



# SANHO CHEMICAL CO., LTD.

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## KINGMIDE 328-A

KINGMIDE 328-A is a Polyaminoamide type epoxy curing agent. Mixed resin of KINGMIDE 328-A with an epoxy resin maintain a rather longer pot-life, and provides its cured products with well balanced cured properties. KINGMIDE 328-A is therefore recommended to be employed for such applications as general adhesives and structural adhesives in construction works.

### 1. SPECIFICATIONS

Appearance	: Brown-colored viscous liquid
Viscosity (25°C)	: 10,000~20,000 mPa·s
Colour	: 10 Max.
Amine Value	: 380±20
Specific Gravity (25°C)	: 0.97
A.H.E.W.	: 95

### 2. RECOMMENDED MIXING RATIO

40~80 parts by weight to 100 parts of Bisphenol-A type epoxy resin whose epoxy equivalent weight is about 190.

### 3. CURING CHARACTERISTICS

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

Total mass employed : 200 gram

Temperature : 22~23°C

Epoxy / KINGMIDE 328-A	Mixing Ratio		
	70 / 30	60 / 40	50 / 50
Peak Exothermic Time (min.)	210	165	155
Peak Exothermic Temperature(°C)	71	114	96
Gel Time (approx. minutes)	150	130	120

### 4. PHYSICAL PROPERTIES

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

Curing time = 7 days, at 23°C

Epoxy / KINGMIDE 328-A		Mixing Ratio		
		70 / 30	60 / 40	50 / 50
Tensile Strength	(Kgf/mm <sup>2</sup> )	4.6	6.3	5.5
Flexural Strength	(Kgf/mm <sup>2</sup> )	8.4	8.0	7.4
Flexural Modulus	(Kgf/mm <sup>2</sup> )	3.0×10 <sup>2</sup>	2.8×10 <sup>2</sup>	2.5×10 <sup>2</sup>
Compressive Strength	(Kgf/mm <sup>2</sup> )	8.0	7.4	6.8
Izod Impact Test	(Kgf-cm/cm)	2.0	2.9	3.0
Rockwell Hardness	(M-scale)	40	50	35
Heat Distortion Temperature	(°C)	40	45	43



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## 5. LAP SHERA STRENGTH

Epoxy resin : employed same epoxy resin as above **4**.

Curing Temperature : 23°C for 7 days

Mild steel plates with sand blast treatment were employed whereon the lap shear strength of the mixtured resin of the epoxy resin and KINGMIDE 328-A was measure.

Epoxy resin / KINGMIDE 328-A	Mixing Ratio		
	70 / 30	60 / 40	50 / 50
Lap Shear Strength ( kgf/cm <sup>2</sup> )	168	163	171

## 6. CHEMICAL RESISTANCE

Weight change of the cured products of an epoxy resin (=employed the same epoxy resin as **4**. with KINGMIDE 328-A was measured as follow after immersing them for a specified period into following chemical substances.

Curing time : for 7days, at 22~23°C

(% : percent)

Immersing Time	One day			Seven days			One month		
	7/3	6/4	5/5	7/3	6/4	5/5	7/3	6/4	5/5
Tap Water	0.2	0.1	0.2	0.4	0.5	0.4	1.2	1.6	2.5
5% solution of Salt	0.1	0.2	0.3	0.3	0.4	0.4	1.3	1.4	2.5
10% of Caustic Soda	0.1	0.2	0.2	0.3	0.4	0.3	1.2	1.3	1.8
10% of Ammonia	0.1	0.1	0.2	0.4	0.4	0.4	1.3	1.5	2.5
5% solution of Sulfuric Acid	0.2	1.8	7.0	0.6	4.0	11.5	1.7	7.5	50.5
5% solution of Hydrochloric Acid	0.2	0.7	2.0	0.5	1.3	2.5	1.5	4.2	18.2
Kerosene	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.5	0.4
Isopropanol	0.4	0.6	1.8	0.8	1.3	2.5	1.4	2.5	13.0
MIBK	4.5	2.0	1.0	10.0	4.0	3.0	16.0	7.0	11.5