Product Information

VESTAMID® L2123

HIGH VISCOSITY, PLASTICIZED PA12-RESIN

VESTAMID® L2123 NC is a plasticized and high-viscosity polyamide 12 compound for the extrusion of flexible tubing and hoses especially for automotive industry. Tubing according to DIN 73 378, Type: PA 12-PHL.

VESTAMID® L2123 NC is characterized by a high melt viscosity, optimized cold temperature impact resistance and good dimensional control during pipe extrusion.

Properties of compounds based on PA12 vary little with changing humidity due to low moisture absorption. Parts made of this semi-crystalline material are characterized by exceptional impact strength, low coefficient of friction and good chemical resistance.

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

Sustainability
Sustainable electricity

Processing
Injection molding, Extrusion

Delivery form
Pellets, Granules

Resistance to
Heat (thermal stability), Oil / fuels

Electrical
Insulating

Conformity
Automotive

Additives
Lubricant, Unfilled

LCA-values	dry	Unit	Test Standard
LCA name of certificate	VESTAMID® L Compound high	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	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	**395 / 370**	MPa	ISO 527
Tensile strength	**25 / -**	MPa	ISO 527
Yield stress	**25 / 22**	MPa	ISO 527
Yield strain	**32 / 31**	%	ISO 527
Stress at 50% strain	**25 / ***	MPa	ISO 527
Stress at break	**44 / ***	MPa	ISO 527
Nominal strain at break, tB	**270 / >50**	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	*** / 130**	MPa	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	*** / 100**	MPa	ISO 899-1
Charpy impact strength, +23°C	**N / N**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**N / N**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, +23°C	**115 / N**	kJ/m²	ISO 179/1eA
Type of failure	**P / -**	-	-
Charpy notched impact strength, -30°C	**13 / 8**	kJ/m²	ISO 179/1eA
Type of failure	**C / -**	-	-

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	**171 / ***	°C	ISO 11357-1/-3

Temp. of deflection under load A, 1.80 MPa	**45 / ***	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**80 / ***	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**165 / ***	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**120 / ***	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**180 / ***	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	**170 / ***	E-6/K	ISO 11359-1/-2
Melting Temperature	**171**	°C	ASTM D 3418

Physical properties	**dry / cond**	**Unit**	**Test Standard**
Density	**1030 / -**	kg/m³	ISO 1183
Humidity absorption	**0.6 / ***	%	Sim. to ISO 62
Moisture content	**0.05 / -**	Gew.-%	ISO 15512
Bulk density, Granulate	**596**	kg/m³	-
Density	**1030**	kg/m³	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	-
Burnin behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**3.2 / ***	mm	-

Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Volume resistivity, V	**1E10 / -**	Ohm*m	IEC 62631-3-1
Relative permittivity, 100Hz	**10 / -**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.6 / -**	-	IEC 62631-2-1
Dissipation factor, 100Hz	**2000 / -**	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	**1100 / -**	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/P50	**29 / -**	kV/mm	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	**600 / -**	-	IEC 60112

Assessment of the insulation group	I	-	DIN EN 60664-1

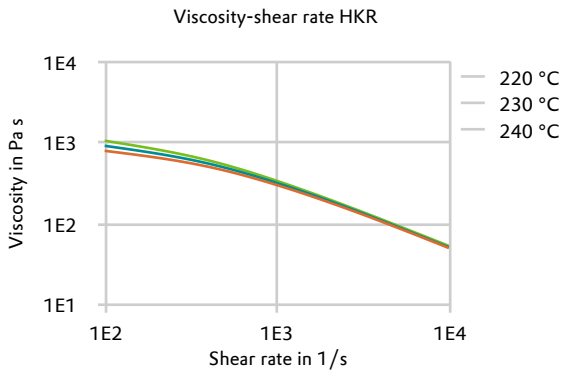
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	160 / *	cm^3/10min	ISO 1133
Temperature	230 / *	°C	-
Load	21.6 / *	kg	-
Molding shrinkage, parallel	0.7 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / *	%	ISO 294-4, 2577

Polymer analytics	dry / cond	Unit	Test Standard
Viscosity number	190 / *	cm^3/g	ISO 307, 1157, 1628

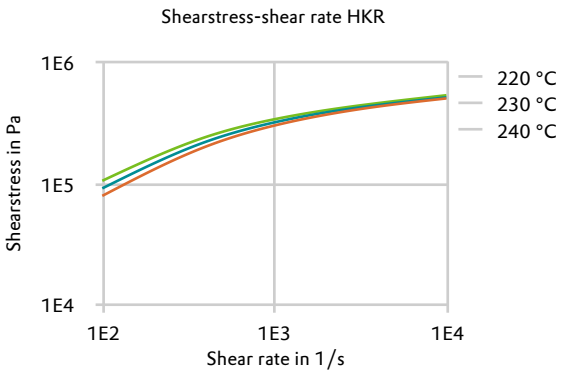
Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	220	°C	ISO 294
Injection Molding, mold temperature	60	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294

Diagrams

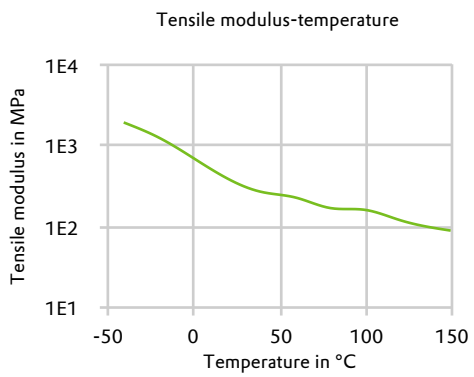
Viscosity-shear rate HKR



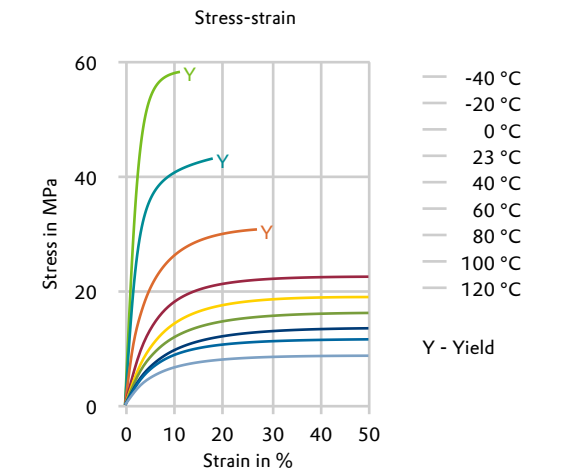
Shearstress-shear rate HKR



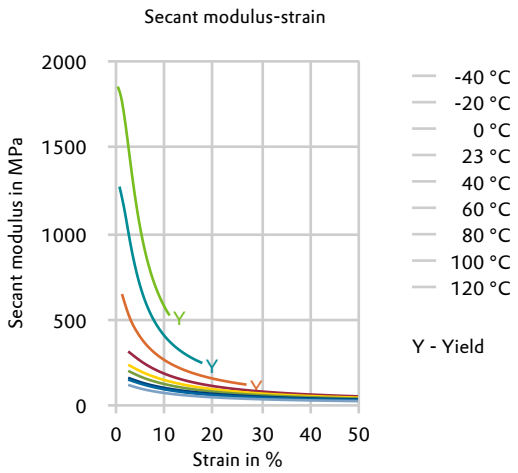
Tensile modulus-temperature



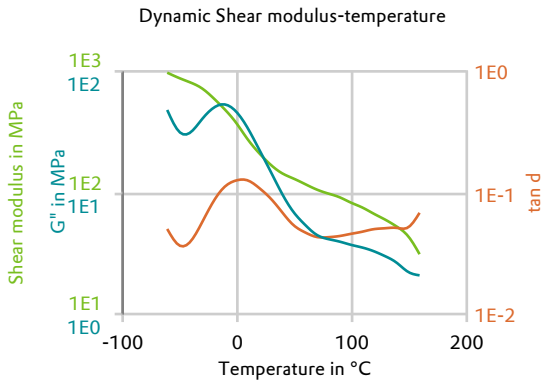
Stress-strain



Secant modulus-strain



Dynamic Shear modulus-temperature



Characteristics

Processing
Profile extrusion, Pipe/Tube extrusion

Special Characteristics
High impact strength, Light-stabilized, U.V. stabilized, High heat resistant

Additives
Plasticizer, Impact restistant

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	**860**	kg/m³	-
Spec. heat capacity of melt	**2900**	J/(kg K)	-
Min. mold temperature	**30**	°C	-
Max. mold temperature	**100**	°C	-
Min. melt temperature	**200**	°C	-
Max. melt temperature	**240**	°C	-