

Introduction

Crestafire® GCS 1001E is a non-accelerated, low smoke, fire-retardant **intumescent** polyester-based gelcoat designed to be applied by spray in a thin layer of 500-750µm.

The gelcoat incorporates intumescent technology, meaning that when exposed to fire, cured Crestafire GCS 1001E will form a cellular charred layer on its surface which offers a high degree of protection to the laminate behind.

Crestafire® GCS 1001E is halogen free and does not contain heavy metals. It is restricted to a light grey colour and is designed to be **post-painted**.

Approvals

Fully cured laminates produced with Crestafire® GCS 1001E and Crestafire® P1-3001PA resin can achieve:

HL2 – R1/R7R10/R17 fire ratings according to EN45545-2:2013 for rail applications.

Fully cured laminates produced with Crestafire® GCS 1001E and Crystic VE 679-03PA (non fire-retardant Vinyl ester infusion resin) can achieve:

HL2 – R17 fire ratings according to EN45545-2:2013 for rail applications.

Typical Liquid Gelcoat Properties

Liquid Property	Unit	Crestafire® GCS 1001E
Viscosity, ICI cone & plate, 25°C	Poise	6
Viscosity, Brookfield Spindle 5 at 2.5 RPM, 25°C	mPa.s	38000
Viscosity, Brookfield Spindle 5 at 20 RPM, 25°C	mPa.s	10000
Geltime at 25°C using: 0.25% Cobalt (6% Solution) + 1.50% Butanox M50	Minutes	20
Specific Gravity	-	1.4
Volatile Content	%	24
Stability from date of manufacture when stored in accordance with storage recommendations	Months	3

Typical Cast Gelcoat Properties

Cured Property*	Test Method	Unit	Crestafire® GCS 1001E
Barcol Hardness (Model GYZJ 934-1)	EN59	-	45
Water Absorption, 24 hours, 23°C	BS EN ISO 62 part 6.2	mg	53
Heat Deflection Temperature (1.8MPa) †	BS EN ISO 75-2 (1996)	°C	60
Elongation at Break	BS EN ISO 527-2	%	0.8
Tensile Strength	BS EN ISO 527-2	MPa	25

* Curing Schedule – 24hrs at 20°C + 3hrs at 80°C

† Curing Schedule – 24hrs at 20°C + 5hrs at 80°C + 3hrs at 120°C

Application

Crestafire® GCS 1001E is designed for spray application.

Do:	Don't:
Use a hard wax to release the mould prior to spraying the GCS 1001E	Use a liquid semi-permanent release agent to release the mould as many are not compatible with GCS 1001E and can cause pre-release.
Stir the gelcoat by hand or low shear stirrer before use. In the event any filler sedimentation has occurred during storage, make sure this is completely redispersed throughout the gelcoat before use.	Allow vapour to be retained in deep mould sections as this can cause slow curing.
Ensure the gelcoat has attained a workshop temperature of 18°C – 25°C before use.	Apply excessive thickness in corner areas as this can cause pre-release.
Add between 0.2 – 0.3% of a cobalt 6% solution, and 1.0 – 1.5% of a medium reactivity MEKP type catalyst.	Apply backing laminate before the gelcoat has reached an appropriate degree of cure.
Apply a mist coat and then build up thickness in long, even passes until the recommended wet film thickness of 500-750 microns is reached.	Stir the gelcoat with high shear mixers as this will temporarily break down the thixotropy leading to drainage.
Apply the first layer of laminate within 24 hours of gelcoat application to ensure adequate adhesion between the backing resin and the gelcoat.	Apply less than 500 microns in any area. To maximise fire performance the wet film thickness should be applied between 500 – 750 microns.

Note: Successful spraying of Crestafire® GCS 1001E depends on many variables such as the pump ratio, air input pressure, nozzle size and angle, and hose length and diameter. Scott Bader recommends the use of an airless spray machine with a **minimum pump ratio of 20:1**, and a **nozzle size/angle of 623/50°**. Alternatively, if using a standard gravity pot gun, use an air pressure of 4.0-5.5 bar (70-80 PSI) and a size 8 nozzle tip.

For components that will be exposed to the outdoor environment, the use of a suitable protective paint/varnish is recommended.

The thickness of the final laminate and its entire construction, including any coatings, variation in resin content, sandwich components, etc., has a decisive influence on fire performance. Please note that fire tests on individual component are mandatory for most applications (for more details on laminate constructions and compatible paints/ varnishes please seek assistance from our Technical Services Department).

Before Use

Crestafire® GCS 1001E should be allowed to attain a working temperature of 18 - 25°C before use.

Crestafire® GCS 1001E requires the addition of an accelerator and medium reactivity MEKP type catalyst to start the curing reaction. The recommended accelerator is Cobalt (6% solution) which should be added at 0.2% - 0.3% into the gelcoat, and the catalyst is Butanox M50 which should be added at 1.0 - 1.5% into the gelcoat. The accelerator and catalyst should be thoroughly incorporated into the gelcoat, one at a time, using a low shear mechanical stirrer where possible.

N.B. Catalyst and accelerator must not be mixed directly together as they can react with explosive violence.

Additives

The addition of fillers or pigments to Crestafire® GCS 1001E may adversely affect the fire performance, working characteristics and cure of this material and is therefore not recommended. It incorporates anti-settling additives to minimise filler settlement during storage and promote easy filler re-dispersion. Mild settling may occur after prolonged storage, so it is always recommended to stir the gelcoat before use to ensure uniform filler distribution.

Post Curing

For many applications, Crestafire® GCS 1001E will perform adequately when cured at workshop temperature (18°C - 25°C). However, for optimum properties, and to achieve the highest fire performance, the components should be allowed to cure for 24 hours at 20°C, and then be oven-cured for either 16 hours at 40°C or 3 hours at 80°C.

Storage

Crestafire® GCS 1001E should be stored between 5°C and 25°C in the original, unopened container in a dry, well-ventilated place. Protect from freezing and direct sunlight. Avoid contact with oxidising agents. Stored outside of these recommendations, shelf life will be significantly reduced.

Packaging

Crestafire® GCS 1001E is supplied in 25kg & 225kg containers.

Health and Safety

Please see separate Safety Data Sheet.

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