VESTODUR®

Product Information

VESTODUR® GF30-FR3 NC

GLASS FIBER REINFORCED AND FLAME RETARDANT POLYBUTYLENE TEREPHTHALATE COMPOUND

VESTODUR® GF30-FR3 NC is a glass fiber-reinforced (30% glass fiber), semi-crystalline thermoplastic compound for injection molding, based on polybutylene terephthalate (PBT), with a creamy-white color.

Test bars made of this compound are rated V-0, according UL94 by Underwriters Laboratories Inc., self-extinguishing and non-dripping.

This compound is especially suitable for parts which are subjected to high mechanical and thermal loads and must have a very good flame-resistance.

The incorporated flame retardant is non-migrating and does not contain polybrominated diphenyl ethers. The additive has no corrosive effects on metal inserts or neighboring metal parts.

Therefore, the compound is suitable for components of the electrical and electronical industry. Laser marking with high contrasts is possible.

The compounds are supplied as cylindrical pellets in polyethylene packaging.

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

Processing
Injection molding

Delivery form
Pellets, Granules

Optics
Laser markable

Resistance to
Fire / burn, UV / light / weathering

Conformity
Automotive

Additives
Glass fibers, Release agent, Flame retardant

Mechanical properties ISO	dry	Unit	Test Standard
Tensile modulus	**11400**	MPa	ISO 527
Tensile strength	**140**	MPa	ISO 527
Stress at break	**130**	MPa	ISO 527
Strain at break, B	**2.2**	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	**11000**	MPa	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	**8000**	MPa	ISO 899-1
Charpy impact strength, +23°C	**55**	kJ/m²	ISO 179/1eU
Type of failure	**C**	-	-
Charpy notched impact strength, +23°C	**9**	kJ/m²	ISO 179/1eA
Type of failure	**C**	-	-

Thermal properties	dry	Unit	Test Standard
Melting temperature	**223**	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**45**	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	**216**	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**223**	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**216**	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**213**	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**50**	E-6/K	ISO 11359-1/-2
Melting Temperature	**223**	°C	ASTM D 3418

Physical properties	dry	Unit	Test Standard
Density	**1720**	kg/m³	ISO 1183
Water absorption	**0.4**	%	Sim. to ISO 62
Shore D hardness	**84**[b]	-	ISO 7619-1
Density	**1720**	kg/m³	ASTM D 792

b: 3 seconds

Burning Behav.	dry	Unit	Test Standard
Burning behav. at 1.5 mm nom. thickn.	**V-0**	class	IEC 60695-11-10
Thickness tested	**1.5**	mm	-
Burnin behav. at thickness h	**V-0**	class	IEC 60695-11-10
Thickness tested	**3.0**	mm	-
Burning behav. at thickness h	**V-0**	class	IEC 60695-11-10
Thickness tested	**0.8**	mm	-
Oxygen index	**34**	%	ISO 4589-1/-2
Limiting Oxygen Index	**34**	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	**960**	°C	IEC 60695-2-12
Glow Wire Ignition Temperature (GWIT)	**800**	°C	IEC 60695-2-13
Hot Wire Ignition (HWI)	**4**	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	**0.4**	mm	-
Hot Wire Ignition (HWI)	**3**	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	**0.8**	mm	-
Hot Wire Ignition (HWI)	**3**	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	Unit	Test Standard
Volume resistivity, V	**>1E13**	Ohm*m	IEC 62631-3-1
Surface resistivity, E	**1E13**	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	**4.1**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**4.4**	-	IEC 62631-2-1
Dissipation factor, 100Hz	**30**	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	**150**	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/P50	**27**	kV/mm	Sim. to IEC 60243-1

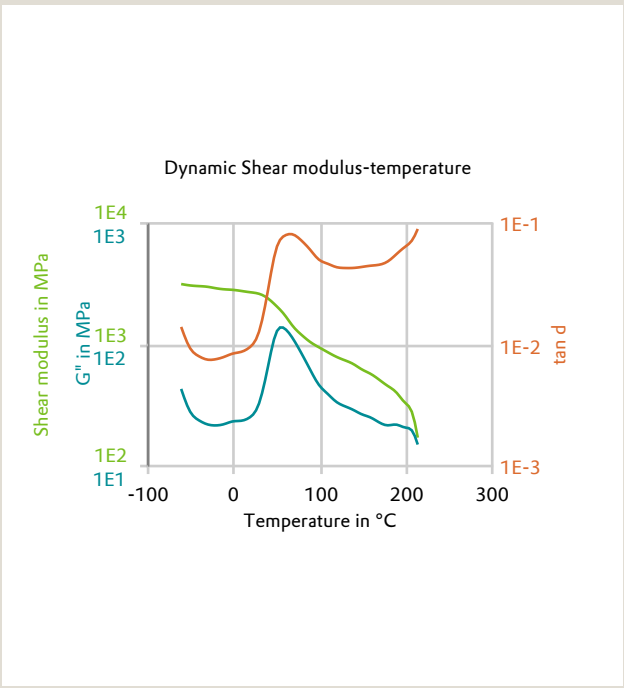
CTI, test solution A, 50 drops value	**250**	-	IEC 60112
Assessment of the insulation group	**III a**	-	DIN EN 60664-1
CTI, Performance Level Categories, PLC	**3**	class	ASTM D 3638

Rheological properties	**dry**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**12**	cm^3/10min	ISO 1133
Temperature	**250**	°C	-
Load	**2.16**	kg	-
Molding shrinkage, parallel	**0.2**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.5**	%	ISO 294-4, 2577
Mold temperature	**80**	°C	-
Melt temperature	**260**	°C	-

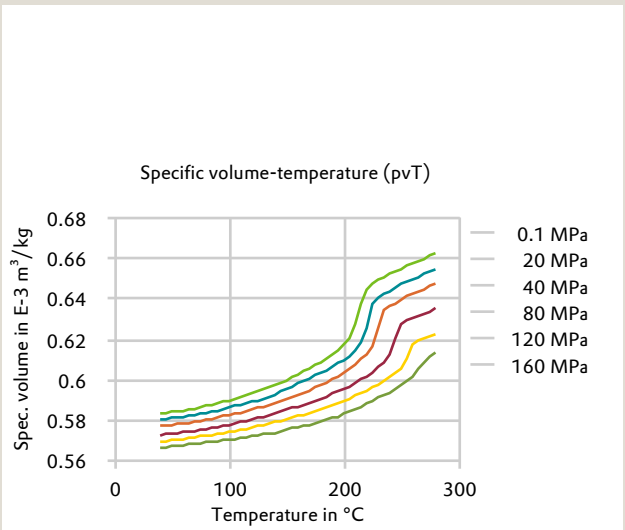
Test specimen production	**dry**	**Unit**	**Test Standard**
Processing conditions acc. ISO	**7792**	-	ISO ....-2
Injection Molding, melt temperature	**260**	°C	ISO 294
Injection Molding, mold temperature	**80**	°C	ISO 294
Injection Molding, injection velocity	**200**	mm/s	ISO 294
Injection Molding, pressure at hold	**70**	MPa	ISO 294

Diagrams

Dynamic Shear modulus-temperature



Specific volume-temperature (pvT)



Characteristics

Applications
Electrical and Electronical, Encapsulation

Special Characteristics
Semi-crystalline, Light-stabilized, U.V. stabilized, High heat resistant, Non-dripping, Color stability, Self-extinguishing

Features
Non-corrosive, Non-migrating ingredients

Color
Natural color, White

Additives
Antioxidant agent, Release agent, Flame retardant, Light stabilizer, Heat stabilizer

Chemical Resistance
Aging resistance

Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass) (23°C)
- ✔ Citric Acid solution (10% by mass) (23°C)
- ✖ Hydrochloric Acid (36% by mass) (23°C)
- ✖ Nitric Acid (40% by mass) (23°C)
- ✔ Sulfuric Acid (38% by mass) (23°C)

✔	Sulfuric Acid (5% by mass) (23°C)

Bases

✖	Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

✔	Isopropyl alcohol (23°C)
✔	Methanol (23°C)
✔	Ethanol (23°C)

Hydrocarbons

✔	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

✔	Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
✔	Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
✔	Diesel fuel (pref. ISO 1817 Liquid F) (90°C)

Salt solutions

✔	Sodium Chloride solution (10% by mass) (23°C)
✔	Sodium Hypochlorite solution (10% by mass) (23°C)
✔	Sodium Carbonate solution (20% by mass) (23°C)

Other

✖	Ethyl Acetate (23°C)
✔	Hydrogen peroxide (23°C)
✔	Water (23°C)

Rheological calculation properties	dry	Unit	Test Standard
Density of melt	**1460**	kg/m³	-
Thermal conductivity of melt	**0.29**	W/(m K)	-
Spec. heat capacity of melt	**1540**	J/(kg K)	-
Min. mold temperature	**50**	°C	-
Max. mold temperature	**120**	°C	-
Min. melt temperature	**240**	°C	-
Max. melt temperature	**280**	°C	-