review purposes only and process adjustments may be required to achieve optimum results in your specific manufacturing environment.

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Technical Datasheet

Property	Lay-up	Condition	HTS45	IM7	HTS40	AS4
			35%/145gsm UDT	35%/145gsm UDT	38%/ 3KPW	38%/ 3KPW
Dry DMA Tg °C	17°C	Dry	209	213	209	213
Wet DMA Tg °C	17°C	Wet	160	163	160	163
Tension Strength, mPa	17°C	RTD	2068.4	2764.8	923.9	951.5
		-59°C	1992.6	2682.1	854.9	910.1
		121°C - Dry	2068.4	2661.4	965.3	951.5
		121°C - Wet	1868.9	2468.32	937.7	903.2
	32°C	RTD	53.8	66.9	847.4	899.8
		-59°C	53.8	41.4	800.5	841.2
		121°C - Wet	25.5	29.6	861.8	835.6
Tension Modulus, gPa	17°C	RTD	125.5	151	62.7	61.4
		-59°C	123.4	147.5	66.9	64.1
		121°C - Dry	126.2	153.1	63.4	59.9
		121°C - Wet	129.6	155.8	62.1	59.9
	32°C	RTD	8.8	9.4	64.1	62.1
		-59°C	10.3	9.8	64.8	62.1
		121°C - Wet	5.5	6.2	59.9	57.2
Compression Strength, mPa	17°C	RTD	1668.5	1661.6	875.6	848.1
		-59°C	1434.1	1709.9	889.4	875.6
		121°C - Dry	1461.7	1565.1	758.4	772.2
		121°C - Wet	1075.6	1082.5	572.3	586.1
	32°C	RTD	289.6	337.9	786	806.7
		121°C - Wet	199.9	213.7	496.4	572.3
Compression Modulus, gPa	17°C	RTD	122	144.8	57.9	57.2
		-59°C	121.3	142.7	59.3	55.8
		121°C - Dry	18.2	148.2	59.3	58.6
		121°C - Wet	18.0	148.2	59.9	56.5
	32°C	RTD	11	11	58.6	55.8
		121°C - Wet	8.3	8.9	58.6	57.2
IPS-Str, mPa	[+45°/-45°]2s	RTD	164.1	162.7	125.5	131
IPS-Mod, mPa	[+45°/-45°]2s	RTD	4.3	4.9	5.2	5.2
ILSS, mPa	17°C	RTD	92.4	144.1	74.5	78.6
G _{1c} , cm-kPa	17°C	RTD	0.48	0.32	1.58	1.55
UNT-Str, mPa	QI Balanced	RTD	786	910	661.9	689.5
OHT-Str, mPa	QI Balanced	RTD	372.3	455.1	337.8	344.7
		-75°F	358.5	461.9	310.3	317.2
UNC-Str, mPa	QI Balanced	RTD	675.7	710.2	641.2	634.3
		121°C - Wet	482.6	489.5	379.2	372.3
OHC-Str, mPa	QI Balanced	RTD	386.1	461.9	324.1	317.2
		121°C - Wet	268.9	248.2	234.4	234.4
CAI, mPa (1500 N*m/m)	QI Balanced	RTD	124.5	133.4	169.0	177.9

Cure Cycle: Autoclave / 2°F/min / 85 psi / 2 hrs at 350°F

250F Wet: Followed by conditioning at 160°F/85%RH

Std. Modulus data (AS4 and HTS40) is based on 3 lots of testing, Intermediate Modulus data (IM7 and HTS45) is based on 1 lot

Select mechanical data also available for Toray T830 6KPW and 6K8HS, Toray T800 12K UD, and Teijin IMS65 12K UD

