Product Information

VESTAMID® DX9304 BK E70238

HIGH-VISCOSITY, HEAT- AND LIGHT-STABILIZED, IMPACT-MODIFIED POLYAMIDE 612 COMPOUND FOR EXTRUSION

VESTAMID® DX9304 BK E70238 is a PA 612 extrusion compound developed for the manufacturing of tubing systems with higher demands on heat resistance.

The melting point of VESTAMID® DX9304 BK E70238, about 35 °C higher than PA 11 and PA 12 compounds, allows higher temperatures in use. The compound is especially suitable for the extrusion of tubing systems that are exposed to high burst pressures at high service temperatures, e.g. hydraulic clutch lines.

The material absorbs only little moisture. Therefore dimensions and properties of parts are nearly unaffected through ambient conditions.

The process temperatures should be in the range of 240-270°C.

Pigmentation may affect values.

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
Automotive and Mobility, Sustainable, Industry and Engineering

Sustainability
Sustainable electricity

Processing
Extrusion

Delivery form
Pellets, Granules

Resistance to
Heat (thermal stability), UV / light / weathering, Oil / fuels

Electrical
Insulating

Conformity
Automotive

Additives
Unfilled

LCA-values	dry	Unit	Test Standard
LCA name of certificate	VESTAMID® D Compound medium	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	**21.7**	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	**7.2**	kg CO_2 eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	**7.2**	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	**268000 / 174000**	psi	ISO 527
Tensile strength	**7250 / -**	psi	ISO 527
Yield stress	**7250 / 5950**	psi	ISO 527
Yield strain	**5 / 20**	%	ISO 527
Stress at break	**6240 / ***	psi	ISO 527
Nominal strain at break, tB	**41 / >50**	%	ISO 527
Charpy impact strength, +23°C	**N / N**	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	**N / N**	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, +23°C	**19 / 45.2**	ftlb/in²	ISO 179/1eA
Type of failure	**P / P**	-	-
Charpy notched impact strength, -30°C	**14.3 / 8.56**	ftlb/in²	ISO 179/1eA
Type of failure	**C / C**	-	-
Flexural modulus, 23°C	**264000 / 152000**	psi	ISO 178
Flexural stress at conv. deflection, 23°C	**8410 / 4640**	psi	ISO 178
Flexural strength, 23°C	**10400 / 6380**	psi	ISO 178
Flexural strain at flexural strength, 23°C	**7 / 8**	%	ISO 178
Flexural stress at break, 23°C	**N / N**	psi	ISO 178

Flexural strain at break, 23°C	**N / N**	%	ISO 178

Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature	**415 / ***	°F	ISO 11357-1/-3
Temp. of deflection under load A, 1.80 MPa	**122 / ***	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**338 / ***	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**408 / ***	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**347 / ***	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**8.33E-5 / ***	in/in/°F	ISO 11359-1/-2
Melting Temperature	**415**	°F	ASTM D 3418

Physical properties	**dry / cond**	**Unit**	**Test Standard**
Density	**1.04 / 1.04**	g/cm³	ISO 1183
Water absorption	**2.7 / ***	%	Sim. to ISO 62
Humidity absorption	**1.3 / ***	%	Sim. to ISO 62
Shore D hardness	**75[b] / 74[b]**	-	ISO 7619-1
Density	**1.04**	g/cm³	ASTM D 792

b: 3 seconds

Burning Behav.	**dry / cond**	**Unit**	**Test Standard**
Burning behav. at 1.5 mm nom. thickn.	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.0630 / ***	in	-
Burnin behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.1260 / ***	in	-

Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Volume resistivity, V	**3.2E12 / 1.8E10**	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	**1.3E14 / 1.4E14**	Ohm/sq	IEC 62631-3-2
Relative permittivity, 50Hz	**4.2 / -**	-	IEC 62631-2-1

Relative permittivity, 100Hz	**4.1 / -**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.2 / -**	-	IEC 62631-2-1
Dissipation factor, 50Hz	**690 / -**	E-4	IEC 62631-2-1
Dissipation factor, 100Hz	**560 / -**	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	**310 / -**	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	**991 / 965**	kV/in	IEC 60243-1
CTI, test solution A, 50 drops value	**600 / -**	-	IEC 60112
Assessment of the insulation group	**I**	-	DIN EN 60664-1

Rheological properties	**dry / cond**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**7 / ***	cm^3/10min	ISO 1133
Temperature	**280 / ***	°C	-
Load	**5 / ***	kg	-
Molding shrinkage, parallel	**2.1 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.2 / ***	%	ISO 294-4, 2577
Mold temperature	**176 / ***	°F	-
Melt temperature	**500 / ***	°F	-

Test specimen production	**dry**	**Unit**	**Test Standard**
Injection Molding, melt temperature	**482**	°F	ISO 294
Injection Molding, mold temperature	**176**	°F	ISO 294
Injection Molding, injection velocity	**7.87**	in/s	ISO 294

Characteristics

Applications
Tube and hose

Color
Black

Processing
Profile extrusion

Additives
Impact restistant, Light stabilizer, Heat stabilizer

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

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)