

Product Information

VESTAMID® L-GF15

GLASS FIBRE REINFORCED (15%) PA12 RESIN FOR THE INJECTION MOULDING OF RIGID AND TOUGH PARTS

VESTAMID® L-GF15 NC is a glass fiber –reinforced heat stabilized Polyamide 12 for injection molding. The material contains about 15% glass fibers, an ageing protective agent and a processing aid for a fast and even form filling. Due to the reinforcement moldings from this compound exhibit a higher strength and good heat resistance, excellent for gear housings for electric window openers in cars.

Further advantages of VESTAMID® L-GF15 NC are the characterizing properties of PA12, e.g., low water absorption, good dimensional stability and nearly constant mechanical properties at changing ambient humidity.

VESTAMID® L-GF15 NC is supplied as cylindrical granules, ready for processing, in moisture-proof bags.

The use of colorants may change property 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, Industry and Engineering

Processing

Injection molding

Delivery form

Pellets, Granules

Resistance to

Heat (thermal stability), Oil / fuels

Electrical

Insulating

Conformity

Automotive

Additives

Glass fibers, Lubricant

LCA-values	dry	Unit	Test Standard
LCA name of certificate	VESTAMID® L-GF low		ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	24.5	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	5.5	kg CO ₂ eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	5.5	kg CO ₂ eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	0.1	Annual crop eq. y	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	4200 / 3600	MPa	ISO 527
Tensile strength	90 / 81	MPa	ISO 527
Yield stress	90 / 81	MPa	ISO 527
Yield strain	4 / 4	%	ISO 527
Stress at break	87 / 79	MPa	ISO 527
Nominal strain at break, tB	5 / 4	%	ISO 527
Charpy impact strength, +23°C	64 / 49	kJ/m ²	ISO 179/1eU
Type of failure	C / C	-	-
Charpy impact strength, -30°C	80 / 55	kJ/m ²	ISO 179/1eU
Type of failure	C / C	-	-
Charpy notched impact strength, +23°C	12 / 9	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Charpy notched impact strength, -30°C	11 / 7	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Flexural modulus, 23°C	3680 / 3200	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	117 / 98	MPa	ISO 178
Flexural strength, 23°C	135 / 114	MPa	ISO 178
Flexural strain at flexural strength, 23°C	5 / 6	%	ISO 178

Flexural stress at break, 23°C	123 / 95	MPa	ISO 178
Flexural strain at break, 23°C	6 / 7	%	ISO 178

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	178 / *	°C	ISO 11357-1/-3
Temp. of deflection under load A, 1.80 MPa	160 / *	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	175 / *	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	175 / *	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	170 / *	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	80 / *	E-6/K	ISO 11359-1/-2
Melting Temperature	178	°C	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	1120 / -	kg/m ³	ISO 1183
Water absorption	1.3 / *	%	Sim. to ISO 62
Humidity absorption	0.6 / *	%	Sim. to ISO 62
Density	1120	kg/m 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	1.6 / *	mm	-
Burnin behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	3.0 / *	mm	-

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	>1E13 / 1.8E12	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	- / >1E15	Ohm per square	IEC 62631-3-2
Relative permittivity, 50Hz	- / 5.6	-	IEC 62631-2-1
Relative permittivity, 100Hz	4 / 5.2	-	IEC 62631-2-1

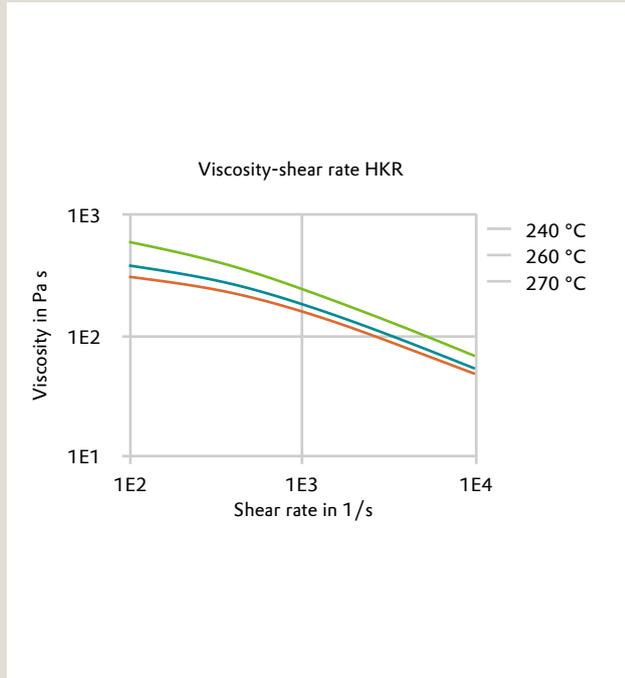
Relative permittivity, 1MHz	3.4 / 3.3	-	IEC 62631-2-1
Dissipation factor, 100Hz	380 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	260 / 450	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	50 / 47	kV/mm	IEC 60243-1
Dielectric strength, AC, S20/P50	44 / -	kV/mm	Sim. to IEC 60243-1
CTI, test 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	55 / *	cm ³ /10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	0.3 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	0.7 / *	%	ISO 294-4, 2577
Mold temperature	80 / *	°C	-
Melt temperature	240 / *	°C	-

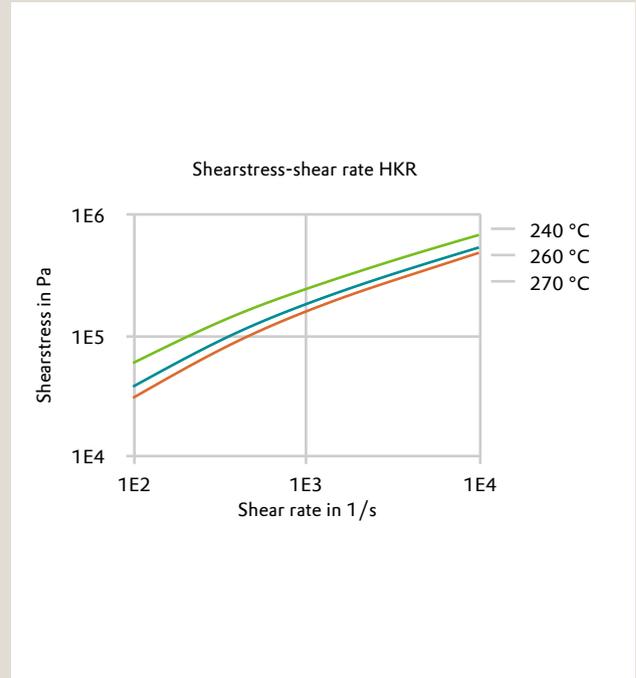
Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	260	°C	ISO 294
Injection Molding, mold temperature	80	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294

Diagrams

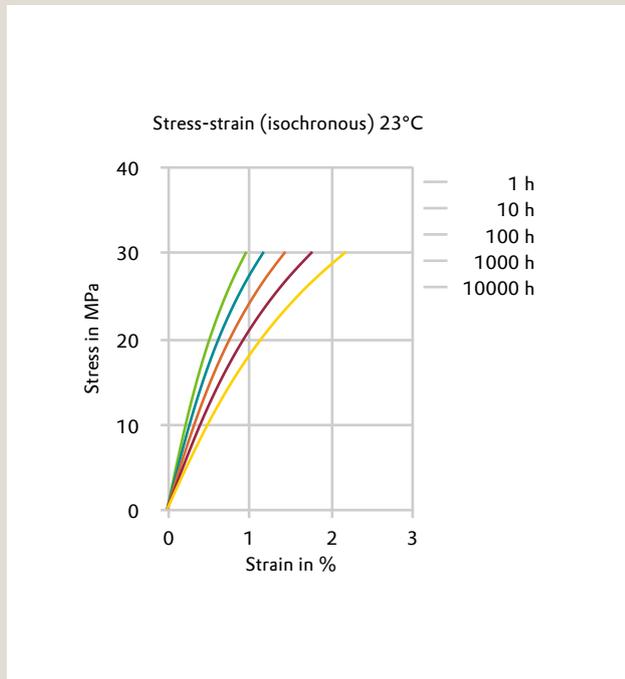
Viscosity-shear rate HKR



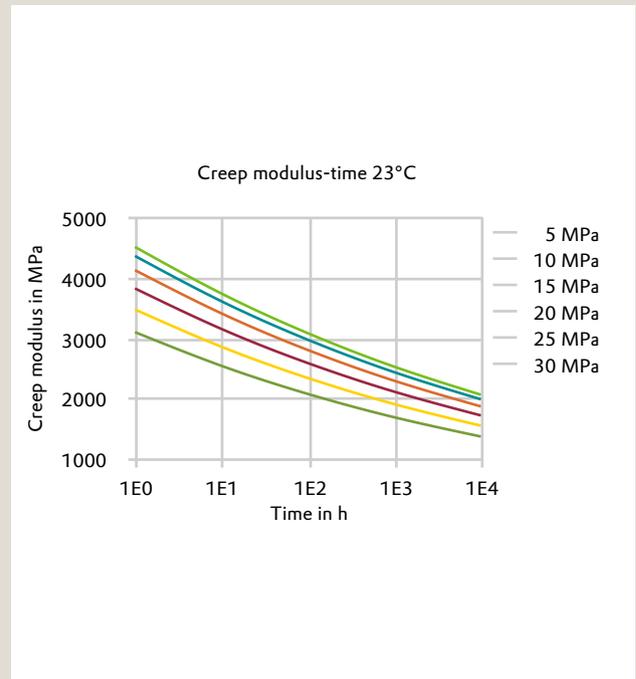
Shearstress-shear rate HKR



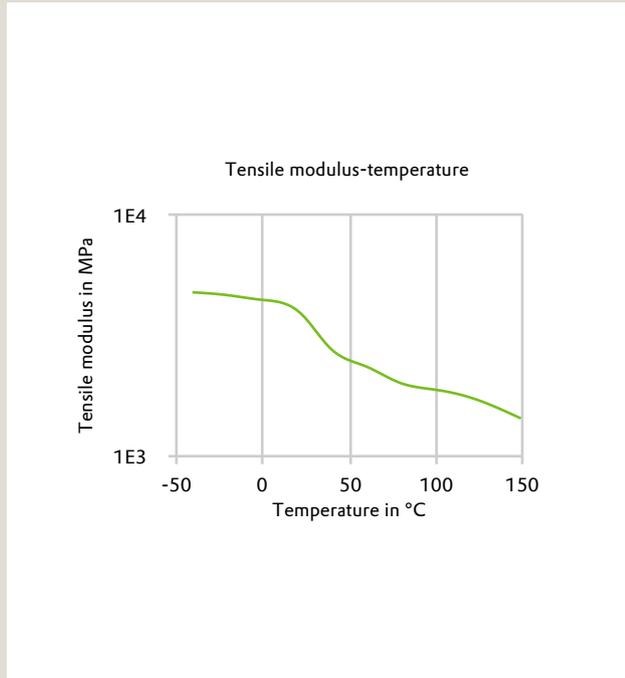
Stress-strain (isochronous) 23°C



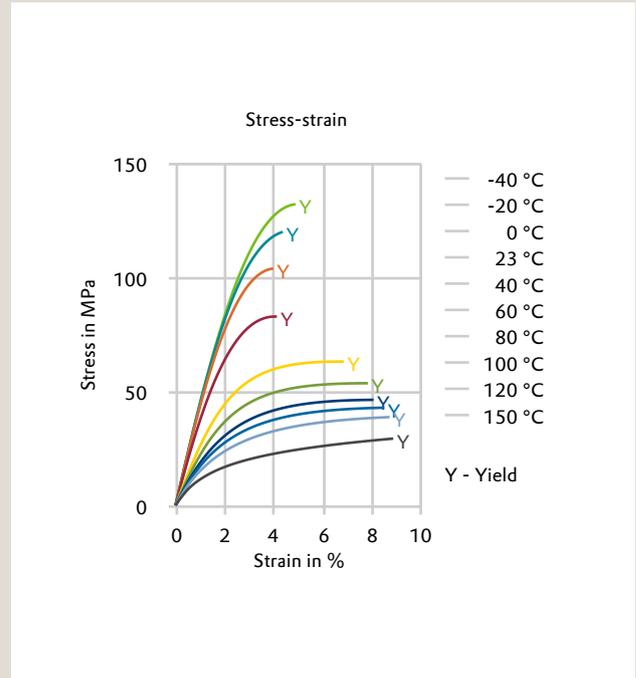
Creep modulus-time 23°C



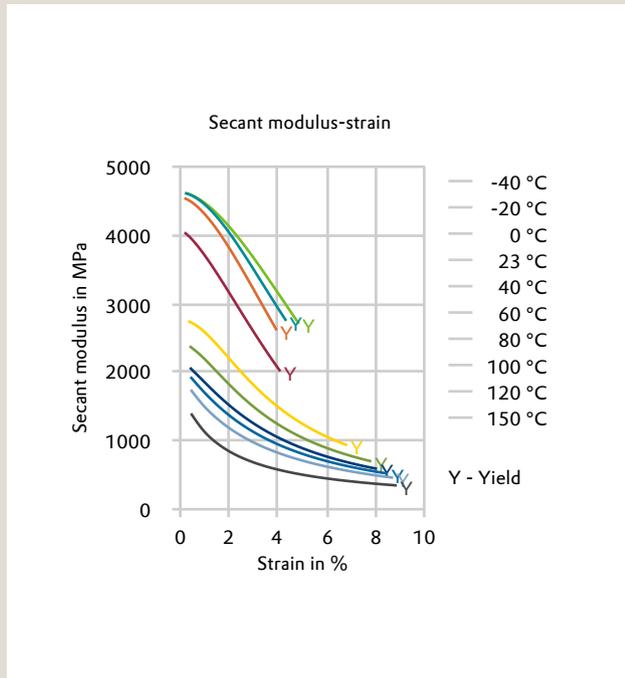
Tensile modulus-temperature



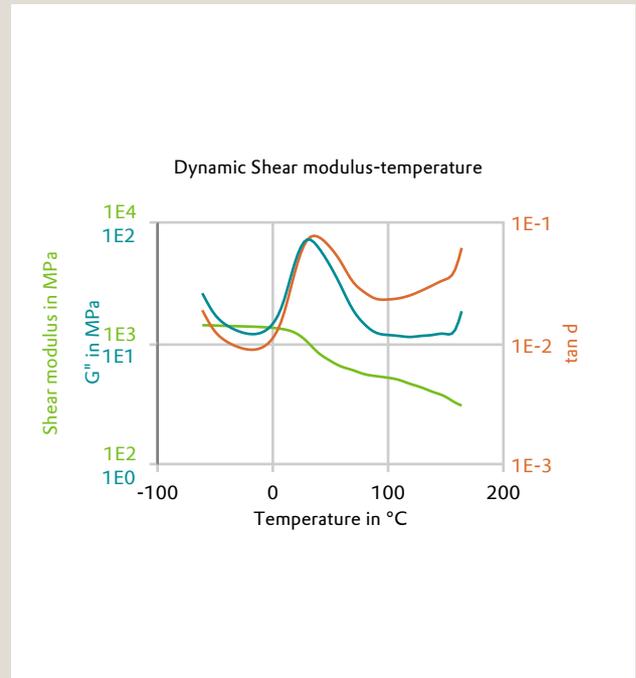
Stress-strain



Secant modulus-strain



Dynamic Shear modulus-temperature



Characteristics

Applications

Encapsulation

Color

Natural color

Special Characteristics

High heat resistant

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
Min. mold temperature	30	°C	-
Max. mold temperature	100	°C	-
Min. melt temperature	230	°C	-
Max. melt temperature	270	°C	-