AOC®
World Leader in Resin Technology

Vipel® F085 Series Epoxy Novolac Vinyl Ester Resin

Product Information

Vipel® Corrosion Resistant Epoxy Novolac, Vinyl Ester Resin

TYPICAL CAST MECHANICAL PROPERTIES* (1) see back page

Test	Unit of Measure	Nominal	Test Method
Tensile Strength	psi/MPa	11,200/77	ASTM D 638
Tensile Modulus	psi/GPa	540,000/3.7	ASTM D 638
Tensile Elongation	%	3.3	ASTM D 638
Flexural Strength	psi/MPa	21,500/148	ASTM D 790
Flexural Modulus	psi/GPa	540,000/3.7	ASTM D 790
Heat Distortion Temperature °F/°C@264 psi		300/149	ASTM D 648
Barcol Hardness	934	44	ASTM D 2583

DESCRIPTION

The Vipel F085 series is an epoxy novolac vinyl ester resin dissolved in styrene. The Vipel F085 series is ideally suited for applications where outstanding mechanical properties and resistance to chemicals, oxidation and heat are required.

TYPICAL LIQUID RESIN PROPERTIES* (2) see back page

Versions	Viscosity cps	Thix Index	Gel Time min	Gel to Peak min	Peak Exotherm °F/C°	Specific Gravity	Styrene Content %
F085-AAA-00	300[1]	NA	15[2]	5	400/204	1.08	33
F085-CAA-00	200[1]	NA	15[2]	7	420/216	1.07	35
F085-HAA-00	1800[3]	NA	14[4]	3	380/193	1.11	25

1) 77°F/25°C Brookfield RV viscosity spindle 2 at 20 rpm
2) 77°F/25°C Gel time with 0.3% cobalt 6%, 0.05% DMA and 1.5% MEKP
3.) 77°F/25°C Brookfield RV viscosity spindle #3 AT 20 rpm
4) 180°F/82°C SPI gel with 1.0% BPO

*Typical properties are not to be construed as specifications.

BENEFITS

Corrosion resistance

The epoxy novolac backbone chemistry provides resistance to acids and bases and has superior resistance to many organic solvents. Vipel F085 series is generally resistant to liquids and vapors at higher temperatures than standard bisphe nol-A epoxy vinyl ester resins.

The Vipel F085 series is well suited for use in the field of chlorine-alkali electrolysis. Refer to AOC's "Corrosion Resistant Resin Guide" for corrosion resistance information or for questions regarding suitability of a resin to any particular chemical environment contact AOC.

Mechanical Properties

The Vipel F085 series is suitable for moldings that are subjected to particularly high static and dynamic loads. It is resistant to internal stress cracking under high loading.

Versatile

Suitable for various fabricating methods such as hand lay-up, filament winding, etc.

Vipel®
F085 Series
Epoxy Novolac Vinyl Ester Resin

ROOM TEMPERATURE CHP CURE SYSTEMS (PARTS BY WEIGHT 100 PARTS VIPEL F085 - A, B, OR C)

Temperature	Cobalt 6%	DMA*	CHP**	Gel Time	Gel to Peak	Peak Exotherm
°F/°C	%	%	%	min	min	°F/°C
65/18	0.4	0.2	2.0	23	8	394/201
	0.3	0.15	1.0	34	11	390/199
	0.3	0.1	1.0	39	14	374/190
	0.3	0.05	1.0	46	19	361/183
	0.15	0.05	1.0	64	27	358/181
77/25	0.4	0.2	1.5	17	6	402/206
	0.3	0.05	1.5	29	13	377/192
	0.4	0.15	1.5	21	8	397/203
	0.2	0.0	1.0	50	28	347/175
95/35	0.4	0.2	2.0	19	6	408/209
	0.3	0.0	1.0	36	19	358/181
	0.3	0.05	1.0	30	9	384/196
	0.3	0.15	2.0	22	7	404/207
	0.3	0.1	2.0	25	7	400/204
	0.15	0.0	1.0	43	18	367/186

* N, N-Dimethylaniline
** Cumene hydroperoxide 90% active

HIGH TEMPERATURE TENSILE PROPERTIES

Temperature, °F/°C	CAST PROPERTIES		ASME RTP-1 LAMINATE PROPERTIES*	
	Tensile Strength, psi/MPa	Tensile Modulus, psi/GPa	Tensile Strength, psi/MPa	Tensile Modulus, psi/GPa
77/25	11,200/77	540,000/3.7	27,000/186	2,000,000/13.8
150/66	10,000/69	460,000/3.2	24,800/171	2,000,000/13.8
200/93	8,000/55	370,000/2.6	21,600/149	1,750,000/12.1
250/121	5,300/37	320,000/2.2	21,500/148	1,680,000/11.6
275/135	4,000/28	248,000/1.7	19,500/134	1,420,000/9.8
300/149	1,900/13	50,700/0.35	17,500/121	1,350,000/9.3
325/163			18,000/124	1,050,000/7.2

* V M M, M R M R M, V-glass veil, M -chopped strand glass mat 1.5 oz per square foot/ 450 g/m^2, R-Woven Roving 24 oz per square yard/ 814 g/m^2 . Laminates were 1/4 inch/6.3 mm thick and post cured at 300°F/149°C for 2 hours. Glass content is 38.2%

PERFORMANCE GUIDELINES

A. Keep full strength catalyst levels between 1.0% - 2.0% of the total resin weight.

B. Maintain shop temperatures between 65°F/18°C and 90°F/32°C and humidity between 40% and 90%. Consistent shop conditions contribute to consistent gel times and will help the fabricator make a high quality part.

C. Finished part surfaces that have been cured at room temperature in contact with air should be relatively tack free. They may not, however, be fully cured and are thus not as resistant to chemicals as a fully cured part. If no further laminating is planned, a 10% solution of 5% paraffin wax solution (MP 115-118°F/46-48°C) in styrene may be added to the last resin layer to provide a tack free surface.

D. Optimimum cure and performance may be obtained by post curing room temperature cured laminates for two hours at 158-212°F/70-100°C.

SAFETY

See appropriate Material Safety Data Sheet for guidelines.

STORAGE STABILITY

This product is stable for seven months from the date of manufacture when stored in the original containers, away from direct sunlight or other UV light sources and at or below 77°F/25°C.

After extended storage, some drift may occur in the product viscosity and gel time.

TYPICAL PROPERTIES OF CURED RESIN*

PROCESSING

Finished part surfaces that have been cured at room temperature in contact with air should be relatively tack free. They may not, however, be fully cured and are thus not as resistant to chemicals as a fully cured part. If no further laminating is planned, a 10% solution of 5% paraffin wax solution (MP 115-118°F/46-48°C) in styrene may be added to the last resin layer to assure a tack free surface. Optimum cure and performance may be obtained by post curing room-temperature cured laminates for three to six hours at 194-212°F/90-100°C.

ISO 9001:2000 CERTIFIED

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9001:2000 standards. This certification recognizes that each AOC facility has an internationally accepted model in place for managing and assuring quality. We follow the practices set forth in this model to add value to the resins we make for our customers.

FOOTNOTES

(1)

Based on tests of Vipel F085-AAA-00 at 77°F/25°C and 50% relative humidity. All thixotropic resins should be mixed well prior to use. The use of thixotropy degrades the corrosion performance of a resin in some chemical environments such as sodium chloride. All tests on unreinforced cured resin. Castings were post cured.

(2)

The gel times shown are typical but may be affected by catalyst, promoter, inhibitor concentration, resin, mold, and shop temperature. Variations in gelling characteristics can be expected between different lots of catalysts and at extremely high humidities. Pigment and/or filler can retard or accelerate gelation. It is recommended that the fabricator check the gelling characteristics of a small quantity of resin under actual operating conditions prior to use.

AOC®
World Leader in Resin Technology

North America
northamerica@aoc-resins.com
Toll Free: +1 (866) 319-8827
www.aoc-resins.com

Global Contacts

Australia
australia@aoc-resins.com
Middle East
middleeast@aoc-resins.com
Latin America
latinamerica@aoc-resins.com
Africa
africa@aoc-resins.com
Asia\Australia
asia@aoc-resins.com
Europe
europe@aoc-resins.com