

Product Information

Vipel Corrosion Resistant and Fire Retardant Vinyl Ester Resin

TYPICAL CAST MECHANICAL PROPERTIES * see back page (1)

Test	Units of Measure	Nominal	Test Method
Tensile Strength	psi/MPa	13,000/90	ASTM D 638
Tensile Modulus	psi/GPa	522,000/3.6	ASTM D 638
Tensile Elongation	%	4.0	ASTM D 638
Flexural Strength	psi/MPa	22,500/155	ASTM D 790
Flexural Modulus	psi/GPa	537,000/3.7	ASTM D 790
Heat Distortion Temperature	°F/°C @264 psi	230/110	ASTM D 648

TYPICAL LIQUID RESIN PROPERTIES @ 25°C * see back page (2)

VERSIONS	MEKP	%	GT	Gel to Peak	Peak Exotherm (°F/°C)	Visc	SP	rpm	cps	TI	Specific Gravity	FDA	HAP Content, %
K010-TBA-23	DDM-9	1.25	23	11	356/180	LV	3	60	315	1.5	1.04	Yes	42
K010-TBD-30	DDM-9	1.25	30	11	365/185	LV	2	60	155	NA	1.04	Yes	42
K010-TBE-30	MEKP-9	1.25	30	11	352/178	LV	2	60	225	1.3	1.04	Yes	42
K010-TBH-40	MEKP-9	2.00	40	10	347/175	LV	2	60	225	1.3	1.05	Yes	42

1) US Food and Drug Administration (Ingredients comply with Title 21 CFR, parts 170-199 relative to FDA ingredients)

2) 6/60 thix index

*Typical properties are not to be construed as specifications.

TOXICITY DATA (Bombardier SMP 800: Toxic Gas Production)

Material	Flaming Mode	Non-Flaming Mode	Specified Maximum
Carbon Monoxide (CO ppm), 1.5 minutes	43	2	--
@ 4.0 minutes	180	3	--
@ maximum	774	112	--
Hydrogen Cyanide (NCN ppm)	< 1	< 1	100
Hydrogen Chloride (HCl ppm)	< 1	< 1	500
Hydrogen Fluoride (HF ppm)	< 1	< 1	100
Sulphur Dioxide (SO ₂ ppm)	< 1	< 1	100
Nitrogen Oxides (as NO ₂ ppm)	1	< 1	100
Original weight/Final weight (g)	17.50	18.03	--
Weight loss (g/%)	6.3/35.03	2.29/12.70	--
Time to Ignition (s)	27	Did not ignite	--
Buring Duration	525	--	--



DESCRIPTION

AOC's Vipel K010-TB series are promoted bisphenol A, epoxy-based vinyl ester resins dissolved in styrene and methyl methacrylate. Flame and smoke resistance is obtained by incorporating at least 60 parts of alumina trihydrate per 100 parts of resin.

Vipel K010-TB series are ideally suited for use in hand lay-up, spray-up and filament winding processes where outstanding mechanical properties and excellent resistance to chemicals and heat are required.

BENEFITS

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

Unique composition produces a tough and versatile resin with excellent crack and craze resistance in molded parts.

Vipel K010-TB series is suitable for moldings that are subjected to particularly high static or dynamic loads. Vinyl ester resins have excellent resistance to sustained heat.

Vipel K010-TB series resins are highly resistant to several chemical environments.

Contact AOC Technical Representative on corrosion inquiries for Vipel K010-TB series resins if filler is used in the composite.

Vipel® K010-TB Series Bisphenol A Epoxy Vinyl Ester Resins

FLAME RETARDANT & SMOKE DEVELOPMENT DATA (see note below)

Laminate Construction	NFPA 258-76 Smoke Development (ASTM E-662-97 NBC Smoke Density Chamber) Rating			Flame Spread (ASTM E-162-98)
	Units	Flaming	Non-Flaming	
~ 25% glass content	-Dm	216	151	25
Thickness, 5.0 mm, G200 gelcoat	-Ds 1.5	2	1	100 max
Laminate	-Ds 4.0	17	2	200 max

Note: For laminates of 60 phr ATH.

BENEFITS (Continued)

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.

PERFORMANCE GUIDELINES

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

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

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

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 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.

Storage in plastic totes made out of materials such as polyethylene (PE) or polypropylene (PP) in particular translucent PE/PP will accelerate gel formation and result in a significantly reduced storage stability.

Storage of this resin outdoors in translucent plastic totes may reduce the storage stability to only a few weeks. AOC cannot assume responsibility for gel formation under these storage conditions.

SAFETY

See appropriate Material 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 K010-TB 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 post cured.

(2)

The gel times shown are typical but may be affected by catalyst, promoter and inhibitor concentrations and resin, mold and shop temperature. Variations in gelling characteristics can be expected between different lots of catalysts and at extremely high humidities. Pigment and fillers 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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