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 tubing (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.

For information about processing of VESTAMID®, please follow the general commendations about "Processing of VESTAMID® compounds".

FOR FURTHER INFORMATION PLEASE CONTACT US AT EVONIK-HP@EVONIK.COM
OR VISIT OUR PRODUCT AT WWW.VESTAMID.COM

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, εtB	**140 / >50**	%	ISO 527
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	**35 / 55**	kJ/m²	ISO 179/1eA
Type of failure	**C / C**	-	-

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Charpy notched impact strength, -30°C	**9 / 10**	kJ/m²	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 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	**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
Water absorption	**1.6 / ***	%	Sim. to ISO 62
Humidity absorption	**0.8 / ***	%	Sim. to ISO 62
Density	**1010 / 1010**	kg/m³	ISO 1183
Shore D hardness	**75[b] / -**	-	ISO 7619-1
Density	**1010**	kg/m³	ASTM D 792

b: 3 seconds

Burning Behav.	dry / cond	Unit	Test Standard
Burnin behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**3.0 / ***	mm	-

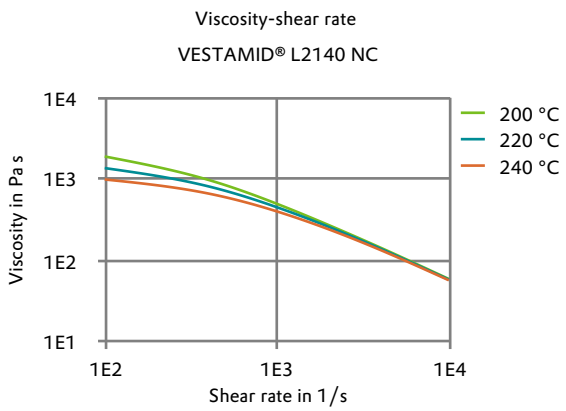
YellowCard available	yes / *	-	-
Burning behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.8 / ***	mm	-
Yellow Card available	yes / *	-	-
Burning behav. at 1.5 mm nom. thickn.	**HB / ***	class	IEC 60695-11-10
Thickness tested	**1.5 / ***	mm	-
Yellow Card available	yes / *	-	-

Electrical properties	dry / cond	Unit	Test Standard
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
Volume resistivity, ρV	**1E13 / 3E12**	Ohm*m	IEC 62631-3-1
Surface resistivity, σE	*** / 1E15**	Ohm	IEC 62631-3-2
Surface resistivity, σC, circular electrodes	**>1E15 / >1E15**	Ohm per square	IEC 62631-3-2
Electric strength, AC, S20/S20	**- / 28**	kV/mm	IEC 60243-1
Electric strength, AC, S20/P50	**26 / -**	kV/mm	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	**600 / 600**	-	IEC 60112

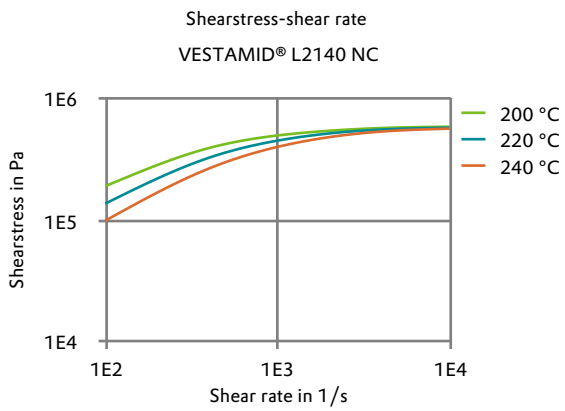
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	**3 / ***	cm^3/10min	ISO 1133
Temperature	**220 / ***	°C	-
Load	**5 / ***	kg	-
Molding shrinkage, parallel	**0.7 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.2 / ***	%	ISO 294-4, 2577
Mold temperature	**80 / ***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

Diagrams

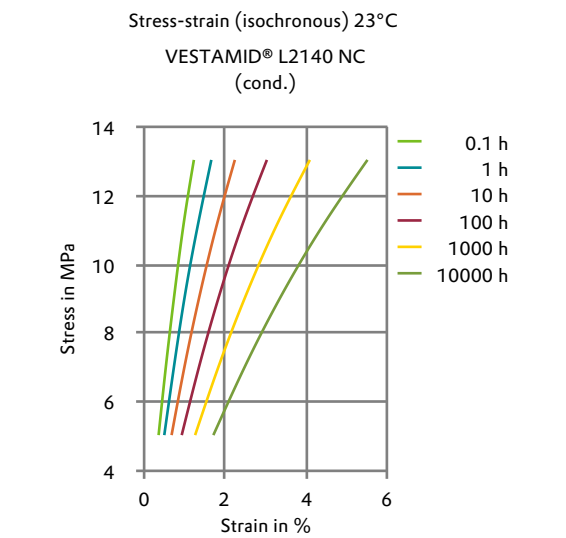
Viscosity-shear rate



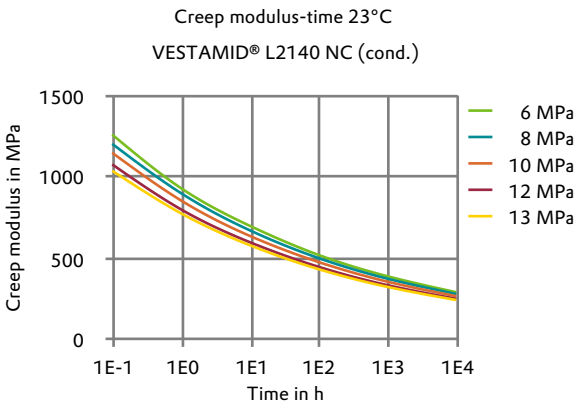
Shearstress-shear rate



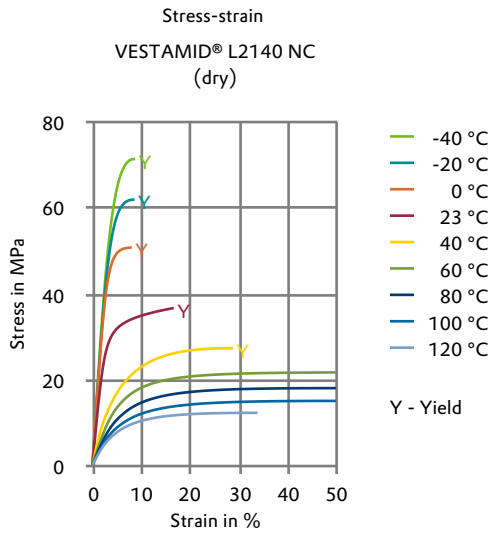
Stress-strain (isochronous) 23°C



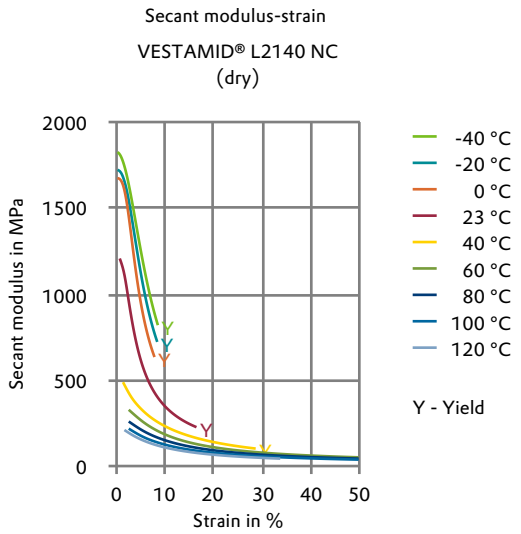
Creep modulus-time 23°C



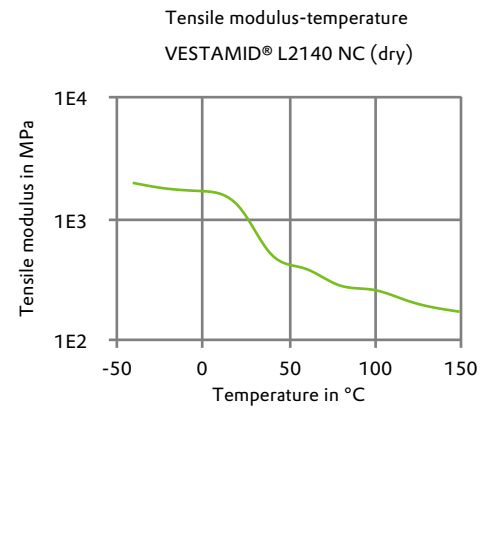
Stress-strain



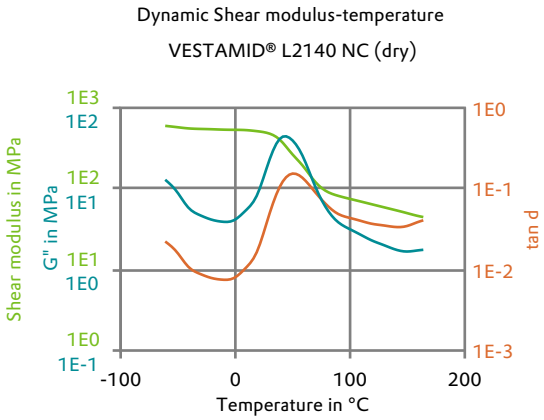
Secant modulus-strain



Tensile modulus-temperature

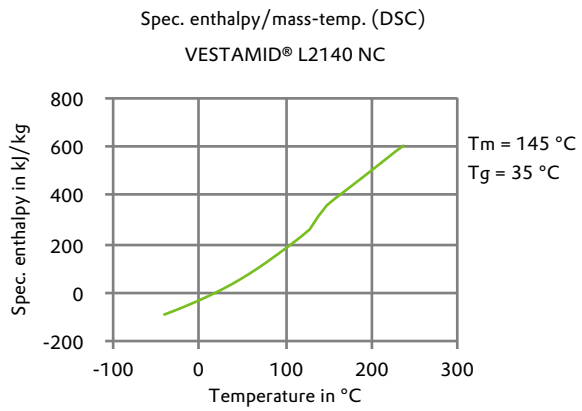


Dynamic Shear modulus-temperature



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Spec. enthalpy/mass-temp. (DSC)



Characteristics

Key Feature, Industrial Sector
Automotive, Electrical and Electronical, Instustry and Building Construction

Key Feature, Processing
Injection Molding, Extrusion

Key Feature, Resistance to
Heat (Thermal Stability), U.V. / Light / Weathering, Oil / Fuels

Key Feature, Electrical
Isolating

Key Feature, Certificate / Licence
Automotive

Key Feature, Additives
Lubricants, Unfilled

Processing
Profile Extrusion

Special Characteristics
Semi-crystalline, Light-stabilized, Heat-stabilized, High viscosity

Features
General Chemical Resistance, Low Coefficient of Friction

Color
Natural Color

Delivery form
Pellets, Granules

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	-
Thermal conductivity of melt	**0.2**	W/(m K)	-
Spec. heat capacity of melt	**3000**	J/(kg K)	-

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