

**TECHNICAL INFORMATION**

# POLIMAL<sup>®</sup>

# TVE-2 WTP

## Application

**Polimal TVE-2 WTP** is tooling resin designed for polyester – glass moulds and polyester-glass laminates production with very good mechanical parameters. The resin may be used as barrier coat to reinforce and protection of gelcoat layer.

## Characteristics

**Polimal TVE-2 WTP** is chemical-proof resin on vinyl ester base, pre-accelerated, thixotropic, with colourful curing indicator. Easily wets and permeates a glass fiber, properly layed does not creates strains. It has high mechanical parameters, good thermal and chemical resistance and low water absorption.

### Advantages of using:

- low polymerization shrinkage,
- very good deaeration and wetting,
- favourable curing characteristics,
- possibility of using standard MEKP,
- high resistance to aging, UV light, water, dissolvents and chemical media,
- high mechanical parameters,
- elimination of toxic amine from system.

## Typical parameters

Parameter	Unit	Value
<b>Viscosity at 25°C</b> Brookfield, sp. 21/rpm.5	cP	<b>1 100 ÷ 1 700</b>
<b>Viscosity at 25°C</b> Brookfield, sp. 21/rpm. 50	cP	<b>500 ÷ 600</b>
<b>Thixotropic index</b>	-	<b>&gt;2,1</b>
<b>Gel time at 25°C</b> 2% Luperox <sup>®</sup> K-1 S	min	<b>15 ÷ 40</b>
<b>Gel time at 25°C</b> 1,5% Luperox <sup>®</sup> K-1 S	min	<b>25 ÷ 50</b>

## Storage conditions

**Polimal TVE-2 WTP** should be stored in close package in a dry, shady and cool places, adapted for storing flammable materials at temperatures not exceeding 25°C.

## Processing conditions

The resin should be mixed before use. Good curing requires ambient temperature above 18°C and low air humidity. The best curing conditions are obtained using 2% MEKP as hardener. It is possible to adjust gel time by varying of amount of hardener, the best in the range of 1 – 2%. The final curing could be optimized by postcuring at elevated temperatures.

The advantage of the resin is possibility of using standard hardener for unsaturated polyester resins like MEKP, eg. Luperox<sup>®</sup> K-1S or specialist hardener intended for vinyl ester resins, eg. Luperox<sup>®</sup> K-12.

**Polimal<sup>®</sup>** is the trade name reserved for unsaturated polyester resins produced by **CIECH - Sarzyna S.A.**

**Luperox<sup>®</sup>** is the trade name registered for products of **ARKEMA** company.

Data and suggestions included in this document are on the basis of our own tests and are considered by us as reliable. However, we cannot take any responsibility for actions and losses directly or indirectly resulted from using our products. User should check the product quality, safety and properties before its using.

### Note:

The information does not substitute Material Safety Data Sheet or Technical Specification, which are superior documents and are available on the customer's request.

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Mechanical parameters of Polimal TVE-2 WTP.

Parameter	Unit	Value
Flexural strength acc. to ISO 178	MPa	135
Flexural modulus acc. to ISO 178	MPa	3500
Stress at break acc. to ISO 527	MPa	80
Tensile modulus acc. to ISO 527	MPa	3500
Impact strength acc. to ISO 179	kJ/m <sup>2</sup>	20
Heat deflection temperature, HDT acc. to ISO 75	°C	100
Barcol hardness acc. to ASTM 2583-07	°B	40

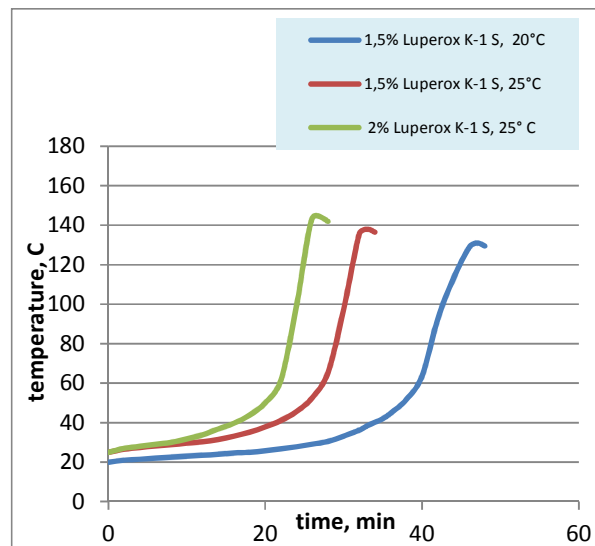
Application of Polimal TVE-2 WTP – making a laminate.

Composition of laminate	Laminate I	Laminate II
MEKP hardener, medium reactive	1,5%	1,5%
Glass mat „150”	1 layer	1 layer
Glass mat „450”	3 layers	7 layers
Composition of laminate, resin : glass, %	68 : 32	67 : 33
Estimated weight of laminate, kg/m <sup>2</sup>	4,8	10

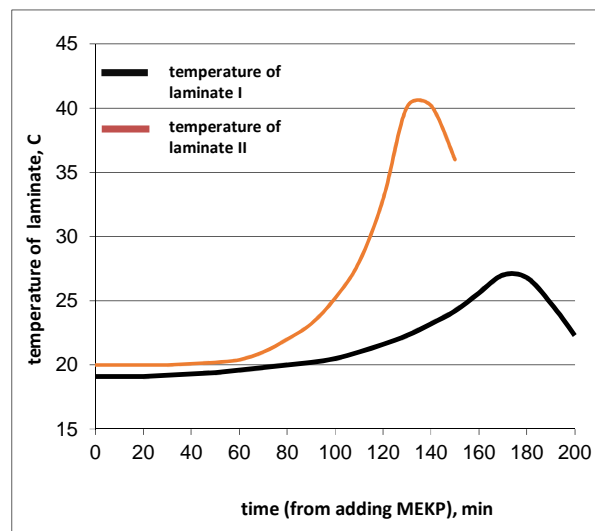
Temperature measurement of laminate while curing.

Measurement	Laminate I	Laminate II
Ambient temperature	19 ÷ 20 °C	
Maximum temperature of laminate	27 °C	42,9 °C
Time from adding MEKP to Tmax	2h 50min	2h 15min

The curing process while making a polyester-glass laminate.



Reactivity of Polimal TVE-2 WTP depending on time and hardener quantity.


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