

## Product Information

# Vipel Corrosion Resistant, Low VOC, Bisphenol A, Epoxy Vinyl Ester Resin

### TYPICAL PROPERTIES OF CURED RESIN\* (1)

Test	Units of Measure	Nominal	Test Method
Tensile Strength,	psi/MPa	13,800/95	ASTM D638
Tensile Modulus	psi/GPa	520,000/3.6	ASTM D638
Tensile Elongation	%	5.1	ASTM D638
Flexural Strength	psi/MPa	23,600/162	ASTM D790
Flexural Modulus	psi/GPa	560,000/3.9	ASTM D790
Heat Distortion Temp. °F/°C @ 264 psi		266/130	ASTM D648
Barcol Hardness, Ultimate		44	ASTM D2583

### TYPICAL LIQUID RESIN PROPERTIES\* (2) see back page

Version	Viscosity, Cps	Thix Index	Gel Time, minutes	Gel to Peak Exotherm, minute	Peak Exotherm, °F/C	Specific Gravity	Styrene Content %
F007-AAA-00	400 <sup>1</sup>	NA	25 <sup>2</sup>	7	370/188	1.07	32
F007-APT-35	550 <sup>3</sup>	2 <sup>4</sup>	35 <sup>5</sup>	10	300/149	1.06	35
F007-CPT-40	900 <sup>3</sup>	3 <sup>4</sup>	40 <sup>5</sup>	18	338/170	1.06	34

NA- Not applicable

- 1) 77°F/25°C Brookfield RV viscosity spindle 2 at 20 rpm
- 2) 77°F/25°C Gel time with 0.2% Cobalt 6%, 0.05% DMA and 1.25% MEKP
- 3) 77°F/25°C Brookfield LV viscosity spindle 3 at 60 rpm
- 4) 6/60 Thix Index
- 5) 77°F/25°C Gel time with 1.25% MEKP

\*Typical properties are not to be construed as specifications.

### DESCRIPTION

AOC's Vipel F007 is a low VOC, bisphenol A epoxy-based vinyl ester resin dissolved in styrene.



### BENEFITS

#### Versatile

The Vipel F007 Series is ideally suited for use in hand lay-up, spray-up, filament winding and pultrusion processes where outstanding mechanical properties and excellent resistance to chemicals and heat are required.

Wide formulating capabilities allow for use in many processes and for optimization of cost/performance.

#### Corrosion resistance

Refer to AOC's "Corrosion Resistant Resin Guide under product F007" for corrosion resistance information. For questions regarding suitability of a resin to any particular chemical environment, contact AOC.

#### Food and Drug

All resins in this datasheet are manufactured from raw materials that are listed in FDA regulation Title 21 CFR 177.2420. It is the fabricator's responsibility to also be sure that the final composite is well cured. All composites used for FDA applications should be post cured at 180°F/82°C for at least 4 hours. After post curing, laminate should be washed with soap and water and rinsed.

# Vipel® F007 Series Low VOC Bisphenol A, Epoxy Vinyl Ester Resin

## MEKP GEL TIMES FOR NON PROMOTED VIPEL F007-AA SERIES RESINS

	10 - 20 Minutes			20 - 40 Minutes			40 - 60 Minutes		
Temperature, °F/°C	65/18	77/25	95/35	65/18	77/25	95/35	65/18	77/25	95/35
Cobalt-6%, %	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2
DMA <sup>1</sup>	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0	0.05
2,4 – Pentanedione, %	0	0	0	0	0	0.05	0	0	0.1
MEKP, %	2.00	1.75	1.25	1.50	1.25	1.25	1.00	1.25	1.25
Gel Time, minutes	17	16	13	33	25	31	57	56	54
Gel to Peak Exotherm, minutes	7	7	6	9	7	8	12	14	9
Peak Temperature, °F/°C	372/ 189	376/ 191	385/ 196	363/ 184	371/ 188	381/ 194	354/ 178	350/ 177	375/ 191

### 1) N, N Dimethylaniline

\*Typical properties are not to be construed as specifications.

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

**E.** Room temperature curing by means of cobalt acceleration should be completed with low hydrogen peroxide content MEKP catalyst to minimize foaming.

#### SAFETY

See appropriate Material Safety Data Sheet for guidelines.

#### 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.

#### STORAGE STABILITY

Vipel F007-APT-35 and Vipel F007-CPT-40 are stable for 3 months from the date of manufacture when stored in original containers, away from direct sunlight or other UV light sources and at or below 77°F/25°C. Vipel F007-AAA-00 is stable for 6 months from the date of manufacture when stored in original containers, away from direct sunlight or other UV light sources and at or below 77°F/25°C.

Storage stability of two months or less should be anticipated if the storage temperature exceeds 86°F/30°C.

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

#### FOOTNOTES

##### (1)

Based on tests of Vipel F007-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.



#### Global Contacts

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