SGi 128 / SD 228
Fire resistant epoxy gel coat

Epoxy gel coat system **SGi 128 / SD 228**:

- is a fire resistant epoxy gel coat system, halogen free and flame retardant
- has a low smokes opacity and toxicity.
- require post curing in the mould before the part's release.

This system allows getting:

- RAILWAY standard EN45545-2 : R6 HL1, HL2
- BUILDING & CONSTRUCTION standard ASTM E84-15b : Class A

The approvals are detailed on the last page of this technical data sheet.

Epoxy resin SGi 128

Appearance / Colour		White gel
Storage stability		2 years @ 20 °C Stir thoroughly before use
Viscosity (mPa.s) Rheometer CP 50 mm Shear rate 10 s-1	@ 15 °C @ 20 °C @ 25 °C @ 30 °C @ 40 °C	18 500 ± 3 700 12 200 ± 2 500 8 570 ± 1 800 6 330 ± 1 300 3 850 ± 800
Density Pycnometer ISO 2811-1	@ 20 °C	1,27 ± 0,01
Refractive Index	@ 25°C	1,5437 ± 0,0005

Hardeners SD 228

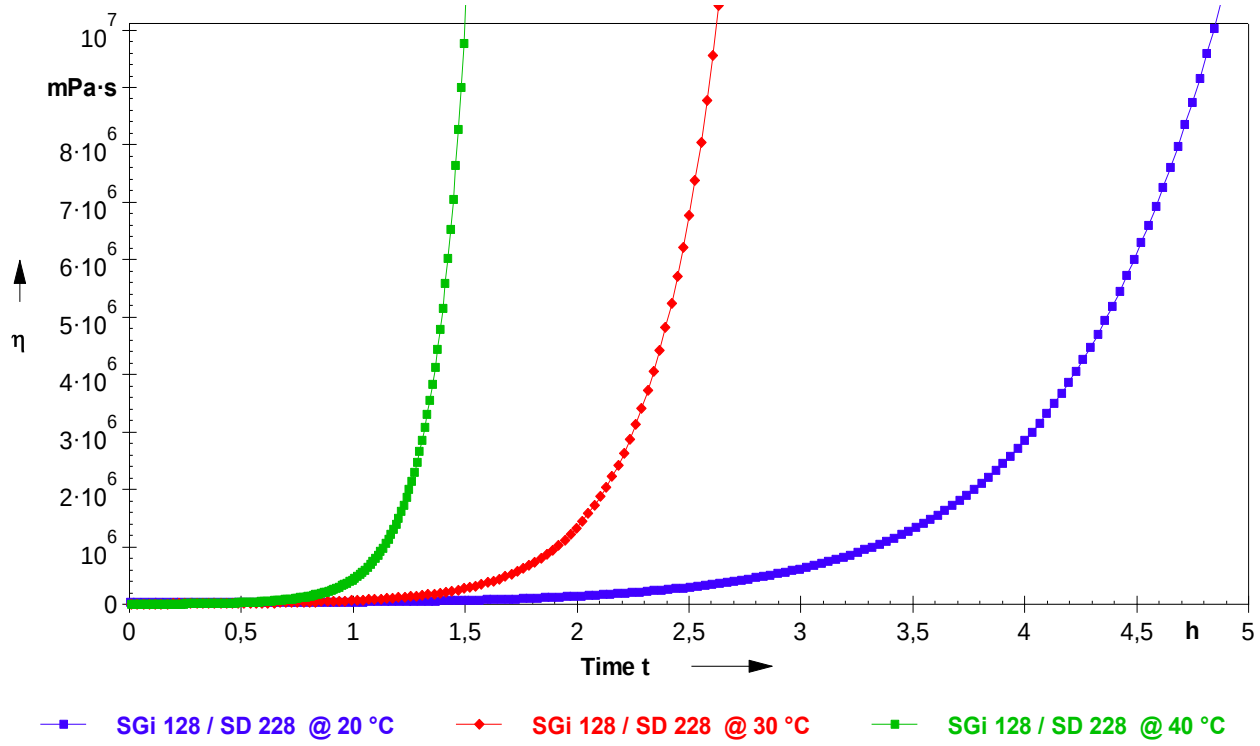
Appearance / Colour		White gel
Storage stability		1 years @ 20 °C Stir thoroughly before use
Viscosity (mPa.s) Rheometer CP 50 mm Shear rate 10 s-1	@ 15 °C @ 20 °C @ 25 °C @ 30 °C @ 40 °C	9 760 ± 2 000 6 600 ± 1 500 4 750 ± 1 000 3 580 ± 800 2 290 ± 500
Density Helium Pycnometer	@ 20 °C	1,41 ± 0,01
Refractive Index	@ 25°C	1,5368 ± 0,0005

Blends Epoxy gel coat SGi 128 / SD 228

Appearance uncured		White gel
Mixing ratio by weight		100 / 70
Viscosity (mPa.s) Rheometer CP 50 mm Shear rate 10 s-1	 @ 20 °C @ 30 °C @ 40 °C	 13 000 6 700 4 200
Consumption (coating thickness 550 to 750 µm)	@ 25 °C	750 to 1 000 g/m²

Reactivity

Increase of viscosity on a layer of 1 mm film thick @ 20, 30, 40 °C



Gel time on a layer of 1 mm thick

Temperature	20 °C	30 °C	40 °C
Gel Time	6 h 40 min	3 h 30 min	1 h 50 min

Glass Transition Temperature on cast resin

	SGi 128 / SD 228
Curing schedule	24 h @ 25 °C 16 h @ 60 °C
DSC $T_{G1\ onset}$ °C $T_{G2\ max}$ °C	 73 73

Tests carried out on samples of pure cast resin, without prior degassing, between steel plates.
Measures undertaken according to the following norms:

Tensile:	ISO 527-2		
Flexion:	ISO 178		
Compression:	ISO 604		
Shear:	ASTM D732-93		
Charpy impact strength:	NF T 51-035		
DSC glass transition:	ISO 11377-2:1999 -5°C to 180°C under nitrogen gas	T_{G1} or Onset:	1st run at 20 °C/min
		T_{G1} maximum or Onset:	2nd run at 20 °C/min
Glass transition DTMA:	ISO 11357-1 - T_G onset G'	Temperature ramp 0°C to 180 °C @ 2°C/min	
	ASTM D4065 - T_G peak G''	Temperature ramp 0°C to 180 °C @ 2°C/min	
Density:	ISO 2811-1		
Viscosity:	ISO 3219 - Rheometer - CP 50 mm - Shear rate 10 s-1		
Gel time:	Crossing of the G'G'' curves method		
GreenCarbon content:	ASTM D6866 or XP CEN/TS 16640 Avril 2014		

Fire Resistance Certifications

Standards	**EN 45545-2** March 2013	**ASTM E84-15b**
Sector	Railway	Building & Construction
Laboratory	LNE– France	Thomas Bell-Wright International consultant – U.A.E.
Test / report:	Orientation Results	PE074 REV 1
Samples	**SGi 128 / SD 228 :** 0,7 mm Substrate material : 2 QX Glass 1,5 kg/m² + SR 1124/SD 4771	**SGi 128 / SD 228 :** 0,75 mm Substrate material : 200 gsm verranne 6 QE 1000 Glass + SR 1125 Th / SZ 8513
Classification	**R6 : HL1, HL2**	**FSI 20** **SDI 160** **CLASS A**

Conditions of Application

18 °C < Temperature of substrate < 50°C Hygrometry < 70%

Release Agent

Try first the compatibility of **SGi 128 / SD 228** with the release agent (fish eyes, release properties after post cure).
Recommended release agent: Cirex Si 041 WB, solvent free.

Application

Use a stirrer with high shear to homogenize the coating prior to use without filtering.
Respect the mixing ratio Gel / Hardener accurately
Mix the two components; wipe the edge and the bottom of the pot while mixing.
Prepare the quantity applicable in less than 15 minutes.
With a brush or roll, do not dilute, **SGi 128** is slightly self-levelling.
Spray gun use is not recommended.

Laminating

The lamination can start when the gel is still tacky or later if the gel has been overlaid by a Verrane layer in order to create a mechanical key.

Mechanical Key

A mechanical key is a verrane layer, applied onto the gelcoat when it is still wet but starting to set. The purpose is to have half of the fabric wet by **SGi 128**, the other half is wet by the resin system. Use a clean, dry foam roller to apply gently the fabric on **SGi 128.**