



Product survey

Vinylester resins (VE-resins)

DISTITRON® - VE 100 – vinylester resin (VE-resin)

Pure resin, based on bisphenol-A epoxy resin

Process: Hand lamination, winding, pultrusion

Certification: RINa, Lloyd's

DISTITRON® - VE 100 STD – vinylester resin (VE-resin)

Pre-accelerated, thixotropic resin, based on bisphenol-A epoxy resin

Process: Spray up, hand laminating, hand lay up

Certification: RINa, Lloyd's

HN 800 TA 31 – vinylester resin (VE-resin)

Pre-accelerated and thixotropic, mixed with styrene, with a hardening indicator. Neither contains wax nor paraffin and therefore protects from delamination.

Application: Usable in all fields, especially shipbuilding and in outdoor areas.

Process: Spraying / Brushing process

Certification: Lloyd's

HW 859-15 – Vinylester resin (VE-resin)

Unsaturated VE resin, dissolved in styrene, based on bisphenol-A. It contains neither a hardening indicator nor wax or paraffin and therefore protects against delamination.

Application: Production of chemical resistant products, due to the unique compositions of the resin a good connection to the glass fiber arises.

Process: Winding process

HQ 800-A 45 – Infusion resin – vinylester resin (VE-resin)

Unsaturated, pre-accelerated VE-resin dissolved in styrene. It contains neither a hardening indicator nor wax or paraffin and therefore protects against delamination. It stands out for low exothermic process as well as low shrinkage.

Application: Due to its low viscosity and long gel time the production of large components is possible, which require a long injection time.

Process: RTM, RTM light and vacuum infusion

Certification: Lloyd's – Register of Shipment

Technical data sheet / [Technisches Datenblatt](#)

DISTITRON® VE 100 – Vinylesterharz (VE-Harz)

Description / [Beschreibung](#)

First emission Erste Ausgabe	01/05/1996
Resin type Harztype	Bisphenol-A Epoxy Resin based vinyl ester Vinylester, basierend auf Bisphenol-A Epoxidharz
Special features Besondere Eigenheiten	pure resin reines Harz
Processing Verfahren	Contact moulding, filament winding, pultrusion Handlaminieren, Wickeln, Pultrusion
Note Anmerkung	Certificate: RINA, LLOYD´s Zertifikat: RINA, LLOYD´s

Delivery specification of the liquid resin [Distitron® VE 100](#) [Lieferspezifikationen des flüssigen Harzes](#) [Distitron® VE 100](#)

Properties Eigenschaften	Test method Testmethode	Unit Einheit	Typical value Typischer Wert
Viscosity RVF at 25°C, s 2 rpm 2 Viskosität RVF bei 25°C, s 2 rpm 2	GM025	mPa.s	380 - 480
Monomer content Monomergehalt	RS06C	%	42 - 46
Curing at 25°C with Reaktivität bei 25°C mit	0.5 % Co 6% + 1.5% Cumyl hydroperoxide		
Gel time Gelzeit	RS08G	min.sec	11.00 – 15.00
Curing time Härtungszeit	RS08G	min.sec	19.00 – 28.00
Maximum temperature Maximale Temperatur	RS08G	°C	165 - 195

Properties of the liquid resin [Distitron® VE 100](#) [Eigenschaften des flüssigen Harzes](#) [Distitron® VE 100](#)

Appearance - color Aussehen - Farbzahl	RS13F	-----	Yellow gelb
Acid number Säurezahl	RS02C	mg KOH/g	8 Max
Stability at 20°C in the dark Stabilität bei 20°C im Dunkeln	RS07G	months Monate	6

Properties of cured unreinforced resin Distitron® VE 100 Eigenschaften des gehärteten nicht verstärkten Harzes Distitron® VE 100

Casting preparation:

Gießvorbereitung:

Hardner type and amount: 1.5 % Cumyl hydroperoxide

Härtertyp und Menge:

Promotor type and amount: 0.3% Co6%

Beschleunigertyp und Menge:

Curing cycle: 24h at 23°C + 2h at 100°C + 1h at 100°C

Härtungszyklus: 24h bei 23°C + 2h bei 100°C + 1h bei 100°C

Properties Eigenschaften	Test method Testmethode	Unit Einheit	Typical value Typischer Wert
Tensile strength Zugfestigkeit	ISO 527-1993	MPa	86
Tensile modulus Zugmodul	ISO 527-1993	MPa	3300
Elongation at break Bruchdehnung	ISO 527-1993	%	6,0
Stress at yield Zugfestigkeit	ISO 527-1993	MPa	86
Strain at yield Streckdehnung	ISO 527-1993	%	4.8
Flexural strength Biegefestigkeit	ISO 178-2001	MPa	135
Flexural modulus Biegemodul	ISO 178-2001	MPa	3500
Heat deflection temperature Wärmeverformungstemperatur	ISO 75-2:2004 Metodo A	°C	106
Glass transition Glasübergangstemperatur	ASTM E 1545-00	°C	112
Overall volume shrinkage Volumenschrumpfung	ISO 3521-1997 corr. 1:2003	%	7.3
Barcol hardness at 25°C Barcol Härte bei 25°C	ASTM D 2583-01	Unit Einheit	38

(*) by Thermo Mechanical Analysis

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Technical data sheet / [Technisches Datenblatt](#)

DISTITRON® VE 100 STD – Vinylesterharz (VE-Harz)

Description / [Beschreibung](#)

First emission Erste Ausgabe	07/19/2001
Resin type Harztype	Bisphenol-A Epoxy Resin based vinyl ester Vinylester, basierend auf Bisphenol-A Epoxidharz
Special features Besondere Eigenheiten	pre-accelerated, thixotropic vorbeschleunigt, thixotropiert
Processing Verfahren	Spray up, contact moulding, hand lay up Spray up, Handlaminiieren, Hand lay up
Note Anmerkung	Certificate: RINA, LLOYD´s Zertifikat: RINA, LLOYD´s

Delivery specification of the liquid resin [Distitron® VE 100 STD](#) [Lieferspezifikations des flüssigen Harzes](#) [Distitron® VE 100 STD](#)

Properties Eigenschaften	Test method Testmethode	Unit Einheit	Typical value Typischer Wert
Viscosity RVF at 25°C, s 2 rpm 2 Viskosität RVF bei 25°C, s 2 rpm 2	GM025	mPa.s	1900 – 2600
Viscosity RVF at 25°C, s 2 rpm20 Viskosität RVF bei 25°C, s 2 rpm20	GM025	mPa.s	600 - 850
Monomer content Monomergehalt	RS06C	%	44 - 49
Curing at 25°C with Reaktivität bei 25°C mit	1.5% MEKP		
Gel time Gelzeit	RS08G	min.sec	34.00 – 41.00
Curing time Härtungszeit	RS08G	min.sec	55.00 – 62.00
Maximum temperature Maximale Temperatur	RS08G	°C	145 - 175

Properties of the liquid resin [Distitron® VE 100 STD](#) [Eigenschaften des flüssigen Harzes](#) [Distitron® VE 100 STD](#)

Appearance - color Aussehen - Farbzahl	RS13F	-----	Opalescent violet Schillerndviolett
Stability at 20°C in the dark Stabilität bei 20°C im Dunkeln	RS07G	months Monate	3

Properties of cured unreinforced resin Distitron® VE 100 STD Eigenschaften des gehärteten nicht verstärkten Harzes Distitron® VE 100 STD

Casting preparation:

Gießvorbereitung:

Hardner type and amount: 1.5% MEKP

Härtertyp und Menge:

Curing cycle: 24h at 23°C + 2h at 100°C + 1h at 100°C

Härtungszyklus: 24h bei 23°C + 2h bei 100°C + 1h bei 100°C

Properties Eigenschaften	Test method Testmethode	Unit Einheit	Typical value Typischer Wert
Tensile strength Zugfestigkeit	ISO 527-1993	MPa	55
Tensile modulus Zugmodul	ISO 527-1993	MPa	3400
Elongation at break Bruchdehnung	ISO 527-1993	%	2,0
Flexural strength Biegefestigkeit	ISO 178-2001	MPa	95
Flexural modulus Biegemodul	ISO 178-2001	MPa	3500
Heat deflection temperature Wärmeverformungstemperatur	ISO 75-2:2004 Metodo A	°C	105
Glass transition Glasübergangstemperatur	ASTM E 1545-00	°C	110
Barcol hardness at 25°C Barcol Härte bei 25°C	ASTM D 2583-01	Unit Einheit	35

(*) by Thermo Mechanical Analysis

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Technical data sheet

HN 800 TA 31 – vinylester resin (VE-resin)

Description

- Resin type:** Vinylester resin
- Description:** Vinylester resin mixed with styrene, thixotropic, pre-accelerated, with hardening indicator.
- Specifics:** The resin neither contains wax nor paraffin and so protects from delamination. It's recommended to grind the laminate after 24 hours to guarantee a connection with the following laminate.
- Advantages:** **HN 800 TA 31** is applicable in all fields, especially in shipbuilding and for the use in outdoor areas. **HN 800 TA 31** guarantees a good compatibility and impregnation in connection with glass fibers and protects against bubbles. The high reactivity allows good polymerization in shortest time. Compared with conventional resin **HN 800 TA 31** offers a low styrene content and therefore essentially lower environmental influences whilst working. **HN 800 TA 31** gives FRP components an excellent resistance against osmosis. It has a high HDT value and offers excellent mechanical characteristics.
- Process:** Spraying process, brushing process
- Certification:** Lloyd's Register of Shipping (MATS/3547/1 – 16.10.2006)

Delivery specifications of the liquid resin HN 800 TA 31

Characteristics	Unit	Method	HN 800 TA 31
Appearance			cloudy blue
Viscosity RFA at 25°C s 2 rpm20	mPa-s	I.O. 369	450-550
Thixotropic index – RVF 2 rpm/20rpm		I.O. 369	3.0 – 3.8
Gel time 25°C (100g resin /1,5g MEKP)	minutes	I.O. 1000	27 - 35
Exothermic temperature	°C	I.O. 1000	155 - 175
Gel temperature max	minutes	I.O. 1000	10 - 15
Styrene content	%	I.O. 349	29 - 33
Water content	%	I.O. 360	Max 0.1

Mechanical characteristics – HN 800 TA 31
(100g resin + 1.25g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Method	HN 800 TA 31
HDT	°C	ASTM D 648	105
Tg	°C	DIN 53445	123
Tensile strength	MPa	ASTM D 638	81
Tensile E-modulus	GPa	ASTM D 638	4.1
Elongation	%	ASTM D 638	2.7
Barcol hardness	--	ASTM D 2583	48

Hardening parameter: 24h at 23°C + 2h at 100°C

Please consider: We recommend a working temperature between 15°C and 30°C. Using **MEKP / AAP** and higher working temperature one can shorten the gel time. Please shake resp. stir the resin before use.

Storage recommendation: The resin have to be stored dry in undamaged original containers; the room temperature should be between 5°C and 25°C. Higher temperature will shorten the shelf life and could change the characteristics of the resin. The storage period of unsaturated, styrene soluble resin can shorten most quickly when the resin is not stored in nontransparent containers and when it is exposed to light. At correct storage the stability of the resin is guaranteed for 6 months.

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Technical data sheet

HW 859-15 – vinylester resin (VE resin)

Description

- Resin type:** Vinylester resin
- Description:** Epoxy-bisphenol A based, unsaturated and dissolved in styrene.
- Specifics:** The resin neither contains a hardening indicator, wax nor paraffin and so protects from delamination. It's recommended to grind the laminate after 24 hours to guarantee a connection with the following laminate.
- Advantages:** **HW 859-15** was developed for the production of chemical resistant products, due to the unique composition of resin **HW 859-15** arises a good connection with glass fibers. The fast hardening and the high exothermic temperature allows the shortening of the working process as well as excellent polymerization. The low viscosity of the resin allows easy handling.
- Process:** Winding process

Delivery specification of the liquid resin HW 859-15

Characteristics	Unitt	Method	HN 859-15
Appearance ***			clear liquid
Viscosity RFA at 25°C s 2 rpm20	mPa-s	I.O. 368	400 - 500
Gel time 25°C *	minutes	I.O. 1000	13 - 17
Exothermic Temperature.	°C	I.O. 1000	155 - 175
Gel temperature max	minutes	I.O. 1000	7 - 11
Styrene content ***	%	I.O. 387	38 - 42
Water content ***	%	I.O. 360	<= 0.15%

* 100g resin + 2.5 ml Co (1%) + 0.1g DMA + 1.5g MEKP50
 *** The values haven't been published in the analysis report.

Mechanical characteristics – HW 859-15
100g resin + 0,2 ml Co (6%) + 0,1g DMA + 1,5 MEKP 50

Characteristics	Unit	Method	HW 859-15
HDT	°C	ASTM D 648	100
Tg	°C	DIN 53445	120
Tensile strength	MPa	ASTM D 638	80
Flexural strength	MPa	ASTM D 790	140
Tensile E-modulus	GPa	ASTM D 638	3.5
Flexural E-modulus	GPa	ASTM D 790	3.6
Elongation	%	ASTM D 638	5.0
Barcol hardness	--	ASTM D 2583	45

Hardening parameter: 24h at 23°C + 2h at 100°C

We recommend a working temperature between 15°C and 30°C. Using **MEKP / AAP** and higher working temperature one can shorten the gel time

Please consider: The resin must reach a minimum temperature of 15°C before use to guarantee a proper result whilst using MEKP. Please shake resp. stir the resin before use.

Storage recommendation: The resin must be stored dry in undamaged original containers; the room temperature should be between 5°C and 25°C. Higher temperature will shorten the shelf life and could change the characteristics of the resin. The storage period of unsaturated, styrene soluble resin can shorten most quickly when the resin is not stored in nontransparent containers and when it is exposed to light. At correct storage the stability of the resin is guaranteed for 3 months, at temperatures of 65°C the shelf life shortens to 3 days.

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Technical data sheet

HQ 800-A 45 – Infusion resin– vinylester resin (VE-resin)

Description

- Resin type:** Vinylester resin
- Description:** unsaturated vinylester resin, dissolved in styrene, pre-accelerated.
- Specifics:** The resin neither contains hardening indicator, nor wax or paraffin and therefore protects against delamination. It stands out for low exothermic process as well as low shrinkage. Moreover, **HQ 800-A 45** offers very good mechanical characteristics and excellent chemical resistance.
- Advantages:** **HQ 800-A 45** has low viscosity. Hereby and by long gel time, it is possible to produce large components, which require a long injection time. **HQ 800-A 45** is certified by Lloyd's Register of Shipment.
- Process:** RTM, RTM light and vacuum infusion

Delivery specification of the liquid resin HQ 800-A 45

Characteristics	Unit	Method	HQ 800-A 45
Appearance			clear liquid
Viscosity at 25°C	mPa-s	I.O. 368	100-130
Gel time 25°C *	minutes	I.O. 1000	40 - 50
Exothermic temperature.	°C	I.O. 1000	155 - 175
Gel temperature max	minutes	I.O. 1000	20 – 26
Styrene content ***	%	I.O. 349	33 – 37
Water content ***	%	I.O. 360	max 0.1 %

* 100g resin + 1.5g MEKP50

**Mechanical characteristics – HQ 800-A 45
 100g resin + 1,5 MEKP 50**

Characteristics	Unit	Values	Method
HDT	°C	95	ASTM D 648
Tg	°C	123	DIN 53445
Tensile strength	MPa	81	ASTM D 638
Tensile E-modulus	GPa	4.1	ASTM D 638
Elongation	%	3.5	ASTM D 638
Barcol hardness	--	48	ASTM D 2583

Hardening parameter: 24h at room temperature + 2h at 100°C

We recommend a working temperature between 15°C and 30°C. Using **MEKP / AAP** and higher working temperature one can shorten the gel time

Please consider: The resin must reach a minimum temperature of 15°C before use to guarantee a proper result whilst using MEKP. Please shake resp. stir the resin before use

Storage recommendation: The resin must be stored dry in undamaged original containers; the room temperature should be between 5°C and 25°C. Higher temperature will shorten the shelf life and could change the characteristics of the resin. The storage period of unsaturated, styrene soluble resin can shorten most quickly when the resin is not stored in nontransparent containers and when it is exposed to light. At correct storage the stability of the resin is guaranteed for 6 months, at temperatures of 65°C the shelf life shortens to 6 days.

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