TECHNICAL Datasheet

ergo.® 7440
(ergo.® 7438 (resin) and ergo.® 7439 (hardener))

Description
ergo.® 7440 is a black, toughened, pasty epoxy resin for application with composite or metal parts. The resin provides excellent strength build up after pot life, good heat resistance up to 140 °C as well as good mechanical properties.

Advantages
- High toughness
- Excellent adhesion to composite materials and metals
- High strength at elevated temperatures
- Good chemical resistance
- High temperature resistance

Physical properties (liquid product)
Chemical base  epoxy resin
Curing System    2-K-System
Mixing ratio        2 : 1 (resin : hardener)

Shelf life         12 month at ~ 23 °C

Viscosity according to DIN 54453
(cone/plate-system; cone C-25; shear rate D=35 s⁻¹; 23 °C)
Resin     ergo.® 7438    70'000 – 90'000 mPa•s
Hardener  ergo.® 7439    15'000 – 30'000 mPa•s
Mixture    pasty, thixotropic

Color      Resin     ergo.® 7438    white
Hardener   ergo.® 7439    black
Mixture    black

Density
23 °C     Resin     ergo.® 7438    1.2 g/cm³
Hardener  ergo.® 7439    1.2 g/cm³
Mixture    1.2 g/cm³
Physical properties (cured product after 7 days/23 °C)

- **Glasstransition temperature** ($T_g$): ~106 °C
- **Thermal range**: -40 °C up to +140 °C
- **Modulus (DIN EN ISO 178)**: 2100 N/mm²
  - After 7 days at 23°C
- **Tensile strength (ISO 527 1A)**: 33 N/mm²
  - After 7 days at 23°C
- **Elongation at break (ISO 527 1A)**: 4.6%
  - After 7 days at 23°C
- **Pot life (20 g mixture @ 23 °C)**: 40 - 60 minutes
- **Fixture time (> 1 N/mm²)**: 3 hours (23 °C)
- **Functional time (> 10 N/mm²)**: 4.5 hours (23 °C)
- **Final strength**: 2 ~ 3 days (23 °C)

**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
- **Aluminum**: ~ 24 N/mm²
- **Steel**: ~ 35 N/mm²
- **Stainless steel**: ~ 30 N/mm²
- **Brass**: ~ 24 N/mm²
- **Copper**: ~ 20 N/mm²
- **ABS**: ~ 2 N/mm²
- **PVC**: ~ 2 N/mm²
- **Polycarbonate**: ~ 2 N/mm²
- **GRP, polyester**: ~ 9 N/mm² (broken fibers)
- **GRP, epoxy**: ~ 12 N/mm²
- **Carbon Composite**: ~ 26 N/mm² (broken fibers)

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**Fig. 1**: Lap shear strength vs. temperature on steel-steel; 100% = strength at 23 °C.

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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