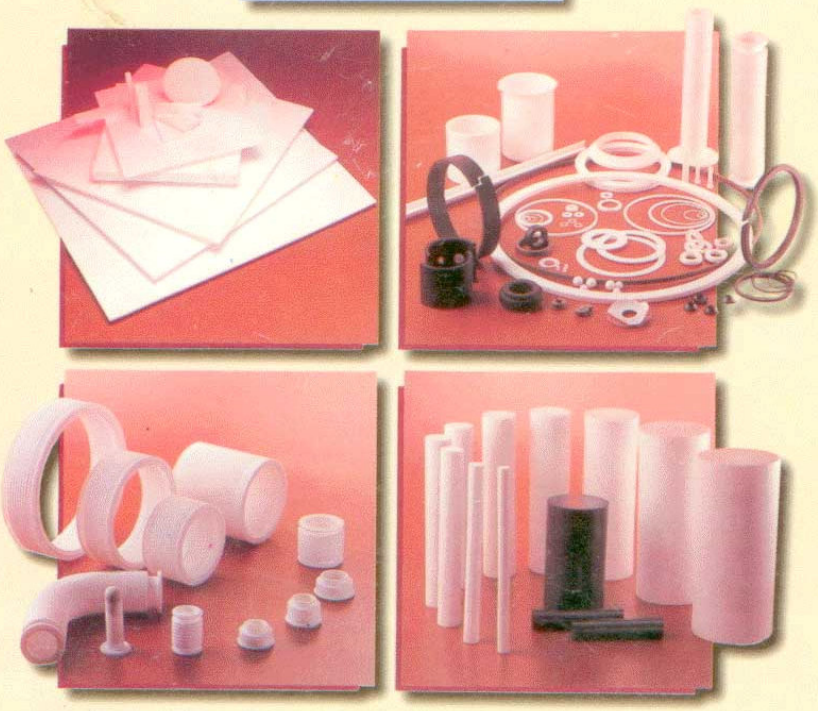
BHARAT ASBESTOS & RUBBER Co

137 Narayan Dhuru Street, Ground floor, Mumbai – 400 003
Tel – 23421765 / 23436898 / 23112055 / 23457055 Fax – 23422445
E.mail – barc@vsnl.com Web Add – www.barc.co.in

POLYMER PRODUCTS

P.T.F.E. Rods, Sheets, Bushes,Tapes & P.T.F.E. Moulding Items.
Nylon, P.P., P.V.C. & Asbestos Items.



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TUFFLON PTFE OUTSTANDING PROPERTIES & RELATED APPLICATIONS:

Chemical Resistance:

TUFFLON PTFE products are inert to almost all known chemicals even at as high temperature as upto 260°C continuous and pressures,imparting excellent chemical resistance to all the Acids (including highly corrosive strong inorgenic acids) Alkalies, orgenic chemicals, all known solvents. Except that it is effected by elementry Fluorine, strong florinating agents (such as chlorine trifluoride) and molten alkali metals.

Typical Applications:

Gaskets, 'O' rings, Flat 'V' rings, seals, valve and pump diaphgrams components for valves & pumps, impellers, pipe expansion joints, stirrers, pistons rings, plugs and balls for valves, floats for rotameters, balls for Non-return valve, laboratory beakers, crusibles, mechanical seals, nuts and bolts etc.

Electrical Resistance:

Tufflon PTFE products are very good electrical insulating material having high volume and surface resistivity, high dielectric strength, very low dielectric constant and dissipation factor. It has got highest tracking resistance rating and very good high voltage arc resistance. Its corona resistance is good.

Typical Application:

Various Tufflon machined components are used in electrical and electronic industries such as High tension bushings and insulators in high voltage switchgear (because of Tufflon PTFE's very good arc and traching resistance), Nozzle and outlet orifices of high tension power switches operating with sulphur hexa fluoride, Hermetic seals for capacitors, spacers for coaxial cables, brush holders in collector motors, valve and cathode holders, Transistor sockets, plug connections, conductor bushings, insulating bushings, soldering terminals, slot insulation of motors, insulation in commutators and coil and transformer insulations etc.

Heat/Temperature Resistance and Cryogenic Stability:

Tufflon PTFE components have the highest thermal stability amongst all other commercially available plastics or fluoropolymers. Tufflon PTFE components can be used continously at temperatures ranging from-200° C to 260°C retaining good tensile strength, flexibility and elasticity making it fully serviceable under moderate loads. It can be used for intermittent service temp. upto 300°C depending upon mechanical stresses involved.

Tufflon PTFE products will withstand severe temperature extremes without loss of physical properties and can be used at -260°C also (i.e. t.p. of liquid helium) without undergoing embrittlement.

Typical Applications:

Components for non lubricated gas compressors such as Piston rings Rider rings, valve disc guide, electrical insulations and insulation bushing of various types where high temperatures are involved, components for Nuclear plant equipments and reactors, ball valve rings, piping and reactor gaskets, expansion bellows etc.

Friction Resistance:

Tufflon PTFE products have the lowest co-efficient of friction, in dynamic and static applications it is the same, amongst all solid materials. This is because of very low intermolecular forces in PTFE due to the high bond energy between carbon and fluorine atoms. Actual co-efficient of friction depends on number of factors such as loading pressure and sliding speed, the opposing material, type of lubricant if used and for most practical applications it is 0.1 to 9.25 combined with this property it has got very good physical and mechanical properties.

Even Tufflon filled PTFE containing 5% to 40% by volume of fillers such as Glass fibre, bronze, carbon, graphite, solo or in combination have such low friction co-efficient and with increased surface hardness and other physical properties.

Typical Application:

Dry running Bearings, self lubricating bushes, seals for stuffing boxes on rotating shaft, oil seal rings, washers, gaskets, parts for pneumatic equipment gears, valve seals, parts for non-lubricating gas compressors such as Piston Rings, Rider Rings, non-lubricated plug valve sleeve, wedges etc. As a anti-friction bearing plates for bridges, loads in corrosive liquids, building industry, pipe bridges etc. where PTFE as load bearing constructional material as well as that of solid lubricant.

Non-Stick Properties:

Tufflon PTFE products, as a result of very low intermolecular forces, due to high bond energy between Fluorine and Carbon atoms and the low polarazibility of fluorine atoms, do not adhere or stic to other materials giving rise to excellent NON-STICK properties.

Typical Applications:

For handling sticky fluid or substance e.g. laboratory beakers, flexible hose, loose sleeves for rollers used in Backery and food industry etc.

Non Taxicity:

TUFFLON PTFE products, being highly inert to virtually all orgenic and inorgenic chemicals are non toxic in nature and is safe for contact with edibles, drugs and pharmaceuticals etc.

Typical Applications:

Laboratory beakers, pharmaceutical bottles, bottle Tufflon PTFE products, due to its thermal resistance,

Weather Resistance:

Tufflon PTFE products, due to its thermal resistance chemical inertness, resistance to ultravioletrays, ozone and general industrial atmospheric conditions, exhibits excellent weather Resistance.

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PROPERTIES OF UNFILLED & FILLED/MODIFIED P.T.F.E.

Filler/Filler Content in w/w

Mechanical properties measured at 20°C on sintered moulding	UNIT OF MEASURE	100% PTFE	Glass 25%	Carbon 25%	Graphite 15%	Bronze 60%
Specific weight (Density)	g/cm^3	2.14 – 2.19	2.25	2.1	2.2	3.8 – 3.9
Ultimate Tensile strength	kg/cm^2	210 – 350	125 – 200	120 – 155	140 – 210	105 – 140
Elongation at Break	%	250 – 400	200 – 300	100 – 150	200 – 300	80 – 160
Hardness	Shore D	50 – 55	55 – 70	60 – 65	55 – 65	55 – 65
Compressive modulous for 1% deformation	kg/cm^2	4000	6000	–	–	7500
Impact Strength	$cmkg/cm^2$	8	9	–	–	11
Coefficient of Friction		0.06	0.12	0.13	0.07	0.13
Thermal Properties						
Crystalline Temp. Range	°C	320 – 340	320 – 340	320 – 340	320 – 340	320 – 340
Specific heat at 50°C	kcal/kg x°C	0.25	–	–	–	–
Thermal Conductivity	10^{-4} cal/cms deg. C	6	9	13	11	19
Thermal Linear Expansion						
– Parallel to direction of Moulding	%	1.9	1.8	1.9	2.15	1.5
– Perpendicular to direction of Moulding	%	1.8	1.0	1.1	1.60	1.1
Continuous Service Temp.	°C	– 250 to + 260	– 250 to + 260	– 250 to + 260	– 250 to + 260	– 250 to + 260
	°F	– 420 to + 500	– 250 to + 260	– 250 to + 260	– 250 to + 260	– 250 to + 260
Electrical Properties						
Dielectric Strength						
thickness 0.15mm	KV/mm	80	–	–	–	–
thickness 0.25mm	KV/mm	60	–	–	–	–
thickness 1.00mm	KV/mm	30	–	–	–	–
thickness 2.00mm	KV/mm	15	–	–	–	–
Volume Resistivity	ohm-cm	10^{18}	$2x10^{15}$	10^4	10^6	10^7
Surface Resistivity	ohm	10^{17}	10^{15}	10^7	10^{14}	10^9
Surface resistances at the arc	Sec.	700	–	–	–	–
Permittivity at 23°C, 10^5-10^7 HZ dry	–	2.02 – 2.09	2.25 – 2.50	Conducting Filler	Conducting Filler	Conducting Filler
Other Properties						
Flammability	–	Non Flammable	Non Flammable	Non Flammable	Non Flammable	Non Flammable
Resistance to Weathering	–	Excellent	Excellent	Excellent	Excellent	Excellent