

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 GE 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 | 2100 / 1800 | MPa | ISO 527 |
| Tensile strength | 47 / 37 | MPa | ISO 527 |
| Yield stress | 47 / 37 | MPa | ISO 527 |
| Yield strain | 5 / 5 | % | ISO 527 |
| Stress at break | 37 / * | MPa | ISO 527 |
| Nominal strain at break, tB | 20 / >50 | % | ISO 527 |
| Tensile creep modulus, 0,5% Strain, 1h | * / 1600 | MPa | ISO 899-1 |
| Tensile creep modulus, 0,5% Strain, 1000h | * / 1100 | MPa | ISO 899-1 |
| Charpy impact strength, +23°C | 160 / N | kJ/m ² | ISO 179/1eU |
| Type of failure | C / - | - | - |
| Charpy impact strength, -30°C | 160 / N | kJ/m ² | ISO 179/1eU |
| Type of failure | C / - | - | - |
| Charpy notched impact strength, +23°C | 4.4 / 6 | kJ/m ² | ISO 179/1eA |
| Type of failure | C / C | - | - |
| Charpy notched impact strength, -30°C | 6 / 6 | kJ/m ² | ISO 179/1eA |
| Type of failure | C / C | - | - |

| Thermal properties | dry / cond | Unit | Test Standard |
|--|----------------|-------|----------------|
| Melting temperature | 178 / * | °C | ISO 11357-1/-3 |
| Temp. of deflection under load A, 1.80 MPa | 55 / * | °C | ISO 75-1/-2 |
| Temp. of deflection under load B, 0.45 MPa | 150 / * | °C | ISO 75-1/-2 |
| Vicat softening temperature B, 50 N, 50 K/h | 155 / * | °C | ISO 306 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, parallel | 130 / * | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, normal | 130 / * | E-6/K | ISO 11359-1/-2 |
| Melting Temperature | 178 | °C | ASTM D 3418 |

| Physical properties | dry / cond | Unit | Test Standard |
|---------------------|--------------------|-------------------|----------------|
| Density | 1250 / 1260 | kg/m ³ | ISO 1183 |
| Water absorption | 1.1 / * | % | Sim. to ISO 62 |
| Humidity absorption | 0.5 / * | % | Sim. to ISO 62 |
| Density | 1250 | kg/m ³ | 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 | - |
| 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) | 2 | PL-Klasse | IEC 60695-2-20 |
| HWI - thickness tested | 3.0 | mm | - |
| Hot Wire Ignition (HWI) | 3 | PL-Klasse | IEC 60695-2-20 |
| HWI - thickness tested | 1.5 | mm | - |

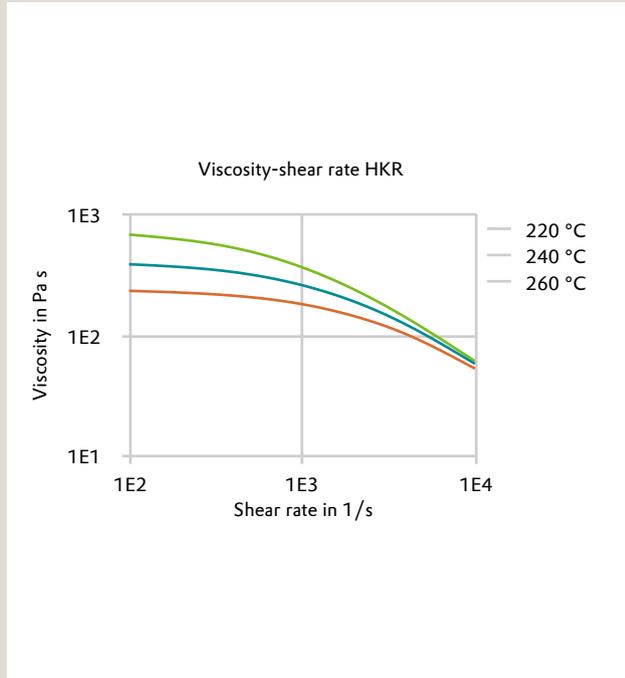
| Electrical properties | dry / cond | Unit | Test Standard |
|---|--------------|-------|---------------------|
| Volume resistivity, V | >1E13 / 2E12 | Ohm*m | IEC 62631-3-1 |
| Surface resistivity, E | * / 1E15 | Ohm | IEC 62631-3-2 |
| Relative permittivity, 100Hz | 4.1 / 5 | - | IEC 62631-2-1 |
| 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 | - / 36 | kV/mm | IEC 60243-1 |
| Dielectric strength, AC, S20/P50 | 31 / - | 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 | 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 | 80 / * | °C | - |
| Melt temperature | 250 / * | °C | - |

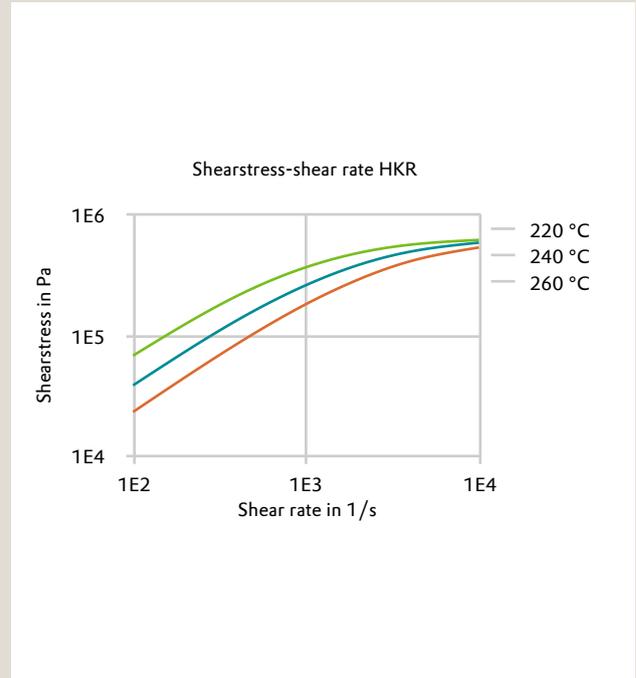
| Test specimen production | dry | Unit | Test Standard |
|---------------------------------------|-----|------|---------------|
| Injection Molding, melt temperature | 250 | °C | ISO 294 |
| Injection Molding, mold temperature | 80 | °C | ISO 294 |
| Injection Molding, injection velocity | 200 | mm/s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

Diagrams

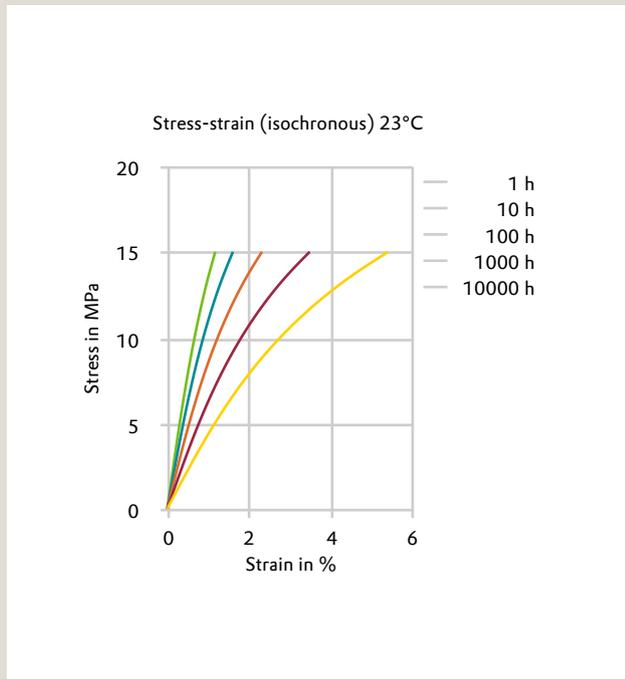
Viscosity-shear rate HKR



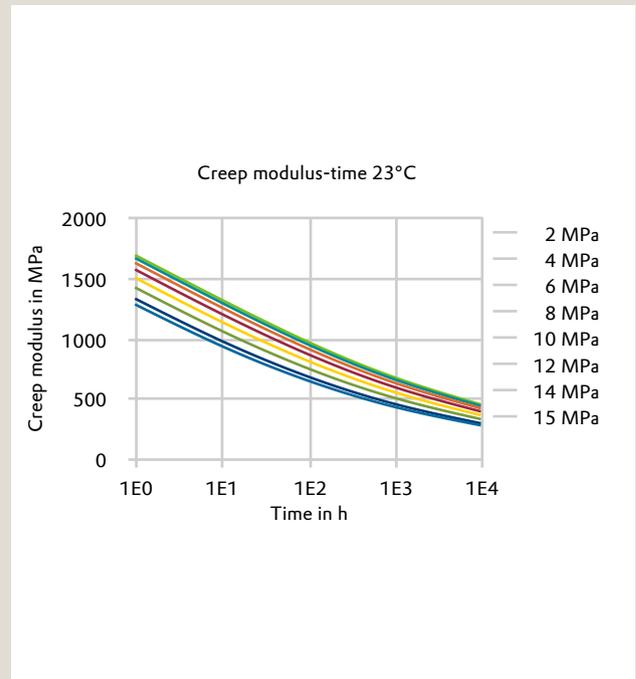
Shearstress-shear rate HKR



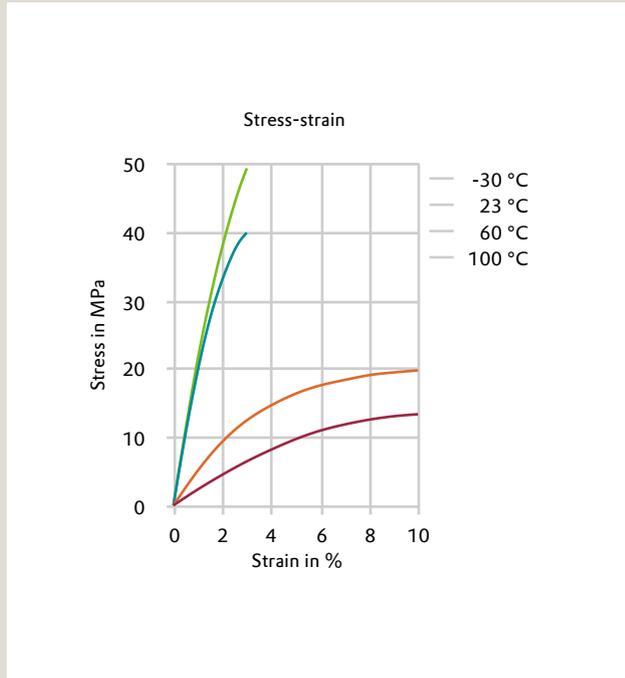
Stress-strain (isochronous) 23°C



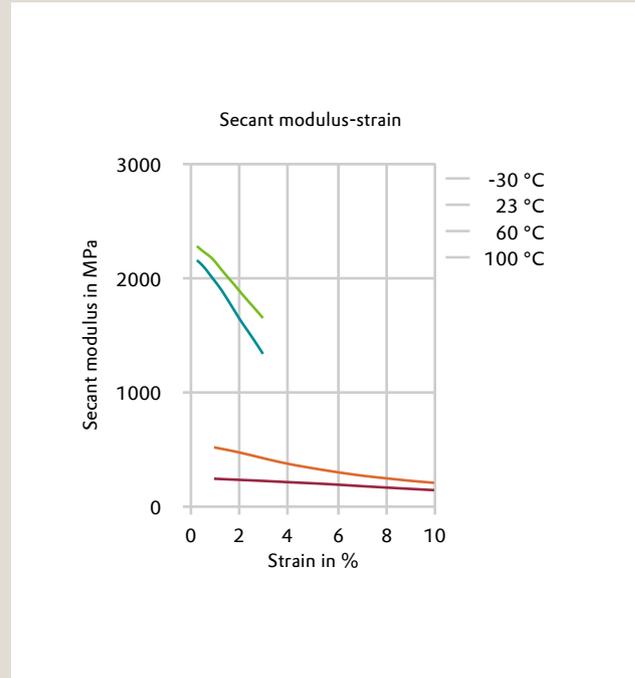
Creep modulus-time 23°C



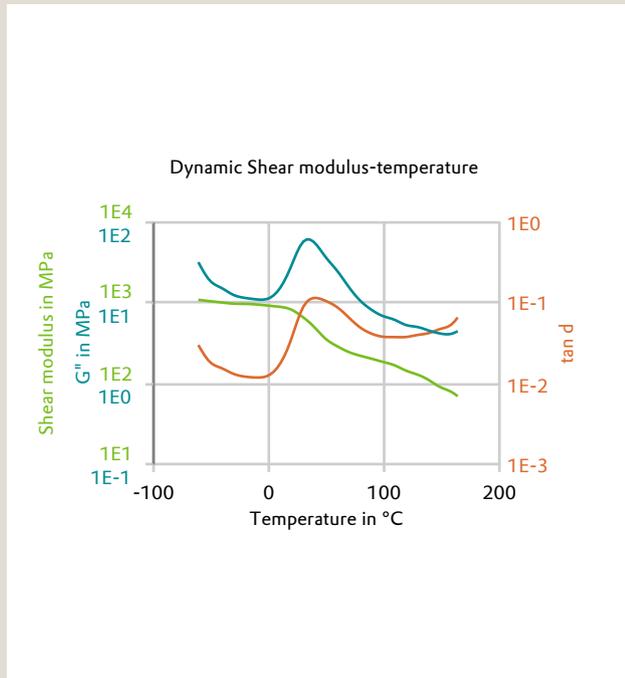
Stress-strain



Secant modulus-strain



Dynamic Shear modulus-temperature



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 | 1090 | kg/m ³ | - |
| 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 | 230 | °C | - |
| Max. melt temperature | 270 | °C | - |