Material Data Sheet

TEPEX® dynalite 104-RG600(x)/47%
Roving Glass – PP Consolidated Composite Laminate

	Property		*Method ISO*	*Units*	*Longitudinal*	*Transverse*
Material	Reinforcement		Fibres		roving glass	
			Fabric		twill 2/2	
			Area weight	g/m²	600	
			Yarn	tex	1200	1200
			Weight rate	%	50	50
	Polymer		Polymer		PP	
	Laminate		Density	g/cm³	1,68	
			Fibre content	% vol.	47	
			Thickness per layer	mm	0,5	
Mechanical	Tensile	Modulus	527-4/5	GPa	20,5	20,1
		Strength	527-4/5	MPa	400	390
		Elongation	527-4/5	%	-	-
		Poisson's ratio	527-4/5		-	-
	Flexural	Modulus	178	GPa	17,5	17,0
		Ultimate stress*	178	MPa	370	365
	Charpy impact strength unnotched	23°C	179/1eU	kJ/m²	-	-
		-30°C		kJ/m²	-	-
Thermal	Melting Temperature	per DSC	3146	°C	163	
	Glass transition temperature	per DSC	3146	°C	-	
	Heat deflection temperature	1,80 MPa	75-1/2	°C	158	
	Coefficient of thermal expansion	-30°C to 23°C	ASTM E831	E-6 1/K	-	-
		23°C to 80°C			-	-
	Relative temperature index	20.000 h	IEC 216/1	°C	90	

** 3-Point loading, span-to-depth ratio 16 to 1*

These values are for this specific composition only, the characteristics of composites depend on the reinforcement level and the fibre orientation. Non-standard thickness may also alter some or all of these properties. The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits nor used alone as basis of design.

This information corresponds to our current knowledge on subject. It is offered solely to provide possible suggestions for your own experimentations. It is not intended, however; to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge and experience becomes available. Since we cannot anticipate all variations in actual end-use conditions. Bond-Laminates makes no warranties and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a licence to operate under or a recommendation to infringe any patent right.
Caution: *Do not use this product in medical applications involving permanent implantation in human body.*

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Processing guidelines for TEPEX® Roving Glass – Polypropylene

1. Storage/handling

Storage time: unlimited

The PP resin is not sensitive to moisture. Nevertheless, the material is provided in sealed packages and should be stored before processing in the working area until a temperature equilibrium is reached. The use of dust masks and ventilation whilst cutting, milling, drilling etc. is advised.

2. Heating

Forming temperature: between 190°C and 210°C

Forming temperature depends on the polymer to be used. In general the TEPEX® sheet should be heated ca. 20°C - 40°C above the melting temperature of the polymer. Heating cycles should be short to avoid polymer oxidation (surface colour browning). The preferred heating method is middle wavelength IR-heating. Best results are obtained when heating power is controlled as a function of the sheet temperature. Two sided heating should be applied starting from a material thickness of 1,0 mm. Contact heating is feasible but a release film should be applied. This release film will have to be moulded with the material to prevent distortion of the fabric during peeling of the release film in molten laminate status. Heating in a convection oven leads to excessive oxidation of the surface due to the length of the heat cycle and is therefore not recommended.

3. Sheet transfer

Sheet transportation: max. 2-3 sec.

The sheet should be transferred within seconds.
Circulation of cool air in the processing environment reduces the sheet temperature considerably and will lead to a reduction of fabric formability and wrinkles. Manual transfer is not recommended as it causes fabric distortion and polymer distribution caused by the sticky resin to gloves. For obtaining maximum processing stability an automatic transport of the sheet is recommended.

4. Press forming

Press speed: > 50 mm/s (1st step)
Closing speed: 5 mm/s (2nd step)

The recommended closing speed of the press is at least 50 mm/s and should be reduced to approx. 5 mm/s during the last part (10 mm) of the forming. Local clamping forces should be applied to prevent fabric wrinkling during moulding. The clamping forces and arrangements depend on the fabric type, the material thickness and the complexity of the part.

5. Cooling

Consolidation pressure: 5 bar - 100 bar
Extraction temperature: ≤ 110°C

The consolidation pressure varies over the surface of a formed part, depending on part geometry and tool material. The tool temperature should both guarantee good formability/flow and stable product extraction. Aluminium and steel can be used from 80°C up to 100°C; product extraction is then possible without any additional cooling cycle. The consolidation time depends on the material thickness, the tool temperature and the tool materials. Recommended for a laminate thickness of 2,0 mm and the aforementioned conditions is a cooling time of about 30 seconds.

When and where to apply TEPEX® Roving Glass – Polypropylene

1. General description

Within the TEPEX® composite laminate, PP is a resin which can be used at temperatures from -10°C up to 90°C constantly. PP is known for its good hardness, stiffness, abrasion resistance and chemical resistance.

2. Application Areas

Typical application environments are within automotive applications, large structural parts.