RESIN SYSTEM DATA SHEET

NAME:	MTM® 45-1 EPOXY MATRIX
MANUFACTURER	CYTEC SOLVAY GROUP
TYPE:	176 to 356°F (80-180°C) Cure Toughened Epoxy

PRODUCT DESCRIPTION:

MTM®45-1 is a flexible curing temperature, high performance, toughened epoxy matrix system optimised for low pressure, vacuum bag processing. MTM45-1 may be cured at temperatures as low as 80°C (176°F), allowing the use of low cost tooling for prototypes and short production runs. MTM45-1 offers a combination of properties that make it an ideal candidate for the Out-of-Autoclave (OoA) production of large aircraft primary structures. The process cost savings can equally be applied to other less critical structures such as fairings.

PRODUCT BENEFITS/FEATURES:	**TYPICAL APPLICATIONS:**
• High Damage Tolerance	• Aircraft Primary Structures
• Lower density for increased weight savings	• Rocket fairings or housings

NEAT RESIN PHYSICAL PROPERTIES:	
Resin Density:	1.18 g/cc
Resin Gel Time @ 266°F (130°C)	90 min.
Gel Time @ 356°F (180°C)	10 min.
Dynamic Viscosity	~8 Pa.s @ 266°F (130°C) (2°C/min)
DMA E' onset Tg, SACMA, 356°F (180°C) 2 hours Dry	356°F (180°C)
DMA E' onset Tg, SACMA, 356°F (180°C) 2 hours Wet	311°F (160°C)

FABRIC LAMINATE PROPERTIES:

MATERIAL	MTM45-1/CF0525*-36%RW	Cure Cycle	4 hours at 121°C (250°F)
		Post-Cure	2 hours at 177°C (350°F)

Test	Test method	Units	Test temperature/conditions				
			-54°C (-65°F) dry	20°C (68F°) dry	93°C (199°F) dry	93°C (199°F) wet	121°C (250°F) wet
0° Tensile strength	ASTM D3039	MPa (ksi)	896 (130)	904 (131)		844 (122)	885 (128)
0° Tensile modulus		GPa (msi)	65.8 (9.54)	63.5 (9.21)		64.4 (9.34)	75.8 (11.0)
90° Tensile strength		MPa (ksi)	846 (123)	858 (124)	822 (119)		748 (109)
90° Tensile modulus		GPa (msi)	62.9 (9.12)	60.9 (8.83)	59.3 (8.60)		61.5 (8.92)
0° Compressive strength	ASTM D6641	MPa (ksi)	687 (99.6)	644 (93.3)		448 (64.9)	351 (50.8)
0° Compressive modulus		GPa (msi)	58.2 (8.44)	58.3 (8.46)		69.6 (10.1)	
90° Compressive strength		MPa (ksi)	644 (93.4)	594 (86.1)		384 (55.6)	322 (46.7)
90° Compressive modulus		GPa (msi)	53.6 (7.77)	54.5 (7.90)		60.1 (8.72)	
In-plane shear strength (IPSS)	ASTM D3518	MPa (ksi)	91.4 (13.2)	68.6 (9.95)		38.0 (5.51)	30.9 (4.48)
In-plane shear modulus (IPSM)		GPa (msi)	4.30 (0.62)	3.70 (0.53)		2.60 (0.37)	2.20 (0.31)

FABRIC LAMINATE PROPERTIES: *(continued)*							
MATERIAL	MTM45-1/CF0525*-36%RW		Cure Cycle	4 hours at 121°C (250°F)			
			Post-Cure	2 hours at 177°C (350°F)			
0° Interlaminar shear strength (ILSS)	ASTM D2344	MPa (ksi)	80.4 (11.6)	71.8 (10.4)	59.5 (8.63)	43.4 (6.29)	34.2 (4.96)
Open hole tensile strength (Q/I laminate)	ASTM D5766	MPa (ksi)	342 (49.6)	356 (51.5)		372 (53.9)	350 (50.6)
Open hole compressive strength (Q/I laminate)	ASTM D6484	MPa (ksi)		278 (40.2)		219 (31.8)	194 (28.1)
Filled hole tensile strength (Q/I laminate)	ASTM D6742	MPa (ksi)	352 (51.1)	380 (55.1)			
Filled hole compressive strength (Q/I laminate)	ASTM D6742	MPa (ksi)		447 (64.7)			447 (64.7)
Compressive strength after impact (6.7 J/mm impact)	SACMA SRM2R-94	MPa (ksi)		225 (32.6)			
Data normalised to 0.254mm (0.010in) cured ply thickness except for ILSS and IPSS & IPSM							
**GF0103 is a 295 g/m2 8 harness satin fabric (7781 style) with E glass fibres*							

source: http://www.cytec.com/products/mtm45-1

prepared by: Elevated Materials (www.elevatedmaterials.com)