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Blue Food Quality PTFE Gasket Material Technical Datasheet

Technical Specification

Properties	Value	Test Method
Specific Gravity	2.13 - 2.18 g/cc	ISO 1183
Tensile Strength	25 - 35 MPa	ISO 527
Elongation	250 - 350 %	ISO 527
Hardness	54 - 60 (Shore D)	ISO 868
Flexible Modulus	600 - 700 N/mm²	23°C
Deformation Under Load (140Kg/cmq for 24hrs at 23°C)	10 - 13 %	ASTM D695
Permanent Deformation (After 24hrs. Relaxation at 23°C)	6 - 7.5 %	ASTM D695
Thermal Conductivity	0.24 W./m.K	ASTM C177
Co-efficient of friction	0.07 (Dynamic)	ASTM D1894
Dielectric Constant (at 60Hz to 2GHz)	2.1	ASTM A150
Dielectric Strength	20 - 70 Kv/mm	ASTM A149
Volume Resistivity	$>10^{10}$ Ohm cm	ASTM D257
Service Temperature[1]	-200°C / +260°C	-
Flammability	V-0	UL 94
Melting Point	325°C - 335°C	-
Water Absorption	0.01 %	ASTM D570

[1] Excellent resistance to continuous service temperature up to 260°C and, for limited periods, to even higher temperatures, the low temperature resistance of the product allows satisfactory performance at -200°C.

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Chemical Resistance

PTFE possesses a high inertness towards nearly all known chemicals. It is only attacked by elemental alkali metals, chlorine trifluoride and elemental fluorine at high temperature and pressures.

Solvents Resistance

PTFE is insoluble in all solvents up to temperatures as high as 300°C (572°F). Certain highly fluorinated oils only swell and dissolve PTFE at temperatures close to crystalline melting point.

FDA Approved

(Code of Federal regulation 1 CFR Ch.1, revised as of April 1, 1999 Edition) Sections 175.105 – 175.300 – 176.170 – 176.180 –177.1520 – 177.1550 – 177.2600 – 178.3570. "Perfluorocarbon Resins" of the Food and Drug Administration/USA.

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Bronze Filled PTFE Gasket Material Technical Datasheet

Product Description

60% Virgin PTFE and 40% Bronze.
Excellent wear and compression resistance (low cold creep), good thermal conductivity.

Main Applications

In dynamic seal applications high wear resistance under strong compression, but where chemical resistance is not important (e.g. slideways compression ring and bearings for alternating, oscillating and helical movements).

Technical Specification

Properties	Test Method	Value
Specific Gravity	ASTM D4884	3,090 - 3,140 g/cm³
Tensile Strength	ASTM D4894	>20 MPa
Elongation	ASTM D4894	>200 %
Hardness (Shore D)	ASTM D2240	>65
Deformation under load (14 N/mm², 24h at 23°C)	ASTM D621	7 - 10 %
Permanent deformation (after 24hrs, relaxation at 23°C)	ASTM D621	4 - 5 %
Coefficient of Static Friction	ASTM D1894	0.16 - 0.18
Coefficient of Dynamic Friction	ASTM D1894	0.14 - 0.16
Volume Resistivity	ASTM D257	10^7 Ohm cm
Service Temperature	-	-200 up to +260°C

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25% Carbon Filled PTFE Gasket Material Technical Datasheet

Technical Specification

Properties	Value	Test Method
Density	2.04 - 2.10	ASTM D792
Hardness (Shore D)	≥ 64	ASTM D2240
Tensile Strength	≥ 12	ISO 12086 / ISO 527
Elongation at Break	≥ 50	ISO 12086 / ISO 527

Thermal Properties

Properties	Value	Test Method
Service Temperature (min-max)	-200°C to +260°C	-
Thermal expansion coefficient (linear) 25°C - 100°C	10 - 12	Similar to ASTM D696

Electrical Properties

Properties	Value	Test Method
Volume Resistivity	10^3 Ω · cm	ASTM D257
Surface Resistivity	10^3 Ω	ASTM D257

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Expanded PTFE Gasket Material Technical Datasheet

Technical Specification

Properties	Value
Material	100% pure multidirectionally expanded PTFE.
Temperature Range	-240°C up to +270°C (briefly to +315°C)
Chemical Resistance	Resistant to all media in the range of pH 0 to 14, except for molten and dissolved alkali metals and elemental fluorine gas at high temperatures and pressures.
Recommended Operating Range	Vacuum up to 40bar at -240°C to +230°C (depending on the individual application)
Test & Certificates	Proven according to TA-Luft (VDI 2440) up to 230°C. Conforming to FDA 21 CFR 177.1550 (PTFE).
Properties	EN 13555 (2mm thickness)
Minimum Gasket Stress at Assembly	Q_{min} (40 bar He; 0.01 mg/(s*m)) = 32 MPa
Minimum Gasket Stress in Service	Q_{Smin} (Q_A = 32 MPa; 40 bar He; L = 0.01) <10 MPa

Due to the unique structure of expanded PTFE sheet, gaskets are highly resistant to creep relaxation. They contain no binders, fillers or additives.

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Glass Filled PTFE Gasket Material Technical Datasheet

Technical Specification

Properties	Value (metric)	Value (imperial)	Test Method
Density	2.22 - 2.24	0.0802 - 0.0809	ASTM D792
Deformation: - @ Pressure 13.7 MPa, Time 24 hrs - @ Pressure 13.7 MPa, Time 24hrs (after 24hr relax)	 7.0 - 10 4.0 - 6.5	 7.0 - 10 4.0 - 6.5	 ASTM D621 ASTM D621

Technical Specification

Properties	Value (metric)	Value (imperial)	Test Method
Hardness (Shore D)	62 - 67	62 - 67	ASTM D2240
Tensile Strength	>= 13.0 MPa	>= 1890 psi	ASTM D4745
Elongation at Break	>= 180%	>= 180%	ASTM D4745
Compressive Yield Strength @ Strain 1.00%	8.00 - 9.00 MPa	1160 - 1310 psi	ASTM D695
Coefficient of Friction, Dynamic	0.13	0.13	ASTM D1894
K (wear) Factor	10.0 - 15.0 x 10^{-8} mm^3/Nm	7.45 x 10^{-10} in^3-min/ft-lb-hr	at PV100; ASTM D3702

Technical Specification

Properties	Value (metric)	Value (imperial)	Test Method
CTE, Linear	75.0 - 110 µm/m-°C	41.7 - 61.1 µin/in-°F	ASTM D696
Maximum Service Temperature, Air	260°C	500°F	-
Minimum Service Temperature, Air	-200°C	-328°F	-

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Metal Detectable PTFE Gasket Material Technical Datasheet

Technical Specification

Properties	Test Method	Value
Physical - Mechanical		
Density	ASTM D792	2.30 - 2.36 g/cm³
Hardness (Shore D)	ASTM D2240	≥ 58
Tensile Strength	ISO 527 v = 50mm / min microtensile die	≥ 20 N/mm²
Elongation at Break	ISO 527 v = 50mm / min microtensile die	≥ 250%
Thermal		
Service Temperature (min - max)	-	-200°C / +260°C

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Stainless Steel Filled PTFE Gasket Material Technical Datasheet

Product Description

Stainless steel filled PTFE is a compound based on Virgin PTFE containing 50% stainless steel (AISI 316 L).

- Improved thermal dimensional stability
- Improved deformation under load
- Improved surface hardness
- Improved compression strength
- Exceptional temperature resistance
- High thermal conductivity
- Very good chemical stability
- Reduced friction & wear (low friction)
- Low permeability
- Suitable for food contact

Technical Specification

Properties	Value	Test Method
Colour	Grey	-
Specific Gravity	3.30 - 3.40 g/cm³	ASTM D792
Water Absorption	0.03 %	ASTM D570
Flammability	V-0	UL 94

Mechanical Properties

Properties	Value	Test Method
Tensile Strength	>15 MPa	ASTM D4745
Elongation	>130 %	ASTM D4745
Hardness (Shore D)	>65	ASTM D2240
Ball Hardness	>30 MPa	ASTM D785
Deformation under load (140 kg/cm² for 24hrs @ 23°C)	6 - 7.5 %	ASTM D621
Permanent Deformation (after 24hrs. Relaxation @ 23°C)	2.5 - 4.5 %	ASTM D621

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Mechanical Properties

Properties	Value	Test Method
Coefficient of Static Friction	0.16 - 0.18	ASTM D1894
Coefficient of Dynamic Friction	0.13 - 0.15	ASTM D1894
Wear Coefficient	30 - 40 $\frac{cm^3 \text{ min } 10^{-8}}{Kg \text{ m h}}$	-

Thermal Properties

Properties	Value	Test Method
Thermal Conductivity	0.65 W/ m·K	ASTM C177
Coefficient of Linear Thermal Expansion from +25°C to+100°C	10-5/°C	ASTM D696

Electrical Properties

Properties	Value	Test Method
Volume Resistivity	10^7 Ohm·cm	ASTM D257
Surface Resistivity	10^6 Ohm	ASTM D257

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Virgin PTFE Gasket Material Technical Datasheet

Technical Specification

Properties	Value	Test Method
Density	2.14 - 2.18 g/cm³	ASTM D792
Hardness (Shore D)	≥51	ASTM D2240
Tensile Strength	≥24 N/mm²	ISO 12086 / ISO 527
Elongation at Break	≥250 %	ISO 12086 / ISO 527
Compression Strength at 1% deformation	4 - 5 N/mm²	ASTM D695
Deformation under load at room temperature after 24hrs at 13.7 N/mm2	≤17 %	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	≤9 %	ASTM D621
Deformation under load at 260°C after 41 N/mm2	≤32 %	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	≤19 %	ASTM D621
Impact strength Izod	153 J/m	ASTM D256

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Tribological Properties

Properties	Value	Test Method
Dynamic coefficient of friction	0.06	ASTM D1894 / ASTM D3702
Wear factor K	2.900	ASTM D3702
PV Limit: - at 3m/min - at 30m/min - at 300m/min	 2.4 N/mm² · m/min 4.2 N/mm² · m/min 5.7 N/mm² · m/min	 - - -

Thermal Properties

Properties	Value	Test Method
Service Temperature (min - max)	-200°C to +260°C	-
Thermal expansion coefficient (linear) 25 - 100°C	12 - 13 10^{-5}(mm/mm)/ °C	Similar to ASTM D696

Electrical Properties

Properties	Value	Test Method
Dielectric Strength (specimen 0.5mm thick)	≥40 KV/mm	ASTM D149
Dielectric Constant at 60 Hz and 106 Hz	2.05 - 2.10	ASTM D150
Volume Resistivity	10^{18} Ω · cm	ASTM D257
Surface Resistivity	10^{17} Ω	ASTM D257