

Introduction

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

It incorporates new intumescent technology. When exposed to fire, Crestafire® GCS 1001 E forms a foamed cellular charred layer offering a high degree of protection to the surface of the composite.

Crestafire® GCS 1001 E is restricted to standard light grey colour and is designed to be **post-painted**.

Approvals

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

HL2 - R1/R7/R10/R17 fire ratings as per EN 45545-2:2013 for railway applications.

Properly cured laminates made 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 properties

Property	Unit	Liquid Gelcoat
Viscosity, ICI cone & plate, 25°C	Poise	6
Viscosity, Brookfield SP5 at 2,5rpm, 25°C	MPa.s	38000
Viscosity, Brookfield SP5 at 20rpm, 25°C	MPa.s	10000
Specific Gravity at 25°C		1.4
Stability from date of manufacture when stored in accordance with storage recommendations	Month	3
Volatile Content	%	24.3

Property	Test Method	Unit	Cured Gelcoat
Barcol Hardness (Model GYZJ 934-1)	EN59		45
Water Absorption 24 hrs at 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 of 24hrs at 20°C + 5hrs at 80°C + 3hrs at 120°C

Geltimes & Back-up times

Temperature	Curing system	Geltime	Back-up time
25°C	1,5% MEKP 50%** 0,25% cobalt (6%)	20 minutes	45 – 60 minutes

**Geltimes and back-up times tested under laboratory conditions and are to be used for guidance only. For longer geltimes, alternative catalysts and/or inhibitors can be used. Please consult the technical support department for more information.

Applications

Crestafire[®] GCS 1001 E is designed for spray application.

Do	Don't
Stir the gelcoat by hand or low shear stirrer before use. In the event filler sedimentation occurs during storage, make sure this is completely redispersed again in 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 20°C - 25°C before use.	Apply excessive thickness in corner areas as this can cause pre-release.
Add between 1.0 – 1.5% of a medium reactivity MEKP type catalyst. Stir the gelcoat by hand or low shear stirrer.	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 0.5mm (500 micron) 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.	Apply more or less than 500 microns in any area.

Note 1: Successful application of Crestafire[®] GCS 1001 E depends on many variables such as the pump ratio, air input pressure, nozzle tip size and angle, tube hose size diameter and length.

Scott Bader recommend 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 4-5.5 bar (70 – 80 PSI) and a size 7 or 8 nozzle tip.

Note 2: To maximise the fire properties, the gelcoat wet film should be applied at a thickness of **500 microns**.

The laminating process can be carried out approximately **1 hour after gelcoat application** thereby ensuring excellent adhesion between the gelcoat and the backing resin. To ensure adequate adhesion between the gelcoat and the backing resin, lamination must occur within 24h from gelcoat application.

For components that will be exposed to the outdoor environment, Scott Bader recommend the use of a suitable protective paint and/or varnish.

The thickness of the final laminate and its entire construction, including any coatings, applications, sandwich components, etc., also has a decisive influence on fire performance.

Please note that individual component tests are mandatory for most applications (for more details on laminate constructions and compatible paints/ varnishes please seek assistance from our Technical Support Department).

Note 3: A hard wax should be used to release the mould prior to spraying. Many liquid semi-permanent release agents are not compatible with Crestafire GCS 1001E

Additives

The addition of fillers or pigments to Crestafire® GCS 1001 E will adversely affect the fire properties and cure of this material and is not recommended.

Before use

Crestafire® GCS 1001 E should be allowed to attain a working temperature between 23°C-25°C before use for best spraying application. Stir well by hand or with a low shear stirrer to avoid aeration and then allow to stand to regain thixotropy. Crestafire® GCS 1001 E requires only the addition of a medium reactivity MEKP (50%) type catalyst to start the curing reaction. The catalyst should be added at 1.0% into the gelcoat and then thoroughly incorporated with a low shear mechanical stirrer where possible.

Post curing

For many applications, Crestafire® GCS 1001 E will perform adequately when cured at workshop temperature (20°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 16 hours at 40°C or 3 hours at 80°C.

Storage

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

Health and safety

Please see separate Safety Data Sheet.