

## Technical Guide - EN 45545-2 Test Results

# Evopreg<sup>®</sup> PFC502

Fire-retardant prepregs with low environmental impact

### Introduction

Evopreg<sup>®</sup> PFC502 prepregs are a range of fire-retardant, pre-impregnated composite materials based on a polyfurfuryl alcohol (PFA) bioresin.

PFA is a thermosetting bioresin derived from crop waste and is similar to phenolic resin but with lower toxicity and VOC emissions. In addition to its environmental credentials, PFA has outstanding fire retardant properties, plus excellent temperature and chemical resistance.

The prepregs can be supplied with a range of reinforcement fibres and fabric constructions. They can be consolidated by vacuum bagging, autoclave or press moulding and are designed for applications including rail interiors, aircraft interiors, marine, offshore and construction.

This document summarises test results for Evopreg<sup>®</sup> PFC502 according to EN 45545-2 "Railway applications. Fire protection on railway vehicles. Requirements for fire behaviour of materials and components". In these tests, Evopreg<sup>®</sup> PFC502 achieves Hazard Level 3 (HL3) classification with both glass fibre and carbon fibre reinforcements.

### EN 45545-2 Test Results - Evopreg<sup>®</sup> PFC502 with Glass Fibre

Data for laminates made from 8 plies of Evopreg<sup>®</sup> PFC502 with 300g/m<sup>2</sup> 8HS 7781 style woven glass fibre and 40% resin content by weight, cured in an autoclave for 1 hour at 140°C. Thickness 2 mm.

Requirement R1 relates to interior surfaces. R6 relates to passenger seat shells.

| Requirement set | Test method reference                      | Parameter                | Units             | Result average | Class |
|-----------------|--|--------------------------|-------------------|----------------|-------|
| R1              | T02 ISO 5658-2                             | CFE                      | kW/m <sup>2</sup> | 45.93          | HL3   |
| R1, R6          | T03.01 ISO 5660-1, 50 kW/m <sup>2</sup>    | MARHE                    | kW/m <sup>2</sup> | 32.46          | HL3   |
| R1, R6          | T10.01 EN ISO 5659-2, 50 kW/m <sup>2</sup> | D <sub>s</sub> 4         | -                 | 22.88          | HL3   |
| R1, R6          | T10.02 EN ISO 5659-2, 50 kW/m <sup>2</sup> | VOF4                     | min               | 80.46          | HL3   |
| R1, R6          | T11.01 EN ISO 5659-2, 50 kW/m <sup>2</sup> | CIT <sub>G</sub> (4 min) | -                 | 0.1536         | HL3   |
|                 |  | CIT <sub>G</sub> (8 min) | -                 | 0.2555         | HL3   |

## EN 4545-2 Test Results - Evopreg<sup>®</sup> PFC502 with Carbon Fibre

Data for laminates made from 5 plies of Evopreg<sup>®</sup> PFC502 with 650g/m<sup>2</sup> HS 12K 2x2 twill woven carbon fibre and 38% resin content by weight, cured in an autoclave for 1 hour at 140°C. Thickness 3mm.

| Requirement set | Test method reference                      | Parameter                | Units             | Result average | Class |
|-----------------|--|--------------------------|-------------------|----------------|-------|
| R1              | T02 ISO 5658-2                             | CFE                      | kW/m <sup>2</sup> | 32.3           | HL3   |
| R1, R6          | T03.01 ISO 5660-1, 50 kW/m <sup>2</sup>    | MARHE                    | kW/m <sup>2</sup> | 43.57          | HL3   |
| R1, R6          | T10.01 EN ISO 5659-2, 50 kW/m <sup>2</sup> | D <sub>s</sub> 4         | -                 | 79.07          | HL3   |
| R1, R6          | T10.02 EN ISO 5659-2, 50 kW/m <sup>2</sup> | VOF4                     | min               | 150.76         | HL3   |
| R1, R6          | T11.01 EN ISO 5659-2, 50 kW/m <sup>2</sup> | CIT <sub>G</sub> (4 min) | -                 | 0.0874         | HL3   |
|                 |  | CIT <sub>G</sub> (8 min) | -                 | 0.1771         | HL3   |

## Disclaimer

The information provided here is believed to be accurate but should be considered indicative only. It is the responsibility of the customer to check the suitability of the product for their specific application prior to use.