

Product Information

Vipel Corrosion Resistant Isophthalic Polyester Resin

TYPICAL CAST MECHANICAL PROPERTIES * (1) see back page

Test	Unit of Measure	Nominal	Test Method
Tensile Strength	psi/MPa	12,100/83.4	ASTM D 638
Tensile Modulus	psi/GPa	550,000/3.8	ASTM D 638
Tensile Elongation	%	2.8	ASTM D 638
Flexural Strength	psi/MPa	18,400/127	ASTM D 790
Flexural Modulus	psi/GPa	610,000/4.2	ASTM D 790
Heat Distortion Temperature °F/°C @ 264 psi		224/107	ASTM D 648
Barcol Hardness		43	ASTM D 2583

*Typical properties are not to be construed as specifications.

DESCRIPTION

AOC's Vipel F701 series resins are high molecular weight, two stage isophthalic, unsaturated polyester resin with the wet out, cure and handling characteristics of general purpose resins.

They have an excellent shelf life and are ideal for filament winding and spray-up. A few selected resins are listed below including the high viscosity base resin, Vipel F701-FHG-00.

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 %
F701-ABK-15	600 ¹	2.5 ²	15 ³	17	370/188	1.08	44
F701-ABM-23	700 ⁴	2.5 ⁵	23 ⁶	15	380/193	1.06	47
F701-ABU-25	550 ⁴	2.0 ⁵	25 ⁶	12	390/199	1.06	48
F701-BBB-00	400 ⁴	NA	16 ⁷	24	300/149	1.08	44
F701-BID-20	500 ⁴	2 ⁵	20 ⁸	37	180/82	1.06	47
F701-FBB-15	550 ⁴	2.5 ⁵	15 ⁶	12	390/199	1.08	47
F701-FBG-20	525 ⁴	2.8 ⁵	20 ⁶	10	210/410	1.05	50
F701-FBL-20	600 ¹	2.5 ²	20 ³	8	380/193	1.06	48
F701-FBN-28	550 ⁴	2.5 ²	30 ⁶	10	390/199	1.06	48
F701-FBY-45	700 ⁴	2.5 ²	45 ⁶	20	330/166	1.08	44
F701-FHG-00	1500 ⁹	NA	11 ¹⁰	2	410/210	1.12	37
F701-PTT-25	600 ¹	2 ²	25 ¹¹	13	370/188	1.08	47 ¹²

NA- Not applicable

1) 77°F/25°C Brookfield RV viscosity spindle 2 at 20 rpm

2) 2/20 rpm Thix Index

3) 77°F/25°C Gel time with 1.0% MEKP

4) 77°F/25°C Brookfield LV viscosity spindle 3 at 60 rpm

5) 6/60 rpm Thix Index

6) 77°F/25°C Gel time with 1.25% MEKP

7) Gel with 0.25% Cobalt 6% and 1.25% MEKP in a 19 mm x 150 mm test tube

8) Gel with 1.0% MEKP in a 19 mm x 150 mm test tube

9) 77°F/25°C Brookfield RV viscosity spindle 3 at 20 rpm

10) 180°F/82°C SPI gel with 1.0% BPO

11) 77°F/25°C Gel time with 1.1% MEKP

12) HAP Content



BENEFITS

Corrosion resistance

AOC's Vipel F701 series resins provides excellent corrosion resistance when used in contact with inorganic and organic acids. Solvent resistance is field-proven for many petroleum products such as kerosene, heating oil and crude oils. 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.

Versatile

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

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 it should be washed with soap and water and rinsed.

Vipel® F701 Series Polyester Resin

Mechanical Properties of Vipel F701 Laminates with Increasing Temperature

TEMPERATURE, °F/°C	TENSILE STRENGTH, psi/MPa	TENSILE MODULUS, psi/GPa	FLEXURAL STRENGTH, psi/MPa	FLEXURAL MODULUS, psi/GPa
77/25	17,100/118	1,800,000/12.4	27,400/189	1,520,000/10.5
200/93	20,800/143	1,540,000/10.6	28,400/196	1,080,000/7.4
250/121	16,000/110	1,230,000/8.5	10,700/74	560,000/3.9
300/149	11,300/78	1,160,000/8.0	4,400/30	430,000/3.0
350/177			3,800/26	410,000/2.8

Laminate construction: VMMRMRM V=glass veil, M=chopped strand glass mat 1.5 oz per square foot (450 grams per square meter), R=Woven Roving 24 oz per square yard (814 grams per square meter).
Laminates were 0.250 inches thick (6.4 mm) and post cured at 212°F/100°C for 5 hours.

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. Sanding and/or grinding is recommended if a secondary bond is applied to laminate that was made with a resin containing wax.

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 F701-BBB-00 and F701-FHG-00 are 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 25°C/77°F. All other Vipel F701 products 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 25°C/77°F. Storage stability of two months or less should be anticipated if the storage temperature exceeds 30°C/86°F. After extended storage, some drift may occur in the product viscosity and gel time.

FOOTNOTES

(1)

These tests are based on Vipel F701-BBB-16 at 77°F/25°C and 50% relative humidity. All tests performed on unreinforced cured resin castings. Thixotropic components, if applicable, are excluded from casting samples. 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.



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