

## 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	12,800/88	ASTM D 638
Tensile Modulus	psi/GPa	560,000/3.9	ASTM D 638
Tensile Elongation	%	3.1	ASTM D 638
Flexural Strength	psi/MPa	23,100/159	ASTM D 790
Flexural Modulus	psi/GPa	610,000/4.2	ASTM D 790
Heat Distortion Temperature °F/°C @ 264 psi		262/128	ASTM D 648
Barcol Hardness		46	ASTM D 2583

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

### DESCRIPTION

AOC's Vipel F701-S series resins are high molecular weight, two stage isophthalic, unsaturated polyester resins with the wet out, cure and handling characteristics of general purpose resins. The main feature is lower styrene content.

They have an excellent shelf life and are ideal for filament winding and spray-up. A few selected resins are listed below.

### 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-SPT-15	550 <sup>1</sup>	2.1 <sup>2</sup>	15 <sup>3</sup>	12	390/199	1.07	41.5
F701-SPT-30	550 <sup>1</sup>	2.1 <sup>2</sup>	30 <sup>3</sup>	13	380/193	1.07	41.5

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 1.25% MEKP



### BENEFITS

#### Corrosion resistance

AOC's Vipel F701-S series resins provide 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. Vipel F701-S series resins contain less styrene than standard versions.

#### 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 then rinsed.

# Vipel® F701-S Series Polyester Resin

## MECHANICAL PROPERTIES OF VIPEL F701-S 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	23,800/164	1,900,000/13.1	26,000/179	1,500,000/10.3
200/93	21,500/148	1,400,000/9.6	23,000/159	1,000,000/6.9
250/121	17,000/117	1,100,000/7.6	10,000/69	600,000/4.1
300/149	10,800/74	800,000/5.5	5,500/38	300,000/2.1

ASME RTP-1 Laminate construction: VMM, MRMRM 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

This product is stable for three 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 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-SAA-00 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.



### Global Contacts

**Australia**  
australia@aac-resins.com  
**Middle East**  
middleeast@aac-resins.com  
**Latin America**  
latinamerica@aac-resins.com  
**Africa**  
africa@aac-resins.com  
**Asia/Australia**  
asia@aac-resins.com  
**Europe**  
europe@aac-resins.com

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