

Product Information

VESTAMID® L-R3-EI BK

HIGH VISCOSITY, ELECTRICALLY CONDUCTIVE PA12 RESIN WITH HIGHER IMPACT RESISTANCE



VESTAMID® L-R3-EI BK

Resin: ISO 1874-PA12, HI, EHZ, 22-010

Former Designation: VESTAMID® X3693 BK (t)

High viscosity, electrically conductive PA12 resin with higher impact resistance. The resistance values of the finished parts are dependent on the processing conditions.

Application examples: Parts for explosion proof machines and rooms

Inside the original and undamaged packaging, the product has a shelf life of at least 2 years when stored in dry rooms at temperatures not exceeding 30°C.

Key Features

Industrial Sector

Sustainable, Industry and Engineering

Delivery form

Pellets, Granules

Sustainability

Sustainable electricity

Electrical

Anti-static, Conductive

Processing

Injection molding, Extrusion

Additives

Release agent

LCA-values

LCA name of certificate

dry

[VESTAMID® L Compound high](#)

Unit

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Test Standard

ISO 14040, 14044

LCA certifier

[TÜV Rheinland](#)

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ISO 14040, 14044

Blue water consumption	23.9	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	5.8	kg CO ₂ eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	5.8	kg CO ₂ eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	0.1	Annual crop eq. y	ISO 14040, 14044
GWP savings as compared to 2023 reference	-2.1	kg CO ₂ eq./kg	ISO 14040, 14044

Mechanical properties ISO **dry / cond** **Unit** **Test Standard**

Tensile modulus	1600 / -	MPa	ISO 527
Tensile strength	42 / -	MPa	ISO 527
Yield stress	42 / -	MPa	ISO 527
Yield strain	9 / -	%	ISO 527
Stress at break	38 / -	MPa	ISO 527
Nominal strain at break, tB	26 / -	%	ISO 527
Charpy impact strength, +23°C	N / -	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N / -	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	10 / -	kJ/m ²	ISO 179/1eA
Type of failure	C / -	-	-
Charpy notched impact strength, -30°C	9 / -	kJ/m ²	ISO 179/1eA
Type of failure	C / -	-	-
Flexural modulus, 23°C	1540 / -	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	49 / -	MPa	ISO 178
Flexural strength, 23°C	59 / -	MPa	ISO 178
Flexural strain at flexural strength, 23°C	7 / -	%	ISO 178
Flexural stress at break, 23°C	N / -	MPa	ISO 178
Flexural strain at break, 23°C	N / -	%	ISO 178

Thermal properties **dry / cond** **Unit** **Test Standard**

Melting temperature	178 / *	°C	ISO 11357-1/-3
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Temp. of deflection under load A, 1.80 MPa	60 / *	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	130 / *	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	177 / *	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	146 / *	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	150 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	150 / *	E-6/K	ISO 11359-1/-2
Melting Temperature	178	°C	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1060 / -	kg/m ³	ISO 1183
Water absorption	1.2 / *	%	Sim. to ISO 62
Humidity absorption	0.5 / *	%	Sim. to ISO 62
Density	1060	kg/m ³	ASTM D 792

Burning Behav.	dry / cond	Unit	Test Standard
Burning behav. at 1.5 mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.6 / *	mm	-
Thickness tested	3.2 / *	mm	-

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	1.5 / -	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	2.0E2 / -	Ohm per square	IEC 62631-3-2
Surface resistance, RSD	1.00E2 / -	Ohm	IEC 62631-3-2
Surface resistivity, D	1.00E3 / -	Ohm per square	IEC 62631-3-2
Test specimen	UL-Stab /	-	-

Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	150 / *	cm ³ /10min	ISO 1133
Temperature	275 / *	°C	-

Load	21.6 / *	kg	-
Molding shrinkage, parallel	1.6 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.6 / *	%	ISO 294-4, 2577
Mold temperature	80 / *	°C	-
Melt temperature	240 / *	°C	-

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	250	°C	ISO 294
Injection Molding, mold temperature	80	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294

Characteristics

Applications

Encapsulation, IT and telecommunication

Processing

Profile extrusion

Special Characteristics

High impact strength, Light-stabilized, High heat resistant, High viscosity

Color

Black

Additives

Release agent, Light stabilizer, Conductive agent, Heat stabilizer, Processing aids

Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass) (23°C)
- ✓ Citric Acid solution (10% by mass) (23°C)

Bases

- ✓ Sodium Hydroxide solution (35% by mass) (23°C)
- ✓ Sodium Hydroxide solution (1% by mass) (23°C)
- ✓ Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

- ✓ Isopropyl alcohol (23°C)

- ✓ Methanol (23°C)
- ✓ Ethanol (23°C)

Hydrocarbons

- ✓ n-Hexane (23°C)
- ✓ Toluene (23°C)
- ✓ iso-Octane (23°C)

Ketones

- ✓ Acetone (23°C)

Ethers

- ✓ Diethyl ether (23°C)

Mineral oils

- ✓ SAE 10W40 multigrade motor oil (23°C)
- ✓ Insulating Oil (23°C)

Standard Fuels

- ✓ ISO 1817 Liquid 1 (60°C)
- ✓ ISO 1817 Liquid 2 (60°C)
- ✓ ISO 1817 Liquid 3 (60°C)
- ✓ ISO 1817 Liquid 4 (60°C)
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (90°C)
- ✓ Diesel EN 590 (100°C)

Salt solutions

- ✓ Sodium Chloride solution (10% by mass) (23°C)
- ✓ Sodium Carbonate solution (20% by mass) (23°C)
- ✓ Sodium Carbonate solution (2% by mass) (23°C)
- ✓ Zinc Chloride solution (50% by mass) (23°C)

Other

- ✓ Ethyl Acetate (23°C)
- ✓ Hydrogen peroxide (23°C)
- ✓ DOT No. 4 Brake fluid (120°C)

✓ Water (23°C)

Rheological calculation properties

	dry	Unit	Test Standard
Density of melt	900	kg/m ³	-
Thermal conductivity of melt	0.18	W/(m K)	-
Spec. heat capacity of melt	2660	J/(kg K)	-
Ejection temperature	180	°C	-
Min. mold temperature	30	°C	-
Max. mold temperature	100	°C	-
Min. melt temperature	230	°C	-
Max. melt temperature	270	°C	-