



# SANHO CHEMICAL CO., LTD.

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## KINGMIDE 315

KINGMIDE 315 is a polyaminoamide type epoxy curing agent. It has a relatively high amine value and has a lower molecular weight and viscosity than KINGMIDE 305 and it's used primarily, but not exclusively with liquid epoxy resins. It's major applications include general adhesives, sealants, putties, concrete repair compounds and surface coatings.

### 1. SPECIFICATIONS

Appearance	: Brown-colored viscous liquid.
Viscosity (40°C)	: 8,000~12,000 mPa·s
Colour (Gardner)	: 10 Max.
Amine Value	: 335±15
A.H.E.W.	: 120
Sp.Gr. (25°C)	: 0.97

### 2. RECOMMENDED MIXING RATIO

- ⊖ 20~35 parts to 100 parts of Bisphenol-A type epoxy resin whose epoxy equivalent weight is about 490.
- ⊖ 50~100 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 temp.	: 23°C

EXOTHERMIC REACTION				
Mixing ratio = Epoxy resin / KINGMIDE 315	70 / 30	60 / 40	50 / 50	40 / 60
Peak exothermic time. (min.)	127	130	157	144
Peak exothermic temp. (°C)	35	39	52	52
Gel time (min.)	190	150	130	132



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## 4. PHYSICAL PROPERTIES

Employed Bisphenol-A type epoxy resin whose epoxy equivalent weight is about 190.  
 Curing time=7 days at 23°C (JIS K6911)

Epoxy resin / KINGMIDE 315	70 / 30	60 / 40	50 / 50	40 / 60
Tensile Strength (kgf/mm <sup>2</sup> )	5.7	6.1	4.9	3.1
Flexural Strength (kgf/mm <sup>2</sup> )	9.3	9.6	8.9	4.1
Flexural Modulus (kgf/mm <sup>2</sup> )	2.4×10 <sup>2</sup>	2.5×10 <sup>2</sup>	2.3×10 <sup>2</sup>	1.3×10 <sup>2</sup>
Compressive Strength (kgf/mm <sup>2</sup> )	7.5	7.4	7.1	5.8
Izod Impact Strength (kgf/cm-cm)	2.8	2.9	4.8	3.6
Rockwell Hardness (M-scale)	25.0	24.0	25.0	16.0
Heat Distortion Temp. (°C)	50	51	49	43

## 5. LAP SHEAR STRENGTH

Mild steel plates with sand blast treatment were employed whereon the lap shear strength of the mixed resin of the epoxy resin and KINGMIDE 315 was measured.

Epoxy resin : Employed same epoxy resin as above 4.

Curing time : 7 days at 23°C

Epoxy resin / KINGMIDE 315	80 / 20	70 / 30	60 / 40	50 / 50	40 / 60
Lap shear strength (kgf/cm <sup>2</sup> )	130	220	178	172	192

## 6. CHEMICAL RESISTANCE

Weight change of the cured products of an epoxy resin (=employed the same epoxy resin as 4.) with KINGMIDE 315 was measured as follows after immersing them for a specified period into following chemical substances.

Curing time : 7 days at 23°C

Unit : %

Epoxy resin / KINGMIDE 315	70 / 30			60 / 40			50 / 50		
	1	7	30	1	7	30	1	7	30
Immersing time ( days )									
Tap water	0.2	1.5	2.5	0.2	1.5	2.5	0.1	1.5	2.5
5% salt solution	0.2	1.3	1.9	0.1	1.2	1.7	0.1	1.2	1.7
10% caustic Soda Solution	0.1	1.1	1.6	0.9	1.1	1.6	0.1	1.1	1.8
10% ammonia Solution	0.2	1.4	2.2	0.1	1.2	2.0	0.1	1.2	2.3
5% sulfuric Acid Solution	0.2	1.9	6.4	0.7	4.5	9.8	2.1	4.5	20.0
5% hydrochloric Acid Solution	0.2	1.5	2.8	0.2	1.5	2.9	0.6	1.5	12.0
Kerosene	0.0	0.2	0.3	0.0	0.4	0.4	0.0	0.4	0.4
Isopropanol	0.5	1.8	3.4	1.2	6.1	16	1.5	6.1	24.0
Methyl-isobutyl-ketone	8.0	19.0	39	2.6	12.0	25	1.6	12	18.0