

PRELIMINARY PRODUCT INFORMATION

Product Description

VTS243FR is a black-pigmented, flame-retarded, epoxy syntactic-core film capable of initial cure temperatures between 65°C -150°C (149°F - 302°F). Following postcure, a Tg of at least 160°C (320°F) can be achieved. The material is formulated for co-cure with ACG's VTM™240 series of prepregs and XVTF242FRB surfacing film.

VTS243FR is self-extinguishing when tested to ISO3795/FMVS302. It is used as a core material to provide rigidity in thin planar components and is a key component of the BPS240 body panel material system, which has its own set of Technical Datasheets. In this form it is supplied attached to a structural fabric, into which it will infuse during cure.

It can also be supplied in sheet form with a lightweight support scrims for general purpose use in constant thickness composite sandwich constructions.

Features

- High performance resin system designed for service temperatures of up to 155°C (311°F).
- Flexible cure characteristics from 65°C – 150°C (149°F - 302°F) under vacuum-only or higher pressures.
- Available on scrim carriers and structural carbon-fibre or glass-fibre fabrics.
- Flame Retardant – self-extinguishing when tested to ISO3795/FMVS302.

Cured VTS243FR Properties

Tg (DMA 5% Modulus Loss)	123°C (from 120°C cure) 163°C (with 180°C postcure)
Cured Resin Density (120°C/6bar autoclave cure)	950 kg/m ³
Tensile Strength	<i>To be determined</i>
Compressive Strength	<i>To be determined</i>
Shear Strength	<i>To be determined</i>
Shear Modulus	<i>To be determined</i>
Shear Elongation	<i>To be determined</i>

Storage

When not in use, VTS243FR should ideally be stored in a freezer or refrigerator. At -18°C (0°F) a shelf-life in excess of 12 months can be expected. The maximum worklife at 21°C (70°F) is expected to be 15 days.

When the materials are removed from the freezer it is essential that they are allowed to thaw entirely and reach room temperature BEFORE the polyethene bag is opened. Typically the thaw time for a 20lm roll taken from -18°C (0°F) storage into a 21°C (70°F) room may be between 4 -6hrs.

Unless the materials are allowed to fully thaw, condensation may form on the material – moisture within a curing laminate may be extremely detrimental to final part quality and appearance. When materials are returned to the freezer the material MUST be resealed to prevent ingress of moisture.

Curing Instructions

VTS243FR is designed primarily for vacuum-bag curing, though it is also useful in autoclaved and pressed components.

In most instances the surrounding laminate will determine the cure cycle for components containing VTS243FR laminæ. In common with other materials from the VTM240-series, the following cure temperature/times are recommended:

16hrs @ 65°C (149°F)

5hrs @ 80°C (176°F)

2hrs @ 100°C (212°F)

60mins @ 120°C – standard recommended conditions

45mins @ 150°C (302°F)

Ramp-rates will usually be determined by the surrounding materials – typically a VTM laminate will be heated at 0.5-2.0°C/min to the peak dwell temperature and cooled at ≤3.0°C/min. The component should be at least 20°C (68°F) below the cure temperature before being released from the tooling.

Where the required service-temperature of the components exceeds the initial cure temperature, a freestanding postcure of the laminate is recommended. With temperature ramp-up rates of ≤20°C/hr, the component should be postcured to at least 20°C (68°F) above it's intended service-temperature (up to a maximum of 180°C (356 F)).

ATTENTION:

It is always recommended that intended cure cycles be assessed by the manufacture of representative test panels. These should assess the effect of tooling materials, oven heat input, vacuum consumable stacks, etc., on the final cured-panel quality.

Availability

In sheet form VTS243FR is available incorporated with a 44gsm cotton scrim (CS44) in a standard thickness of 0.5mm (0.02in), referred to as:

VTS243FR/CS44-0.5mm

Additionally, 0.5mm (0.02in) sheets can be laminated by ACG into multiple ply-stacks, and supplied in 0.5mm (0.02in) incremental thickness up to 4mm (0.15in).

VTS243FR may also be attached to various structural fabrics from ACG's range. The following products are offered in roll formats as standard:

VTS243FR/CF3500-0.75mm CF3500 fabric = HS(12K)carbon-380gsm- 2x2 twill

VTS243FR/GF1100-1.0mm GF1100 fabric = E-glass-390gsm- 2x2 twill

Typically, up to 50% of the syntactic film weight is available to 'donate' resin for infusion into the carrier fabric.

Health and Safety

VTS243FR contains epoxy resins that can cause allergic reactions by skin contact. Avoid prolonged or repeated skin contact – the use of gloves and protective clothing is advised.

Where contact occurs, clean the skin thoroughly using soap & water or proprietary resin-removers. DO NOT USE SOLVENTS FOR SKIN-CLEANSING.

In the un-cured state, VTS243FR materials attached to structural fabrics will contain dry fibres. Small amounts of these fibres may be released during cutting & handling of the materials. Skin contact with these fibres should be minimised, as should dispersal of the fibres into the workplace. Particular care should be taken using carbon fibre materials around electrical products – such equipment should be made intrinsically safe.

For further information please consult ACG **Material Safety Data Sheet MSDS No 428**, available from ACG upon request.