



# SANHO CHEMICAL CO., LTD.

NO. 1, ZHONGSHAN S. RD., LUZHU DIST., KAOHSIUNG CITY, TAIWAN.  
 TEL : 886-7-6962211~3 [http : // www.sanho.com.tw](http://www.sanho.com.tw)  
 FAX : 886-7-6976993 (Sales) E-mail : sanho@sanho.com.tw  
 FAX : 886-7-6961782 (Export) E-mail : sanho@so-net.net.tw

## FUJICURE FXR-1081

NO:TD-06-10

Fujicure FXR-1081 is not only a latent curing agent but also a curing accelerator.

FXR-1081 has the active hydrogen in molecule as well as the function group which act as a curing catalyst.

FXR-1081 is dispersed easily in epoxide resin resin and the resin mixture maintains good storage stability at room temperature.

Compared with the other Fujicure latent curing agents Fujicure FXE-1081 provides superior strength property at a lower curing temperature.

Additionally, even a small phr of FXR-1081 decreases the curing temperature to a great extent without deteriorating the original storage stability of the epoxy resin mixture when FXR-1081 is formulated in other latent curing agent.

The cured product using FXR-1081 is slightly yellowish but transparent and performs superior mechanical properties along with superior adhesion properties.

Encapsulation, potting, adhesive are recommendable application fields.

### 1. Typical specification :

(Not the fixed specification)

Appearance	While powder / particle.
Specific gravity	1.11
Particle size	4µm on average.
Softening point	121°C

### 2. Property of the compounding

Epoxy resin <sup>(1)</sup> , Phr	100	100	100	100	100
Aerosil 300 <sup>(2)</sup>	1	1	1	1	1
FXR-1081	10	15	20	25	30
Gel time <sup>(3)</sup> (sec)					
at 70°C	1,404	953	734	573	459
at 80°C	753	534	437	362	333
at 100°C	353	251	197	169	161
at 120°C	277	182	146	125	110
Storage stability <sup>(4)</sup>					
Viscosity increase ratio (in multiple)					
Initial viscosity, (Pa·S / 25°C)	23.7	27.5	32.3	38.8	46.3
40°C × 30 days	1.5	1.7	25days	16days	10dasy
23°C × 30days	1.1	1.1	1.1	1.1	1.1
Gel time <sup>(3)</sup> (40°C × 30days) (sec)					
at 70°C	1,171	812	—	—	—



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at 80°C	654	400	—	—	—
Gel time <sup>(3)</sup> (23°C × 30days) (sec)					
at 70°C	1,387	942	703	508	439
at 80°C	743	526	423	357	302

Remarks :

- (1) Bisphenol-A liquid epoxy resin whose epoxy equivalent weight is about 190.
- (2) Colloidal silica by Nippon Aerosil.
- (3) Mess=2g, Measured by Yasuda model gel-timer.
- (4) Measure the storage stability after store the epoxy compounding in 23°C and 40°C for 30 days. The temperature to measure the storage stability is 25°C °

Result : the viscosity increase over the initial viscosity.

Report the increase rate in multiple times and / or days for viscosity of the epoxy compounding to increase up to 2 times high on the initial viscosity.

### 3. Property of the cured product.

Epoxy resin <sup>(1)</sup> , Phr	100	100	100	100	100
Aerosil 300 <sup>(2)</sup>	1	1	1	1	1
FXR-1081	10	15	20	25	30
Curing property measured by DSC. <sup>(3)</sup> , °C					
Reaction start temp-1	67	67	67	66	67
Reaction start temp-2	95	93	91	90	89
Peak temperature.	116	114	113	111	110
Glass transition temp <sup>(4)</sup>	56	98	105	105	104
Bending strength <sup>(5)</sup> , Mpa					
Curing at 70°C × 1h	—	28	90	91	87
80°C × 1h	111	118	125	126	126
100°C × 1h	111	113	115	117	120
120°C × 1h	100	105	105	104	110
Bending modulus <sup>(5)</sup> , Gpa					
Curing at 70°C × 1h	—	1.0	2.9	3.4	3.5
80°C × 1h	3.3	3.3	3.5	3.6	3.5
100°C × 1h	3.0	2.8	2.7	2.6	2.7
120°C × 1h	2.7	2.3	2.3	2.4	2.4
Tensile strength <sup>(6)</sup> , Mpa					
Curing at 70°C × 1h	—	11.5	14.0	14.8	14.9
80°C × 1h	16.5	16.0	15.9	15.0	15.0
100°C × 1h	19.8	18.9	17.5	15.5	15.5
120°C × 1h	23.5	21.7	20.5	18.3	19.0



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Boiling water absorption <sup>(7)</sup> , (wt%)					
Curing at 70°C × 1h	—	0.40	0.42	0.50	0.56
80°C × 1h	0.45	0.45	0.46	0.50	0.57
100°C × 1h	0.48	0.46	0.45	0.50	0.57
120°C × 1h	0.52	0.45	0.50	0.52	0.52

Remarks :

- (1) Bisphenol-A liquid epoxy resin whose epoxy equivalent weight is about 190.
- (2) Colloidal silica by Nippon Aerosil.
- (3) Measured from the curve of DSC.  
Heating speed = 10°C / min.
- (4) Heating upto 220°C under heating speed 10°C / min.  
Thereafter heat again under heating speed of 10°C / min.  
Measured from DSC curve.
- (5) Cure for one hour at each temperatoue.  
Measure Bending strength and bending modulus.
- (6) Apply the epoxy compounding onto mild steel sheet with sand blast.  
Cure for one hour.  
Measure the tensile strength under  
The speed of 2mm/min.
- (7) Encapsulate the compounding into a mold (diameter = 50mm. Height = 3mm).  
Cure for one our.  
Immerse the cured product in boiling water for one hour.  
Thereafter, measured the weight increase of the cured product.

#### 4. Accelerating property to D.I.C.Y

Epoxy resin <sup>(1)</sup> , Phr	100	100	1,000	1,000	100
Aerosil 300 <sup>(2)</sup>	1	1	1	1	1
Amicure CG-1400 <sup>(3)</sup>	8	8	8	8	8
FXR-1081	—	1	3	5	7
Curing property measured by DSC. <sup>(4)</sup> , °C					
Reaction start temp-1	159	122	72	68	70
Reaction start temp-2	188	162	128	117	111
Peak temperature.	198	176	149	140	135
Glass transition temp <sup>(5)</sup>	131	130	131	130	127
Gel time <sup>(6)</sup> , (sec)					
at 100°C	—	—	2,289	1,039	651
at 120°C	—	—	557	289	214
at 150°C	—	450	142	117	96
at 180°C	293	139	89	71	64



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Storage stability <sup>(7)</sup> 黏 Viscosity increase ratio (in multiple)					
Initial Viscosity, Pa·s / 25°C	21.7	23.1	24.9	26.6	28.4
40°C × 30days	1.2	1.4	1.6	1.8	2.0
23°C × 30days	1.1	1.1	1.1	1.1	1.1
Gel time <sup>(6)</sup> (40°C × 30days) (sec)					
at 100°C	—	—	1,690	787	506
at 120°C	—	—	507	257	193
at 150°C	—	400	139	115	101
at 180°C	255	136	90	70	60
Gel time <sup>(6)</sup> (23°C × 30days)(sec)					
at 100°C	—	—	2,009	948	611
at 120°C	—	—	555	233	186
at 150°C	—	400	138	108	100
at 180°C	271	126	90	68	68
Tensile strength <sup>(7)</sup> , Mpa					
Curing at 100°C × 1 小時	—	—	—	11.5	19.7
120°C × 1 小時	—	—	23.1	22.0	20.6
150°C × 1 小時	—	27.0	25.9	24.2	24.5
180°C × 1 小時	28.3	28.0	28.5	28.5	27.2

## Remarks :

- (1) Bisphenol-A liquid epoxy resin whose epoxy equivalent weight is about 190.
- (2) Colloidal silica by Nippon Aerosil.
- (3) D. I.C.Y. by Air Products
- (4) Measured from the curve of DSC.  
Heating speed = 10°C/min.
- (5) Heating upto 220°C under heating speed 10°C / min.  
(when using only CG-1400, upto 250°C)  
Thereafter, heat again under heating speed of 10°C/min.  
Measured from DSC curve.
- (6) Mass=2g, Measured by Yasuda model gel-timer.
- (7) Measure the storage stability after store the epoxy compounding in 23°C and 40°C for 30 days.  
The temperature to measure the storage stability is 25°C.  
Result : the viscosity increase over the initial viscosity.  
Report the increase rate in multiple times and / or days for viscosity of the epoxy compounding to increase upto 2 times high on the initial viscosity.
- (8) Apply the epoxy compounding onto mild steel sheet with sand blast.  
Cure for one hour.  
Measure the tensile strength under the speed of 2mm/min.