

Ajicure PN-40 and PN-40J are amine-epoxy adduct type latent epoxy curing agents and accelerators. Ajicure PN-40J is a micro-grounded type of Ajicure PN-40. These products are very good accelerators for epoxy/dicyandiamide(DICY) system and also very good latent curing agents for epoxy resin.] One component epoxy/Ajicure PN-40 or PN-40J formulations show rapid cure and very long pot life and provide high Tg when cured.

One component DICY cured adhesive accelerated with Ajicure PN-40 or PN-40J show rapid cure and very long pot life and provide high shear strength.

We have 3 kinds of Ajicure PN-series; Ajicure PN-23, PN-40 and PN-31. Ajicure PN-40 and PN-31 are based on Ajicure PN-23 and modified to improve their pot life. The differences between them are mainly curing speed and stabilities, which are described below;

Curing speed : *Fast* Ajicure PN-23 > PN-31 > PN-40

Pot life : *Long* Ajicure PN-40 > PN-31 > PN-23

Ajicure PN-23 is very stable in bisphenol A epoxy resin formulations. But in bisphenol F formulations or formulations with diluents Ajicure PN-23 shows shorter pot life. In comparison with Ajicure PN-23 **Ajicure PN-40 or PN-40J shows much better pot life even in bisphenol F epoxy.**

Table 1. Typical properties

	AJICURE PN-40	AJICURE PN-40J
Appearance	pale yellow powder	pale yellow powder
Particle size av.	10 micron	3 micron
Softening point (??)	100-110	100-110

- **LONG POT LIFE**

- Viscosity increase of aging at 70°C-8hr is very small

- Long pot life with reactive diluent

- **RAPID CURE / Low temperature cure**

- PN-40 : 100°C/30min ~ (Bis A epoxy)

- PN-40J : 90°C/30min ~ (Bis A epoxy)

- 80°C/60min ~ (Bis F epoxy)

- **Transparent cured product**

- PN-40J provides lustrous cured product

- **HIGH Tg**

- **EXCELLENT ACCELERATOR of DICY**

- Viscosity increase during aging at 70 °C-8hr is very small

- can be cured at 100 °C

Table 2. Properties of Bis-F epoxy formulations

Curing agent		PN-40		PN-40J	PN-23
Formulation	Epon 807	100	100	100	100
	Ajicure PN-40	20	30	-	-
	Ajicure PN-40J	-	-	20	-
	Ajicure PN-23	-	-	-	20
	Aerosil 200	2	2	2	2
Gel Time (min)	80 °C	23.5	15.2	10.5	13.1
	100 °C	4.6	3.8	4.0	4.0
	120 °C	2.3	2.1	2.3	2.1
	150 °C	1.5	1.2	1.5	1.3
Tg (°C)	[80 °C-60min cure]	not cure	105	105	105
	[120 °C-30min cure]	130	130	130	135
Initial Viscosity (Ps)		92	123	94	90
Viscosity Increase ratio after 4W @40 °C		1.2	1.4	2.4	24.1
Viscosity Increase ratio after 24hr @60 °C		1.5	2.1	12.8	cure

Epon807 is equivalent to Epon862.

Table 3. Properties of Bis-A epoxy formulations

		PN-40		PN-40J	PN-23
Formulation	Epon 828	100	100	100	100
	Ajicure PN-40	20	30	-	-
	Ajicure PN-40J	-	-	20	-
	Ajicure PN-23	-	-	-	20
	Aerosil 200	1	1	1	1
Gel Time (min)	100 °C	5.5	4.6	4.1	4.2
	120 °C	2.7	2.3	2.4	2.2
	150 °C	1.4	1.2	1.4	1.2
Tg (°C)	[100 °C-30min cure]	53	69	121	125
	[120 °C-30min cure]	135	140	140	135
Initial Viscosity (Ps)		294	396	278	291
Viscosity Increase ratio after 4W @40 °C		1.1	1.3	2.2	1.5
Viscosity Increase ratio after 24hr @60 °C		1.2	1.5	4.0	6.6
Viscosity Increase ratio after 3hr @70 °C		1.2	1.3	1.7	cure
Viscosity Increase ratio after 8hr @70 °C		1.3	1.7	3.6	-

Ajicure PN-40 and PN-40J are excellent accelerators for DICY.

Table 4. Properties of Bis-F epoxy / dicyandiamide (DICY) formulations

		PN-40	PN-40J	PN-23
Formulation	Epon 807	100	100	100
	DICY	8	8	8
	Ajicure PN-40	5	-	-
	Ajicure PN-40J	-	5	-
	Ajicure PN-23	-	-	5
	Aerosil 200	1	1	1
Gel Time (min)	100 °C	13.3	10.2	12.9
	110 °C	4.8	4.3	4.4
	120 °C	3.0	3.0	3.0
	150 °C	1.3	1.3	1.4
Tg (°C)	[120 °C-0.5hr+150 °C-1hr cure]	136	138	135
Initial Viscosity (Ps)		52	53	54
Viscosity Increase ratio after 1W @40 °C		1.1	1.1	1.5
Viscosity Increase ratio after 4W @40 °C		1.3	1.3	8.0
Viscosity Increase ratio after 3hr @70 °C		1.2	2.0	cure
Viscosity Increase ratio after 8hr @70 °C		4.3	100	-

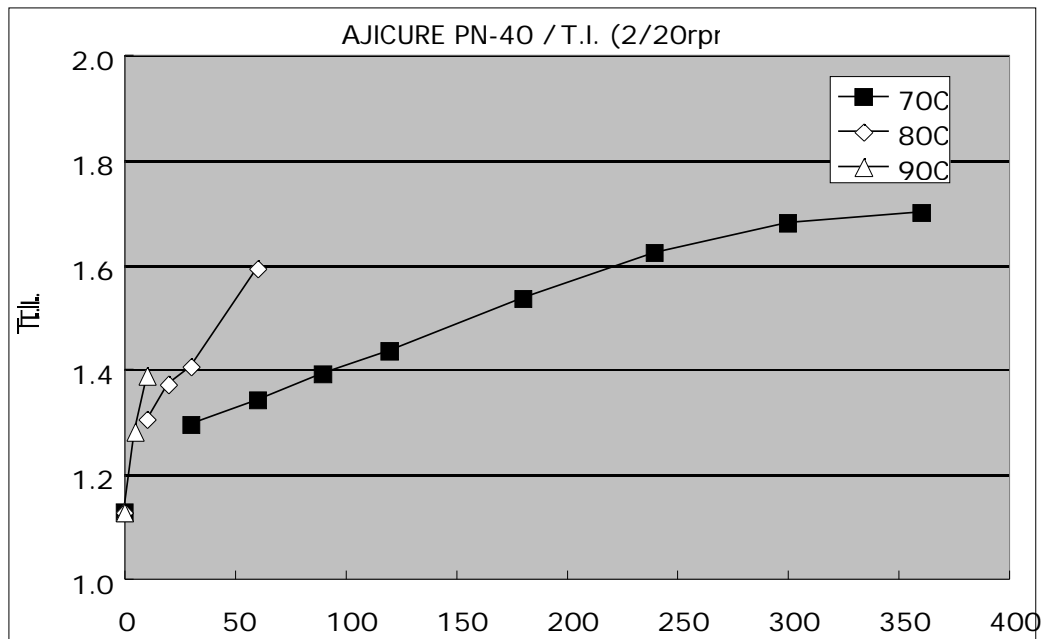
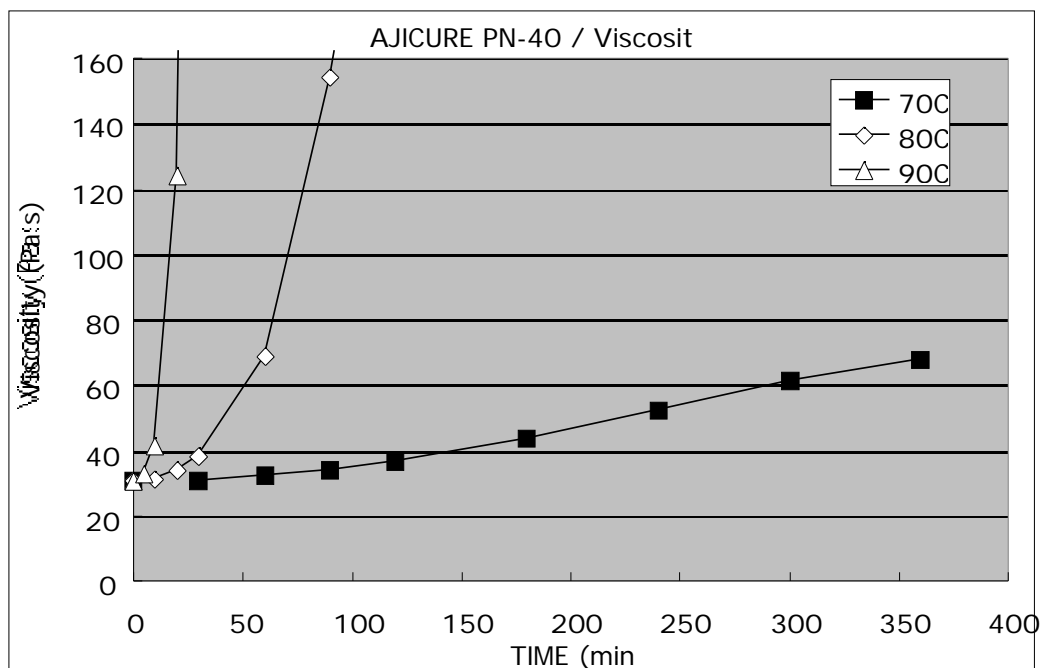
Epon807 is equivalent to Epon862.

Formulation

Epon828 (100)
AJICURE PN-40 (20)
Aerosil#200 (1)

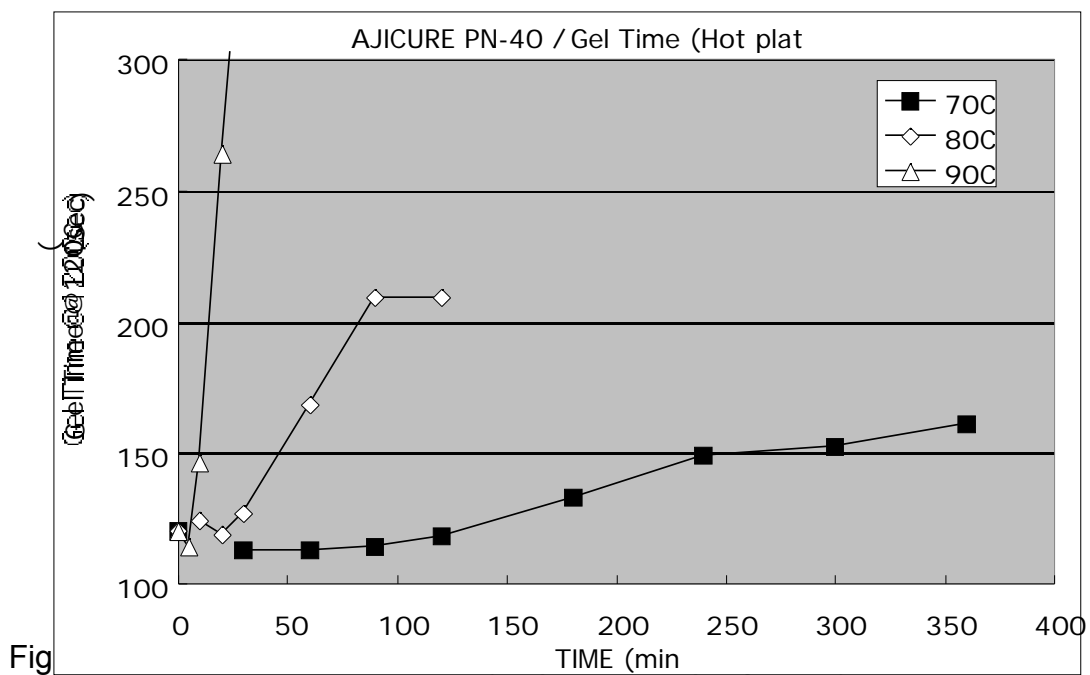
AJICURE PN-40 is very stable.

Within 70C/5hr or 80C/50min the formulation
keeps below twice the initial viscosity.



Formulation

Epon828 (100)
 AJICURE PN-40 (20)
 Aerosil#200 (1)



Gel Time of PN-40 formulation increase gradually while it is kept at 70C , 80C or 90C.

AJICURE®

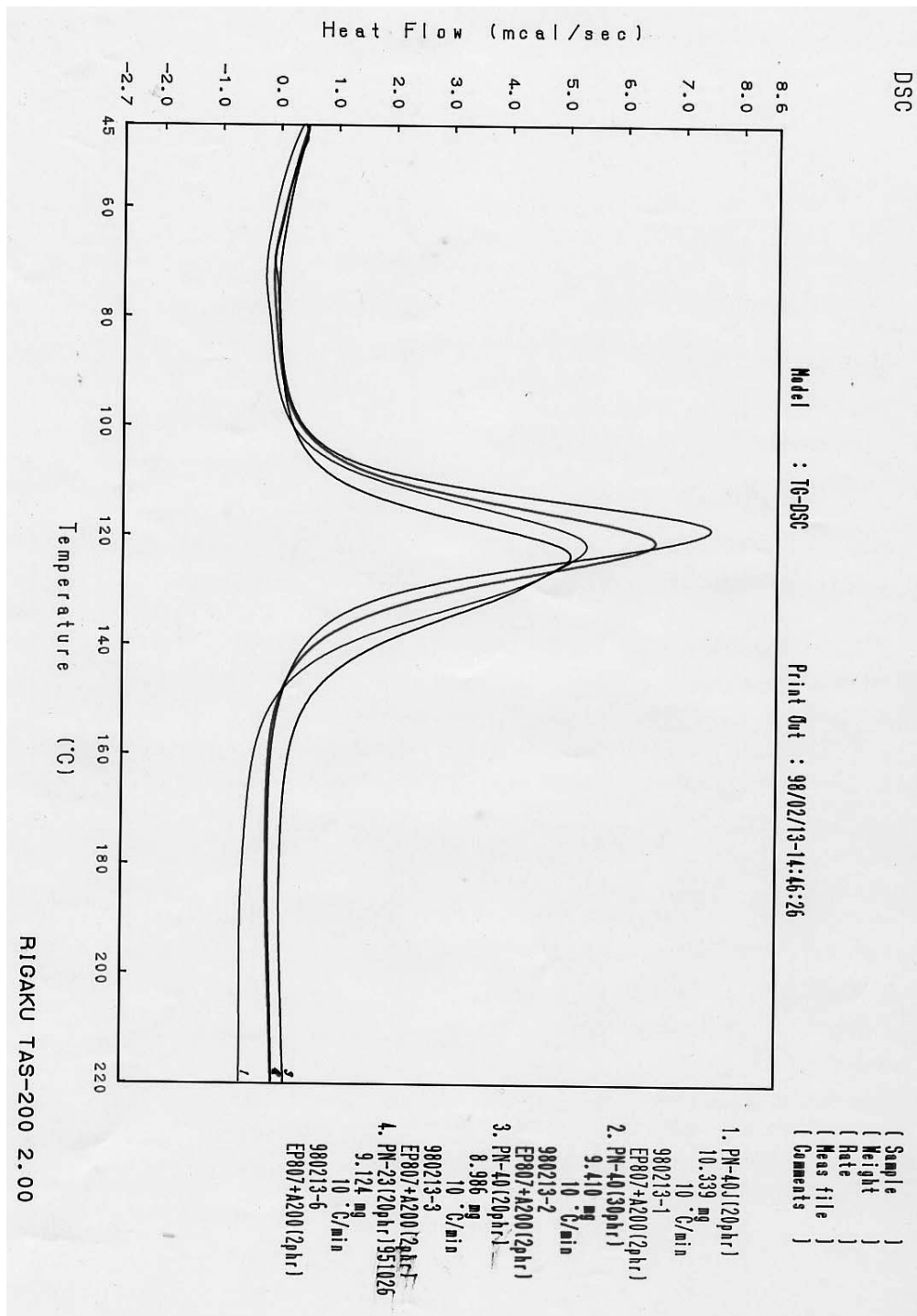
LATENT CURING AGENTS AND ACCELERATORS
FOR EPOXY RESIN

Formulation

EP807 (100)

PN-40 (20)

A200 (2)



PN-40J : SEM X1000



PN-40J : SEM X3000

