



SANHO CHEMICAL CO., LTD.

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KINGMIDE X-2100

KINGMIDE X-2100 is a medium viscosity, modified reactive polyamide resin designed for use with liquid epoxy resins to achieve cure at room temperature or better cure under adverse conditions. KINGMIDE X-2100 systems are suitable for use in adhesives, coatings, floorings, putties where excellent chemical resistance and good water resistance and good colour stability and good impact resistance and better curing even in low temperature and under conditions of high humidity are required.

1. SPECIFICATIONS

| | |
|------------------------------|---------------------------------|
| Appearance | : Brown-colored viscous liquid. |
| Viscosity (mPa · s /25°C) | : 6,000 ~ 12,000 |
| Amine Value(JIS) | : 350±20 |
| Colour (Gardner) | : 10 Max |
| Specific Gravity (25 / 25°C) | : 1.04 |
| A.H.E.W | : 110 |

2. RECOMMENDED MIXING RATIO

40~70 parts by weight to 100 parts of liquid epoxy resin whose epoxy equivalent weight is about 190.

3. CURING CHARACTERISTICS

| | |
|------------------|---|
| Epoxy resin | : Employed Bisphenol-A type epoxy resin whose EEW is 190. |
| Total mass | : 100g |
| Room temperature | : 23°C |

| Epoxy resin / KINGMIDE X-2100 | 100 / 50 | 100 / 60 | 100 / 70 |
|-------------------------------|----------|----------|----------|
| Peak exothermic time (min) | 59 | 52 | 47 |
| Peak exothermic (°C) | 164 | 167 | 162 |
| Gel time (min) | 54 | 45 | 43 |

4. PHYSICAL PROPERTIES

The mechanical properties of the cured products of the KINGMIDE X-2100 and the same epoxy resin as employed above were measured as follow ;

| Epoxy resin / KINGMIDE X-2100 | 100 / 50 | 100 / 60 | 100 / 70 |
|-------------------------------|----------|----------|----------|
|-------------------------------|----------|----------|----------|



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| | | | | |
|-----------------------|------------------------|---------------------|---------------------|---------------------|
| Tensile Strength | (kgf/mm ²) | 1.1 | 1.1 | 1.3 |
| Flexural Strength | (kgf/mm ²) | 2.4 | 2.3 | 3.5 |
| Flexural Modulus | (kgf/mm ²) | 3.0×10 ² | 2.8×10 ² | 2.9×10 ² |
| Compressive Strength | (kgf/mm ²) | 6.5 | 5.8 | 5.2 |
| Izod Impact Strength | (kgf/cm-cm) | 1.0 | 0.9 | 0.9 |
| Rockwell Hardness | (M-scale) | 40 | 30 | 37 |
| Heat Distortion Temp. | (°C) | 49.5 | 50 | 50.5 |

5. LAP SHEAR STRENGTH

Epoxy resin : Employed Bisphenol-A type epoxy resin whose EEW is 190.

Curing Temperature : 23°C for 7 days

| | | | |
|---|----------|----------|----------|
| Epoxy resin / KINGMIDE X-2100 | 100 / 50 | 100 / 60 | 100 / 70 |
| Lap shear strength (kgf/cm ²) | 117 | 125 | 131 |

6. CHEMICAL RESISTANCE

Percentage increase in weight of the cured products of KINGMIDE X-2100 and the same epoxy resin as employed above were measured as follow: Sample being cured at 23°C for 7 days, and immersing into respective chemical substances.

Unit : %

| Epoxy resin / KINGMIDE X-2100 | 100 / 50 | | | 100 / 60 | | | 100 / 70 | | |
|-------------------------------|----------|------|--------|----------|------|------|----------|------|------|
| | 1 | 7 | 30 | 1 | 7 | 30 | 1 | 7 | 30 |
| Immersing time (days) | | | | | | | | | |
| Tap water (23°C) | 0.1 | 0.4 | 1.0 | 0.1 | 0.5 | 1.1 | 0.1 | 0.6 | 1.3 |
| 5% Salt solution | 0.1 | 0.4 | 0.9 | 0.1 | 0.5 | 1.2 | 0.1 | 0.5 | 1.2 |
| 10% Caustic Soda Solution | 0.1 | 0.4 | 0.8 | 0.2 | 0.4 | 1.0 | 0.2 | 0.5 | 1.1 |
| 10% Ammonia Solution | 0.2 | 0.5 | 1.1 | 0.3 | 0.7 | 1.2 | 0.2 | 0.6 | 1.3 |
| 5% Sulfuric Acid Solution | 0.5 | 0.9 | 1.5 | 0.8 | 1.5 | 2.6 | 1.2 | 12.9 | 5.3 |
| 5% Hydrochloric Acid Solution | 0.1 | 0.5 | 1.0 | 0.3 | 0.8 | 1.7 | 0.9 | 1.9 | 3.3 |
| Kerosene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Isopropanol | 0.3 | 0.5 | 1.0 | 0.2 | 0.2 | 0.5 | 0.7 | 1.2 | 1.8 |
| Methyl-isobutyl-ketone | 14.5 | 22.4 | BROKEN | 9.0 | 12.8 | 17.6 | 5.4 | 8.8 | 14.3 |