

## TECHNICAL DATASHEET

### 7440

(Resin 7438 + Hardener 7439)

#### Description

7440 is a black, toughened, pasty epoxy resin adhesive for application with composite or metal parts. The resin provides excellent strength build up after a long pot life, very good heat resistance as well as remarkable mechanical properties over a broad temperature range.

7440 fulfills the requirements according to DIN EN 45545-2 chart 5, R1, R7 and R17 with HL1-3.

#### Advantages

- High toughness
- Excellent adhesion to composite materials and metals
- High strength at elevated temperatures
- High temperature resistance
- Solvent-free, good chemical resistance

#### Physical properties (liquid product)

Chemical base	Epoxy resin adhesive
Curing System	2-component-system
Mixing ratio (volume)	2 : 1 (resin : hardener)

Shelf life	24 month at 5 – 23 °C
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Colour	Resin	7438	White
	Hardener	7439	Black
	When cured		Black

Density	Resin	7438	~1.19 g/cm <sup>3</sup>
	Hardener	7439	~1.19 g/cm <sup>3</sup>
	Mixture		~1.19 g/cm <sup>3</sup>

#### Viscosity acc. to DIN EN 12092 measured at 23 °C

(Cone-Plate-System, Cone 25, shear rate 35 s<sup>-1</sup>, 23 °C)

Resin	7438	70'000 – 90'000 mPa·s
Hardener	7439	15'000 – 30'000 mPa·s
Mixture		Pasty, thixotropic

**Curing properties**

Pot life at 23 °C

40 – 60 minutes

Fixture time at 23 °C (>1 N/mm<sup>2</sup>)

~ 3 hours

Functional time at 23 °C (>10 N/mm<sup>2</sup>)

~ 4.5 hours

Final strength at 23°C

~ 2 – 3 days

Volume shrinkage

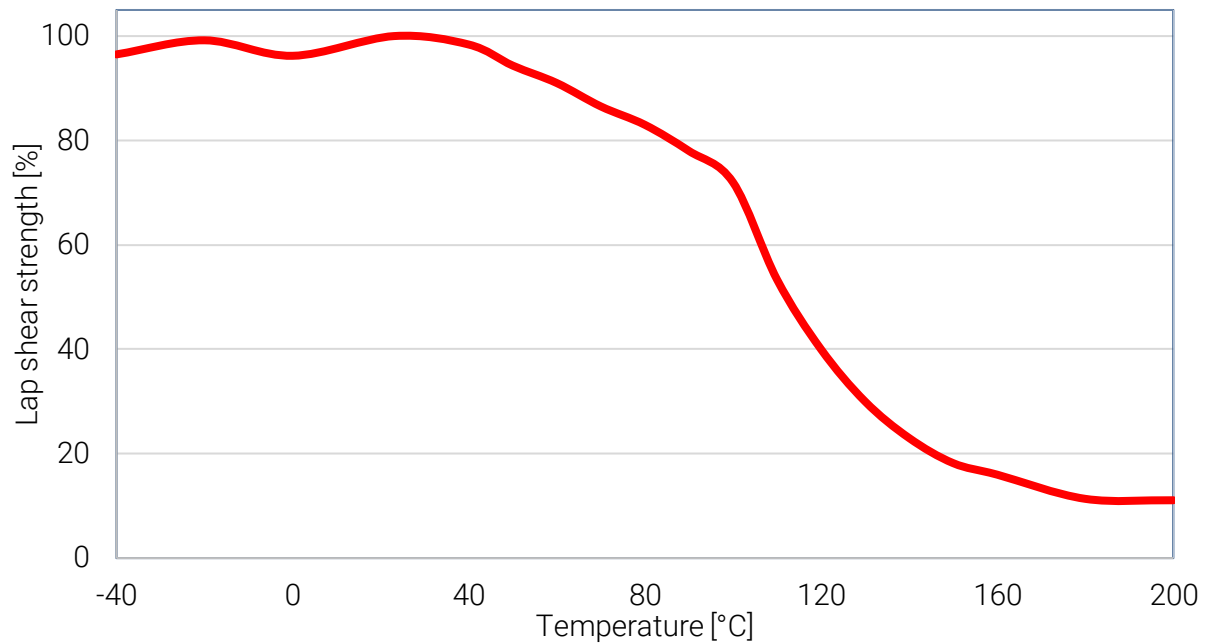
~ 3 %

**Physical properties (cured product)**

Thermal range

-60 °C up to +180 °C

Tensile shear strength vs. temperature (steel to steel; 100% = Strength at 23 °C)



Glass transition point ( $T_g$ )

~ 106°C

Curing: 16 hours at 40 °C, post-hardened at 120 °C

Thermal expansion coefficient <  $T_g$   
>  $T_g$

~ 74 ppm/K

~ 161 ppm/K

Volume resistivity

~  $1.94 \cdot 10^{15} \Omega \cdot \text{cm}$

Tensile strength (ISO 527-2/1A/2) ~ 33 N/mm<sup>2</sup>  
 After 7 days at 23 °C, test temperature 23 °C  
 Elongation at break (ISO 527-2/1A/2) ~ 4.6 %  
 After 7 days at 23 °C, test temperature 23 °C  
 E-modulus (DIN EN ISO 178/A/2) ~ 2100 N/mm<sup>2</sup>  
 After 7 days at 23 °C, test temperature 23 °C

Tensile-test properties after curing for 7d at 23 °C, then 1h 85 °C  
 (ISO 527-2/5A\*/10; \* 4mm specimen thickness)

Temperature	-35 °C	23 °C	85 °C	105 °C
E modulus [N/mm <sup>2</sup> ]	3300	2800	800	100
Tensile strength [N/mm <sup>2</sup> ]	48	45	13	7
Elongation at break [%]	1.7	2.7	17	21

Shore-D-hardness ~ 80

Tensile shear strength acc. to DIN EN 1465

Curing: 16 hours at 40 °C, 24 hours at 23 °C, test temperature 23 °C, metals corundum blasted

Steel ~ 35 N/mm<sup>2</sup>

Stainless Steel ~ 30 N/mm<sup>2</sup>

Aluminium ~ 24 N/mm<sup>2</sup>

Brass ~ 24 N/mm<sup>2</sup>

Copper ~ 20 N/mm<sup>2</sup>

GRP, epoxy ~ 12 N/mm<sup>2</sup>

GRP, polyester ~ 9 N/mm<sup>2</sup> (broken fibres)

Carbon Composite ~ 26 N/mm<sup>2</sup> (broken fibres)

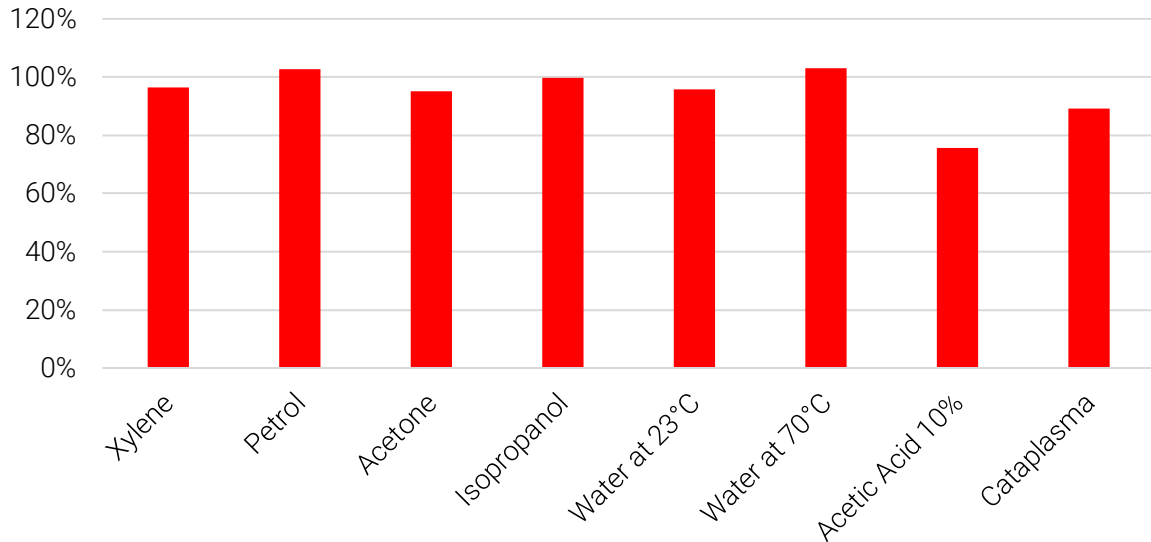
ABS ~ 2 N/mm<sup>2</sup>

PC ~ 2 N/mm<sup>2</sup>

PVC ~ 2 N/mm<sup>2</sup>

### Chemical resistance

Tensile shear strength acc. to DIN EN 1465; steel plates degreased and corundum-blasted; curing for 7 days at 23 °C, storage for 30 days at 23 °C (excepted: Cataplasma); % to the reference



### Precautions

For your own safety, please refer to the information of the concerned MSDS and for the correct handling the “user instructions”.

The information in this data sheet is based on the results of our research and experience. However, the suggestions herein concerning the use, application, and processing of the products (collectively, „the methods“) **are non-binding recommendations only**. It is the user’s sole responsibility to determine the suitability and safety of these methods, based on the user’s particular purpose in using the products. Before relying on the reliability and safety of any parts that are bonded using the products, it is extremely important that the user test the reliability and safety of the parts that are bonded. Failure to do so could result in serious personal injury. Because of the use of the products are within the purchaser’s sole control, Kisling Corporation specifically disclaims all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose, arising from the sale or use of the products described herein. Kisling Corporation specifically disclaims any liability for consequential, incidental, or other damages of any kind, including lost profits. Kisling Corporation’s liability for damages shall not exceed the purchase price of the products used.

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