Product Information

VESTAMID® L-GF30

GLASS FIBER-REINFORCED AND HEAT STABILIZED POLYAMIDE 12

VESTAMID® L-GF30 NC is a glass fiber –reinforced heat stabilized Polyamide 12 for injection molding. The material contains about 30% 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.

Further advantages of VESTAMID® L-GF30 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-GF30 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.

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

Key Features

Industrial Sector
Automotive and Mobility, Sustainable, Industry and Engineering

Sustainability
Sustainable electricity

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 medium	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044

EVONIK Leading Beyond Chemistry

Blue water consumption	**23.9**	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	**4.9**	kg CO_2 eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	**4.9**	kg CO_2 eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	**0.3**	Annual crop eq. y	ISO 14040, 14044
GWP savings incl. bio. C. as compared to classical production	**2.4**	kg CO_2 eq./kg	ISO 14040, 14044

Mechanical properties ISO	**dry / cond**	**Unit**	**Test Standard**
Tensile modulus	**6800 / 5500**	MPa	ISO 527
Tensile strength	**120 / -**	MPa	ISO 527
Yield stress	**- / 110**	MPa	ISO 527
Yield strain	**- / 5**	%	ISO 527
Stress at break	**118 / ***	MPa	ISO 527
Nominal strain at break, εtB	**6 / 5.5**	%	ISO 527
Anisotropy ratio, tensile modulus	**0.65 / -**	-	-
Anisotropy ratio, tensile strength	**0.55 / -**	-	-
Charpy impact strength, +23°C	**93 / 75**	kJ/m²	ISO 179/1eU
Type of failure	**C / C**	-	-
Charpy impact strength, -30°C	**100 / 95**	kJ/m²	ISO 179/1eU
Type of failure	**C / C**	-	-
Charpy notched impact strength, +23°C	**27 / 24**	kJ/m²	ISO 179/1eA
Type of failure	**P / C**	-	-
Charpy notched impact strength, -30°C	**21 / 22**	kJ/m²	ISO 179/1eA
Type of failure	**C / C**	-	-
Flexural modulus, 23°C	**5900 / -**	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	**168 / -**	MPa	ISO 178
Flexural strength, 23°C	**188 / -**	MPa	ISO 178
Flexural strain at flexural strength, 23°C	**6 / -**	%	ISO 178
Flexural stress at break, 23°C	**182 / -**	MPa	ISO 178

Flexural strain at break, 23°C	**6 / -**	%	ISO 178
Taber Abrasion Resistance, S33, 2x 500g	**< 15 / -**	mg/100 cycles	DIN 53754

Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature	**178 / ***	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**42 / ***	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	**165 / ***	°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	**175 / ***	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**60 / ***	E-6/K	ISO 11359-1/-2
Melting Temperature	**178**	°C	ASTM D 3418

Physical properties	**dry / cond**	**Unit**	**Test Standard**
Density	**1240 / 1240**	kg/m³	ISO 1183
Water absorption	**1.1 / ***	%	Sim. to ISO 62
Humidity absorption	**0.5 / ***	%	Sim. to ISO 62
Shore D hardness	**79 / -**	-	ISO 7619-1
Density	**1240**	kg/m³	ASTM D 792

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	-
Yellow Card available	yes / *	-	-
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	-

Yellow Card available	yes / *	-	-
Hot Wire Ignition (HWI)	**3**	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	**0.8**	mm	-
Hot Wire Ignition (HWI)	**2**	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	**1.5**	mm	-
Hot Wire Ignition (HWI)	**1**	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	**3.0**	mm	-

Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Volume resistivity, ρV	**>1E13 / 2E12**	Ohm*m	IEC 62631-3-1
Surface resistivity, σE	*** / >1E15**	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	**4.1 / 5**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.4 / 4**	-	IEC 62631-2-1
Dissipation factor, 100Hz	**310 / 600**	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	**330 / 400**	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	**- / 45**	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 / 600**	-	IEC 60112
Assessment of the insulation group	**I**	-	DIN EN 60664-1
CTI, Performance Level Categories, PLC	**0**	class	ASTM D 3638

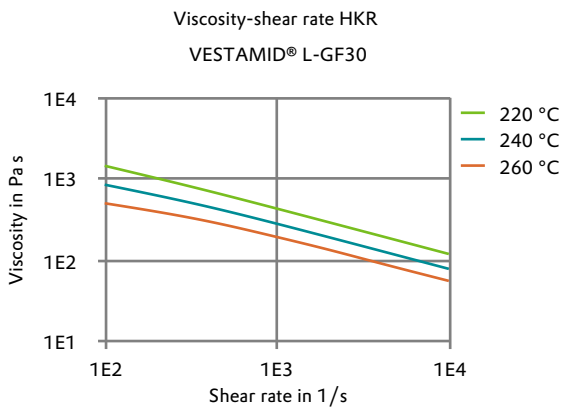
Rheological properties	**dry / cond**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**30 / ***	cm^3/10min	ISO 1133
Temperature	**275 / ***	°C	-
Load	**5 / ***	kg	-
Melt volume-flow rate, MVR	**33 / ***	cm^3/10min	ISO 1133
Temperature	**230 / ***	°C	-
Load	**2.16 / ***	kg	-

Molding shrinkage, parallel	**0.1 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.7 / ***	%	ISO 294-4, 2577
Mold temperature	**80 / ***	°C	-
Melt temperature	**250 / ***	°C	-

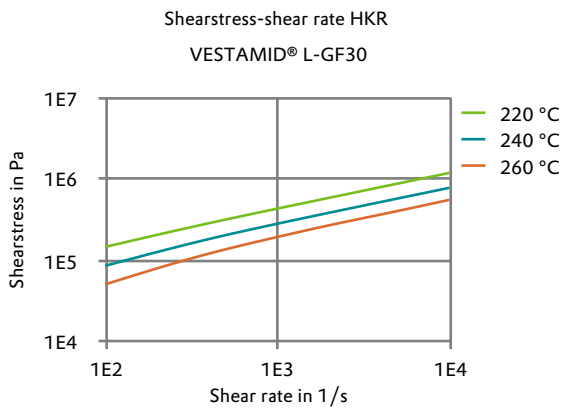
Test specimen production	**dry**	**Unit**	**Test Standard**
Injection Molding, melt temperature	**250**	°C	ISO 294
Injection Molding, mold temperature	**80**	°C	ISO 294
Injection Molding, injection velocity	**200**	mm/s	ISO 294
Injection Molding, pressure at hold	**70**	MPa	ISO 294

Diagrams

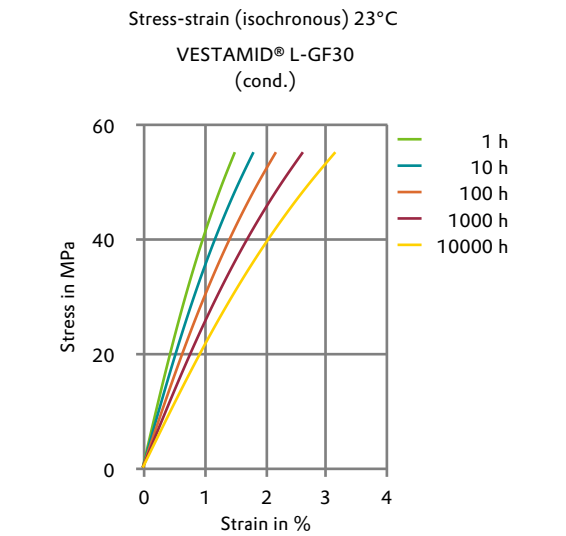
Viscosity-shear rate HKR



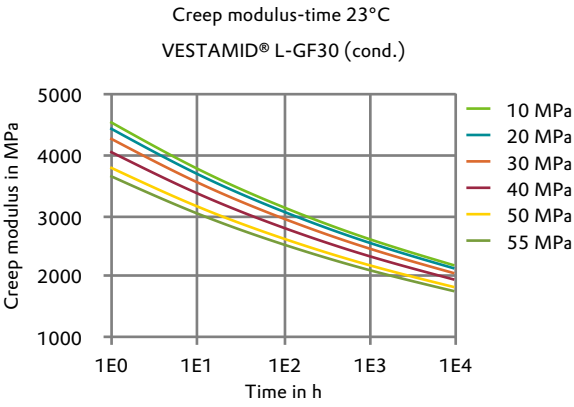
Shearstress-shear rate HKR



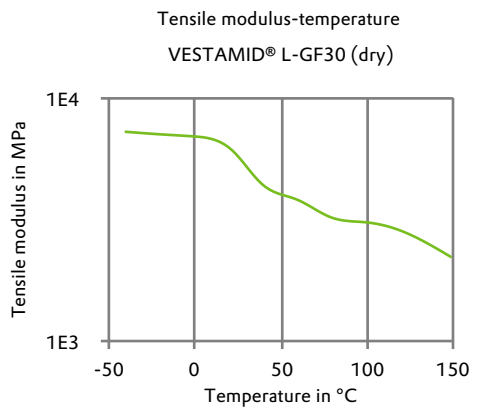
Stress-strain (isochronous) 23°C



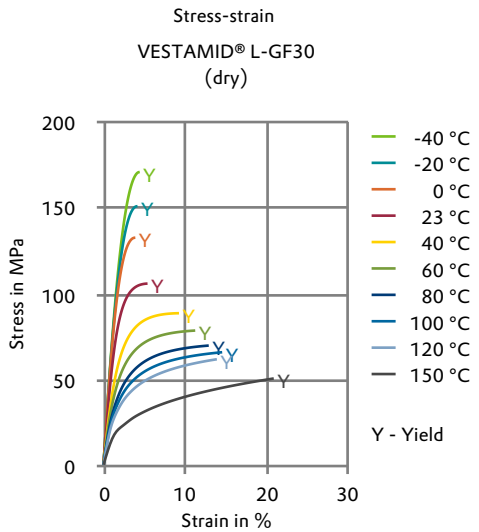
Creep modulus-time 23°C



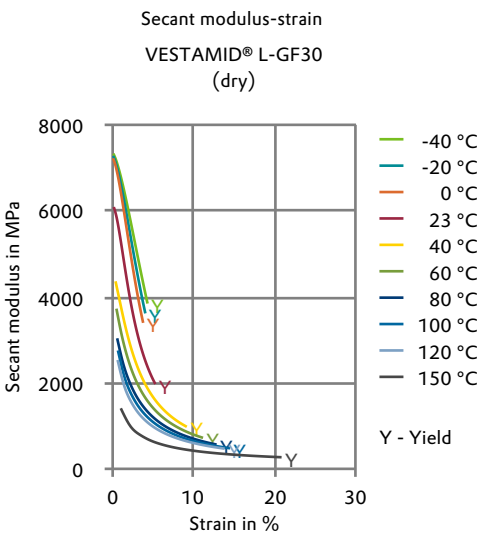
Tensile modulus-temperature



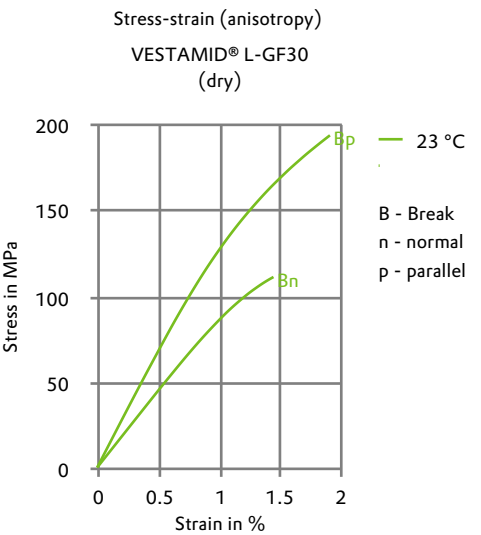
Stress-strain



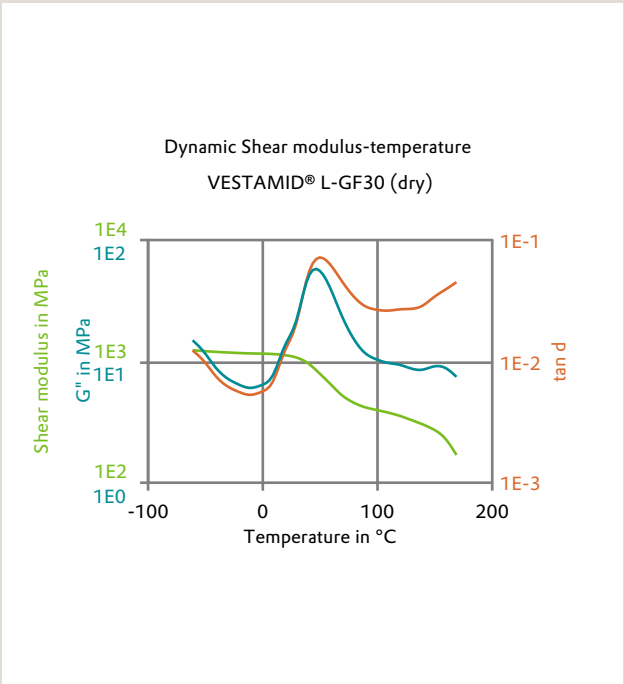
Secant modulus-strain



Stress-strain (anisotropy)



Dynamic Shear modulus-temperature



Characteristics

Special Characteristics
High heat resistant

Color
Natural color

Additives
Antioxidant agent, 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	**1090**	kg/m³	-
Thermal conductivity of melt	**0.28**	W/(m K)	-
Spec. heat capacity of melt	**2400**	J/(kg K)	-
Ejection temperature	**180**	°C	-
Min. mold temperature	**30**	°C	-
Max. mold temperature	**100**	°C	-
Min. melt temperature	**240**	°C	-
Max. melt temperature	**280**	°C	-

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