MÜHLMEIER COMPOSITES

Resin-survey

= suitable = limited suitable

Description	Characteristics			Application fields										Use							
														Tanks and pipes							
	volatile portion % (+/- 2%)	Viscosity mPas (25°C) Tx = thixotrope	Gel time in minutes (25°C)	Hand laminate	Spraying	RTM	filament winding	Pultrsion	Pouring process - with filler	Pressing process	Boat building	Vehicle manufacturing	Machine parts	Water	Organic products	Food	Acids / Bases	Sanitary accessories	Helmets	construction industrie	Mould making
DS 429 BSXQ - **Ortho**, adhesive setting, GL	40 - 45	Tx	18 - 27																		
DS 429 BSXQZ - Ortho, non adhesive setting	40 - 45	Tx	18 - 25																		
DS 429 SV 1.3 - Ortho, injection resin	41 - 45		9 - 12																		
DS 414 G2Q - Ortho, LSE, Type 1140, GL	39 - 44	Tx	21 - 27																		
HA 119 TAE - series, Ortho	42 - 46	Tx	13 - 26																		
HA 184 TPR 20, Ortho	40 - 44	Tx	17 - 25																		
R184ATC, Ortho	29 - 34	Tx	11 - 18																		
HN 306 TA, ISO	42 - 46	Tx	13 - 40																		
HN 380 TA 15, ISO	46 - 49	Tx	13 - 16																		
HN 380 TA 20, ISO	45 - 49	Tx	18 - 22																		
HA 906 TA 45	44 - 48	Tx	40 - 45																		
R918A - Easymould - mould making resin	29 - 31	Tx	38 - 42																		
R930A - fire protection system - Firecare	<15	Tx	7 - 10																		
R921a0000g15 - fire protect. resin M2/F0/DIN 5510:2	<30	Tx	20 - 30																		
R919a0000g20 - fire protection resin M1/F1	<30	Tx	20 - 30																		

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Technical data sheet /Technisches Datenblatt

DISTITRON® 429 BSXQ

Description / Beschreibung

First emission **Erste Ausgabe**	04/08/1999
Resin type **Harztype**	Orthopthalic Orthophthalsäure
Special features **Besondere Eigenheiten**	pre-accelerated, thixotropic, resin with curing indicator vorbeschleunigt, thixotropiert, Harz mit Härtungsindikator
Processing **Verfahren**	Spray up, hand lay up Spritzverfahren, Streichverfahren
Note **Anmerkung**	Certificate: RINA, LLOYD´s Zertifikat: RINA, LLOYD´s

Delivery specitication of the liquid resin Distitron ® 429 BSXQ
Lieferspezifikations des flüssigen Harzes Distitron ® 429 BSXQ

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	1450 - 1950
Viscosity RVF at 25°C, s 2 rpm 20 Viskosität RVF bei 25°C, s 2 rpm 20	GM025	mPa.s	430 - 620
Monomer content Monomergehalt	RS06C	%	40 - 45
Curing at 25°C with Reaktivität bei 25°C mit	2 % MEKP		
Gel time Gelzeit	RS08G	min.sec	18.00 – 27.00
Curing time Härtungszeit	RS08G	min.sec	27.00 – 44.00
Maximum temperature Maximale Temperatur	RS08G	°C	155 - 185

Properties of the liquide resin Distitron ® 429 BSXQ
Eigenschaften des flüssigen Harzes Distitron ® 429 BSXQ

Appearance - colour Aussehen - Farbzahl	RS13F	----------	opalescent bluish schillernd bläulich
Acid number Säurezahl	RS02C	mg KOH/g	13 – 19
Stability at 20°C in the dark Stabilität bei 20°C im Dunkeln	RS07G	month Monate	3

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Properties of cured unreinforced resin Distitron ® 429 BSXQ
Eigenschaften des gehärteten nicht verstärkten Harzes Distitron® 429 BSXQ

Casting preparation:
Gießvorbereitung:

Hardner type and amount: **1% MEKP**
Härtertyp und Menge:

Promotor type and amount:
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	50
Tensile modulus Zugmodul	ISO 527-1993	MPa	4000
Elongation at break Bruchdehnung	ISO 527-1993	%	1.4
Flexural strength Biegefestigkeit	ISO 178-2001	MPa	90
Flexural modulus Biegemodul	ISO 178-2001	MPa	4200
Heat deflection temperature Wärmeverformungstemperatur	ISO 75-2:2004 Metodo A	°C	65
Glas transition Glasübergangstemeratur	ASTM E 1545-00	°C	75
Barcol hardness at 25°C Barcol Härte bei 25°C	ASTM D 2583-01	Unit Einheit	45

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DISTITRON® 429 BSXQZ

Description / Beschreibung

First emission **Erste Ausgabe**	04/27/2010
Resin type **Harztype**	Orthopthalic Orthophthalsäure
Special features **Besondere Eigenheiten**	pre-accelerated, thixotropic, resin with curing indicator vorbeschleunigt, thixotropiert, Harz mit Härtungsindikator
Processing **Verfahren**	Spray up, hand lay up Spritzverfahren, Streichverfahren
Note **Anmerkung**	low styrene emission niedrige Styrolemission

Delivery specification of the liquid resin Distitron ® 429 BSXQZ
Lieferspezifikations des flüssigen Harzes Distitron ® 429 BSXQZ

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	1700 - 2300
Viscosity RVF at 25°C, s 2 rpm 20 Viskosität RVF bei 25°C, s 2 rpm 20	GM025	mPa.s	520 - 730
Monomer content Monomergehalt	RS06C	%	40 - 45
Curing at 25°C with Reaktivität bei 25°C mit	2 % MEKP		
Gel time Gelzeit	RS08G	min.sec	18.00 – 25.00
Curing time Härtungszeit	RS08G	min.sec	30.00 – 44.00
Maximum temperature Maximale Temperatur	RS08G	°C	145 - 175

Properties of the liquid resin Distitron ® 429 BSXQZ
Eigenschaften des flüssigen Harzes Distitron ® 429 BSXQZ

Appearance - colour Aussehen - Farbzahl	RS13F	----------	opalescent bluish schillernd bläulich
Stability at 20°C in the dark Stabilität bei 20°C im Dunkeln	RS07G	month Monate	3

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Properties of cured unreinforced resin Distitron® 429 BSXQZ
Eigenschaften des gehärteten nicht verstärkten Harzes Distitron® 429 BSXQZ

Casting preparation:
Gießvorbereitung:

Hardner type and amount: 1% MEKP
Härtertyp und Menge:

Promotor type and amount:
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	50
Tensile modulus Zugmodul	ISO 527-1993	MPa	4000
Elongation at break Bruchdehnung	ISO 527-1993	%	1.4
Flexural strength Biegefestigkeit	ISO 178-2001	MPa	90
Flexural modulus Biegemodul	ISO 178-2001	MPa	4200
Heat deflection temperature Wärmeverformungstemperatur	ISO 75-2:2004 Metodo A	°C	65
Glas transition Glasübergangstemeratur	ASTM E 1545-00	°C	75
Barcol hardness at 25°C Barcol Härte bei 25°C	ASTM D 2583-01	Unit Einheit	45

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Technical data sheet /Technisches Datenblatt

DISTITRON® 429 SV1.3

Description / Beschreibung

First emission **Erste Ausgabe**	01/28/2002
Resin type **Harztype**	Orthopthalic Orthophthalsäure
Special features **Besondere Eigenheiten**	pre-accelerated vorbeschleunigt
Processing **Verfahren**	Injection Injektion
Note **Anmerkung**	

Delivery specification of the liquid resin — Distitron ® 429 SV1.3
Lieferspezifikations des flüssigen Harzes — Distitron ® 429 SV1.3

Properties **Eigenschaften**	**Test method** **Testmethode**	**Unit** **Einheit**	**Typical value** **Typischer Wert**
Viscosity RVF at 25°C, s 2 rpm 20 Viskosität RVF bei 25°C, s 2 rpm 20	GM025	mPa.s	110 - 150
Monomer content Monomergehalt	RS06C	%	41 - 45
Curing at 25°C with Reaktivität bei 25°C mit	1.5 % MEKP (on 50g of resin)		
Gel time Gelzeit	RS08G	min.sec	9.00 – 12.00
Curing time Härtungszeit	RS08G	min.sec	20.00 – 31.00
Maximum temperature Maximale Temperatur	RS08G	°C	115 - 145

Properties of the liquid resin — Distitron ® 429 SV1.3
Eigenschaften des flüssigen Harzes — Distitron ® 429 SV1.3

Appearance - colour Aussehen - Farbzahl	RS13F	----------	rose rosa
Acid number Säurezahl	RS02C	mg KOH/g	13 - 20
Stability at 20°C in the dark Stabilität bei 20°C im Dunkeln	RS07G	month Monate	6

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Properties of cured unreinforced resin Distitron® 429 SV1.3
Eigenschaften des gehärteten nicht verstärkten Harzes Distitron® 429 SV1.3

Casting preparation:
Gießvorbereitung: 50 ppm HQ

Hardner type and amount:
Härtertyp und Menge: 1.5% MEKP

Promotor type and amount:
Beschleunigertyp und Menge:

Curing cycle:
Härtungszyklus: 24h at 23°C + 2h at 100°C + 1h at 100°C
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	70
Tensile modulus Zugmodul	ISO 527-1993	MPa	3900
Elongation at break Bruchdehnung	ISO 527-1993	%	2.3
Flexural strength Biegefestigkeit	ISO 178-2001	MPa	130
Flexural modulus Biegemodul	ISO 178-2001	MPa	4200
Heat deflection temperature Wärmeverformungstemperatur	ISO 75-2:2004 Metodo A	°C	68
Glas transition Glasübergangstemeratur	ASTM E 1545-00	°C	78
Barcol hardness at 25°C Barcol Härte bei 25°C	ASTM D 2583-01	Unit Einheit	47

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Technical data sheet

HA 119 TAE - series

Description

Resin type: Orthophthalic acid

Description: Resin of the series **HA 119 TAE** is a mixture of unsaturated polyester-resin, dissolved in styrene, thixotropic and pre-accelerated. It is furnished with a color indicator.
The resin contains a special additive, which reduces drastically the styrene-emission whilst production process (ca. 80%). This additive compared with normal paraffin reduces the danger of delamination clearly. But it's recommended to wait no longer than 3 days whilst laminating the single layers to guarantee a good adhesion.

Application field: **HA 119 TAE** resins have been developed for all FRP fields.

Advantages: The special chemical composition of **HA 119 TAE** - series guarantees good compatibility and saturating of the glass fiber. The low viscosity of the resin guarantees a fast and complete aeration.
The middle high thixotropic index also allows the laminating of vertical flats, without danger of running.

Specifics: The resin gives good mechanical characteristics to the fiberglass reinforced plastic. It has a low exothermic temperature and hardens very fast.

Process: spraying process, brushing process

Chemical and physical characteristics of the liquid resin:

Characteristics	Unit	Method	HA 119 TAE 15	HA 119 TAE 23
Appearance			cloudy blue liquid	
Viscosity RVF at 25°C s 2 rpm20	mPa-s	I.O. 369	670 - 730	
Thixotropic index – RVF 2 rpm/20rpm		I.O. 369	3.3 – 4.0	
Gel time 25°C (100g resin /1,5g MEKP50)	minutes	I.O. 1000	13 - 16	22 - 26
Exothermic temperature	°C	I.O. 1000	165 - 185	160 - 180
Gel – temperature max	minutes	I.O. 1000	12 - 16	14 - 18
Styrene content	%	I.O. 349	42 - 46	
Water content	%	I.O. 360	max. 0.15	

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Mechanical characteristics of the pure resin (100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Method	HA 119 TAE 15	HA 119 TAE 23
HDT	°C	ASTM D 648	63	
Tg	°C	DIN 53445	80	
Tensile strength	MPa	ASTM D 638	55	
Flexural strength	MPa	ASTM D 790	100	
Tensile E-modulus	GPa	ASTM D 638	4.0	
Flexural E-modulus	GPa	ASTM D 790	4.1	
Tensile strain	%	ASTM D 638	2.0	
Barcol hardness	--	ASTM D 2583	45	

We recommend a working temperature between 15°C and 30°C. Using **MEKP / AAP** blends, and a higher working temperature the gel time can be shortened. Please don't blow neither air nor gas into the resin. It may not be mixed with conventional resins.

Please consider: Before use the resin must reach a minimum temperature of 15°C to achieve a suitable 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.

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Technical data sheet

HA 184 TPR 20

Description

Resin type: Orthophthalic acid

Description Unsaturated polyester resin, dissolved in styrene, thixotropic and pre-accelerated.
The resin is dyed blue and furnished with a color indicator.

Specifics: The resin neither contains wax nor paraffin and so protects from delamination.

Advantages: **HA 184 TPR 20** is a multi-use resin. The special composition guarantees good compatibility and wettability of the glass fiber, it can be worked excellently.
HA 184 TPR 20 has a good reactivity with middle exothermic.

Process: Spraying process, brushing process

Chemical and physical characteristics of the liquid resin:

Characteristics	Unit	Method	HA 184 TPR 20
Appearance			cloudy blue liquid
Viscosity RFA at 25°C s 2 rpm20	mPa-s	I.O. 369	600 - 750
Thixotropic index – RVF 2 rpm/20rpm		I.O. 369	3.2 – 3.8
Gel time 25°C (100g resin /1,5g MEKP)	minutes	I.O. 1000	17 - 25
Exothermic temperature	°C	I.O. 1000	175 - 195
Gel – temperature max	minutes	I.O. 1000	12 - 17
Styrene content	%	I.O. 349	40 - 44
Water content	%	I.O. 360	max 0.15

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Mechanical characteristics – HA 184 TPR 20
(100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Method	HA 184 TPR 20
HDT	°C	ASTM D 648	72
Tg	°C	DIN 53445	90
Tensile strength	MPa	ASTM D 638	50
Flexural strength	MPa	ASTM D 790	110
Tensile E-modulus	GPa	ASTM D 638	4.3
Flexural E-Modulus	GPa	ASTM D 790	4.4
Tensile strain	%	ASTM D 638	3.0
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** blends, and a higher working temperature the gel time can be shortened. Please don't blow neither air nor gas into the resin. It may not be mixed with conventional resins.

Please consider: Before use the resin must reach a minimum temperature of 15°C to achieve a suitable 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.

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Technical data sheet

R184ATC

Description

Resin type: Polyester resin – orthophthalic acid

Description: **R184ATC** is a thixotropic, pre-accelerated, filled, unsaturated polyester resin, dissolved in styrene.

Specifics: **R184ATC** contains neither wax nor paraffin and so no delamination problems are caused. To guarantee a good adhesion it's recommended to laminate further laminates within 3 days.

Advantages: **R184ATC** was developed for the use in different fields of glass fiber working. The special chemical composition of the resin and the fillers guarantees a good compatibility and wettability of the glass fiber.

Main characteristics: This special thixotropic system cares for low settling of the contained fillers.

Process: Spraying process
Brushing process

Chemical-physical characteristics of the liquid resin

Characteristics	Unit	Method	R184ATC
Appearance			liquid light-pink
Viscosity RVF at 25°C s 2 rpm20	mPa-s	I.O. 801	600 – 750
Thixotropic index RVF 2 rpm/20rpm		I.O. 802	3.2 – 3.8
Gel time 25°C (200g resin /1,5g MEKP 50)	minutes	I.O. 803	11 – 18
Gel – peak (peak reached)	minutes	I.O. 1000	10 – 16
Exothermic temperature	C°	I.O. 1000	145 – 165
Styrene content	%	I.O. 349	29 - 34
Water content	%	I.O. 360	max. 0.15

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Mechanical characteristics of the pure resin – R184ATC (100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Methode	R184ATC
Barcol hardness	--	ASTM D 2583	40

We recommend a working temperature between 15°C and 30°C.
A mixture of MEKP and AAP allows a shorter gel time with higher exothermic temperature (MEKP – standard reactivity methylethylketonperoxide/ AAP – acetylacetoneperoxide)
Whilst production of fiberglass reinforced plastics, which require chemical stability, we recommend to ask for technical consulting before using the resin **R184ATC.**

Please consider: Before use the resin must reach a minimum temperature of 15°C to achieve a suitable 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.

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Technical data sheet

HN 306 TA series

Description

Resin type: Isophthalic acid

Description: Unsaturated polyester resin, dissolved in styrene, thixotropic, pre-accelerated, furnished with hardening indicator.

Specifics: The resin neither contains wax nor paraffin and so protects from delamination. It's recommended to grind the laminate after 3 days to guarantee a connection with the following laminate.
HN 306 TA is a multi-use resin, especially used for boat building.

Advantages: Good compatibility and connection to the glass fiber. No bubbling, good mechanical characteristics.

Process: Spraying process, brushing process

Chemical and physical characteristics of the liquid resin: HN 306 TA series

Characteristics	Unit	Method	HN 306 TA 15	HN 306 TA 25	HN 103 TA 35
Appearance			cloudy blue liquid		
Viscosity RFA at 25°C s 2 rpm20	mPa-s	I.O. 369	500 - 650	600 – 700	650 - 750
Thixotropic index – RVF 2 rpm/20rpm		I.O. 369	3.0 – 3.5	3.0 – 3.5	3.0 – 3.5
Gel time 25°C (100g resin /1,5g MEKP)	minutes	I.O. 1000	13 - 20	20 - 30	30 - 40
Exothermic temperature	°C	I.O. 1000	115 - 135	110 - 130	110 - 130
Gel – temperature max.	minutes	I.O. 1000	15 – 20	16 – 22	17 - 23
Styrene content	%	I.O. 349	42 – 46	42 – 46	41 - 45
Water content	%	I.O. 360	max 0.15	max 0.15	max 0.15

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Mechanical characteristics – HN 306 TA series
(100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Method	HN 306 TA 15	HN 306 TA 25	HN 103 TA 35
HDT	°C	ASTM D 648	76	76	76
Tg	°C	DIN 53445	100	100	100
Tensile strength	MPa	ASTM D 638	79	79	79
Flexural strength	MPa	ASTM D 790	125	125	125
Tensile E-modulus	GPa	ASTM D 638	4.0	4.0	4.0
Flexural E-modulus	GPa	ASTM D 790	4.3	4.3	4.3
Tensile strain	%	ASTM D 638	2.5	2.5	2.5
Barcol harness	--	ASTM D 2583	40	40	40

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

We recommend a working temperature between 15°C and 30°C. Using **MEKP / AAP** blends, and a higher working temperature the gel time can be shortened. Moreover we advise not to mix this resin with conventional resin.

Please consider: Before adding the hardener the resin must have a minimum temperature of 15°C. 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.

All information contained in this data sheet are based on our technical and scientific knowledge, but buyer and user should make their own trials with our products under their own use conditions.
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Technical data sheet

HN 380 TA 15 – ISO resin

Description

Resin type: Isophthalic acid

Description: Unsaturated polyester resin, dissolved in styrene, thixotropic, pre-accelerated, furnished with hardening indicator.

Specifics: The resin neither contains wax nor paraffin and so protects from delamination. It‘s recommended to grind the laminate after 3 days to guarantee a connection with the following laminate.

Advantages: The products of series **HN 380 TA 15** have been developed for all glass fiber plastic fields and especially for the production of watercrafts. This resin can be applied manually or sprayed for the coating. The special chemical composition of the resin guarantees a good compatibility and wettability with the glass fibers as well as excellent bubble building resistance.

Process: Spraying process, brushing process

Certified: Lloyd´s Register of Shipping (MATS/3547/1 – 16.10.2006)

Chemical-physical characteristics of the liquid resin HN 380 TA 15

Characteristics	Field	Measuring unit	Method
Appearance ****	cloudy blue liquid		
Viscosity RFA at 25°C *	500 – 600	mPa-s	I.O. 369
Thixotropic index **	3.0 – 3.5		I.O. 369
Gel time 25°C ***	13.0 – 16.0	minutes	I.O. 1000
Exothermic temperature	8.0 – 12.0	minutes	I.O. 1000
Gel – temperature. max	190.0 -210.0	°C	I.O. 1000
Styrene content ****	46.0 – 49.0	%	I.O. 349
Water content ****	max. 0.15	%	I.O. 360
Stability at 65°C ****	min. 6	days	I.O. 375
Storage stability ****	min. 6	months	I.O. 998

* Brookfield RVF Spindle’2@20 turn/min
** Brookfield RVF @ 2 U/min/20 turn/min
*** 100g resin + 1.50 g MEKP 50 (Luperox K 1)
**** Values not mentioned in the analysis report

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Typical mechanical characteristics – HN 380 TA 15
(100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Value	Measuring unit	Method
HDT	95.0	°C	ASTM D 648
Tg	115.0	°C	DIN 53445
Tensile strength	65.0	MPa	ASTM D 638
Flexural strength	120.0	MPa	ASTM D 790
Tensile E-modulus	3.8	GPa	ASTM D 638
Flexural E-modulus	3.9	GPa	ASTM D 790
Elongation after tensile	4.0	%	ASTM D 638
Barcol hardness	50.0	--	ASTM D 2583

We recommend a working temperature between 15°C and 30°C. Don't blow neither air nor other gas into the resin. Moreover, we advise you not to mix it with conventional resin.

Please consider: Before use the resin must reach a minimum temperature of 15°C to achieve a suitable 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.

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Technical data sheet

HN 380 TA 20

Description

Resin type: Isophthalic acid

Description: Unsaturated polyester resin, dissolved in styrene, thixotropic, pre-accelerated, furnished with hardening indicator.

Specifics: The resin neither contains wax nor paraffin and so protects from delamination. It‘s recommended to grind the laminate after 3 days to guarantee a connection with the following laminate..

Advantages: Good compatibility and wetting in connection with glass fibers.
The high reactivity of **HN 380 TA 20** allows a good polymerization in shortest time. **HN 380 TA 20** gives excellent resistance against osmosis to FRP components. It has a high HDT-value, high capacity, good elongation, excellent mechanical characteristics and therefore it is most suitable for boat building.

Process: Spraying process, brushing process

Certified: Lloyd´s Register of Shipping (MATS/3547/1 – 16.10.2006)

Chemical and physical characteristics of the liquid resin: HN 380 TA 20

Characteristics	Unit	Method	HN 380 TA
Appearance			cloudy blue liquid
Viscosity RFA at 25°C s 2 rpm20	mPa-s	I.O. 369	600 - 700
Thixotropic index – RVF 2 rpm/20rpm		I.O. 369	3.0 – 3.5
Gel time 25°C (100g resin /1,5g MEKP)	minutes	I.O. 1000	18 - 22
Exothermic temperature	°C	I.O. 1000	190 - 210
Gel – temperature max	minutes	I.O. 1000	8 - 12
Styrene content	%	I.O. 349	45 - 49
Water content	%	I.O. 360	Max 0.15

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Mechanical characteristics – HN 380 TA 20
(100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Method	HN 380 TA 20
HDT	°C	ASTM D 648	95
Tg	°C	DIN 53445	115
Tensile strength	MPa	ASTM D 638	65
Flexural strength	MPa	ASTM D 790	120
Tensile E-modulus	GPa	ASTM D 638	3.8
Flexural E-modulus	GPa	ASTM D 790	3.9
Elongation after tensile	%	ASTM D 638	4.0
Barcol hardness	--	ASTM D 2583	50

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 a higher working temperature the gel time reduces.

Please consider: Before use the resin must reach a minimum temperature of 15°C. 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.

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Technical data sheet

HA 906 TA 45

Description

Resin type: ISO/NPG – Iso-neopentylglycol

Description: Resin **HA 906 TA 45** is a mixture of unsaturated polyester resin, dissolved in styrene, thixotropic and pre-accelerated with cobalt salts.
It doesn't contain color indicator.
The resin neither contains wax nor paraffin and therefore causes no delamination problems. It's recommended to grind the laminate after 3 days to guarantee a connection with the following laminate.

Advantages: The special chemical composition of **HA 906 TA 45** guarantees good compatibility of the glass fiber and prevents air inclusions.

The high reactivity of the resin **HA 906 TA 45** allows a good polymerization within a short time.

Specifics: Laminates produced with this resin have a high resistance against osmosis. It has a high HDT-value, is very resilient, and has a good elongation after tensile and excellent mechanical characteristics in general.

Chemical and physical characteristics of the liquid resin:

Characteristics	Unit	Method	HA 906 A 45
Appearance			cloudy pink liquid
Viscosity RVF at 25°C s 2 rpm20	mPa-s	I.O. 369	1000 - 1400
Thixotropic index – RVF 2 rpm/20rpm		I.O. 369	3.7 – 4.2
Gel time 25°C (100g resin /1,5g MEKP 50)	minutes	I.O. 1000	40 – 45
Exothermic temperature	°C	I.O. 1000	180 – 200
Gel – temperature max.	minutes	I.O. 1000	20 - 28
Styrene content	%	I.O. 349	44 - 48
Water content	%	I.O. 360	<= 0.15

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Mechanical characteristics of the pure resin (100g resin + 1.5g MEKP 50 – 24h at RT + 2 h at 100°C)

Characteristics	Unit	Method	HA 906 TA 45
HDT	°C	ASTM D 648	104
Tensile strength	MPa	ASTM D 638	45
Elongation after tensile	%	ASTM D 638	1.5
Barcol hardness	--	ASTM D 2583	45

We recommend a working temperature above 25°C. Using **MEKP / AAP** blends, and a higher working temperature the gel time can be shortened. To achieve the full potential of the resin characteristics and the correct grade of polymerization we recommend the tempering follows.

Please consider: Before use the resin must reach a minimum temperature of 25°C to achieve a suitable 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.

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