Research & Development

High heat resistance, flexibility, low dielectric properties

Imide-based epoxy curing agent

It contributes to improving the performance of your epoxy resin.

A new imide-based epoxy curing agent have been developed by Unitika's original manufacturing process. It solves the problems of epoxy resin used for electronic parts in the high temperature range and contributes to the improvement of the performance of your epoxy resin.

Heat-resistant

High heat resistance is achieved by introducing imide group into the epoxy curing system.

low dielectric properties

It is ideal for use in the electronics field

Flexibility

Heat resistant type and flexible type are available.
By using them together, ideal characteristics are expressed.

Applicability

It can also be applied to improve the characteristics of your existing epoxy curing system.

Imide group can be introduced into epoxy curing systems.

Heat resistant type

High heat resistance, high toughness (high strength), low dielectric properties

High performance was achieved with low crosslink density by introducing imide group.

High insulation (By joint study with Tokyo City University)

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Flexible type

Excellent flexibility (low elastic modulus & high elongation), low dielectric properties

Shape stability of epoxy cured product (prevention of cracking, warping and peeling)

The above characteristics are achieved by introducing flexible chemical structure.

By using them together, it is possible to achieve both heat resistance and shape stability

Technical data

General properties

	Curing agent		Heat resistant type	Heat resistant type / Flexible type *2	Heat resistant type	PN *3	PN / Heat resistant type *2,3
Properties	Appearance		Yellow powder	—	Yellow liquid	—	—
Properties	Functional group equivalent	g/eq	274	—	1510	104	—
Characteristics of cured epoxy resin *1	Tensile strength	MPa	96	67	3	54	42
	Tensile elongation	%	9	10	358	2	4
	Tg(DMA)	°C	223	212	14	132	128
	E' (DMA)	MPa	2730	1970	3	2765	1639
	Dielectric constant DK *4	—	3.05	2.91	2.21	3.08	2.86
	Dielectric dissipation factor Df *4	—	0.014	0.011	0.007	0.033	0.027
	CTE *5	10^{-6}/°C	57	86	1632 *7	70	81
	Td5 *6	°C	385	380	314	369	369

*1 Epoxy resin : BADGE (Bisphenol A Diglycidyl Ether), Accelerator : 2-Ethyl-4-methylimidazole (2E4Mz) 0.2wt%,
Mixing ratio : Epoxy resin / Curing agent = 1/1 (Functional group equivalent ratio), Curing condition : 120°C 1h → (22.5°C/h) →300°C 1h
*2 The ratio of the flexible type to the resin solid content was set to 15wt%. *3 PN : Phenol novolac hardener
*4 Cavity perturbation method (5.8GHz) *5 50～100°C *6 Air atmosphere *7 20～50°C

(Notice) This product is under development. The information in this document is presented without guarantee and warranty.

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