

COMPOSITE TECHNOLOGIES

TECHNICAL DATA SHEET

CM11

Visual Composite
Class-A Surface / Snap Cure Epoxy

Product

CM11 is a fast curing visual epoxy system with a press curing method for the needs of visual parts used in the Automotive Industry. Its short curing cycle and hot de-moldable nature are specially optimized for mass production. Hot melt processing provides volatile-free, non-toxic curing and handling.

Typical

- » Suitable for fast press molding
- » Class A Surface quality
- » Good hot de-molding performance
- » Suitable for structural applications
- » Good chemical resistance
- » Suitable for Cataphoresis/ Hot Painting/ Hot adhesive bonding
- » Suitable for autoclave short curing cycle

Resin Matrix Properties

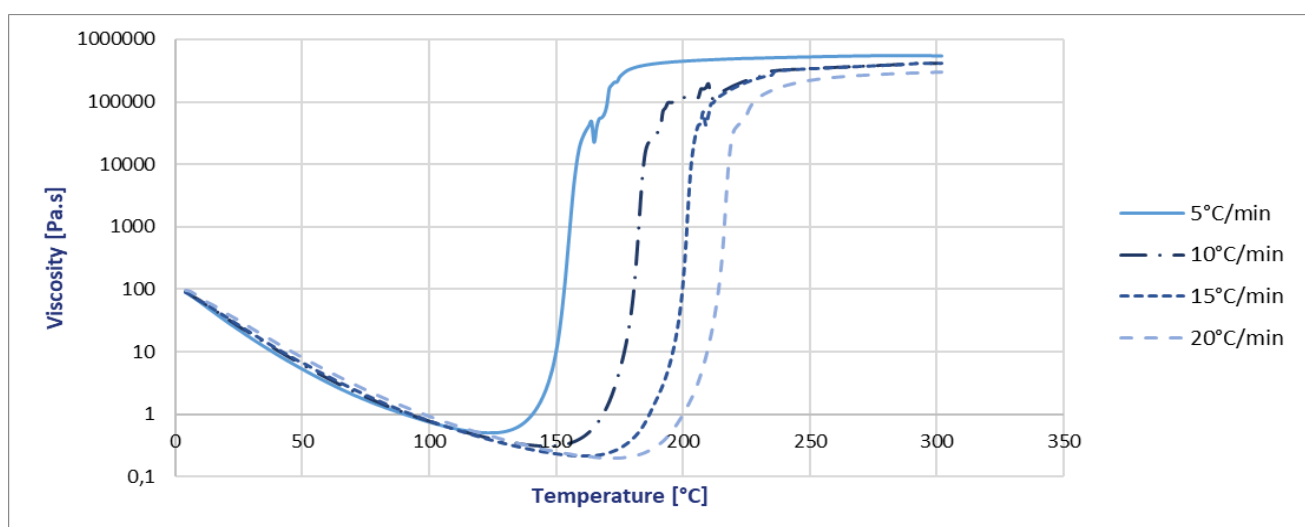


Figure 1 Rheology of CM11

***Our products are flexible by design:
Additional weights, roll sizes, and reinforcements are available.***

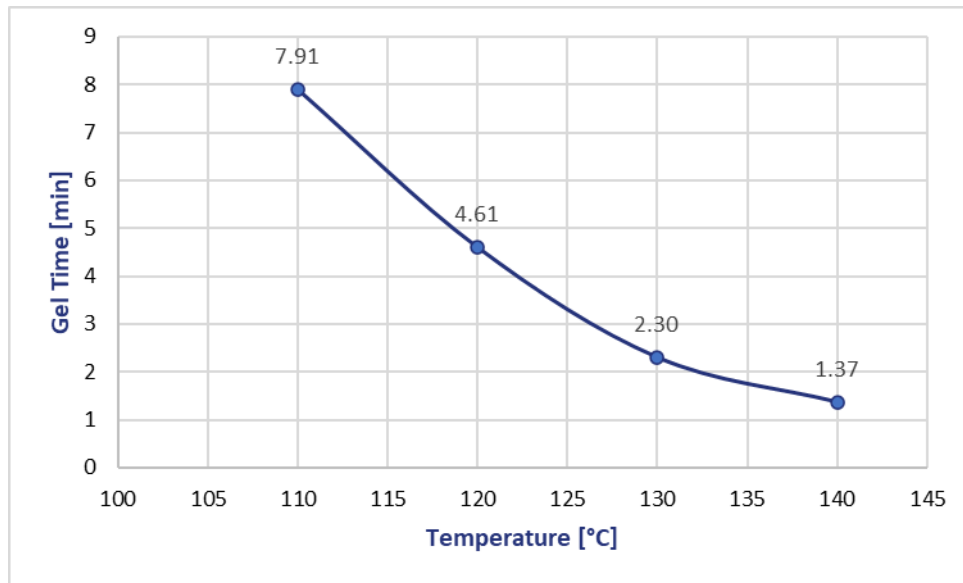


Figure 2 Gel Time of CM11

Resin Properties

Property	Test Method	Value
Resin Density	TS EN 1183-3	1.21 g/cm ³
Resin Color	N/A	Transparent
Resin Elastic Modulus	ISO 527-2	3.48 GPa
Resin Tensile Strength	ISO 527-2	54.5 MPa

Product Reinforcements

Kordsa Composite Europe, Istanbul (Typical, Additional weights, roll sizes, and reinforcements are available)

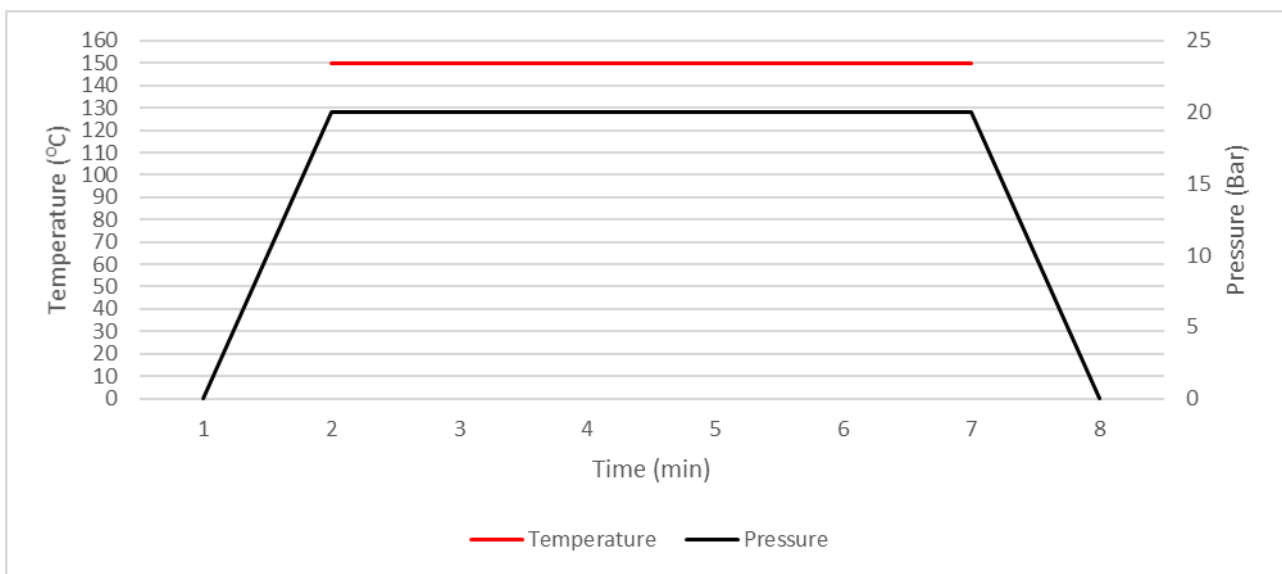
Reinforcement Code	Fiber	Areal Weight (g/ m ²)	Weaving Style	Warp Density (picks / cm)	Weft Density (picks / cm)
TW245	3K TC33	245± 3%	2*2 TWILL	6.1 ± 0.1 /cm	6.1 ± 0.1 /cm
TW600	12K GR34700	600 ± 3%	2*2 TWILL	3.7 ± 0.1 /cm	3.7 ± 0.1 /cm
TW400	12K GR34700	400 ± 3%	2*2 TWILL	2.5 ± 0.1 /cm	2.5 ± 0.1 /cm

Recommended Cure Cycles

Optimum properties are achieved under cured according to one of the following:

Cure Temperature (°C)	Cure Duration (min)
130	20 minutes
140	10 minutes
150	5 minutes
160	4 minutes

Recommended Press Curing Cycle at 150 °C of CM11



Pressure: Minimum of 7 bar (7.2 kg/cm²) (*) up to 30 bar is recommended for 3D part geometries.

Ramp Rate: Consolidated prepregs (preforms) can be loaded into a pre-heated tool (compression molding), as quick as possible closing the mold and direct application of 7 bars are strongly recommended.

Recommended Cure Cycle: 5 minutes at 150°C +/-5°C with 7 to 30 bars pressure at press

Cool Down: Cured parts can be removed from tool without cooling (hot demolding).

Post-Cure Cycle (If needed): 2 hours at 180°C inside an oven.

Physical and Mechanical Properties (Examples only. For the wider prepreg range, please contact Kordsa)

Press Curing Cycle at 150 °C, 30 bar (These values are without post-cure and obtained under dry conditions. If properties after post cure and/or wet conditions are required, consult Kordsa)

Mechanical Properties for Carbon Fiber Reinforcement

Property	Standard	Test Temp.	Property	35% RC/ UD150 34700 12KM	40% RC/ TW200 TR30S
Tensile (0°)	EN 2561	25 °C	Tensile Stress MPa (ksi)	2193 (318.1)	787.8 (114.3)
			Poisson's Ratio	0.29	0.04
			Modulus GPa (msi)	144.7 (21)	65.9 (9.6)
Tensile (90°)	EN 2561 / ASTM D3039	25 °C	Tensile Stress MPa (ksi)	-	750.3 (108.8)
			Poisson's Ratio	-	0.04
			Modulus GPa (msi)	-	62.5 (9.1)
Compression (0°)	EN 2850	25 °C	Compressive Stress MPa (ksi)	1383 (200.6)	634 (91.9)
			Chord Modulus GPa (msi)	125.5 (18.2)	49.5 (7.2)
Compression (90°)	EN 2850	25 °C	Compressive Stress MPa (ksi)	-	641.0 (93.0)
			Chord Modulus GPa (msi)	-	50.7 (7.4)
ILSS	EN 2563	25 °C	ILSS MPa (ksi)	-	61.35 (8.9)
IPSS	EN 6031/ ASTM D3518	25 °C	Shear Strength MPa (ksi)	-	74.8 (10.8)
			Shear Chord Modulus GPa (msi)	-	5.3 (0.8)
DMA	EN 6032	Range	E' (°C) (°F)	141.2 (286.2)	145.7 (294.3)
			Tan (δ) (°C) (°F)	177.9 (352.2)	178.1 (352.6)
			E'' (°C) (°F)	172.4 (342.3)	172.5 (342.5)
DMA*	EN 6032	Range	E' (°C) (°F)	150.9 (303.6)	-
			Tan (δ) (°C) (°F)	171.6 (340.9)	-
			E'' (°C) (°F)	166.2 (331.2)	-
DSC	EN 6041	Range	DOC (%)	96	97

*Post Cure: 2 hours at 180°C inside an oven.

Mechanical Properties for Carbon Fiber Reinforcement

Property	Standard	Test Temp.	Property	48% RC/ TW245 TC33	45% RC/ TW245 TR30S
Tensile (0°)	ASTM D3039	25 °C	Tensile Stress MPa (ksi)	716.5 (103.9)	627 (90.9)
			Poisson's Ratio	0.02	0.04
			Modulus GPa (msi)	57.3 (8.3)	61.1 (8.9)
Tensile (90°)	ASTM D3039	25 °C	Tensile Stress MPa (ksi)	747.4 (108.4)	576 (83.5)
			Poisson's Ratio	0.02	0.02
			Modulus GPa (msi)	67.4 (9.8)	54 (7.8)
Compression (0°)	ASTM D3410	25 °C	Compressive Stress MPa (ksi)	492.8 (71.5)	440.3 (63.9)
			Chord Modulus GPa (msi)	50.9 (7.4)	56.2 (8.2)
Compression (90°)	ASTM D3410	25 °C	Compressive Stress MPa (ksi)	557.6 (80.9)	427.2 (62)
			Chord Modulus GPa (msi)	54.2 (7.9)	53.1 (7.7)
ILSS	ASTM D2344	25 °C	ILSS MPa (ksi)	54.5 (7.9)	72.8 (10.6)
4 Point Bending	ASTM D7264	25 °C	Flexural Strength MPa (ksi)	774.8 (112.4)	794.7 (115.3)
			Chord Modulus GPa (msi)	77 (11.2)	74.8 (10.8)
DMA	EN 6032	Range	E' (°C) (°F)	144.6 (292.3)	142.3 (288.1)
			Tan (δ) (°C) (°F)	179.4 (354.9)	178.6 (353.5)
			E'' (°C) (°F)	175.5 (347.9)	174.5 (346.1)
DSC	EN 6041	Range	DOC (%)	97	97

Mechanical Properties for Glass Fiber Reinforcement

Property	Standard	Test Temp.	Property	40% RC /8HS300 /7781
Tensile (0°)	EN 2747	25 °C	Tensile Stress MPa (ksi)	484.9 (70.3)
			Poisson's Ratio	0.12
			Modulus GPa (msi)	25.2 (3.6)
Compression (0°)	EN 2850	25 °C	Compressive Stress MPa (ksi)	436.8 (63.4)
			Chord Modulus GPa (msi)	27.5 (4)
Compression (90°)	EN 2850	25 °C	Compressive Stress MPa (ksi)	394.8 (57.3)
			Chord Modulus GPa (msi)	24.8 (3.6)
ILSS	EN 2377	25 °C	ILSS MPa (ksi)	51.2 (7.4)
IPSS	EN 6031	25 °C	Shear Strength MPa (ksi)	112.1 (16.3)
			Shear Chord Modulus GPa (msi)	3.8 (0.6)
DMA	EN 6032	Range	E' (°C) (°F)	156.8 (314.2)
			Tan (δ) (°C) (°F)	180.6 (357.1)
			E'' (°C) (°F)	176.3 (349.3)
DSC	EN 6041	Range	DOC (%)	97
Composite Density	ASTM D792	25 °C	Density (g/cm ³)	1.9

Storage Requirements

Shelf life is from date of manufacturing according to storage temperature below. Working life is the cumulation of time outside of storage temperature.

Storage Condition	CM11
Shelf Life at -18 °C	6 months
Work Life at 24 °C	14 days
Tack Life at 24 °C	5 days

Handling & Safety Instructions

- » Store prepreg suspended horizontally to avoid flat spots and thinning under the weight of the roll.
- » Allow product sufficient time (at least 24 hours) to reach ambient temperatures after removal from cold storage to prevent condensation on the adhesive surface.
- » Use the appropriate safety equipment for this product.
- » Refer to the CM11 Material Safety Data Sheet for specific safety instructions.

Technical Assistance

In a bind? Call us anytime. We provide fast and knowledgeable technical support:

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Ver: August.2022

<https://www.kordsa.com>
<https://composite.kordsa.com>

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