

Product Information

VESTAMID® L2140 NC

HIGH VISCOSITY, HEAT AND LIGHT STABILIZED PA12 COMPOUND



VESTAMID® L2140 NC is a heat and light stabilized polyamide 12 compound for the extrusion of tubings (e.g. fuel lines) and semi-finished products. Tubing according to DIN 73 378, Type: PA 12-HL.

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, Industry and Engineering

Sustainability

Sustainable electricity

Processing

Injection molding, Extrusion

Delivery form

Pellets, Granules

Resistance to

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

Electrical

Insulating

Conformity

Automotive

Additives

Lubricant, Unfilled

LCA-values

LCA name of certificate

dry

[VESTAMID® L Compound low](#)

Unit

-

Test Standard

ISO 14040, 14044

LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	25.7	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	6.1	kg CO ₂ eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	6.1	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	-2.5	kg CO ₂ eq./kg	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	1500 / 1200	MPa	ISO 527
Tensile strength	44 / 38	MPa	ISO 527
Yield stress	44 / 38	MPa	ISO 527
Yield strain	4 / 11	%	ISO 527
Stress at 50% strain	38 / *	MPa	ISO 527
Stress at break	44 / *	MPa	ISO 527
Nominal strain at break, tB	140 / >50	%	ISO 527
Charpy impact strength, +23°C	N / N	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	35 / 55	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Charpy notched impact strength, -30°C	9 / 10	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Flexural modulus, 23°C	1460 / 1000	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	51 / 34	MPa	ISO 178
Flexural strength, 23°C	59 / 43	MPa	ISO 178
Flexural strain at flexural strength, 23°C	6 / 8	%	ISO 178
Flexural strain at break, 23°C	N / N	%	ISO 178

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	178 / *	°C	ISO 11357-1/-3
Glass transition temperature, DSC	45 / *	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	50 / *	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	110 / *	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	170 / *	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	140 / *	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	140 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	140 / *	E-6/K	ISO 11359-1/-2
Melting Temperature	178	°C	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1010 / 1010	kg/m ³	ISO 1183
Water absorption	1.6 / *	%	Sim. to ISO 62
Humidity absorption	0.8 / *	%	Sim. to ISO 62
Shore D hardness	75 ^[b] / -	-	ISO 7619-1
Density	1010	kg/m ³	ASTM D 792

b: 3 seconds

Burning Behav.	dry / cond	Unit	Test Standard
UL Yellow Card available	yes / *	-	-
Burning behav. at 1.5 mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	-
Burnin behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	3.0 / *	mm	-
Burning behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.8 / *	mm	-
Hot Wire Ignition (HWI)	4	PL-Klasse	IEC 60695-2-20

HWI - thickness tested	0.8	mm	-
Hot Wire Ignition (HWI)	3	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	1.5	mm	-
Hot Wire Ignition (HWI)	2	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	3.0	mm	-

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	1E13 / 3E12	Ohm*m	IEC 62631-3-1
Surface resistivity, E	* / 1E15	Ohm	IEC 62631-3-2
Surface resistivity, C, circular electrodes	>1E15 / >1E15	Ohm per square	IEC 62631-3-2
Relative permittivity, 100Hz	3.7 / 5	-	IEC 62631-2-1
Relative permittivity, 1MHz	3 / 3.4	-	IEC 62631-2-1
Dissipation factor, 100Hz	450 / 800	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	260 / 500	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	- / 28	kV/mm	IEC 60243-1
Dielectric strength, AC, S20/P50	26 / -	kV/mm	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	600 / 600	-	IEC 60112
Assessment of the insulation group	I	-	DIN EN 60664-1
CTI, Performance Level Categories, PLC	0	class	ASTM D 3638

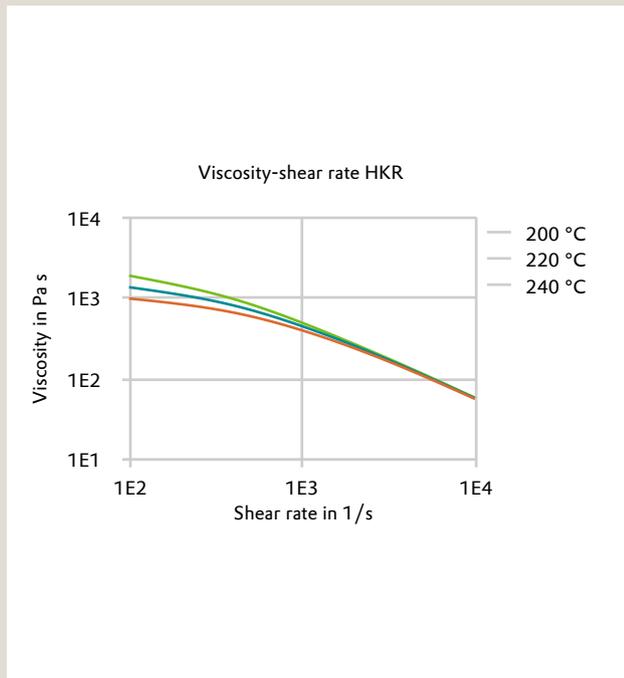
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	3 / *	cm ³ /10min	ISO 1133
Temperature	220 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	0.7 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.2 / *	%	ISO 294-4, 2577
Mold temperature	80 / *	°C	-
Melt temperature	240 / *	°C	-

Test specimen production

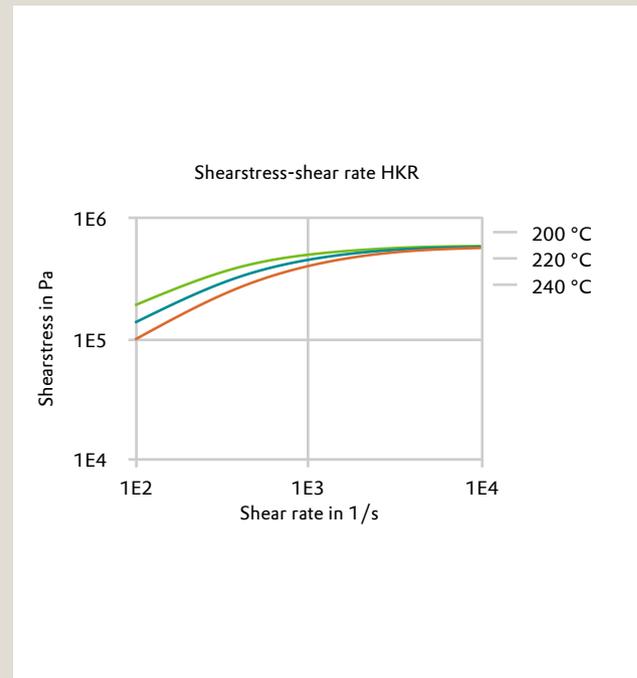
	dry	Unit	Test Standard
Injection Molding, melt temperature	240	°C	ISO 294
Injection Molding, mold temperature	60	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294

Diagrams

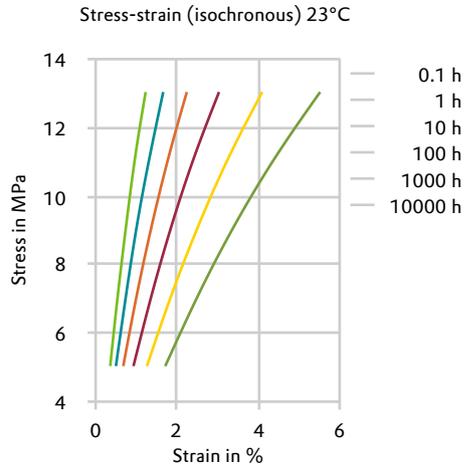
Viscosity-shear rate HKR



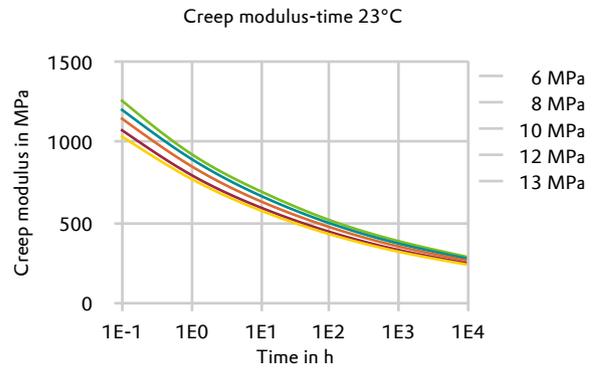
Shearstress-shear rate HKR



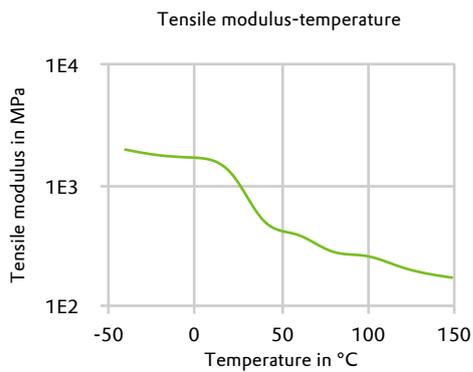
Stress-strain (isochronous) 23°C



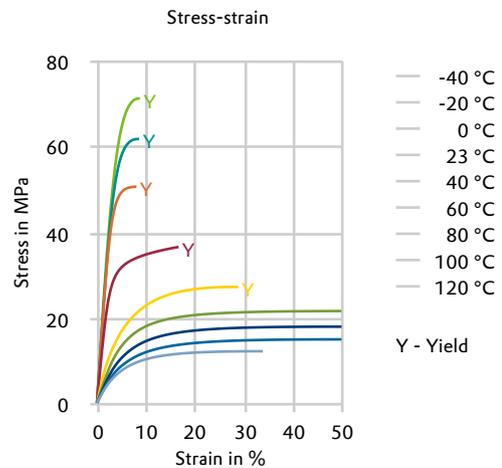
Creep modulus-time 23°C



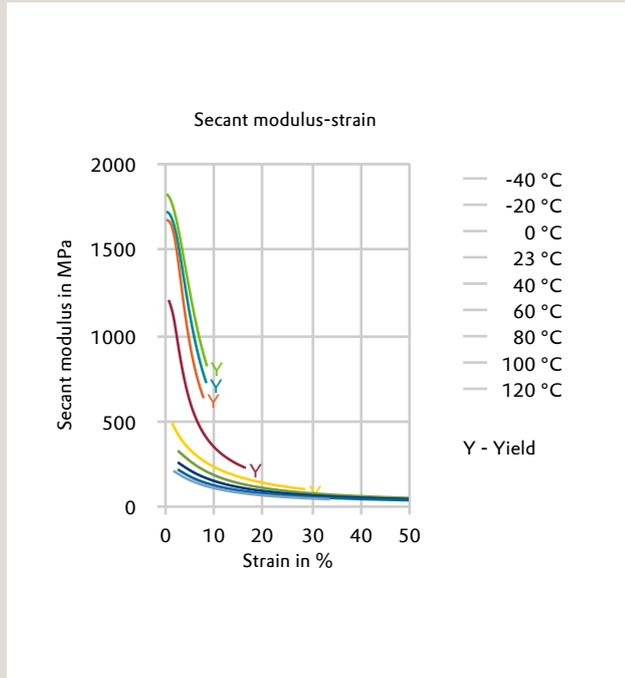
Tensile modulus-temperature



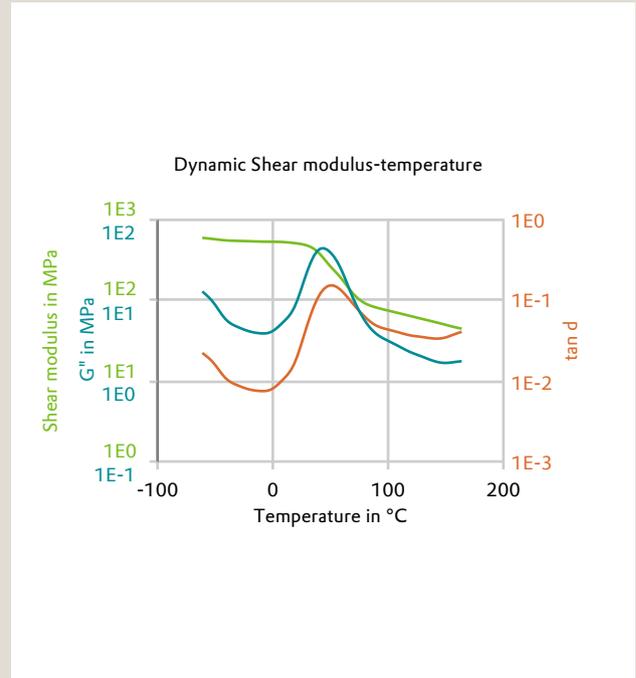
Stress-strain



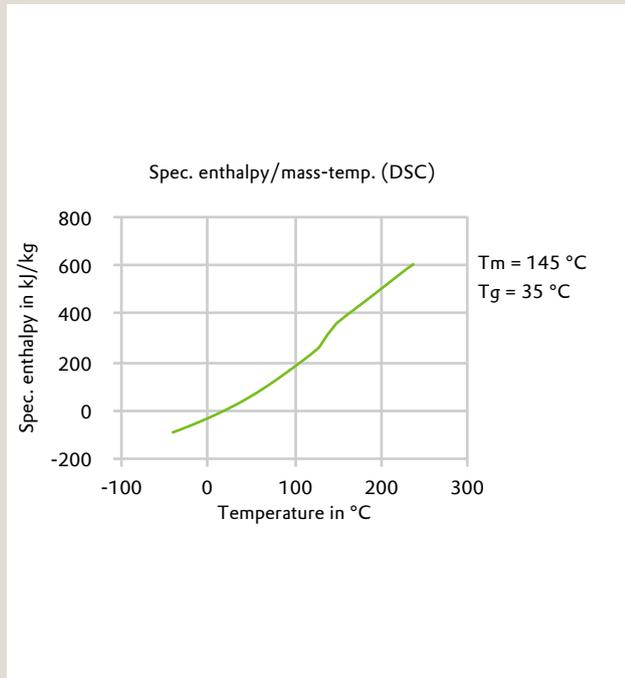
Secant modulus-strain



Dynamic Shear modulus-temperature



Spec. enthalpy/mass-temp. (DSC)



Characteristics

Applications

Electrical and Electronical

Processing

Profile extrusion

Special Characteristics

Semi-crystalline, Light-stabilized, High heat resistant, High viscosity

Features

Low coefficient of friction

Color

Natural color

Additives

Light stabilizer, Heat stabilizer

Chemical Resistance

General chemical resistance

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/m ³	-
Thermal conductivity of melt	0.2	W/(m K)	-
Spec. heat capacity of melt	3000	J/(kg K)	-
Min. mold temperature	30	°C	-
Max. mold temperature	100	°C	-
Min. melt temperature	220	°C	-
Max. melt temperature	260	°C	-