

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	57300 / 53700	psi	ISO 527
Tensile strength	3630 / -	psi	ISO 527
Yield stress	3630 / 3190	psi	ISO 527
Yield strain	32 / 31	%	ISO 527
Stress at 50% strain	3630 / *	psi	ISO 527
Stress at break	6380 / *	psi	ISO 527
Nominal strain at break, tB	270 / >50	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	* / 18900	psi	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	* / 14500	psi	ISO 899-1
Charpy impact strength, +23°C	N / N	ftlb/in ²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	ftlb/in ²	ISO 179/1eU
Charpy notched impact strength, +23°C	54.7 / N	ftlb/in ²	ISO 179/1eA
Type of failure	P / -	-	-
Charpy notched impact strength, -30°C	6.18 / 3.81	ftlb/in ²	ISO 179/1eA
Type of failure	C / -	-	-

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	340 / *	°F	ISO 11357-1/-3

Temp. of deflection under load A, 1.80 MPa	113 / *	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	176 / *	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	329 / *	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	248 / *	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	0.0001 / *	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	9.44E-5 / *	in/in/°F	ISO 11359-1/-2
Melting Temperature	340	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1.03 / -	g/cm ³	ISO 1183
Humidity absorption	0.6 / *	%	Sim. to ISO 62
Moisture content	0.05 / -	wt.-%	ISO 15512
Bulk density, Granulate	37.2	lb/ft ³	-
Density	1.03	g/cm 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	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	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	737 / -	V/mil	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
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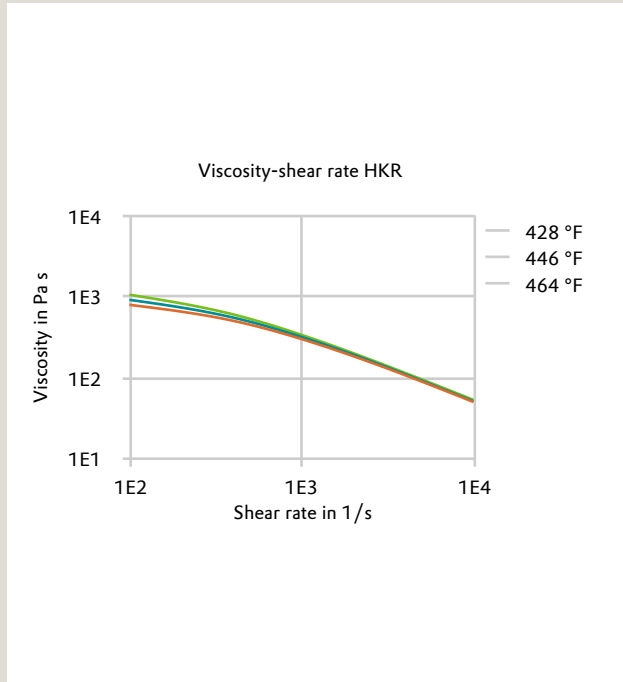
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	160 / *	cm ³ /10min	ISO 1133
Temperature	230 / *	°C	-
Load	21.6 / *	kg	-
Molding shrinkage, parallel	0.7 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / *	%	ISO 294-4, 2577

Polymer analytics	dry / cond	Unit	Test Standard
Viscosity number	5260 / *	in ³ /lb	ISO 307, 1157, 1628

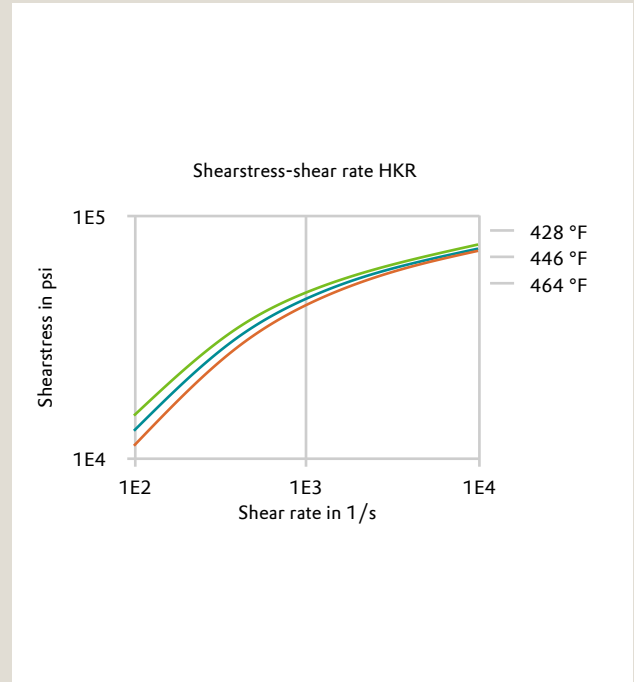
Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	428	°F	ISO 294
Injection Molding, mold temperature	140	°F	ISO 294
Injection Molding, injection velocity	7.87	in/s	ISO 294
Injection Molding, pressure at hold	10200	psi	ISO 294

Diagrams

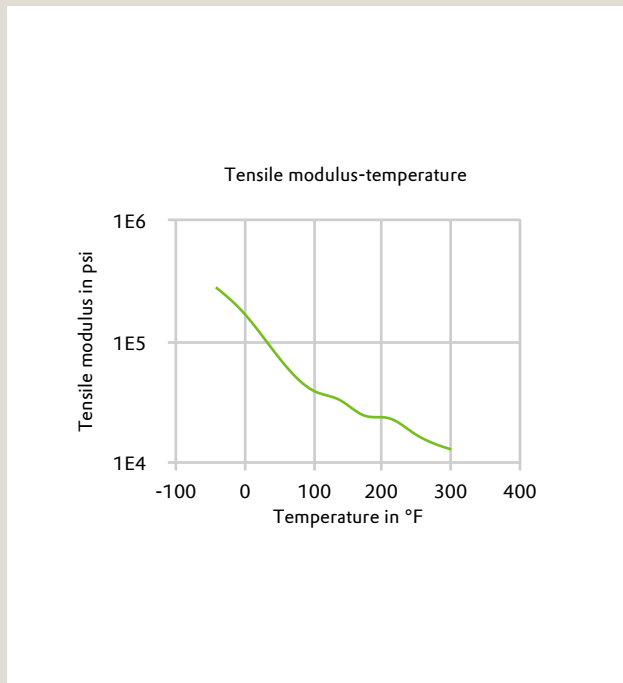
Viscosity-shear rate HKR



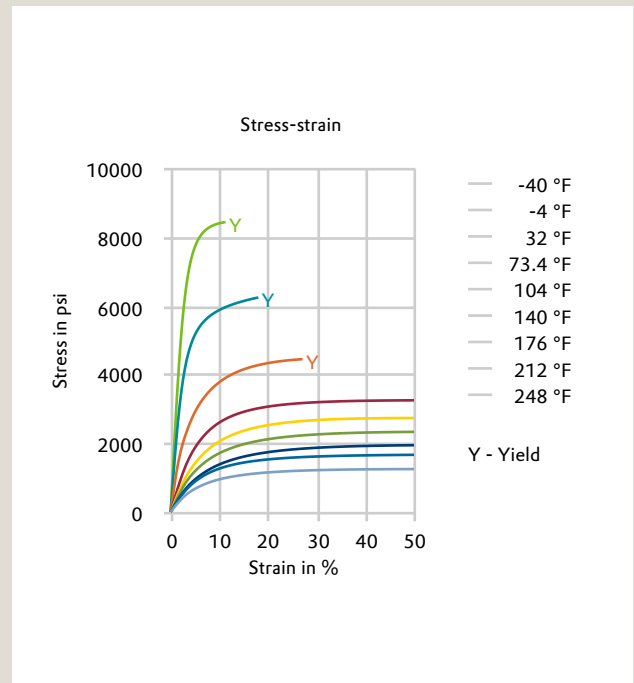
Shearstress-shear rate HKR



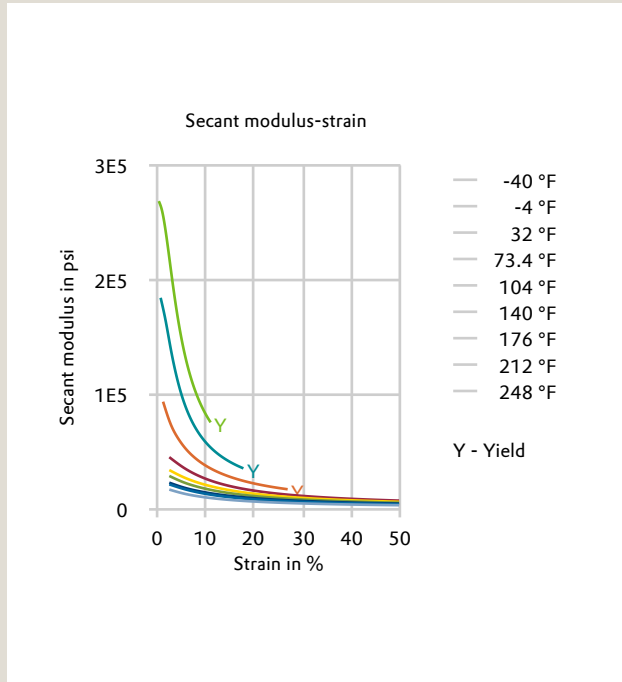
Tensile modulus-temperature



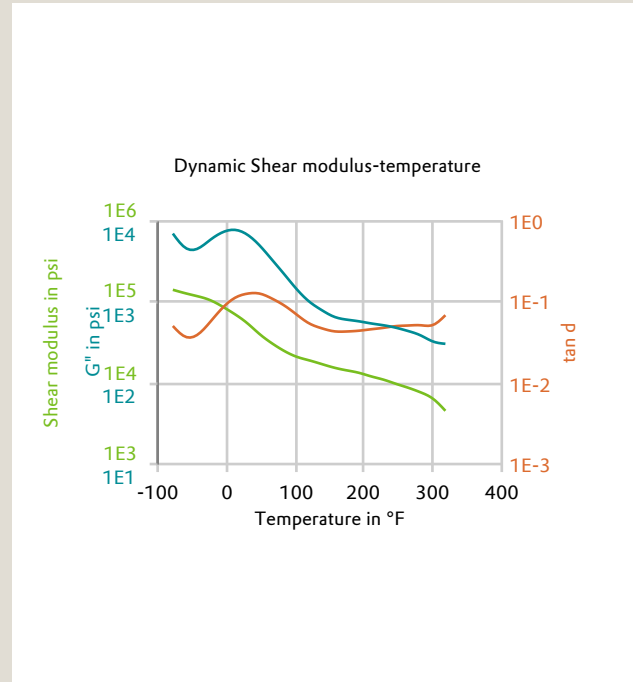
Stress-strain



Secant modulus-strain



Dynamic Shear modulus-temperature



Characteristics

Processing

Profile extrusion, Pipe/Tube extrusion

Additives

Plasticizer, Impact resistant

Special Characteristics

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

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	53.7	lb/ft ³	-
Spec. heat capacity of melt	1.09	BTU/(lb·F)	-
Min. mold temperature	86	°F	-
Max. mold temperature	212	°F	-
Min. melt temperature	392	°F	-
Max. melt temperature	464	°F	-