



TECHNICAL DATA SHEET

NITTO DENKO CORPORATION
Semiconductor Related Products Divis

CLEAR TRANSFER MOLDING COMPOUND NT-600H

NT-600H is the transparent compound whose main component is epoxy resin. It shows rapid curing and has high moisture resistance, and has high reliability and workability when used for encapsulation of opto-devices such as LEDs and photodetectors.

1. FEATURES

- 1) It has highly cross-linked density and good thermal and heat-cycle characteristics.
- 2) Rapid-curing brings short molding time.
- 3) For encapsulation of opto-devices, it possesses superior moldability and reliability.

2. MOLDING CONDITIONS

The following table shows the recommended cure profile, that may be adjusted depending on the mold die design, package design, and the characteristics of the semiconductor device molded in the package.

Outer releasing agent (silicones or fluorinated compounds) must be applied onto the mold surface prior to use of this product to ease its release from the mold dies.

Molding condition:

Mold Temperature:	145 – 160 °C
In-mold cure time:	1.5 – 2.5 min
Transfer pressure:	3 – 8 MPa (30 – 82 kgf/cm ²)

Post mold curing condition

Temperature x time:	150 °C x 3 hrs
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Note:

Post cure time above is the required time after the temperature of molded package goes up to the indicated one.

Temperature rising rate of molded package changes depending on air flowing rate and heat capacity of package and its holder in the oven. Please confirm the time the packages heated up to the cure temperature and add it in the time packages kept in the oven.

3. PROPERTIES

3.1 GENERAL PROPERTIES

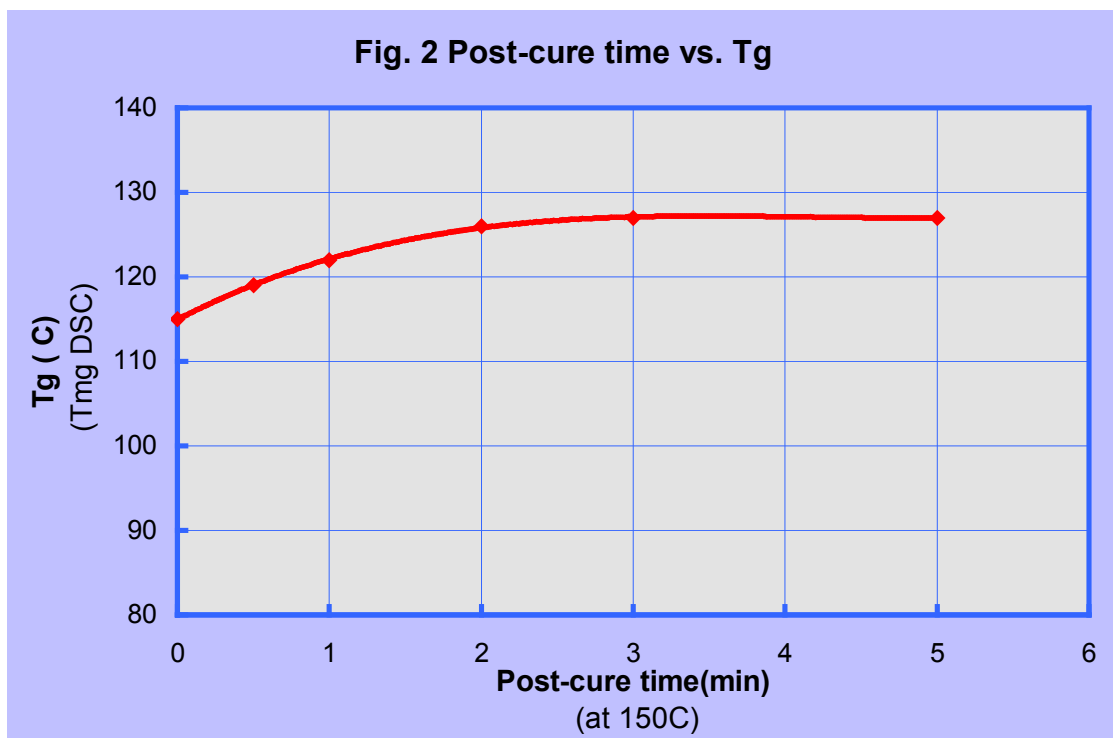
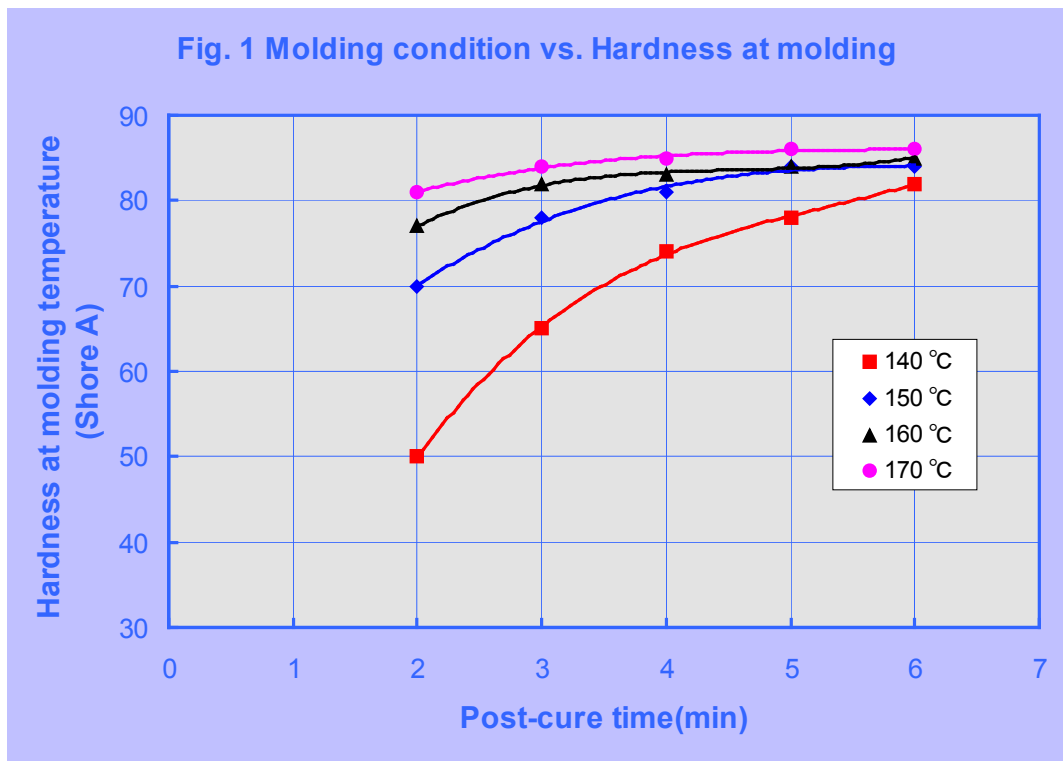
Inspected specimens were cured under following condition.

In-mold curing : 150 °C x 4 min

Post mold curing : 150 °C x 3 hrs

PROPERTY	TEST CONDITION	UNIT	VALUE	NOTES
Specific Gravity	JIS K 6911	-	1.21	
Hardness	Shore D	-	84	
Mold shrinkage	100mm ϕ 2mm ^t	%	1.40	
Molding condition vs. Hardness	Shore A	-	Fig. 1	
Water Absorption	JIS K 6911	wt%	0.18	25 \pm 5°C 24hrs
Boiling Water Absorption			0.28	95 °C \times 1h
Flexural Strength	JIS K 6911	N/mm ²	130	
Flexural Modulus			3100	
CTE below Tg		1/°C	6.5x10 ⁻⁵	
CTE above Tg			17x10 ⁻⁵	
Tg – (TMA)		°C	127	
Tg – (DSC)			122	
Post-cure condition vs. Tg	DSC	-	Fig. 2	
Volume Resistivity (ρ_v)	JIS K 6911	Ω ·cm	12x10 ¹⁵	25°C
Dielectric Constant			3.8	1MHz
Dissipation Factor		%	2.3	1MHz
Transmittance at 400 nm	Spectrophotometer	%	88	1.0mm ^t
Refractive Index	Abbe method		1.56	589.3 nm

Value* : The above values are not specifications and cannot be guaranteed.



3.2 IONIC IMPURITIES IN EXTRACTED WATER

Test Method

Preparation of specimen

Molding condition	:	150 °C x 4 min
Post cure condition	:	150 °C x 3 hrs

Extracting Condition

Specimen	:	60 mesh pass granulated product
Extraction	:	121 °C x 0.2 MPa (2 atm) x 20 hrs

PROPERTY	UNIT	VALUE
Electric Conductivity	$\mu\Omega^{-1}\cdot\text{cm}$	95
pH	—	3.5
Na ⁺	ppm	0.4
Cl ⁻	ppm	12

* Measured by : Na⁺ = Atomic absorption spectrometry, Cl⁻ = Ionic chromatography

* Above figures are typical ones and not for specification purposes.

4. ATTENTION

Before use, see Material Safety Data Sheet (MSDS) of this product.