



SANHO CHEMICAL CO., LTD.

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TOHMIDE RS-640

TOHMIDE RS-640 is a high viscosity reactive polyamide hardener designed for use with liquid epoxy resins. This product has good adhesion with variety metal materials and specifically designed for use in multiply wood material adhesives where high peel strengths are required.

1. SALES SPECIFICATION

| | |
|------------------------------|------------------------|
| Appearance | : Brown viscous liquid |
| Viscosity (mPa·s /40°C) | : 10,000 ~ 14,000 |
| Amine Value (JIS) | : 265 ± 10 |
| Colour (Gardner) | : 13 Max |
| Specific Gravity (25 / 25°C) | : 0.96 |
| Flash point (°C) | : 232 |

2. RECOMMENDED MIXING RATIO

50~200 parts to 100 parts of Bisphenol-A type epoxy resin whose epoxy equivalent weight is about 190.

3. CURING CHARACTERISTICS

Epoxy resin : Employed Bisphenol-A type epoxy resin whose epoxy equivalent weight is about 190.

Total mass : 100 gram

Room Temperature : 23°C

| Epoxy / TOHMIDE RS-640 | 65 / 35 | 50 / 50 | 35 / 65 |
|-----------------------------|---------|---------|---------|
| Peak Exothermic Time | 60 | 50 | 200 |
| Peak Exothermic Temperature | 42.5 | 58 | 90 |
| Gelling Time | 90 | 70 | 160 |

4. MECHANICAL PHYSICAL PROPERTIES

Employed Bisphenol-A type epoxy resin whose epoxy equivalent weight is about 190.

Curing time=7 days at 23°C



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| Epoxy / TOHMIDE RS-640 | | 70 / 30 | 60 / 40 | 50 / 50 |
|-----------------------------|------------------------|---------------------|---------------------|---------------------|
| Tensile Strength | (kgf/mm ²) | 2.7 | 3.8 | 2.9 |
| Flexural Strength | (kgf/mm ²) | 3.2 | 3.3 | 2.4 |
| Flexural Modulus | (kgf/mm ²) | 8.2×10 ² | 9.4×10 ² | 6.5×10 ² |
| Compressive Strength | (kgf/mm ²) | 1.9 | 3.4 | 3.2 |
| Izod Impact Strength | (kgf-cm/cm) | 1.0 | 1.9 | 6.4 |
| Rockwell Hardness | (M Scale) | -4 | 11 | 27 |
| Heat Distrotion Temperature | (°C) | 28.5 | 32 | 31.5 |

5. LAP SHEAR STRENGTH

The resin mix of TOHMIDE RS-640 and the same epoxy resin as employed above was applied to hold mild steel plates at 22~23°C, whose surface were treated by sand-blast. LAP SHEAR STRENGTH was measured as follow after leaving the bonded steel plates at 22~23°C for 7 days.

| Epoxy / TOHMIDE RS-640 | 7 / 3 | 6 / 4 | 5 / 5 | 4 / 6 | 3 / 7 |
|--|-------|-------|-------|-------|-------|
| Lap Shear Strength (kgf/cm ²) | 216 | 200 | 220 | 235 | 185 |

6. CHEMICAL RESISTANCE OF THE CURED PRODUCTS

Percentage increase in weight of the cured products of TOHMIDE RS-640 and the same epoxy resin as employed above were measured as follow after curing them at an ambient temperature , and immersing into following chemical substances.

| Immersion time (days) | 1 day | | | 7 days | | | 30 days | | |
|----------------------------------|-------|------|------|--------|------|------|---------|------|------|
| | 7/3 | 6/4 | 5/5 | 7/3 | 6/4 | 5/5 | 7/3 | 6/4 | 5/5 |
| Tap Water | 0.16 | 0.11 | 0.22 | 0.41 | 0.46 | 0.37 | 1.2 | 1.5 | 2.3 |
| 5% solution of Salt | 1.14 | 0.20 | 0.27 | 0.36 | 0.40 | 0.35 | 1.2 | 1.3 | 2.4 |
| 10% solution of Caustin soda | 0.12 | 0.18 | 0.19 | 0.34 | 0.36 | 0.31 | 1.1 | 1.2 | 1.7 |
| 10% solution of Ammonia | 0.14 | 0.12 | 0.20 | 0.38 | 0.37 | 0.38 | 1.2 | 1.4 | 2.4 |
| 5% solution of Surfrucic Acid | 0.21 | 0.71 | 6.4 | 0.51 | 3.5 | 10.2 | 1.5 | 7.1 | 48.3 |
| 5% solution of Hydrochloric Acid | 0.15 | 0.61 | 1.9 | 0.44 | 1.1 | 2.1 | 1.2 | 3.0 | 12.1 |
| Kerocene | 0.02 | 0.07 | 0.06 | 0.11 | 0.23 | 0.13 | 0.23 | 0.43 | 0.35 |
| Isopropylalcohol | 0.37 | 0.62 | 1.7 | 0.79 | 1.2 | 2.4 | 1.4 | 2.4 | 12.4 |
| Metyl-isobutyl-ketone | 4.2 | 1.7 | 1.1 | 9.9 | 3.8 | 2.4 | 15.3 | 6.8 | 11.2 |