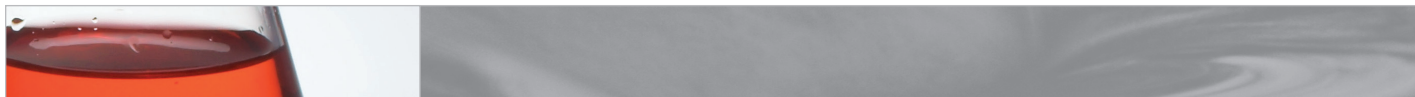


CoREZYN® Comparison of Corrosion Resistant Resins

This guide was prepared by the Interplastic laboratory to illustrate comparisons among the different corrosion resistant resins available.

Please keep in mind that the inherent differences in polymer design and manufacturing techniques will result in different composite strengths and corrosion resistance.



Premium Corrosion Resistant Resins

Brand	Interplastic CoREZYN®	Ashland	Polynt	AOC Vipel®	Swancor
Bisphenol A Vinyl Esters	VE8300 ^{1, 10}	Hetron® 922 ¹ , Derakane® 411 ¹	9100 ¹ , 785-8430 ¹ , RF-1001 DMV	F013 ¹	901
	VE8100 ¹	Hetron 922L, Derakane 411C ¹	781-2140	F010 ¹	–
	VE8360 ^{1, 9}	Hetron 942/35, Derakane 441-400 ¹	781-0430 ³	F007-AAA-00	–
	VE8300LH ^{1, 9, 11}	–	–	–	–
High-Crosslink Density Vinyl Esters	VE8710 ^{1, 9}	Hetron 980, Derakane 451	–	F080, F083	–
	VE8470 ^{4, 9}	–	–	–	–
	VE8770 ⁹	–	–	–	–
Epoxy Novolac Vinyl Esters	VE8730 ⁹	Hetron 970, Derakane 470	9480, RF-1051	F085	907
	VE8730-34 ^{9, 11}	Hetron 970/35 ³	–	–	–
	VE8740 ⁹	Derakane 470HT	–	F086	–
High-Elongation Vinyl Esters	VE8550 ³	Derakane 8084 ³	9085 ³ KRF-3200	F017	–
	VE8510 ¹⁰	–	–	–	–
	VE8515 ⁹	–	–	–	–
Bisphenol A Fumarate Polyesters	–	Hetron 700	31734-01 (Dion 6694)	F282	–
Flexibilized Bisphenol A Fumarate Polyesters	–	Hetron 800	–	–	–
Chlorendic Anhydride Polyesters	–	Hetron 72, Hetron 92, Hetron 197 ⁵	797	–	–
Furfuryl Alcohol Resins	–	Hetron 800	–	–	1001, 2001
Products highlighted in each row are sold as chemical equivalents of each other.					

Corrosion Resistant Isophthalic and Terephthalic Resins

Brand	Interplastic CoREZYN®	Ashland Aropol®	Polynt	AOC Vipel®
Isophthalic	75-AQ-001 ¹	7241 ¹	33402 ¹ , 741-3601 ¹ , 040-4332	F701 ¹
	75-AQ-001S ¹	7242 ¹	33434-00 ¹ (Dion 6631T ³), 745-4615 ¹	–
	75-AQ-010 ¹	–	–	–
	75-AQ-010LH ⁹	–	–	–
	75-AA-011 ²	–	–	–
Flexibilized Isophthalic	75-AQ-610 ¹	7334	33433-00 (Dion 6334), 040-4280	F737, F738
	–	–	33439-00 (Dion 6246)	–
	–	7530	–	–
Terephthalic	77-AQ-201	–	33425-00 (400)	–
	–	–	E764	–
High-Crosslink Density Isophthalic/Terephthalic	75-AQ-460 ^{2, 9, 14}	–	33423-00 (490)	F764
Products highlighted in each row are sold as chemical equivalents of each other.				

Fire-Resistant Resins

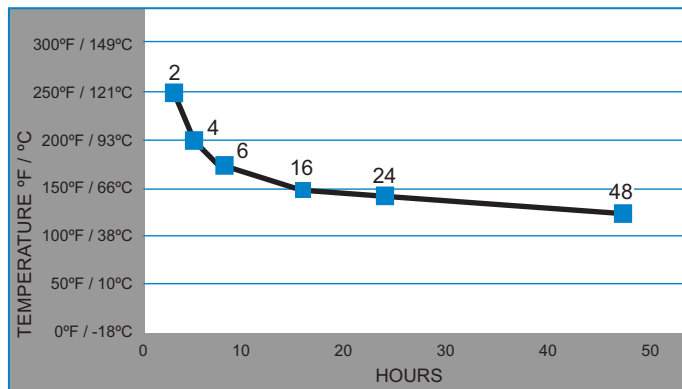
Brand	Interplastic CoREZYN®	Ashland	Polynt	AOC Vipel®	Swancor
Bisphenol A Vinyl Esters	VE8400 ¹²	Hetron® FR998 ⁴ , Derakane® 510B ⁵ Derakane 510A ⁴	RF-2000 SE	K022-AA	–
	VE8440 ^{4,8}	Hetron 992, Derakane 510C	9300 ⁴ , 755-8590	K022-CD	905
	VE8440-AT ^{4,8}	Hetron FR992-SB	–	K022-CN	–
	VE8430 ⁹	–	–	–	–
	VE8470 ^{4,8}	–	–	–	–
Epoxy Novolac Vinyl Esters	VE8480N ⁴	Derakane 510N ⁵	–	K095	–
Bisphenol A Polyesters	–	–	31-736-00 ⁴	–	–
	–	–	711-05AS ⁴ (Dion 6695 ⁴)	–	–
Chlorendic Anhydride Polyesters	–	Hetron 197 ^{4,5}	797 ⁵	K190-B	–
	–	Hetron 92 ⁴	–	K190-A	–
Isophthalic Polyesters	–	Hetron 99P ⁴	Dion 6604T ⁴	K733	–

Products highlighted in each row are sold as chemical equivalents of each other.

Properties of Unfilled Castings

Resins	Barcol Hardness 934-1 Gauge	Heat Distortion Temperature °F (°C)	Tensile Elongation (%)
75-AQ-001	42-47	220 (104)	1.7
75-AQ-001S	42-47	220 (104)	1.7
75-AQ-010	40-45	215 (102)	2.4
75-AA-011	40-45	215 (102)	2.2
75-AQ-460	42-46	232 (111)	2.2
75-AQ-610	37-43	185 (85)	2.2
VE8100	30-38	220 (104)	4.5
VE8300	30-38	210 (99)	5.0
VE8360	34-40	240 (115)	4.1
VE8430	32-38	196 (91)	2.8
VE8440	40-48	225 (107)	4.0
VE8450	38-45	240 (115)	4.0
VE8470	42-50	240 (115)	3.8
VE8510	20-30	175 (75)	10.0
VE8515	15-23	145 (62)	15.0
VE8550	30-35	190 (88)	7.0
VE8710	40-48	220 (104)	2.0
VE8730	40-45	280 (138)	3.0
VE8770	40-48	300 (149)	1.0
VE8740	48-53	293 (145)	1.8
VE8480N	34-40	225 (107)	4.7
VE8400	38-45	215 (102)	4.8
VE8300LH	35-38	214 (101)	5.0

Recommendations for a Post Cure Schedule



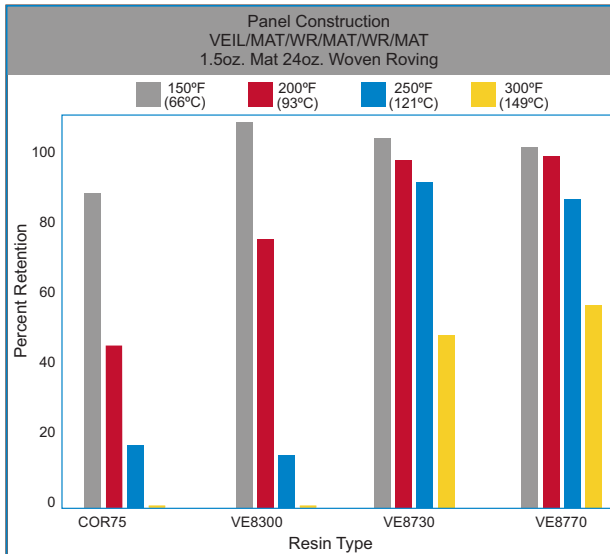
Our recommendations are based on laboratory experience and will not predict all aspects of production cure. Please work with us to ensure adequate cure using analysis by Differential Scanning Calorimetry (DSC) degree of cure or Dynamic Mechanical Analysis (DMA) for glass transition (T_g).

Marine Vinyl Ester and Modified Vinyl Ester Resins

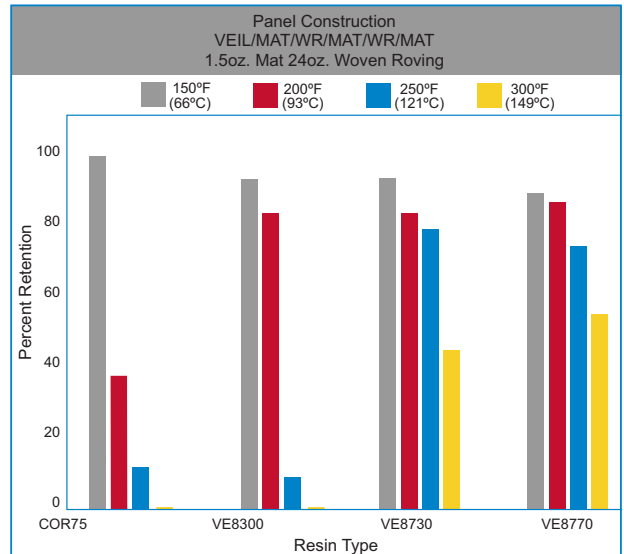
Company	Interplastic CoREZYN®	Ashland	Polynt	AOC Hydropel®
Vinyl Ester	VE8110 ¹⁷	Derakane® 411-700T	–	–
	VE8121 ¹⁷	Derakane 411-700PAT	100 (33350), 784-7978-30 VER	E-010-TC
	VE8121LH Series ^{15,16,17,21}	AME® 6000 T-35 ¹⁵	100LV (33600) ¹⁵ , 784-3842, VMC	H0100K ¹⁵
	VE8153 ¹⁹	–	–	–
	VE8153LH ^{15,16,21,22}	–	–	–
Modified Vinyl Ester	VE8106/VE8107 ^{17, 20}	AME 6000 INF	–	–
	MVR8011 ^{15,16}	AME 5000 ¹⁵	LS (33390) ¹⁵ , BBX ¹⁵	H-034A ¹⁵
	MVR8031	–	33250, 33253	–
	MVR8031LH Series ^{15,16}	–	VSX ¹⁵	H-100-W
	MVR8071 ²⁰ MVR244-406	–	33385	–

Products highlighted in each row are sold as chemical equivalents of each other.

Flexural Modulus as a Function of Temperature



Flexural Strength as a Function of Temperature



Comparison of Resin Chemistries

Bisphenol A Epoxy Resins

- Liquid temperature: 200°F (93°C).
- Vapor temperature: 210°F (99°C).
- Satisfactory in alkaline environments.
- Offer excellent flexibility.
- Good performance in organic and inorganic acids and oxidizing compounds.
- CoREZYN® VE8300, VE8360 and VE8100 are typical products.
- CoREZYN VE8360 offers less than 35% styrene and has corrosion resistance equal to CoREZYN VE8300.

Flame-Resistant Resins

- CoREZYN VE8440 has an ASTM E84 tunnel test flame spread rating of less than 75 without additives and less than 25 with the addition of 1.5% antimony trioxide.
- CoREZYN VE8450 has an ASTM E84 tunnel test flame spread rating of less than 125 without additives and less than 25 with the addition of 5% antimony trioxide.
- CoREZYN VE8430 has an ASTM E162 flame spread rating of less than 25 and an ASTM E662 smoke density of less than 100 at 4 minutes in the flaming mode when used as a blend of 55% resin and 45% alumina trihydrate.

High-Crosslink Density Bisphenol A and Epoxy Novolac Vinyl Ester Resins

- Liquid temperature: 215°F (102°C).
- Vapor temperature: 225°F (107°C).
- CoREZYN VE8730 and CoREZYN VE8770 are excellent in most organic solvents.
- CoREZYN VE8710 has excellent resistance to acid.
- CoREZYN VE8470 has excellent resistance to sodium hypochlorite and other chlorinated bleaching solutions.
- CoREZYN VE8730 is a Novolac vinyl ester.

Isophthalic Polyester Resins

- Liquid temperature: 150°F (66°C).
- Vapor temperature: 160°F (71°C).
- Not recommended for pH >10.5.
- Satisfactory for inorganic and organic acids.
- Solvent resistance acceptable for gasoline, kerosene, mineral spirits, etc.
- Not recommended for oxidizing compounds.
- CoREZYN COR75-AQ-010 is a tough isophthalic resin with the same corrosion resistance as its rigid counterparts and can be used to build thick laminates.
- CoREZYN COR75-AQ-460 contains less than 38% styrene and is compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production” requirements for Open Molding — Corrosion Resistant category.

Footnotes

- ¹ Manufactured from FDA-approved raw materials.
- ² This resin is a recognized component for UL 1746 applications.
- ³ Elastomer-modified vinyl ester resin.
- ⁴ Provides flame spread of less than 75 unfilled and less than 25 filled with 3% antimony trioxide by ASTM E84 tunnel test.
- ⁵ Provides flame spread of less than 125 unfilled and less than 25 filled with 5% antimony trioxide by ASTM E84 test.
- ⁶ Designed for low smoke applications. Used in combination with alumina trihydrate. Provides flame spread of less than 75 filled with 45% alumina trihydrate by ASTM E84 tunnel test.
- ⁷ Not recommended for corrosion applications.
- ⁸ Provides flame spread of less than 25 filled with 1.5% antimony trioxide by ASTM E84 tunnel test.
- ⁹ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production” requirements for Open Molding — Corrosion Resistant and/or High Strength category.
- ¹⁰ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production” requirements for Open Molding — Corrosion Resistant and/or High Strength category: Mechanical Application method.
- ¹¹ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production” requirements for Open Molding — Corrosion Resistant and/or High Strength category: Filament Winding Application method.
- ¹² Provides a flame spread of less than 25 as is by ASTM E84 tunnel test.
- ¹³ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production” requirements for Open Molding — Low Flame Spread/Low Smoke Products category.
- ¹⁴ UL-approved component for UL 1316 applications.
- ¹⁵ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants for Boat Manufacturing.”
- ¹⁶ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production” requirements for Open Molding — Tooling category.
- ¹⁷ These products are approved by Lloyd’s of London for marine applications.
- ¹⁸ Approved by Det Norske Veritas (DNV) for use in marine applications.
- ¹⁹ Heat distortion 270°F (132°C), thixotropic and promoted.
- ²⁰ Infusion resin.
- ²¹ Compliant with the EPA 40CFR Part 63 “National Emission Standards for Hazardous Air Pollutants: Reinforced Plastics Composites Production Requirements for Open Molding — High Strength category (Casting Tensile Strength greater than 10,000 psi).
- ²² Compliant with the EPA part 63 “National Emissions Standards for Hazardous Air Pollutants for Boat Manufacturing.”



Comparison of Corrosion Resistant Resins



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NOTE: We believe this information is reliable, but make no guarantee of accuracy and assume no liability arising from its use.
The user should thoroughly test any application before commercialization.