

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	1.65E6	psi	ISO 527
Tensile strength	20300	psi	ISO 527
Stress at break	18900	psi	ISO 527
Strain at break, B	2.2	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	1.6E6	psi	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	1.16E6	psi	ISO 899-1
Charpy impact strength, +23°C	26.2	ftlb/in ²	ISO 179/1eU
Type of failure	C	-	-
Charpy notched impact strength, +23°C	4.28	ftlb/in ²	ISO 179/1eA
Type of failure	C	-	-

Thermal properties	dry	Unit	Test Standard
Melting temperature	433	°F	ISO 11357-1/-3
Glass transition temperature, DSC	113	°F	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	421	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	433	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	421	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	415	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	2.78E-5	in/in/°F	ISO 11359-1/-2
Melting Temperature	433	°F	ASTM D 3418

Physical properties	dry	Unit	Test Standard
Density	1.72	g/cm ³	ISO 1183
Water absorption	0.4	%	Sim. to ISO 62
Shore D hardness	84^[b]	-	ISO 7619-1
Density	1.72	g/cm ³	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	0.0591	in	-
Burnin behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.1181	in	-
Burning behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.0315	in	-
Oxygen index	34	%	ISO 4589-1/-2
Limiting Oxygen Index	34	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	1760	°F	IEC 60695-2-12
Glow Wire Ignition Temperature (GWIT)	1470	°F	IEC 60695-2-13
Hot Wire Ignition (HWI)	4	PLC	IEC 60695-2-20
HWI - thickness tested	0.0150	in	-
Hot Wire Ignition (HWI)	3	PLC	IEC 60695-2-20
HWI - thickness tested	0.0319	in	-
Hot Wire Ignition (HWI)	3	PLC	IEC 60695-2-20
HWI - thickness tested	0.0591	in	-
Hot Wire Ignition (HWI)	1	PLC	IEC 60695-2-20
HWI - thickness tested	0.1181	in	-

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	686	V/mil	Sim. to IEC 60243-1

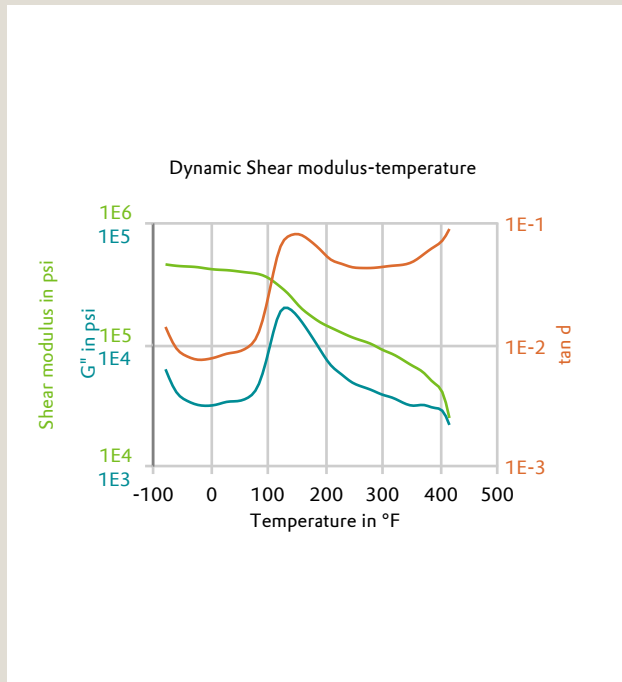
CTI, test solution A, 50 drops value	250	-	IEC 60112
Assessment of the insulation group	III a	-	DIN EN 60664-1
CTI, Performance Level Categories, PLC	3	class	ASTM D 3638

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	176	°F	-
Melt temperature	500	°F	-

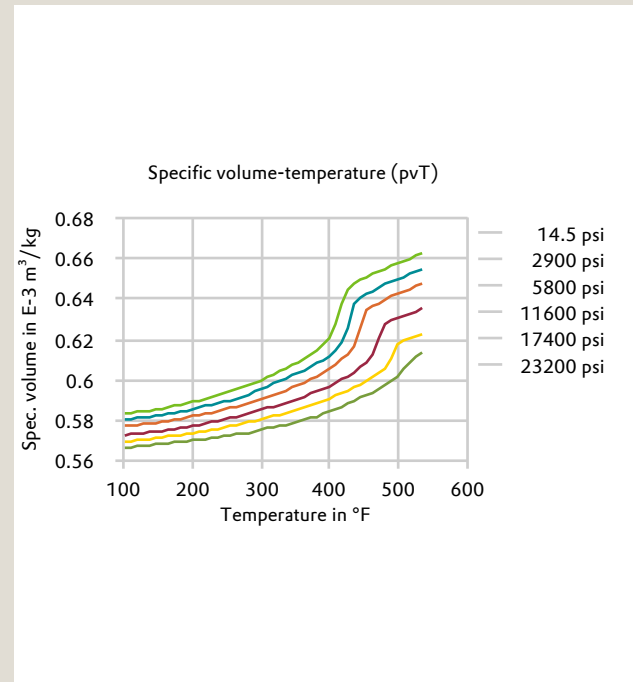
Test specimen production	dry	Unit	Test Standard
Processing conditions acc. ISO	7792	-	ISO-2
Injection Molding, melt temperature	500	°F	ISO 294
Injection Molding, mold temperature	176	°F	ISO 294
Injection Molding, injection velocity	7.87	in/s	ISO 294
Injection Molding, pressure at hold	10200	psi	ISO 294

Diagrams

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	91.1	lb/ft ³	-
Thermal conductivity of melt	2.01	BTU in/(hr ft ² °F)-	-
Spec. heat capacity of melt	0.579	BTU/(lb·F)	-
Min. mold temperature	122	°F	-
Max. mold temperature	248	°F	-
Min. melt temperature	464	°F	-
Max. melt temperature	536	°F	-