

# PALATAL® P 4L-21

## CHEMICAL/PHYSICAL NATURE

Palatal® P 4L-21 is an unsaturated polyester based on orthophthalic acid and standard glycols, dissolved in styrene. The resin has a medium reactivity and a medium viscosity. Palatal® P 4L-21 contains an UV stabilizer.

## MAJOR APPLICATIONS

Palatal® P 4L-21 features good light stability and weathering resistance and is primarily intended for the production of glass-fiber reinforced flat and corrugated sheets.

Translucent sheets made from Palatal® P 4L-21 reinforced with E-glass fibers show light diffusion. Palatal® P 4L-21 is particularly suitable for the production of laminates almost free of internal stress.

## APPROVALS

Cured unreinforced Palatal® P 4L-21 conforms to type 1120 according to DIN 16 946/2 and is classified in group 0 according to DIN 18 820/1.

## PRODUCT SPECIFICATIONS UPON DELIVERY

| Property                    | Range     | Unit    | TM   |
|-----------------------------|-----------|---------|------|
| Viscosity, 23°C             | 530 - 600 | mPa.s   | 2013 |
| Solids content, IR          | 62 - 64   | %       | 2033 |
| Gel time from 25 to 35°C    | 16 - 21   | minutes | 2625 |
| Cure time from 25°C to peak | 23 - 29   | minutes | 2625 |
| Peak temperature            | 130 - 160 | °C      | 2625 |

## REMARKS

Viscosity:  $Z2/100 \text{ s}^{-1}/23^\circ\text{C}$

The curing characteristics are obtained using 1 g Trigonox 44 B (AKZO-Nobel) and 0.5 g Accelerator NL 49P (AKZO-Nobel) added to 100 g resin.

## PROPERTIES OF THE LIQUID RESIN (TYPICAL VALUES)

| Property                        | Value           | Unit              | TM   |
|---------------------------------|-----------------|-------------------|------|
| Density, 20°C                   | 1100            | kg/m <sup>3</sup> | 2160 |
| Refractive index, 23°C          | 1.5425 - 1.5465 | -                 | 2150 |
| Flash point                     | 33              | °C                | 2800 |
| Stability, no init., dark, 25°C | 6               | months            | -    |

## PROPERTIES OF CAST UNFILLED RESIN (TYPICAL VALUES)

| Property                    | Value | Unit              | TM        |
|-----------------------------|-------|-------------------|-----------|
| Density, 20°C               | 1210  | kg/m <sup>3</sup> | -         |
| Tensile strength            | 70    | MPa               | ISO 527-2 |
| Tensile E-modulus           | 4.3   | GPa               | ISO 527-2 |
| Elongation at break         | 2.0   | %                 | ISO 527-2 |
| Flexural strength           | 110   | MPa               | ISO 178   |
| Flexural E-Modulus          | 4.3   | GPa               | ISO 178   |
| Outer fibre strain          | 2.6   | %                 | ISO 178   |
| Impact res. - unnotched sp. | 10    | kJ/m <sup>2</sup> | ISO 179   |
| Heat Deflection Temp. (HDT) | 63    | °C                | ISO 75-A  |
| Glass transition temp. (Tg) | 93    | °C                | DIN 53445 |

## CURING CONDITIONS

The mechanical characteristics are obtained curing the resin with 1ml MEKP-HA 2 (Peroxid-Chemie GmbH) and 0.2 ml Co-octoate solution (1% Co in styrene) added to 100 g resins. Cured for 24 hrs. at RT and post-cured for 24 hrs. at 80 °C.

## PROCESSING

Palatal® P 4L-21 normally does not exhibit tack-free cure. To ensure tack-free cure of surfaces exposed to air, suitable additives (e.g. paraffin solution) should be added.

The final state of cure may be optimized by post-curing at elevated temperatures (e.g. 80 °C) for several hours.

## GUIDELINES BEFORE USE

Before use the resin should be conditioned at a well-defined, application dependent temperature (usually 15°C minimum for a MEKP / Co-cure).

## STORAGE GUIDELINES

The resin should be stored indoors in the original, unopened and undamaged packaging, in a dry place at temperatures between 5°C and 30°C and the properties might change during storage. Shelf life is reduced at higher temperatures and the properties of the resin might change during storage. The shelf life of styrene containing unsaturated polyesters will be significantly reduced when exposed to light. Store in dark and in 100%light tight containers only.

## MATERIAL SAFETY

A Material Safety Data Sheet of this product is available on request.

## TEST METHODS

Test methods (TM) referred to in the table(s) are available on request.

Aliancys is a leading global company active in the sales of Quality Resins for composite applications. Together with its customers, Aliancys is pushing the limits of both composite part manufacturing and performance. Taking an integral approach to new product development, Aliancys is using its full expertise in resin chemistry, material science, and component manufacturing for shaping new applications in composites. So let's talk and increase our mutual business success, both today and tomorrow. More information on [www.aliancys.com](http://www.aliancys.com)

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