



Color & Comfort

EZ0101-17
[2017.03]

EPICLON®

STANDARD PRODUCTS Epoxy Resin & Curing Agents

Color & Comfort



DIC Corporation

EPOXY BUSINESS in DIC CORPORATION

Epoxy business is one of **DIC Corporation's** core business to be strengthened by continuous expansion. The production site is located in Chiba, Japan. The 1st plant has been operated since 1971. The 2nd plant was on stream in 1985 for epoxy resins used for electronics and electric application and the 3rd plant in 1994 for brominated epoxy resins. Investment to exiting plants has been continued to modernize the facilities such as computerizing. In addition to these three plants at Chiba, **DIC** established a joint venture company with epoxy resin manufactures in 1989 to produce BPA liquid epoxy resin.

Quality control and environmental protection are top concerns in our business operation. ISO 9002 for epoxy resin production at Chiba Plant in 1993 and ISO 9001:2000 at Chiba Plant in 2002 were awarded, and ISO 14001 for Chiba Plant in 1997.

The production technology has been licensed to companies in Italy, Korea and Czech.

DIC's epoxy resins have been exported to world market from Japan. In order to provide better service to oversea customers, especially in Asian countries, **DIC** started epoxy production by a 100% subsidiary, **DIC EPOXY MALAYSIA**, in Johor, Malaysia in 1999.

DIC has committed customers to contribute their business by providing excellent quality, not only products, but also technical service, development to meet customers' existing and future needs, delivery, competitive price and other supports.

	PAGE		PAGE
■ <i>Bisphenol A Type liquid</i>	2	■ <i>Phenol Novolac / Modified Novolac Type</i>	8
■ <i>Bisphenol A Type solid</i>	3	■ <i>High Flexible Type</i>	
■ <i>Bisphenol F Type liquid</i>	4	■ <i>High Performance Type</i>	9
■ <i>Diluted Type</i>		■ <i>Polyfunctional Type</i>	
■ <i>Bisphenol A Type solvent solution</i>	5	■ <i>High Molecular weight Type</i>	10
■ <i>Reactive diluents</i>		■ <i>Epoxy Polyol Type</i>	11
■ <i>Brominated Type</i>	6	■ <i>Curing agents- Amine Type</i>	
■ <i>Cresol Novolac Type</i>	7		

Bisphenol A Type liquid

Liquid type epoxy resins based on bisphenol A, are used in various fields such as coatings, electric and as reactive intermediates.

EPICLON®	EEW (g/eq)	Viscosity (25°C, mPa.s)	State	Comments
840	180 - 190	9000 - 11000	<i>Liquid</i>	<i>Low viscosity</i>
840-S	180 - 190	9000 - 11000	<i>Liquid</i>	<i>Low hydrolyzable chlorine</i>
850	184 - 194	11000 - 15000	<i>Liquid</i>	<i>Standard</i>
850-S	184 - 194	11000 - 15000	<i>Liquid</i>	<i>Low hydrolyzable chlorine</i>
850-CRP	168 - 178	3500 - 5500	<i>Liquid or Crystal</i>	<i>Distilled resin / High purity</i>
850-LC	195 - 215	15000 - 25000	<i>Liquid</i>	<i>Low tendency to crystallize</i>

Bisphenol A Type solid

Solid type epoxy resins based on bisphenol A, are used for coatings mainly.

EPICLON®	EEW (g/eq)	Viscosity ¹⁾ (25°C, Gardner)	Softening point (°C)	Comments
860	235 - 255	P - U ²⁾	Semi-solid	<i>Resist ink, Coatings</i>
1050	450 - 500	D - F	62 - 73	<i>Coatings</i>
1055	450 - 500	D - F	62 - 73	<i>Coatings</i>
AM-020-P	600 - 670	H - K	77 - 87	<i>Hybrid powder coatings</i>
3050	740 - 860	R - T	91 - 100	<i>Powder coatings</i>
AM-030-P	710 - 780	J - P	85 - 95	<i>Hybrid powder coatings</i>
4050	900 - 1000	Q - U	93 - 102	<i>Powder coatings</i>
AM-040-P	890 - 970	L - V	90 - 98	<i>Hybrid powder coatings</i>
7050	1750 - 2100	Y - Z ₁	117 - 127	<i>Can coatings, Powder coatings</i>
HM-091	2200 - 2900	Z ₃ - Z ₅	135 - 150	<i>Can coatings, PCM</i>
HM-101	3200 - 3900	Z ₅ - Z ₇	150 - 165	<i>Can coatings, PCM</i>

1) 40% solid in Butyl carbitol 2) 70% solid in Butyl carbitol

Bisphenol F Type liquid

Liquid type epoxy resins based on bisphenol F. They have excellent workability and mold ability due to low viscosity.

EPICLON®	EEW (g/eq)	Viscosity (25°C, mPa.s)	State	Comments
830	165 - 180	3,000 - 4,000	<i>Liquid</i>	<i>Standard</i>
830-S	165 - 180	3,000 - 4,500	<i>Liquid</i>	<i>Low hydrolyzable chlorine</i>
EXA-830LVP	156 - 168	1,000 - 3,000	<i>Liquid or Crystal</i>	<i>High purity / Low viscosity</i>
835	165 - 180	3,000 - 4,500	<i>Liquid</i>	<i>Low tendency to crystallize</i>
EXA-835LV	156 - 170	1,500 - 3,000	<i>Liquid or Crystal</i>	<i>High purity</i>

Diluted Type

Diluted epoxy resins are used for floorings, adhesive, coatings, potting, etc

EPICLON®	EEW (g/eq)	Viscosity (25°C, mPa.s)	Comments
855	183 - 193	800 - 1,100	<i>Diluted with Butyl glycidyl ether</i>
857	190 - 205	800 - 1,100	<i>Diluted with Alkyl phenol mono-glycidyl ether</i>
D-591	191 - 211	700 - 1,100	<i>Diluted with Alkyl phenol mono-glycidyl ether and Alkyl mono-glycidyl ether</i>
D-595	165 - 185	1,000 - 1,600	<i>Diluted with 1,6-Hexanediol di-glycidyl ether</i>

Bisphenol A Type solvent solution

Epoxy resins diluted with solvents. They have excellent workability and can be used for coatings mainly.

EPICLON®	EEW ¹⁾ (g/eq)	N.V.(%)	Viscosity (25°C,Gardner)	Color	Solvents	Comments
860-90X	230 - 270	89 - 91	Z ₃ -Z ₆	<2	Xylene	Heavy duty anti- corrosive coatings
1050-70X	450 - 500	69 - 71	X-Z ₁	<2	Xylene	Heavy duty anti- corrosive coatings
1050-75X	450 - 500	74 - 76	Z ₃ -Z ₅	<2	Xylene	Heavy duty anti- corrosive coatings
1055-75X	450 - 500	74 - 76	Z ₃ -Z ₅	<2	Xylene	Heavy duty anti- corrosive coatings
1051-75M	450 - 500	74 - 76	900-2100 mPa.s	<2	MEK	Laminates
7070-40K	1700 - 2100	38 - 42	P-T	<5	Xylene, n-BuOH, Butyl cellosolve	Can coatings, PCM
HM-091-40AX	2200 - 2900	39 - 41	U-Z	<3	Xylene, Cyclohexanone	Can coatings, PCM

1) As solid

Reactive diluents

Reactive diluents are super low viscosity. Mixing this with liquid epoxy resins achieve very lower viscosity, 100% reactive systems.

EPICLON®	EEW (g/eq)	Viscosity (25°C,Gardner)	Color	Comments
520	220 - 250	5 - 25	<7	Alkyl phenol mono glycidyl ether

Brominated Type

Fire retardant epoxy resins based on tetra-bromo bisphenol A. They have excellent fire retardancy and can be suitable for molding compounds for semi-conductor, electric laminates etc .

EPICLON®	EEW (g/eq)	Br contents (wt %)	Viscosity (25°C, mPa.s)	Comments
152	340 - 380	44 - 48	-	<i>S.P. 56-66 °C</i>
153	390 - 410	46 - 50	-	<i>S.P. 65-75 °C</i>
153-60T	390 - 410 ¹⁾	46 - 50 ¹⁾	<A ²⁾	<i>60% solid in Toluene</i>
153-60M	390 - 410 ¹⁾	46 - 50 ¹⁾	<A ²⁾	<i>60% solid in MEK</i>
1121N-80M	475 - 515 ¹⁾	20 - 22 ¹⁾	1000 - 4000	<i>80% solid in MEK</i>
1123P-75M	530 - 560 ¹⁾	22 - 23.5 ¹⁾	500 - 900	<i>75% solid in MEK</i>

1) As solid 2) Gardner viscosity

Cresol Novolac Type

Multifunctional high heat resistance epoxy resins based on cresol novolac resin. Their applications are molding compounds for semi-conductor, electric laminates, solder resist inks etc.

EPICLON®	EEW (g/eq)	Softening point (°C)	Viscosity (ICI, 150°C, dPa.s)	Comments
N-660	200 - 215	60 - 68	1.0 - 3.0	Standard
N-665	200 - 215	64 - 72	2.0 - 4.0	Standard
N-670	200 - 215	68 - 76	3.0 - 5.0	Standard
N-673	200 - 215	74 - 83	4.5 - 7.0	Standard
N-680	200 - 220	80 - 90	11.0 - 17.0	Standard
N-695	205 - 225	90 - 100	110 - 260 ²⁾	Standard
N-665-EXP	200 - 215	64 - 72	2.5 - 4.0	High purity
N-672-EXP	200 - 215	70 - 78	4.5 - 6.0	High purity
N-655-EXP-S	197 - 207	54 - 62	0.5 - 2.0	High purity / Excellent mold ability
N-662-EXP-S	200 - 210	64 - 70	2.0 - 3.5	High purity / Excellent mold ability
N-665-EXP-S	200 - 210	66 - 74	3.5 - 5.0	High purity / Excellent mold ability
N-670-EXP-S	200 - 210	70 - 80	4.5 - 6.0	High purity / Excellent mold ability
N-685-EXP-S	200 - 210	80 - 90	10 - 12	High purity / Excellent mold ability
N-673-80M	200 - 230 ¹⁾	-	2500 - 7000 ³⁾	80% solid in MEK
N-680-75M	200 - 230 ¹⁾	-	500 - 2500 ³⁾	75% solid in MEK
N-690-75M	210 - 240 ¹⁾	-	1000 - 3200 ³⁾	75% solid in MEK

1) As solid 2) 50% solid in Dioxane, 25°C, mm²/s 3) mPa.s

Phenol Novolac / Modified Novolac Type

Multifunctional epoxy resins based on phenol novolac resin. They can be used for various applications due to their excellent heat resistance.

EPICLON®	EEW (g/eq)	Softening point (°C)	Viscosity (25°C, mPa.s)	Comments
N-740	170 - 190	Semi-solid	H - K ²⁾	Standard
N-770	180 - 200	65 - 75	3.5 - 6.0 ³⁾	Standard
N-775	180 - 200	70 - 80	6.0 - 9.0 ³⁾	Standard
N-740-80M	170 – 190 ¹⁾	-	200 - 600	80% solid in MEK
N-770-70M	180 – 200 ¹⁾	-	100 - 600	70% solid in MEK
N-865	195 - 215	64 - 72	1.0 - 4.0 ³⁾	Modified novolac
N-865-80M	195 – 215 ¹⁾	-	500 - 4000	Modified novolac / 80% solid in MEK

1) As solid 2) 60% solid in Butyl carbitol, Gardner viscosity 3) ICI viscosity at 150°C, dPa.s

High Flexible Type

Modified epoxy resins having excellent thermal shock resistance and flexibility after cured .

EPICLON®	EEW (g/eq)	Viscosity (25°C, mPa.s)	Color	Comments
TSR-960	230 - 250	60000 - 90000	< 5	100% solid. Elastomer modified for adhesive.
TSR-601	450 - 500	Z - Z ₂ ¹⁾	< 8	100% solid. Elastomer modified for adhesive.
1650-75MPX	650 - 750	2000 - 5000	< 7	75% solid in Xylene. Dimer acid modified.

1) 60% solid in Butyl carbitol, Gardner viscosity

High Performance Type

High performance epoxy resins having excellent heat resistance, water resistance, toughness and adhesion. They are suitable for molding compounds for semi-conductor, electric laminates, aerospace parts, etc. .

EPICLON®	EEW (g/eq)	Softening point (°C)	Viscosity (ICI, 150°C, dPa.s)	Comments
HP-4032	135 - 165	Semi-solid	500 – 3000 ¹⁾	<i>Naphthalene type</i>
HP-4032D	136 - 150	Liquid or Crystal	250 – 850 ²⁾	<i>Distilled naphthalene type</i>
HP-7200L	230 - 260	50 - 60	0.1 - 1.0	<i>Dicyclopentadiene type</i>
HP-7200	250 - 280	57 - 68	0.1 - 2.0	<i>Dicyclopentadiene type</i>
HP-7200H	265 - 300	75 - 90	2.0 - 6.0	<i>Dicyclopentadiene type</i>
HP-4700	155 - 170	85 - 98	3.0 - 8.0	<i>Naphthalene type</i>
HP-4710	160 - 180	85 - 105	4.0 - 14.0	<i>Naphthalene type</i>
HP-4770	195 - 210	67 - 77	0.3 - 1.5	<i>Low viscosity Naphthalene type</i>
HP-5000	245 - 260	56 - 64	0.3 - 1.5	<i>Naphthalene type</i>

1) Brookfield type viscometer at 52°C, mPa.s 2) Cannon-Fenske viscometer at 50°C, mPa.s

High Molecular weight Type

High molecular weight epoxy resins are mainly used for baking finish coatings.

EPICLON®	Viscosity (25°C, Gardner)	N.V.(%)	Solvents	Comments
H-353	V - Y	38 - 42	MIBK, Xylene, Cyclohexanone	Poly ether ester
H-360	Z - Z ₃	38 - 42	Xylene, Cyclohexanone, n-Butanol	Phenoxy resin
EXA-123	Z ₃ - Z ₅	29 - 31	Cyclohexanone	Phenoxy resin
EXA-192	Z ₂ - Z ₅	39 - 41	MEK, Xylene, Cyclohexanone	Phenoxy resin
H-301-35PX	Z ₁ - Z ₄	34 - 36	PGM-Ac ¹⁾ , Xylene	Modified phenoxy resin
H-303-45M	Z ₁ - Z ₄	43 - 47	MEK, Xylene, Toluene, PGM-Ac ¹⁾	Modified phenoxy resin
H-304-40	Z ₂ - Z ₅	38 - 42	Toluene, n-Butanol, PGM-Ac ¹⁾ , Xylene	Modified phenoxy resin
H-305-45	Z ₁ - Z ₄	44 - 46	Toluene, n-Butanol, Xylene, PGM-Ac ¹⁾	Modified phenoxy resin

1) Propylene glycol mono-methyl ether acetate

Polyfunctional Type

Polyfunctional epoxy resins are designed to provide rapid cure. etc

EPICLON®	EEW ¹⁾ (g/eq)	Viscosity (25°C, Gardner)	N.V.(%)	Softening point (°C)	Comments
5500	450 - 500	18 - 23 ²⁾	100	82 - 88	Powder coatings
5800	750 - 850	R - W ³⁾	100	96 - 106	Powder coatings

1) As solid 2) ICI viscosity at 150°C, dPa.s, 3) 40%

Epoxy Polyol Type

This type epoxy resins are used for heavy-duty anti-corrosive coatings.

EPICLON®	Viscosity (25°C, Gardner)	N.V.(%)	Solvents	Comments
EXA-8183	K - N	58 - 62	MIBK, MEK	<i>Poly ether ester</i>
EXA-8169	A - E	58 - 62	MIBK, Toluene	<i>Poly ether ester</i>

Curing agents - Polyamine Type

Amine curing agents can be selected in accordance with variable requirements of pot life, film properties and others. EPICLON curing agents (polyamine type) are designed for high strength.

EPICLON®	Equivalent weight ¹⁾ (g/eq)	Viscosity (25°C, mPa.s)	Color	Comments
B-065	62	100 - 400	<12	<i>Amide amine. For low temperature.</i>

1) Theoretical active hydrogen equivalent weight

Safety & Handling

Safety Data Sheets are available for all products in this brochure. Safety information such as health effects, handling precaution, safety equipment, storage condition etc. is described in the SDS. It is strongly recommended that all persons, who will handle epoxy resins and curing agents, should understand the SDS before handling.

Please request the SDS to **DIC** sales representatives before use or test.

Notice

Some of the product specifications in this brochure may be slightly different from those in previous publications. The change reflects most recent manufacturing experience and/or changes in test procedures. Due to market needs and other reasons, product specifications may change or a product may be discontinued.

The information herein is to assist customers in determining whether our products are suitable for their applications. Our products are intended for sale to industrial and commercial customers. We require customers to inspect and test our products before use and to satisfy themselves as to contents and suitability for their applications. We warrant that our products will meet our written specifications. Nothing herein shall constitute any other warranty express or implied, including any warranty of merchantability or fitness for a particular purpose, nor is any protection from any law or patent to be inferred. All patent rights are reserved.

Related products

DICLITE® : Epoxy Vinyl Ester Resin

PHENOLITE® : Novolac Phenol Resin For Epoxy curing agent

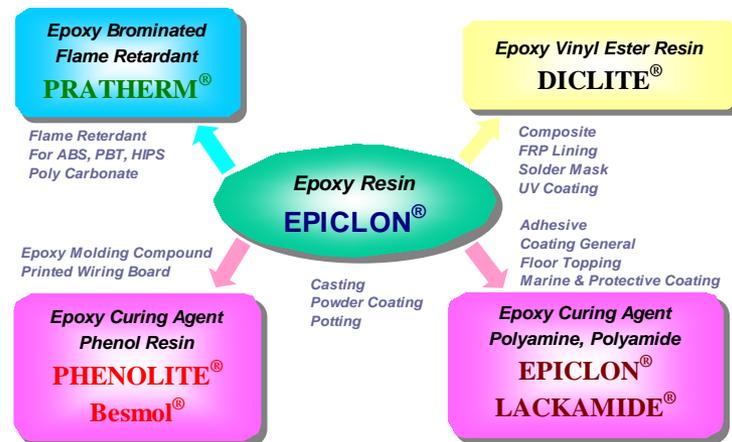
LACKAMIDE® : Polyamine, Polyamide amine For Epoxy curing agent

PRATHERM® : Epoxy Brominated Flame Retardant

Please request the Products information to **DIC** sales representatives.

More technical information,

Visit our website at : <http://www.dic-global.com/jp/en/products/epoxy/>



About DIC

“The DIC WAY”

- On July 1, 2007, DIC adopted "The DIC WAY," an articulation of its new management approach. This new approach reflects DIC's mission going forward, which is to maintain the most positive traditions from its first 100 years, and at the same time to refashion itself and fulfill its corporate mission as a company for the 21st century.
- The DIC WAY comprises three elements, namely, DIC's "management vision," "corporate values" and "principles of conduct."
- DIC's "management vision" delineates business areas the Company will strive to develop "Corporate values" define the values DIC will cultivate "Principles of conduct" set standards for employee conduct. Together, these elements will guide DIC's efforts in the years ahead.

 **Management vision** • Color & Comfort

 **Corporate values** • Through unceasing innovation, the DIC Group strives to create new value directed at sustainable development for its customers, society and the environment.

 **Principles of conduct** • We shall be sensitive to changes in society and strive to always be ahead of the times.
 • We dedicate ourselves to social and environmental sustainability.
 • We strive to be true to "The DIC SPIRIT."
 We respect the autonomy and initiative of each employee in applying his or her talents to the pursuit of our values and the realization of our vision.



DIC CORPORATION EPOXY BUSINESS NETWORK

JAPAN

DIC CORPORATION (Headquarters)

DIC Building, 7-20, Nihonbashi 3-chome,
Chuo-ku, Tokyo 103-8233, Japan
High Performance Chemicals Sales Dept. 1
Polymer Products Div.
Tel: +81-3-6733-5932
Fax: +81-3-6733-5954

DIC CORPORATION (Osaka Branch)

5-19, Kyutaro-machi 3-chome,
Chuo-ku, Osaka 541-8525, Japan
Life & Living Epoxy Sales Dept.
Coating Materials Sales Div.
Tel: +81-6-6252-9564
Fax: +81-6-6252-1690

DIC CORPORATION (Chiba Plant)

12, Yawatakaigandori, Ichihara, Chiba
290-8585, Japan
Polymer Technical Group 5
Polymer Technical Div. 1
Tel: +81-436-41-9815
Fax: +81-436-43-1947

TAIWAN

DIC (Taiwan) Ltd

8th Fl., Chang An Building, No18,
Chang An East Road,
Section 1, Taipei, Taiwan,
Republic of China
Tel: +886-2-2551-8621
Fax: +886-2-2562-9240

MALAYSIA

DIC Epoxy (Malaysia) Sdn. Bhd (Plant)

Plo 408, Jalan Pekeliling 81700 Pasir
Gudang, Johor, Malaysia
Tel: +60-7-255-1558
Fax: +60-7-255-1560

KOREA

DIC KOREA Corp.

6th Fl., S1 Bldg., 168,
Soonhwa-Dong, Jung-Gu, Seoul
100-773, Republic of Korea
Tel: +82-2-757-0481
Fax: +82-2-752-1059

CHINA

DIC (Shanghai) Co.,LTD

12th Fl., Metro Plaza, No.555
Lou Shan Guan Road, Shanghai
200051,
People's Republic of China
Tel: +86-21-6228-9911
Fax: +86-21-6241-9269

DIC (GUANGZHOU) Co.,LTD

Room 1801, Peace World Plaza,
366 Huan Shi Dong Road,
Guangzhou,
People's Republic of China
Tel: +86-20-8384-9737
Fax: +86-20-8384-8283

EUROPE

DIC Europe GmbH

Immermannstrasse 65D,
D-40210 Düsseldorf, Germany
Tel: +49-211-1643-0
Fax: +49-211-1643-88

DIC Europe GmbH, UK Branch

Park House, 643-651 Staines
Road, Feltham, Middlesex ,
TW14 8PA, U.K.
Tel: +44-208-844-2777
Fax: +44-208-844-2707

NORTH AMERICA

DIC International (USA), LLC

35 Waterview Boulevard Parsippany,
New Jersey, 07054, U.S.A.
Tel: +1-973-404-6600
Fax: +1-973-404-6601



Color & Comfort

