

## PRODUCT DATA SHEET

### DESCRIPTION

Toray Cetex<sup>®</sup> MC1200 is a thermoplastic bulk molding compound (BMC) based upon Cetex TC1200 PEEK thermoplastic uni-directional tape. Toray Cetex<sup>®</sup> MC1200 is offered on standard-modulus fibers lengths of up to 25.4 mm (1"). Intermediate modulus fibers and alternative lengths may also be available. Thermoplastic bulk molding compound allows part fabrication with short cycle times. This product allows complex shapes to be made with varying wall thickness, integrated ribs, and reinforcing structure. Many composite compression molded parts are used to replace metal parts for weight savings or they replace plastic injection molded parts where higher strengths or stiffness are required. Toray Cetex<sup>®</sup> MC1200-4A, PEEK, 25.4 mm (1") represents standard-modulus AS-4 fiber chopped to 25.4 mm (1") in length.

### FEATURES

- ▶ **Rapid processing**
- ▶ **Allows easy fabrication of complex shapes**
- ▶ **Easily processible with compression molding or thermforming processes**
- ▶ **Fire-retardant resin system, surpasses 35/35 OSU requirements**
- ▶ **Excellent solvent resistance, excellent moisture resistance**
- ▶ **High strength for good structural performance**
- ▶ **Ambient temperature storage**
- ▶ **Resin system has a T<sub>g</sub> of 143°C (290°F)**
- ▶ **Remoldable**

### PRODUCT TYPE

Polyether-ether-ketone Thermoplastic  
Bulk Molding Compound

### TYPICAL APPLICATIONS

- ▶ Metal to composite replacement
- ▶ Interior structures
- ▶ Automotive underhood applications
- ▶ Oil & Gas gaskets and pipe
- ▶ Aircraft brackets and structures
- ▶ Secondary access doors and enclosures

### SHELF LIFE

Indefinite at 25°C (77°F)

### TYPICAL NEAT RESIN PROPERTIES

Density	1.30 g/cc
Melt Temperature	343°C (649°F)
Recommended Processing Temperature	385°C (725°F)
Moisture Absorption	0.4%
Tensile Strength	14.5 ksi (100 MPa)
Tensile Modulus	3.7 GPa (0.537 Msi)
Elongation at Break	15%
Flexural Strength	170 MPa (24.7 ksi)
Flexural Modulus	4.1 GPa (0.456 Msi)
Izod Notched	2.1 ft-lb/in <sup>2</sup> (4.5 kJ/m <sup>2</sup> )



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### LAMINATES FABRICATED WITH 25.4mm (1") LENGTH TORAY CETEX<sup>®</sup> MC1200-4A BULK MOLDING COMPOUND USING XPRESS COMPRESSION MOLDING PROCESS

Used 146gsm faw AS-4 12k UD tape with 34% resin content

Property	Condition	Methods	Results	
Tensile Strength 0°	RTD	ASTM D 3039	288.9 MPa	41.9 ksi
Tensile Modulus 0°	RTD	ASTM D 3039	43.4 GPa	6.3 Msi
Flexural Strength 0°	RTD	ASTM D 790-3	657.8 MPa	95.4 ksi
Flexural Modulus 0°	RTD	ASTM D 790-3	40.0 GPa	5.8 Msi
Compressive Strength	RTD	ASTM D 6484	312.3 MPa	45.3 ksi
Compressive Modulus	RTD	ASTM D 6484	48.3 GPa	7 Msi
Open-Hole Comp. Strength	RTD	ASTM D 6484	282.0 MPa	40.9 ksi

### FLAME SMOKE TOXICITY TEST RESULTS

Verticle Burn, 60 Sec.	Required	Actual Result	Comment
Maximum Burn Time	15 seconds	0	PASS
Maximum Burn Length	15.4 mm (6")	0.7	PASS
Maximum Burning Particle Time	3 seconds	None	PASS
Horizontal Burn Max Burn Rate	63.5 mm (2.5")	0	PASS
<b>45° Burn 30 Sec.</b>			
Maximum Burn Time	15 seconds	0	PASS
Maximum Burn Length	10 seconds	0	PASS
Maximum Burning Particle Time	No Penetration	None	PASS
<b>OSU Results</b>			
2-Minute Heat Release	65 KW-min/m <sup>2</sup>	0	PASS
Maximum Peak Heat Release		39	PASS
FAA Smoke Density	200 units	0	PASS
NBS Smoke Density (Flaming)	200 units	0	PASS
NBS Smoke Density (Non-flaming)	200 units	1	PASS

Drager Tube Toxicity (BSS7239)	Flaming	Non-Flaming	Comment
HCN 150 PPM	1	1	PASS
CO 1000 PPM	88	18	PASS
NOx 100 PPM	4	< 1	PASS
SO2 100 PPM	< 1	< 1	PASS
HF 100 PPM	< 1	< 1	PASS
HCl 150 PPM	< 1	< 1	PASS

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### TYPICAL CONSOLIDATION PARAMETERS:

#### Thermoplastic BMC Molding Guidelines

1. Pre-weigh the desired amount of molding compound
2. Apply high temperature resistant mold release to mold cavity
3. Distribute molding compound in mold cavity as desired (bulk factor is approximately 4–8 to 1)
4. Heat mold or material to 385°C (725°F)
5. Apply one or more “debulk” pressure cycles as required (optional step)  
Apply pressure to 500 psi (34 bar), release, repeat as necessary
6. Consolidation Cycle: Pressurize to 500–1000 psi. Hold until all material has reached a minimum temperature of 385°C (725°F) for 0–2 minutes
7. Cool Cycle: Cool mold under pressure at 5–20°C/minute to maintain crystallinity for best solvent resistance. Release pressure when part temperatures is below material  $T_g$  143°C (290°F).



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