

# NORPOL<sup>®</sup> FI-184

## DESCRIPTION

NORPOL<sup>®</sup> FI-184 is a vinyl ester based bonding paste for bonding polyester laminates giving grooves with great strength and toughness. Thicknesses up to 20 mm can be applied in one operation without causing cracks when curing.

NORPOL<sup>®</sup> FI-184 is preaccelerated and is changing colour from light blue to green/brownish <5min. after the admixing of peroxide.

NORPOL<sup>®</sup> FI-184 is suitable for machine application. We recommend to run tests with the machine before starting the bonding job to ensure proper admixing of the peroxide.

The bonding paste should be stored at 18-25 °C .If the product have a temperature <18 °C (which is no problem as to product quality) it should be heated to 18-25 °C before use. See storage and handling document of NORPOL<sup>®</sup> products.

## TYPICAL PROPERTIES

### PHYSICAL DATA IN LIQUID STATE AT 23°C

Properties	Unit	Value	Test method
Viscosity			
- Cone & Plate	mPa.s(cP)	800-1000	ISO 2884-1999
- Brookfield RV T-E / 3 rpm	mPa.s(cP)	300000-550000	ISO 2555-89
Density	g/cm <sup>3</sup>	1.14	ISO 2811-2001
Gel time: 2 % NORPOL <sup>®</sup> PEROXIDE 24	minutes	55-70	G020
Reactivity – 25-35°C *	min.	50-90	G089
Reactivity -Peak *	°C	75-105	G089
Reactivity - 25°C –peak *	min.	65-145	G089
Acid number ,max	mgKOH/g	9	ISO 2114-1996
Styrene content	%	33 +/-2	B070
Flash point	°C	32	ASTM D 3278-95
Storage stability from date of production	months	6	G180

\* 2 % NORPOL<sup>®</sup> PEROXIDE 24

The information herein is to help customers determine whether our products are suitable for their applications. Our products are intended for sale to industrial and commercial customers. We request that customers inspect and test our products before using them to satisfy themselves as to contents and suitability. We warrant that our products will meet our written specifications. **Nothing herein shall constitute any other warranty express or implied, including any warranty of merchantability or fitness for a particular purpose**, nor is protection from any law or patent to be inferred. All patent rights are reserved. The exclusive remedy for all proven claims is replacement of our materials, and in no event shall we be liable for special, incidental, or consequential damages.

**TYPICAL NON-REINFORCED CASTING PROPERTIES**

Fully cured

Properties	Unit	Value	Test method
Density	g/cm <sup>3</sup>	1,20	ISO 3521
Volume shrinkage	%	3-8	ISO 3521
Tensile strength	MPa	45-55	ISO 527-1993
Tensile elongation	%	2.5	ISO 527-1993
Tensile modulus	MPa	3300-3700	ISO 527-1993
Heat distortion temp.	°C	70	ISO 75-1993
Linear shrinkage	%	1.8	ASTM D 2566-69
Hardness Barcol , 934-1, min.		35-40	ASTM D 2583-99

**TYPICAL NON-REINFORCED CASTING PROPERTIES**

Cured 24 h at RT + 24 h at 50°C

Properties	Unit	Value	Test method
Tensile strength	MPa	45-55	ISO 527-1993
Tensile elongation	%	2.5	ISO 527-1993
Tensile modulus	MPa	3300-3700	ISO 527-1993
Heat distortion temp.	°C	65	ISO 75-1993
Linear shrinkage	%	1.7-1,8	ASTM D 2566-69
Barcol hardness, min.		35	ASTM D 2583-99
Water absorption, 28 days	%	< 0,70	ISO 62-1999
Impact strength, unnotched	kJ/m <sup>2</sup>	11	ISO 179-2001
Shore D after 4 hours curing, min.		60	LM-003928
Strength build up, min.	Nm	40	LM-003928
Coefficient of thermal expansion(-40to+60°C)	°C -1	<70*10-6	DIN 53752

**TESTS TO CHECK CURING CRACKS AT RT AND ADHESIVE CRACKS AT LOW TEMPERATURE**

Properties	Unit	Value	Test method
Curing cracks in 20 mm thick bond line	-	No cracks	LM CI-00068
Adhesive cracks at low temperature (-40°C)	-	No cracks	LM CI-00066

**STORAGE**

To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 24°C/75°F and away from heat ignition sources and sunlight. Resin should be warmed to at least 18°C/65°F prior to use in order to assure proper curing and handling. All storage areas and containers should conform to local fire and building codes. Copper or copper containing alloys should be avoided as containers. Store separate from oxidizing materials, peroxides and metal salts. Keep containers closed when not in use. Inventory levels should be kept to a reasonable minimum with first-in, first-out stock rotation.

Additional information on handling and storing unsaturated polyesters is available in Reichhold's application bulletin "Bulk Storage and Handling of Unsaturated Polyester Resins." For information on other Reichhold resins or initiators, contact your sales representative or authorized Reichhold distributor.

**SAFETY****READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET BEFORE WORKING WITH THIS PRODUCT**

Obtain a copy of the material safety data sheet on this product prior to use. Material safety data sheets are available from your Reichhold sales representative. Such information should be requested from suppliers of all products and understood prior to working with their materials.

DIRECTLY MIXING ANY ORGANIC PEROXIDE WITH A METAL SOAP, AMINE, OR OTHER POLYMERIZATION ACCELERATOR OR PROMOTER WILL RESULT IN VIOLENT DECOMPOSITION