

Product Information

VESTODUR® X7212 NC

GLASS FIBER REINFORCED AND FLAME RETARDANT POLYBUTYLENE TEREPHTHALATE MOLDING COMPOUND

VESTODUR® X7212 NC is a glass fiber-reinforced (45%), semi-crystalline thermoplastic compound for injection molding, based on polybutylene terephthalate (PBT). The self-extinguishing compound has a creamy-white colour.

VESTODUR® X7212 NC is used for parts of high mechanical and thermal resistance.

Test bars made of the compound are rated V-0 self-extinguishing according to UL94 by Underwriters Laboratories Inc.

The incorporated flame retardant is non-migrating. The additive has no corrosive effects on metal inserts or neighboring metal parts. Therefore, the compound is distinguished for moldings in the electrical and electronical industry. Laser marking with high contrasts is possible.

VESTODUR® X7212 is supplied as cylindrical pellets in polyethylene packaging.

The use of colorants may affect 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.

Key Features

Processing

Injection molding

Delivery form

Pellets, Granules

Optics

Laser markable

Resistance to

Heat (thermal stability), Fire / burn

Additives

Glass fibers, Release agent, Flame retardant

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	2.25E6 / 2.34E6	psi	ISO 527
Tensile strength	21800 / 21800	psi	ISO 527
Stress at break	21000 / 21800	psi	ISO 527
Strain at break, B	1.3 / 1.3	%	ISO 527
Charpy impact strength, +23°C	22.8 / 20.9	ftlb/in ²	ISO 179/1eU
Type of failure	C / C	-	-
Charpy impact strength, -30°C	21.4 / 23.8	ftlb/in ²	ISO 179/1eU
Type of failure	C / C	-	-
Charpy notched impact strength, +23°C	5.71 / 5.23	ftlb/in ²	ISO 179/1eA
Type of failure	C / C	-	-
Charpy notched impact strength, -30°C	5.71 / 7.14	ftlb/in ²	ISO 179/1eA
Type of failure	C / C	-	-
Flexural modulus, 23°C	2.45E6 / 2.36E6	psi	ISO 178
Flexural strength, 23°C	34800 / 31900	psi	ISO 178
Flexural strain at flexural strength, 23°C	1.5 / 1.5	%	ISO 178
Flexural stress at break, 23°C	34800 / 31900	psi	ISO 178
Flexural strain at break, 23°C	1.5 / 1.5	%	ISO 178

Thermal properties	dry / cond	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	423 / *	°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	428 / *	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	419 / *	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	1.11E-5 / *	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	2.22E-5 / *	in/in/°F	ISO 11359-1/-2

Melting Temperature	433	°F	ASTM D 3418
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Physical properties	dry / cond	Unit	Test Standard
Density	1.84 / -	g/cm ³	ISO 1183
Water absorption	0.3 / *	%	Sim. to ISO 62
Humidity absorption	0.1 / *	%	Sim. to ISO 62
Shore D hardness	86^[b] / -	-	ISO 7619-1
Density	1.84	g/cm ³	ASTM D 792

b: 3 seconds

Burning Behav.	dry / cond	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	0.0319 / *	in	-
Oxygen index	37 / *	%	ISO 4589-1/-2
Limiting Oxygen Index	37	%	ASTM D 2863
GWFI - thickness tested	30.5	in	-
GWIT - thickness tested	37.8	in	-
Hot Wire Ignition (HWI)	3	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 / cond	Unit	Test Standard
Surface resistivity, E	* / 1E13	Ohm	IEC 62631-3-2
Surface resistance, RSD	1E13 / -	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	4.4 / -	-	IEC 62631-2-1
Relative permittivity, 1MHz	4.6 / -	-	IEC 62631-2-1
Dissipation factor, 100Hz	40 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	130 / -	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/P50	762 / -	V/mil	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	275 / -	-	IEC 60112
Assessment of the insulation group	III a	-	DIN EN 60664-1
CTI, Performance Level Categories, PLC	2	class	ASTM D 3638

Rheological properties

	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	8 / *	cm ³ /10min	ISO 1133
Temperature	250 / *	°C	-
Load	2.16 / *	kg	-
Molding shrinkage, parallel	0.2 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	0.7 / *	%	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

Characteristics

Applications

Electrical and Electronical

Color

Natural color

Special Characteristics

Light-stabilized, High heat resistant, Self-extinguishing

Additives

Release agent, Flame retardant, Heat stabilizer

Features

Non-corrosive, Non-migrating ingredients

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 (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	97.4	lb/ft ³	-
Thermal conductivity of melt	2.43	BTU in/(hr ft ² °F)-	
Spec. heat capacity of melt	0.537	BTU/(lb-F)	-
Min. mold temperature	122	°F	-
Max. mold temperature	248	°F	-
Min. melt temperature	464	°F	-
Max. melt temperature	536	°F	-