

Product Information

VESTAMID® L1940 NC

MEDIUM-VISCOSITY PA12 RESIN FOR THE EXTRUSION AND INJECTION MOULDING



VESTAMID® L1940 NC is a heat-stabilized polyamide 12 compound for injection molding and for the extrusion wire insulation.

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), Oil / fuels

Electrical

Insulating

Conformity

Food contact, 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	1400 / 1030	MPa	ISO 527
Tensile strength	43 / 39	MPa	ISO 527
Yield stress	43 / 39	MPa	ISO 527
Yield strain	4 / 14	%	ISO 527
Stress at 50% strain	33 / 30	MPa	ISO 527
Stress at break	49 / 55	MPa	ISO 527
Nominal strain at break, tB	245 / 275	%	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	6 / 6	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Charpy notched impact strength, -30°C	6 / 4.5	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Flexural modulus, 23°C	1450 / 1050	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	49 / 33	MPa	ISO 178
Flexural strength, 23°C	60 / 46	MPa	ISO 178
Flexural strain at flexural strength, 23°C	7 / 8	%	ISO 178
Puncture - maximum force, +23°C	3280 / -	N	ISO 6603-2
Puncture - maximum force, -30°C	4320 / -	N	ISO 6603-2
Puncture energy, +23°C	44 / -	J	ISO 6603-2
Puncture energy, -30°C	54 / -	J	ISO 6603-2

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	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	1010 / -	kg/m ³	ISO 1183
Water absorption	1.5 / *	%	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 / 3.1E12	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	8.1E12 / >1E15	Ohm per square	IEC 62631-3-2
Relative permittivity, 100Hz	3.8 / -	-	IEC 62631-2-1
Relative permittivity, 1MHz	2.5 / -	-	IEC 62631-2-1
Dissipation factor, 100Hz	450 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	310 / -	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	- / 35	kV/mm	IEC 60243-1
Dielectric strength, AC, S20/P50	27 / -	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
CTI, Performance Level Categories, PLC	0	class	ASTM D 3638

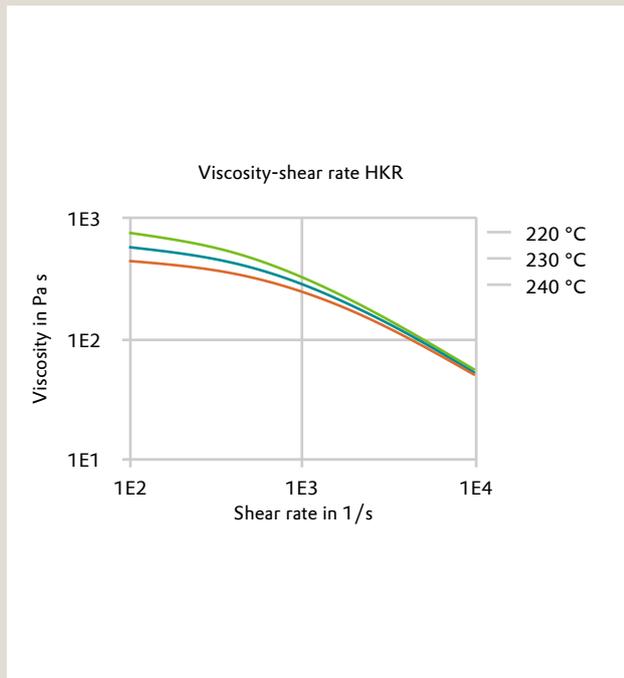
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	110 / *	cm ³ /10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	0.8 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1 / *	%	ISO 294-4, 2577
Mold temperature	60 / *	°C	-
Melt temperature	220 / *	°C	-

Test specimen production

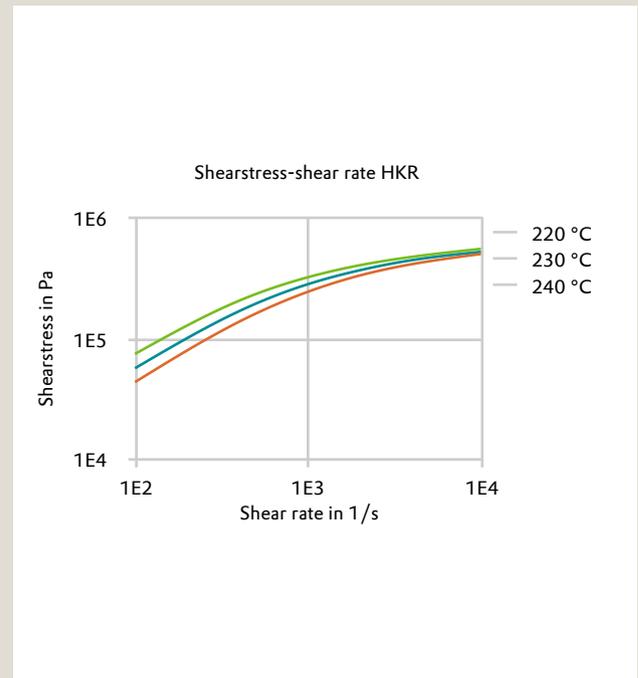
	dry	Unit	Test Standard
Injection Molding, melt temperature	220	°C	ISO 294
Injection Molding, mold temperature	80	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294

Diagrams

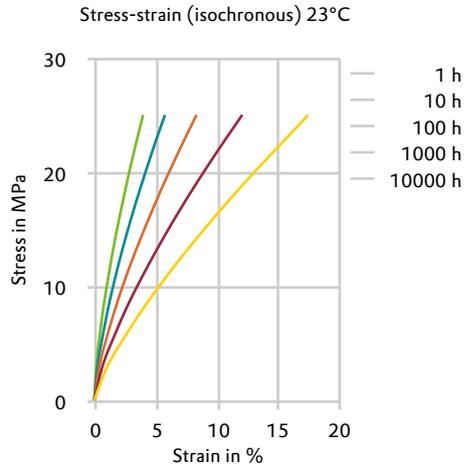
Viscosity-shear rate HKR



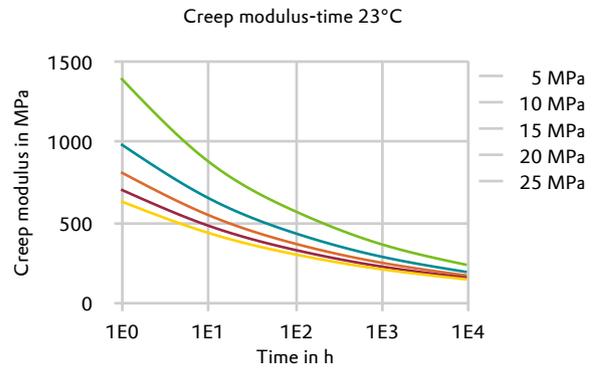
Shearstress-shear rate HKR



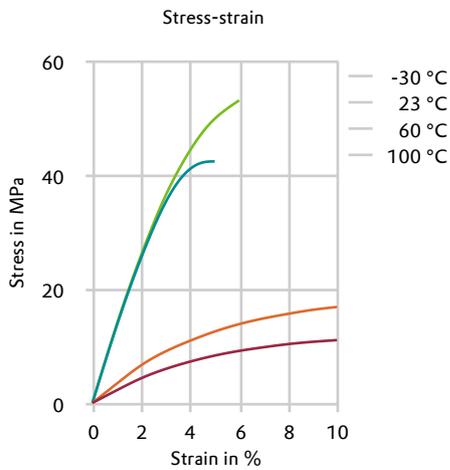
Stress-strain (isochronous) 23°C



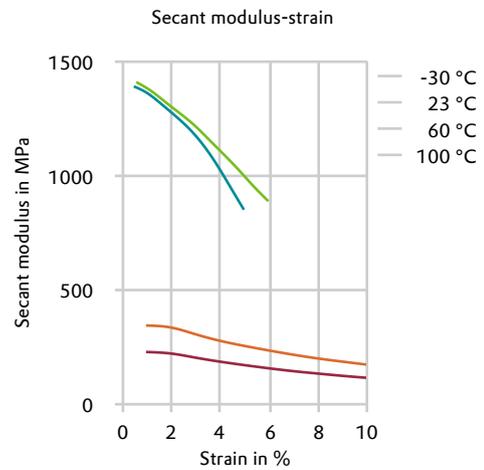
Creep modulus-time 23°C



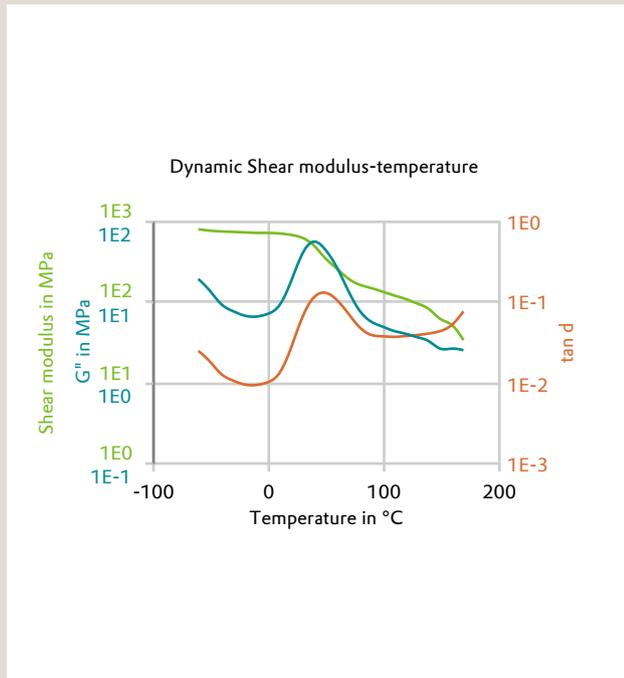
Stress-strain



Secant modulus-strain



Dynamic Shear modulus-temperature



Characteristics

Applications

Electrical and Electronical, Fiber optic cable, IT and telecommunication, Cable sheathing

Processing

Profile extrusion

Special Characteristics

High heat resistant, Medium viscosity

Color

Natural color

Additives

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	860	kg/m ³	-
Thermal conductivity of melt	0.2	W/(m K)	-
Spec. heat capacity of melt	3000	J/(kg K)	-
Ejection temperature	175	°C	-
Min. mold temperature	30	°C	-
Max. mold temperature	100	°C	-
Min. melt temperature	200	°C	-
Max. melt temperature	240	°C	-