Polyurethan Resin for high thickness

Polyurethan resin for high thickness is a 2K polyurethane resin for room temperature applications and VOC free. Main highlights are high transparency and yellowing resistance, even under direct sun exposure. Furthermore, the cured product shows high mechanical properties and outstanding surface hardness and abrasion resistance. This product is designed for high thickness casting, considering its low heat of reaction (peak < 50° C).

PHYSICO-CHEMICAL CHARACTERISTICS

-First component presentation.....Clear fluid liquid

-Second component presentation .....Clear fluid liquid

-Mixing ratio (weigh) first/second component..... 150/100

-Density (first component) (20 °C) (PE-10-01-07) based on (EN ISO 2811-1) .....

..... 1.14 ± 3 % g.cm-3

-Density (second component) (20 °C) (PE-10-01-07) based on (EN ISO 2811-1) .....

..... 1.28 ± 3 % g.cm-3

-Mixing ratio (volume) first/second component 167/100

-Density (after curing) (20 °C) (PE-10-01-06) based on (ASTM D792-00) ..... 1.26 ± 3 % g.cm-3

-Gel Timer (initial temperature 20 °C) (PE-10-01-03) based on (ASTM D2471-99) .....

..... 300 ± 80 min

-Maximum glass transition temperature (Tg , DSC 10 K/min) (PE-10-01-16) based on (EN 12614)

..... 60 ± 5 °C

MECHANICAL PROPERTIES AT 20ºC (cured 7 days)

-Shore A hardness (PE-10-01-02) based on (ASTM D2240-03)..... 100

-Shore A hardness (1 day) (PE-10-01-02) based on (ASTM D2240-03)..... ≥ 50

-Shore D hardness (PE-10-01-02) based on (ASTM D2240-03)..... 60 ± 10

-Shore D hardness (1 day) (PE-10-01-02) based on (ASTM D2240-03)..... ≥ 15

-Erichsen hardness (PE-10-01-04) ..... ≥ 700 g

-Erichsen hardness (1 day) (PE-10-01-04) ..... 200 ± 100 g

MECHANICAL PROPERTIES AT 20ºC (cured 21 days)

-Shore A hardness (PE-10-01-02) based on (ASTM D2240-03)..... 100

-Shore D hardness (PE-10-01-02) based on (ASTM D2240-03)..... 80 ± 5

-Erichsen hardness (PE-10-01-04) ..... 2,000 g

-Persoz hardness (PE-10-01-28) based on (INTA 160225).....277 ± 4 s

-Taber abrasion (1000 g/1000 rounds) (PE-10-01-25) based on (ASTM D4060-01) .....

..... 1.9 ± 0.4 mm^3

-Izod impact resistance (PE-10-01-29) based on (ASTM D256-04) ..... 8.7 ± 0.5 kJ.m-2

-Tensile strength (PE-10-01-19) based on (UNE-EN ISO 527-2:2012).....12 ± 1 MPa

-Percent elongation at break (PE-10-01-19) based on (UNE-EN ISO 527-2:2012) ..... 50 ± 5 %

-Modulus of elasticity (PE-10-01-19) based on (UNE-EN ISO 527-2:2012).....570 ± 30 MPa

-Tensile strength after water uptake (equilibrium) (15 days at 60 °C) (PE-10-01-19) based on (UNE-EN ISO 527-2:2012).....41.8 ± 0.2 MPa

-Modulus of elasticity after water uptake (equilibrium) (15 days at 60 °C) (PE-10-01-19) based on (UNE-EN ISO 527-2:2012).....1,517 ± 84 MPa

-Adherence to steel (LSS) (first GAIBRIDGE 11) (PE-10-01-26) based on (ASTM D1002-05).

..... 14 ± 2 MPa

-Adherence to epoxy composite (LSS) (PE-10-01-26) based on (ASTM D1002-05).....9 ± 1 MPa

-Adherence to concrete (PE-10-01-27) based on (UNE-EN 13892-8) .....

..... 1.8 ± 0.1 MPa (adhesive 50%)

AGING RESULTS

-Colour change after 500 h exposure under Xenon lamp (1000 W/m2) ..... $\Delta E*\alpha\beta < 1$

-Yellowing after 500 h exposure under Xenon lamp (1000 W/m2) based on (ASTM E313) .....

.....$\Delta\Psi I < 1.5$

APPLICATION AREAS

- *High transparency coatings with high hardness and abrasion resistance, on different kind of substrates (consult).*
- *Casting in ambient conditions up to several centimeters thickness.*

***VERY IMPORTANT:** Please consult the type of primer according to the substrate.*

APPLICATION

The product is ready for use and dosage. The vessel containing the first component must be used as the mixing container and the second component must be added to it. Once the mixture is achieved it must be stirred either by hand or mechanically (approximate time: half a minute if stirred mechanically, one minute if done by hand). After it must be applied to the surface to be treated according to the appropriate instructions given in each case (please consult), considering that the pot-life (or mixture time) is limited.

The product can also be supplied in larger containers and, in this case, a digital scale is necessary to weight both components in the precise ratio, as stated in this technical data sheet. If preferred, the mixture can be also done by volume, measuring also the precise amounts of each components as stated in this data sheet.

Once mixed, slowly pour the product in the empty mould or space intended to be filled, trying to introduce in the mixture as less air as possible. Although this formulation produces much less bubbling compared to other polyurethane resins, a spiked roller may be used after a few minutes to help releasing trapped air from the applied product. If due to the type of application a roller is not

VERY IMPORTANT: *The mixture ratio must never be altered!*

HANDLING INSTRUCTIONS

Polyurethane resins and hardeners are chemicals. The proper industrial hygiene procedures should always be followed when they are being handled. For details, please consult the safety data sheet corresponding to these products (for both first and second component).

ADDITIONAL INFORMATION

Resin Pro products are periodically renewed and all updates are shown in the technical and safety data sheets. Please, check the issue date of the sheets to be sure of the validity of all data.