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RESINS | GEL COATS | COLORANTS

VIPEL® F701 SERIES POLYESTER RESIN



Product Information

CORROSION RESISTANT ISOPHTHALIC POLYESTER RESIN

Typical Cast Mechanical Properties ¹

Test	Unit of Measure	Nominal	Test Method
Tensile Strength	psi/MPa	12,100/83.4	ASTM D638 / ISO 527-1
Tensile Modulus	psi/GPa	550,000/3.8	ASTM D638 / ISO 527-1
Tensile Elongation	%	2.8	ASTM D638 / ISO 527-1
Flexural Strength	psi/MPa	18,400/127	ASTM D 790 / ISO 178
Flexural Modulus	psi/GPa	610,000/4.2	ASTM D 790 / ISO 178
Heat Distortion Temp.	°F/°C@264 psi	224/107	ASTM D648 / ISO 75-A
Barcol Hardness		43	ASTM D2583 / EN 59

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 including the high viscosity base resin, Vipel F701-FHG-00.

APPLICATION

Solvent resistance is field-proven for many petroleum products such as kerosene, heating oil and crude oils.

BENEFITS

Corrosion resistance

AOC's Vipel F701 series resins provide excellent corrosion resistance when used in contact with inorganic and organic acids.

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 and filament winding.

Food and Drug

All resins listed on this product data sheet are manufactured from raw materials that are listed in FDA regulation Title 21 CFR 177.2420.

It is the fabricators responsibility to 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 then rinsed.

Typical Liquid Properties²

VERSIONS	Cps	Visc	SP	Rpm	Thix Index	Gel Time Min	Gel to Peak Min	Peak Exotherm (°F/°C)	Specific Gravity	% Styrene Content
F701-ABK-15	600	RV	2	20	2.5 ¹	15 ³	17	370/188	1.08	44
F701-ABM-23	700	LV	3	60	2.5 ²	23 ⁴	15	380/193	1.06	47
F701-ABU-25	550	LV	3	60	2.0 ²	25 ⁴	12	390/199	1.06	48
F701-BBB-00	400	LV	3	60	NA	16 ⁵	24	300/149	1.08	44
F701-BID-08	500	LV	3	60	2.0 ²	8 ⁶	20	246/119	1.06	47
F701-BID-20	500	LV	3	60	2.0 ²	20 ⁶	37	180/82	1.06	47
F701-FBB-15	550	LV	3	60	2.5 ²	15 ⁴	12	390/199	1.08	47
F701-FBG-20	525	LV	3	60	2.8 ²	20 ⁴	10	410/210	1.05	50
F701-FBL-20	600	RV	2	20	2.5 ²	20 ³	8	380/193	1.06	48
F701-FBN-15	550	LV	3	60	2.5 ¹	15 ⁴	10	390/199	1.06	48
F701-FBN-28	550	LV	3	60	2.5 ¹	28 ⁴	10	390/199	1.06	48
F701-FBY-45	700	LV	3	60	2.5 ¹	45 ⁴	20	330/166	1.08	44
F701-FHG-00	1500	RV	3	20	NA	11 ⁷	2	410/210	1.12	37
F701-PTT-25	600	RV	2	20	2.0 ¹	25 ⁸	13	370/188	1.08	47 ⁹
F701-RRR-00	1200	RV	3	20	NA	6.7 ⁷	2	410/210	1.1 ²	38
F701-RTP-13	150	LV	2	30	NA	13 ¹⁰	13	370/188	1.08	44

1) 2/20 rpm Thix Index

2) 6/60 rpm Thix Index

3) 77 °F/25 °C Gel Time with 1.0% MEKP-9H

4) 77 °F/25 °C Gel Time with 1.25% MEKP DDM-9

5) Gel Time with 0.25% Cobalt 6% and 1.25% MEKP-900

6) Gel with 1.0% MEKP in a 19 mm x 150 mm test tube Cadox M50G

7) 180 °F/82 °C SPI gel with 1.0% BPO

8) 77 °F/25 °C Gel Time with 1.1% MEKP-9

9) HAP Content

10) Gel time with 1.5% MEKP M50G

*Typical properties are not to be construed as specifications.



Cobalt Naphthenate (6%) & DMA with Hipoint 90 - MEKP 925H				
Resin Temperature (° F)		60s	70s	90s
10 – 20 min.		No Data	15	16
	MEKP, %		1.0	1.0
	CoNAP, %		0.6	0.2
20 – 40 min.		23	24	No Data
	MEKP, %	1.0	1.5	
	CoNAP, %	0.6	0.2	
40 – 60 min.		70	43	No Data
	MEKP, %	1.0	1.0	
	CoNAP, %	0.2	0.2	

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



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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 a laminate that was made with a resin containing wax.

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 77°F/25°C.

All other Vipel F701 products are stable for 3 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.

SAFETY

See the appropriate Safety Data Sheet for guidelines.

ISO 9001:2008 CERTIFIED

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9001:2008 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 the unpromoted base resin used in the manufacture of Vipel F701 series at 77°F/25°C. All tests performed on unreinforced cured resin castings. Thixotropic components, if applicable are excluded from casting samples. Castings were prepared using 1% BPO and post cured 1 hour at 93°C, 1 hour at 116°C, and 2 hours at 138°C.

(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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