Product Information

VESTAMID® L-GB30

MICROGLASS BEAD-FILLED (30%) PA12 RESIN FOR THE INJECTION MOULDING OF RIGID, LOW-WARPAGE AND DIMENSIONALLY ACCURATE MOULDINGS

VESTAMID® L-GB30 NC is a glass bead –reinforced heat stabilized Polyamide 12 for injection molding. The material contains about 30% microglass beads, 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, an isotropic shrinkage and good heat resistance, excellent for gear housings for mechanical counting mechanisms (e.g.speedometers or water gauges).

Further advantages of VESTAMID® L-GB30 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-GB30 NC is supplied as cylindrical granules, ready for processing, in moisture-proof bags.

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.

The results shown have been generated from a low number of production lots. Therefore, they are preliminary and not yet the result of a statistical evaluation. Therefore they must not be used to establish specifications.

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 beads / spheres, 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
Blue water consumption	**23.6**	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	**5.1**	kg CO_2 eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	**5.1**	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	**-2.3**	kg CO_2 eq./kg	ISO 14040, 14044

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	**305000 / 261000**	psi	ISO 527
Tensile strength	**6820 / 5370**	psi	ISO 527
Yield stress	**6820 / 5370**	psi	ISO 527
Yield strain	**5 / 5**	%	ISO 527
Stress at break	**5370 / ***	psi	ISO 527
Nominal strain at break, tB	**20 / >50**	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	*** / 232000**	psi	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	*** / 160000**	psi	ISO 899-1
Charpy impact strength, +23°C	**76.1 / N**	ftlb/in²	ISO 179/1eU
Type of failure	**C / -**	-	-
Charpy impact strength, -30°C	**76.1 / N**	ftlb/in²	ISO 179/1eU
Type of failure	**C / -**	-	-
Charpy notched impact strength, +23°C	**2.09 / 2.85**	ftlb/in²	ISO 179/1eA
Type of failure	**C / C**	-	-
Charpy notched impact strength, -30°C	**2.85 / 2.85**	ftlb/in²	ISO 179/1eA
Type of failure	**C / C**	-	-

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	**352 / ***	°F	ISO 11357-1/-3
Temp. of deflection under load A, 1.80 MPa	**131 / ***	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**302 / ***	°F	ISO 75-1/-2
Vicat softening temperature B, 50 N, 50 K/h	**311 / ***	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**7.22E-5 / ***	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	**7.22E-5 / ***	in/in/°F	ISO 11359-1/-2
Melting Temperature	**352**	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	**1.25 / 1.26**	g/cm³	ISO 1183
Water absorption	**1.1 / ***	%	Sim. to ISO 62
Humidity absorption	**0.5 / ***	%	Sim. to ISO 62
Density	**1.25**	g/cm³	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	**0.0591 / ***	in	-
Burnin behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.1181 / ***	in	-
Burning behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.0315 / ***	in	-
Hot Wire Ignition (HWI)	**2**	PLC	IEC 60695-2-20
HWI - thickness tested	**0.1181**	in	-
Hot Wire Ignition (HWI)	**3**	PLC	IEC 60695-2-20
HWI - thickness tested	**0.0591**	in	-

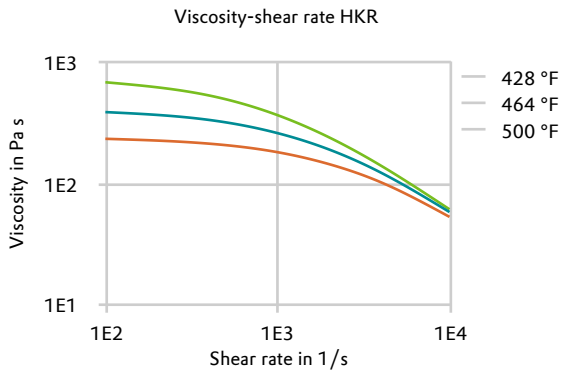
Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	**>1E13 / 2E12**	Ohm*m	IEC 62631-3-1
Surface resistivity, E	*** / 1E15**	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	**4.1 / 5**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.5 / 4**	-	IEC 62631-2-1
Dissipation factor, 100Hz	**310 / 600**	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	**230 / 370**	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	**- / 914**	kV/in	IEC 60243-1
Dielectric strength, AC, S20/P50	**787 / -**	V/mil	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	**100 / ***	cm^3/10min	ISO 1133
Temperature	**275 / ***	°C	-
Load	**5 / ***	kg	-
Molding shrinkage, parallel	**0.6 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.7 / ***	%	ISO 294-4, 2577
Mold temperature	**176 / ***	°F	-
Melt temperature	**482 / ***	°F	-

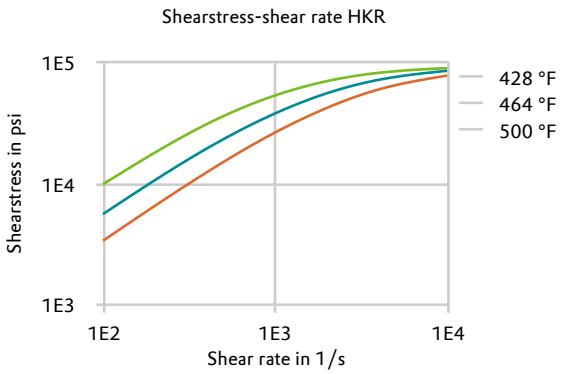
Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	**482**	°F	ISO 294
Injection Molding, mold temperature	**176**	°F	ISO 294
Injection Molding, injection velocity	**7.87**	in/s	ISO 294
Injection Molding, pressure at hold	**10200**	psi	ISO 294

Diagrams

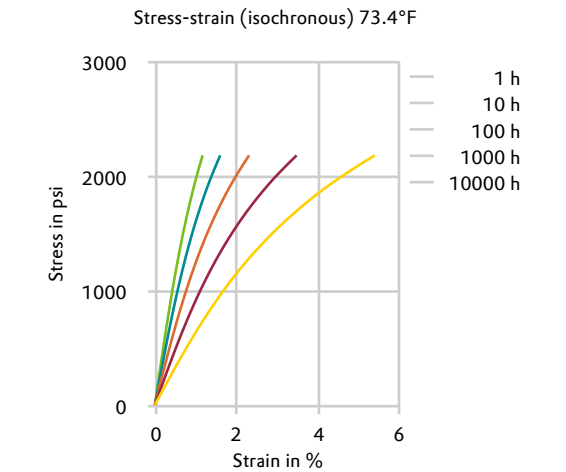
Viscosity-shear rate HKR



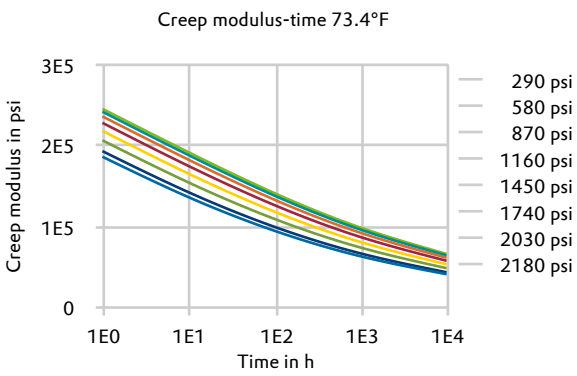
Shearstress-shear rate HKR



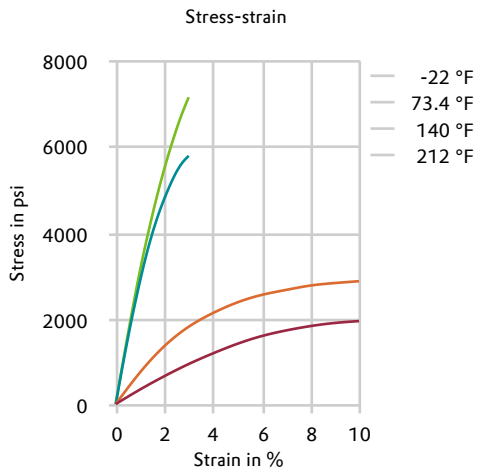
Stress-strain (isochronous) 73°F



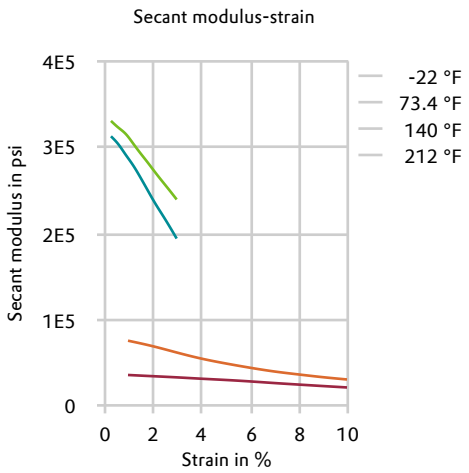
Creep modulus-time 73°F



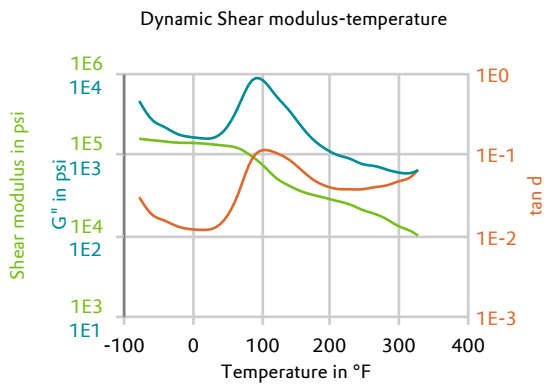
Stress-strain



Secant modulus-strain



Dynamic Shear modulus-temperature



VESTAMID®

Characteristics

Applications
Encapsulation

Additives
Heat stabilizer, Processing aids

Special Characteristics
High heat resistant

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	**68**	lb/ft^3	-
Thermal conductivity of melt	**1.94**	BTU in/(hr ft^2 °F)	-
Spec. heat capacity of melt	**0.902**	BTU/(lb·F)	-
Ejection temperature	**356**	°F	-
Min. mold temperature	**86**	°F	-
Max. mold temperature	**212**	°F	-
Min. melt temperature	**446**	°F	-
Max. melt temperature	**518**	°F	-