PRODUCT BULLETIN

November 2021

DION® 9100

Bisphenol-Epoxy Vinyl Ester Resins

DESCRIPTION

DION® 9100 is a bisphenol-epoxy vinyl ester resin that provides corrosion-resistance in a wide variety of acidic and alkaline environments. This tough, high-strength resin can be used to produce glass-reinforced laminates with excellent impact and stress-fatigue resistance. DION® 9100 is ideal for filament winding operations and applications that require resistance to corrosive environments and thermal cycling.

BENEFITS & FEATURES

- Batch-to-batch consistency and uniformity from production utilizing Statistical Process Control (S.P.C) & Statistical Quality Control (S.Q.C) techniques
- High temperature stability, and resistance to a wide variety of corrosive environments. A premium epoxy vinyl ester polymer with inherent toughness, crack, and stress-fatigue resistance
- Can be used in food and beverage contact applications with chemical components listed under FDA 177.2520 Title 21
- Can be used in many potable water applications with laminates meeting BS6920 requirements
- Allows additional time for thick lay-ups, large diameter winding, and prolonged pot life due to extendable gel time technology
- Lloyd's Register certified

PROPERTIES – LIQUID

Property(1)	Unit	9100
NMV	%	55.0
Acid Value	Mg KOH/gm	4.75
Viscosity(2)	mPa.s	600
Density @ 23°C	g/cm^3	1.04
Gel Time(3)	minutes	25.0

1) All properties at 25°C/77°F unless otherwise noted
2) Cone and plate @ 23°C
3) 3.0 g of 1% active cobalt solution per 100.0 g resin; initiator: 2.0 g of Butanol LPT or MEKP 925H per 100.0 g of resin

PROPERTIES – PHYSICAL

Property[1]	Unit	Neat Resin Casting[2]	Test Method
Tensile Strength	psi	12,000	ASTM D 638
Tensile Modulus	psi	440,000	ASTM D 638
Tensile Elongation	%	5.2	ASTM D 638
Flexure Strength	psi	21,000	ASTM D 790
Flexure Modulus	psi	510,000	ASTM D 790
Compression Strength	psi	15,000	ASTM D 695
Compression Modulus	psi	820,000	
Heat Deflection Temperature	°C/°F	108/226	ASTM D 648
Hardness, Barcol Model 934-1	HB	31	ASTM D 2583

1) Physical properties were determined using internal Polynt test methods that are similar to those listed above.
2) Initiator type and ratio: Luperox A98 @ 1% + 1% of styrene; Cure conditions: gel overnight 16 hrs. @ 130°F; Post-cure conditions: 2 hrs. @ 180°F, 2 hrs. @ 250°F

TYPICAL LAMINATE PROPERTIES

Temperature (°C/°F)	Tensile Strength (psi)	Tensile Modulus (psi)	Flexure Strength (psi)	Flexure Modulus (psi)
25/77	19,000	2,000	33,000	1,000
66/150	22,000	2,000	33,000	1,000
93/200	23,000	1,000	26,000	830
121/250	15,000	800	3,000	370
149/300	10,00	800	-	-

1) Laminate Construction: V/M/M/WR/M/WR/M/M; Glass Content: 42%; Thickness: 0.25 in

APPLICATION

GUIDELINES FOR INITIATOR AND PROMOTER ADDITIONS

DION® resins are formulated for use with methyl ethyl ketone peroxide (MEKP) initiator systems. They can also be used with benzoyl peroxide (BPO). Non-promoted versions of DION® 9100 require the addition of both cobalt octoate or cobalt naphthenate and dimethylaniline (DMA) before adding MEKP initiator to obtain optimal cure. Vinyl ester resins are acutely sensitive to cobalt. If the gel time must be adjusted, use DMA to accelerate it or a 10% solution of tertiary-butyl catechol (TBC-10) to slow it down. Maintain an MEKP level of 1.25-2.5 % by weight.

The curing performance of DION® 9100 is also sensitive to changes in temperature. For best results, use of less than 1.25% MEKP initiator is not recommended. When long gel times at high ambient temperatures are required, the initiator level should be maintained at 1.25% and gel time adjusted by adding TBC-10. At ambient temperatures below 60°F, it may be necessary to add additional dimethylaniline to increase gel and cure rates.

Refer to Polynt's Composites Applications Guide ("Cookbook") for equipment and application recommendations. Each user must determine the suitability of this product to his/her particular mode of operation and intended end-use application. A Polynt representative will be available to assist in the proper selection of all Polynt-Reichhold products available for commercial use.

SHELF LIFE & STORAGE

The shelf life of DION® 9100 is 180 days from the date of manufacture from Polynt. To maximize usage life and maintain optimum properties, resins and gel coats should be stored in the original closed container at temperatures below 23°C/73°F and away from ignition sources and sunlight. Keep containers sealed to prevent moisture pick-up and monomer loss.

SAFETY & WARRANTY

To receive a copy of our safety and warranty information, please email safetyandwarranty@polynt.com.