



# Energy Solutions Wire Enamels

Product Overview Voltatex®



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## Voltatex® Product Overview

Chemical base	Thermal class (°C)	Productname	Solid content (1g/1h/180°C)	Viscosity DIN 53 015 DIN 53 019	Dimension range recommended <sup>(9)</sup>
UL File No. E102069			[ %]	[mPa·s] [23°C]	[Ø in mm]
<b>POLYURETHANE WIRE ENAMEL</b>					
POLYURETHANE	155	Voltatex® 6125	24.0 – 26.0	30 – 40	0.01 – 0.60
		Voltatex® 6129	28.0 – 30.0	60 – 80	
		Voltatex® 6135	34.0 – 36.0	150 – 350	0.30 – 1.00
		Voltatex® 6225	24.0 – 26.0	25 – 60	0.01 – 0.60
		Voltatex® 6424	23.0 – 25.0	35 – 55	0.01 – 0.30
	180	Voltatex® 6335 gold	34.0 – 36.0	400 – 600	0.30 – 1.00
POLYURETHANE (modified)	200	Voltatex® 6534	33.0 – 35.0	440 – 600	0.30 – 1.80
		Voltatex® 6540	38.0 – 41.0	2,300 – 2,900	0.30 – 1.80
		Voltatex® 6725	24.0 – 26.0	50 – 80	0.01 – 0.80
		Voltatex® 6727	26.0 – 28.0	80 – 120	0.01 – 0.80
		Voltatex® 6729	28.0 – 30.0	120 – 200	0.01 – 0.80
<b>POLYESTERIMIDE WIRE ENAMEL</b>					
THEIC modified POLYESTER	220	Voltatex® 7140 A	39.0 – 41.0	500 – 600	0.20 – 3.00
		Voltatex® 7145 A	44.0 – 46.0	1,600 – 2,000	0.30 – 5.00
POLYESTERIMIDE	200	Voltatex® 7225 AG	24.0 – 25.0	40 – 55	0.01 – 0.80
		Voltatex® 7236	35.0 – 37.0	300 – 600	0.30 – 2.50
		Voltatex® 7240	39.0 – 41.0	700 – 900	
THEIC modified POLYESTERIMIDE	200	Voltatex® 7325 A	23.0 – 25.0	35 – 50	0.01 – 0.80
		Voltatex® 7339 A	38.0 – 40.0	700 – 900	0.30 – >3.00
		Voltatex® 7338 AX	37.0 – 39.0	500 – 1,000	0.30 – >2.00
		Voltatex® 7340 AX	39.0 – 41.0	1,100 – 1,600	0.30 – >3.00
		Voltatex® 7342 AX	41.0 – 45.0	1,900 – 2,500	0.30 – 5.00
		Voltatex® 7329 B	27.5 – 29.5	70 – 90	0.01 – 0.80
		Voltatex® 7336 B	35.0 – 37.0	500 – 700	0.10 – 1.50
		Voltatex® 7338 B	37.0 – 39.0	650 – 950	0.10 – 1.50
		Voltatex® 7340 B	39.0 – 41.0	900 – 1,200	0.30 – >3.00
	Voltatex® 7342 B	41.0 – 44.0	1,200 – 2,200	0.30 – >3.00	
	180	Voltatex® 7433	32.0 – 34.0	800 – 1,100	0.50 – >5.00
	200	Voltatex® 7538	37.0 – 39.0	500 – 900	0.30 – >3.00
	220 <sup>(9)</sup>	Voltatex® 7740	38.5 – 41.0	2,200 – 3,000 <sup>(2)</sup>	0.20 – >3.00
200	Voltatex® 7735 FL	33.5 – 35.0	800 – 2,000	0.50 – >5.00	
<b>POLYAMIDEIMIDE WIRE ENAMEL</b>					
POLYAMIDEIMIDE	220	Voltatex® 8123	22.0 – 24.0	70 – 150	0.10 – 0.80
		Voltatex® 8132	31.0 – 33.0	500 – 1,000	0.30 – 5.00
		Voltatex® 8137	35.0 – 38.0	1,500 – 2,500	0.50 – 5.00
	240	Voltatex® 8227	25.0 – 29.0	1,700 – 2,700	0.50 – 5.00
POLYAMIDEIMIDE (modified)	-	Voltatex® 8227SL	25.5 – 27.5	1,800 – 2,800	0.50 – 5.00
POLYAMIDEIMIDE	220	Voltatex® 8327	26.0 – 28.0	2,100 – 2,900 <sup>(2)</sup>	0.50 – 5.00
POLYAMIDEIMIDE (modified)	200	Voltatex® 8534	33.0 – 35.0	500 – 1,000	0.20 – >3.00
POLYAMIDE (Nylon)	-	Voltatex® 9511	10.0 – 12.0	480 – 620	-
<b>POLYAMIDEIMIDE PRIMER</b>					
POLYAMIDEIMIDE (modified)	180	Voltatex® 9127	26.0 – 28.0	1,300 – 1,900 <sup>(2)</sup>	1.00 – 5.00
<b>POLYVINYLFORMAL WIRE ENAMEL (FORMVAR)</b>					
POLYVINYLFORMAL (modified)	105	Voltatex® 9218	17.0 – 23.0	3,500 – 5,500 <sup>(2)</sup>	0.30 – >5.00
	120	Voltatex® 9224	23.0 – 25.0	4,000 – 6,000 <sup>(2)</sup>	
<b>SELFBONDING WIRE ENAMEL</b>					
POLYAMIDE		Voltatex® 8611 C	10.0 – 12.0	300 – 400	0.03 – 0.50
		Voltatex® 8616 C	15.0 – 17.0	600 – 800	0.30 – 2.00
BUTYRAL		Voltatex® 8710	8.5 – 10.5	50 – 80	0.01 – 0.50
		Voltatex® 8718	16.5 – 18.5	500 – 700	0.20 – 1.00
EPOXY		Voltatex® 8816	15.0 – 17.0	300 – 600	0.30 – 3.00
<b>IMPREGNATING VARNISHES FOR GLASS FIBRE COVERED &amp; BRAIDED WIRES</b>					
POLYURETHANE		Voltatex® 9848	47.0 – 49.0	500 – 1,000	-

Voltatex®	Conductor diameter <sup>(4)</sup>	Flexibility and adherence	Solderability temperature / soldering time	Dissipation factor recommended <sup>(8)</sup>	Cut through temperature tested (Lüscher)	Heat shock (1xd)		
	[Ø in mm]	[1xd]	[°C / sec]	[°C]	[°C]	[1xd] [°C]		
<b>6125</b>	0.10	5 % <sup>(5)</sup>	320 / <4.0 <sup>(6)</sup>	135 - 160	220	175 <sup>(5)</sup>		
<b>6129</b>	0.10	5 % <sup>(5)</sup>	375 / <1.0 <sup>(6)</sup>					
<b>6135</b>	0.65	5 %	375 / <1.0 <sup>(6)</sup>					
<b>6225</b>	0.10	15 %	375 / <1.0 <sup>(6)</sup>	135 - 160	230	175		
<b>6424</b>	0.06	5 %	375 / 0.5 <sup>(6)</sup>	150 - 160	230	-		
<b>6335 gold</b>	0.65	10 %	375 / <2.5 <sup>(6)</sup>	130 - 150	230	190		
<b>6534</b>	0.65	5 %	375 / <2.5 <sup>(6)</sup>	170 - 190	240	190		
<b>6540</b>								
<b>6725</b>	0.10	10 % <sup>(5)</sup>	375 / <4.5 <sup>(6)</sup>	170 - 190	260	210 <sup>(5)</sup>		
<b>6727</b>	0.65	5 %	375 / <6.0 <sup>(6)</sup>					
<b>6729</b>								
<b>7140 A</b>	1.00	15 %	-	165 - 180	400	240 <sup>(9)</sup>		
<b>7145 A</b>								
<b>7225 AG</b>	0.10	20 % <sup>(5)</sup>	470 / <3.5 <sup>(7)</sup>	185 - 205	320	220 <sup>(5)</sup>		
<b>7236</b>	0.65	15 %	470 / <6.5 <sup>(7)</sup>	185 - 205	320	200		
<b>7240</b>								
<b>7325 A</b>	0.30	20 %	-	190 - 215	360	220		
<b>7339 A</b>	1.00	15 %						
<b>7338 AX</b>	1.00	15 %						
<b>7340 AX</b>	1.00	15 %						
<b>7342 AX</b>	1.00	15 %						
<b>7329 B</b>	0.30	20 %						
<b>7336 B</b>	0.65	20 %						
<b>7338 B</b>								
<b>7340 B</b>								
<b>7342 B</b>	0.65	25 %						
<b>7433</b>	1.00	15 %						
<b>7538</b>	0.65	15 %						
<b>7740</b>	1.00	5 %				190 - 220	380	200
<b>7735 FL</b>							180	
<b>8123</b>	0.30	15 %			-	260 - 290	400	300
<b>8132</b>	1.00	10 %	-	260 - 290	400	300		
<b>8137</b>	1.00	10 %	-	260 - 290	400	300		
<b>8227</b>	1.00	10 %	-	260 - 300	400	300		
<b>8227SL</b>	-	-	-	-	-	-		
<b>8327</b>	1.00	10 %	-	240 - 280	380	300		
<b>8534</b>	1.00	5 %	-	260 - 290	400	300		
Can be applied as overcoat on thermosetting and solderable enamelled wire without reducing their solderability								
<b>9127</b>	1.00	30 %	-	100 - 130	300	300		
<b>9218</b>	1.00	30 %	-	100 - 120	230	-		
<b>9224</b>	1.00	10 %	-	110 - 130	240	160		
		<b>Layer thickness</b>	<b>Baking conditions</b>	<b>Bond strength</b>	<b>Resoftening temp.</b>			
<b>8611 C</b>	0.315	29µ + 17µ	1 h at 170°C	2.2 N	210°C			
<b>8616 C</b>								
<b>8710</b>	0.315	30µ + 17µ	1 h at 140°C	1.6 N	108°C			
<b>8718</b>								
<b>8816</b>	0.315	30µ + 17µ	1 h at 180°C	1.8 N	140°C			

Impregnating varnish without cresylic acid solvent is used for types of glass braided copper wire or strip, single or binned. High resistance against thermal stress, excellent electrical and mechanical properties, diluent Voltatex® 9959

Voltatex®	Temperature index acc. IEC 172	UL listed (Underwrites Laboratories)	Special characteristics and applications
	[°C]	File No. E102069	
<b>6125</b>	174 <sup>(5)</sup>	yes	Excellent solderable; soldering temperature >320°C; conform to IEC 60317-20.
<b>6129</b>			
<b>6135</b>			
<b>6225</b>			
<b>6424</b>			
<b>6335 gold</b>	195		Solderable magnet wire; pin-hole and crazing resistant; conform to IEC 60317-51.
<b>6534</b>	210	yes	Solderable magnet wire; pin-hole and crazing resistant; conform to IEC 60317-51.
<b>6540</b>			
<b>6725</b>			
<b>6727</b>			
<b>6729</b>			
<b>6729</b>	211 <sup>(5)</sup>		
<b>7140 A</b>	220	yes	THEIC modified Polyester basecoat for aluminium and copper wires.
<b>7145 A</b>			
<b>7225 AG</b>	217 <sup>(5)</sup>	yes	Solderable above 450 °C, hot staking process possible, good elasticity, good dielectric and mechanical properties, conform to IEC 60317-23.
<b>7236</b>	217		
<b>7240</b>	217		
<b>7325 A</b>	205	yes	THEIC Polyesterimide for fine wires.
<b>7339 A</b>			Voltatex® 7339 A with improved viscosity / solid content ratio and wide application range.
<b>7338 AX</b>			Improved heat shock and flexibility, ballasts for fluorescent lamps and hermetic units.
<b>7340 AX</b>			
<b>7342 AX</b>			
<b>7329 B</b>	215	yes	Among others ballasts for fluorescent lamps and hermetic units with improved heat shock. Practice has shown excellent flexibility results.
<b>7336 B</b>			
<b>7338 B</b>			
<b>7340 B</b>			
<b>7342 B</b>			
<b>7433</b>	187 <sup>(9)</sup>	yes	Rectangular and heavy round conductors, combined with PAI topcoat <sup>(11)</sup> is possible.
<b>7538</b>	215	no	Polyesterimide basecoat for aluminium wires (test data are based on copper wire).
<b>7740</b>	213 / 222 <sup>(9)</sup>	yes	For round conductor, outstanding resistance to partial discharges. <sup>(10)</sup>
<b>7735 FL</b>			Specially developed for rectangular conductor, outstanding resistance to partial discharges. <sup>(13)</sup>
<b>8123</b>	230	yes	Both overcoat and single coat, mainly used as a topcoat in combination with a polyester or polyesterimide basecoat.
<b>8132</b>			
<b>8137</b>			
<b>8227</b>	240	yes	
<b>8227SL</b>	–	–	Self-lubrication effects, mainly used as a last topcoat layer with low coefficient of friction.
<b>8327</b>	232	yes <sup>(12)</sup>	Both overcoat and single coat for both rectangular and e.g. round conductors.
<b>8534</b>	200	yes	Overcoat and single coat with outstanding resistance to partial discharges. <sup>(13)</sup>
Provides exceptionally fine finishes with minimum friction factor.			
<b>9127</b>	186	no	Primer for heavy round and rectangular conductor, superior adherence and flexibility. With excellent mechanical properties. Heavy round and rectangular conductors for use in:
<b>9218</b>	105	no	superconductor application
<b>9224</b>	120	no	hermetic application; transformer oil resistant acc. to IEC60 851-4
Bond topcoat over polyesterimide or polyurethane basecoat			
Bonding wire enamel without cresylic acid solvent, bond topcoat over Polyurethane.			
Bond topcoat, Epoxy based, cresol free. For round and rectangular wires.			

<sup>(1)</sup> estimated

<sup>(2)</sup> measuring temperature: 25 °C

<sup>(3)</sup> depend on process condition

<sup>(4)</sup> under normal test conditions on pilot equipment

<sup>(5)</sup> tested on conductor diameter 0.30mm

<sup>(6)</sup> composition of the solder bath: Sn/Pb = 60/40

<sup>(7)</sup> composition of the solder bath: Pb/Sn = 92/8

<sup>(8)</sup> depend on wire diameter and process conditions

<sup>(9)</sup> with PAI Voltatex® topcoat

<sup>(10)</sup> preferably top coated with Voltatex® 8227

<sup>(11)</sup> preferably top coated with Voltatex® 8327

<sup>(12)</sup> 180 in combination with basecoat Voltatex® 7433

<sup>(13)</sup> as occur e.g. in inverter fed motors mainly used in combination with Voltatex® 7740

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