

THERMOPLASTIC POLYESTER RESIN

Rynite® FR543 NC010 is a 43% Glass Reinforced, Flame Retardant, Polyethylene Terephthalate

Product information	0		
Resin Identification	PET- GF43FR(17)		ISO 1043
Part Marking Code	>PET-GF43FR(17	7)<	ISO 11469
Rheological properties			
Moulding shrinkage, parallel Moulding shrinkage, normal Postmoulding shrinkage, normal, 48h at 80°C Postmoulding shrinkage, parallel, 48h at 80°C	0.2 0.8 0.35 0.05	% %	ISO 294-4, 2577 ISO 294-4, 2577 ISO 294-4 ISO 294-4
Typical mechanical properties			
Tensile modulus Tensile stress at break, 5mm/min Tensile strain at break, 5mm/min Flexural modulus Compressive strength Tensile creep modulus, 1000h Charpy impact strength, 23°C Charpy impact strength, -30°C Charpy notched impact strength, 23°C Charpy notched impact strength, -30°C Hardness, Rockwell, M-scale Hardness, Rockwell, R-scale Poisson's ratio	1.8 14500 230 15000 43 30 10	MPa % MPa MPa	ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2 ISO 178 ISO 604 ISO 899-1 ISO 179/1eU ISO 179/1eU ISO 179/1eA ISO 2039-2 ISO 2039-2
Tribological properties			
Coefficient of static friction, against itself Coefficient of static friction, against steel	0.18 0.16		ISO 8295 ISO 8295
Thermal properties			
Melting temperature, 10 ° C/min Glass transition temperature, 10 ° C/min Temperature of deflection under load, 1.8 MPa Temperature of deflection under load, 0.45 MPa Vicat softening temperature, 50 ° C/h 50N Coefficient of linear thermal expansion (CLTE), parallel CLTE, Parallel, 23-55 ° C(73-130 ° F) Coefficient of linear thermal expansion (CLTE),	225 240 225 10 11	°C °C °C	ISO 11357-1/-3 ISO 11357-1/-3 ISO 75-1/-2 ISO 75-1/-2 ISO 306 ISO 11359-1/-2 ASTM E 831 ISO 11359-1/-2
normal Coeff. of linear therm. expansion, Normal,23-55°C (73-130°F)		E-6/K	ASTM E 831

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Thermal conductivity, flow Thermal conductivity of melt Specific heat capacity of melt RTI, electrical, 0.75mm RTI, electrical, 1.5mm RTI, electrical, 3.0mm RTI, impact, 0.75mm RTI, impact, 1.5mm RTI, strength, 0.75mm RTI, strength, 1.5mm RTI, strength, 3.0mm	0.31 W/(m K) 0.3 W/(m K) 1560 J/(kg K) 155 °C 155 °C	ISO 22007-2 ISO 22007-2 ISO 22007-4 UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B
Flammability		
Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition Burning Behav. at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 3.0mm Glow Wire Ignition Temperature, 3.0mm Glow Wire Temperature, No Flame, 0.75mm Glow Wire Temperature, No Flame, 1.5mm Glow Wire Temperature, No Flame, 1.5mm Glow Wire Temperature, No Flame, 2mm Glow Wire Temperature, No Flame, 3mm FMVSS Class Burning rate, Thickness 1 mm	V-0 class 1.5 mm yes V-0 class 0.8 mm yes 35 % 960 °C 960 °C	IEC 60695-11-10 IEC 60695-11-10 UL 94 IEC 60695-11-10 IEC 60695-11-10 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-13 IEC 60335-1 IEC 60335-1
Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity Electric strength Comparative tracking index Comparative tracking index, 23°C Physical/Other properties	4.6 4.1 368 E-4 131 E-4 >1E13 Ohm.m 1E15 Ohm 37 kV/mm 225 2 PLC	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1 IEC 60112 UL 746A
Humidity absorption, 2mm Water absorption, 2mm Density Density of melt	0.1 % 0.6 % 1790 kg/m ³ 1610 kg/m ³	Sim. to ISO 62 Sim. to ISO 62 ISO 1183

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Injection

Drying Recommended	yes	
Drying Temperature	120	°C
Drying Time, Dehumidified Dryer	4 - 6	••
Processing Moisture Content	≤0.02 ^[1]	%
Melt Temperature Optimum	280	°C
Min. melt temperature	270	°C
Max. melt temperature	290	°C
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	95	°C
Min. mould temperature		°C
Max. mould temperature	105 ^[2]	°C
Hold pressure range	≥80	MPa
Hold pressure time	4	s/mm
Back pressure	As low as	MPa
	possible	
Ejection temperature	196	°C

[1]: At levels above 0.02%, strength and toughness will decrease, even though parts may not exhibit surface defects.[2]: (6mm - 1mm thickness)

Characteristics

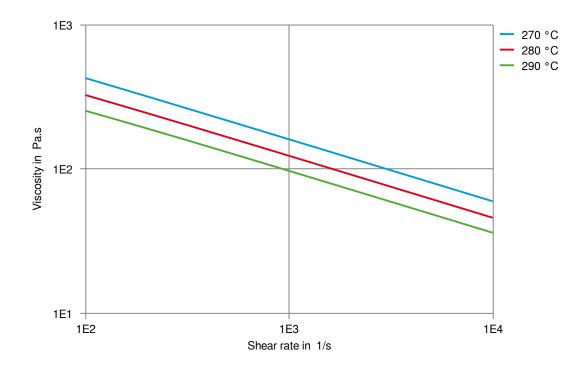
Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Flame retardant
Special characteristics	Flame retardant





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Viscosity-shear rate

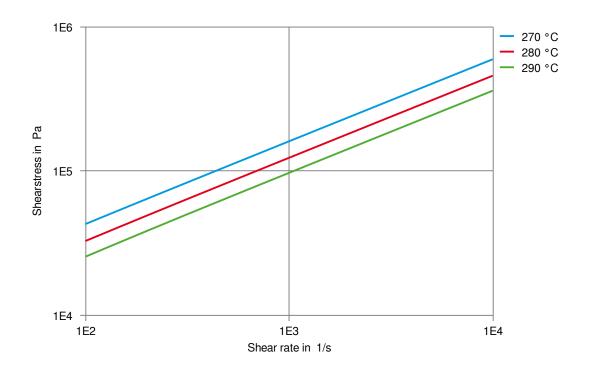






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Shearstress-shear rate

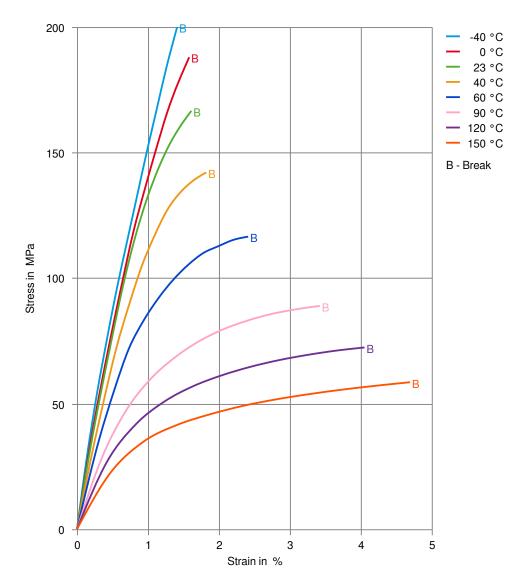






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Stress-strain

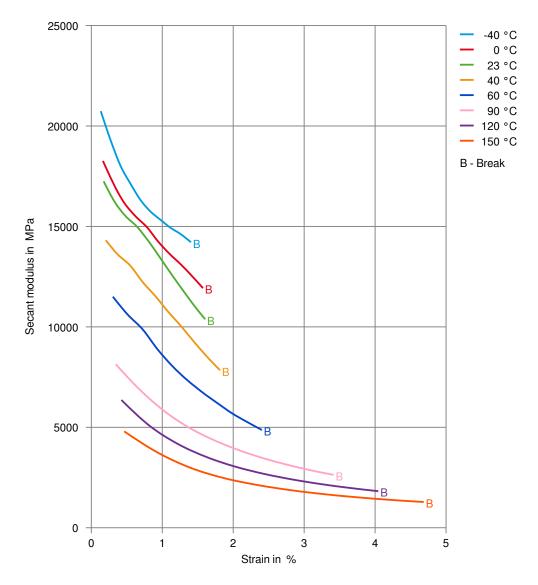






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Secant modulus-strain



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Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass), 23°C
- ✓ Citric Acid solution (10% by mass), 23°C
- ✓ Lactic Acid (10% by mass), 23°C
- ★ Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23 °C
- X Sulfuric Acid (5% by mass), 23°C
- ★ Chromic Acid solution (40% 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
- X SAE 10W40 multigrade motor oil, 130°C
- X SAE 80/90 hypoid-gear oil, 130 °C
- ✓ Insulating Oil, 23°C

Standard Fuels

- ✓ ISO 1817 Liquid 1 E5, 60°C
- ✓ ISO 1817 Liquid 2 M15E4, 60°C
- ✓ ISO 1817 Liquid 3 M3E7, 60°C
- ✓ ISO 1817 Liquid 4 M15, 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
- X 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

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- 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
- X Hydrogen peroxide, 23°C
- X DOT No. 4 Brake fluid, 130°C
- ✗ Ethylene Glycol (50% by mass) in water, 108°C
- 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✓ 50% Oleic acid + 50% Olive Oil, 23°C
- ✓ Water, 23°C
- ★ Water, 90°C
- ✓ Phenol solution (5% by mass), 23°C

Symbols used:

possibly resistant

Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

X not recommended - see explanation

Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

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