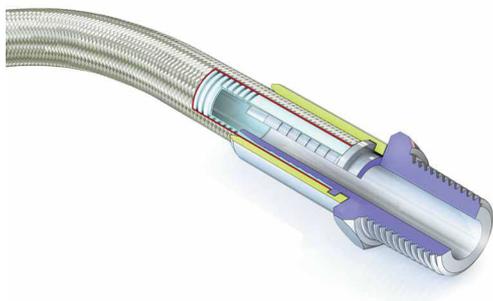




There is a fundamental problem with larger sizes of standard, smooth bore PTFE hose products - as the hose size increases above , so smooth bore PTFE lined hose become significantly less flexible, and more easily kinked.

One solution is to use a conventional convoluted PTFE lined hose, but the internal convolutions make the hose difficult to assemble, and reduces fluid flow rates due to turbulent flow. GFL10 is a new and revolutionary solution to all these problems, providing a unique and patented hose liner design which is flexible in the larger bore sizes, yet which retains a smooth bore. The advantage of a smooth bore as compared with a convoluted bore is that it is easy clean, and does not create "turbulent flow", which drastically reduces fluid flow rates.



STANDARD GRADES AVAILABLE

TO - Natural PTFE Tube Only, No Braid.

AS, TO - Antistatic Black PTFE Tube Only, No Braid.

AS, - Antistatic Black PTFE Tube, external AISI 304 Stainless Steel Wire Braid.

AS, AM - Antistatic Black PTFE Tube, Black Aramid Fibre Braid.

GRADE DESCRIPTIONS

Antistatic PTFE Linings (AS Grade)

When electrically resistive fluids like solvents and fuels, or multiphase mixtures are passed through natural PTFE hose at high flow rates, a static charge build up occurs on the inner wall of the PTFE liner, which eventually discharges to the nearest earth creating a leak path through the liner.

Antistatic PTFE includes a small quantity of a special carbon black which ensures safe static charge dissipation, in accordance with International Standards.

Stainless Steel Wire Braid (SS Grades)

The braid protects the PTFE liner tube against internal pressure and mechanical abuse.

Aramid Fibre Braid (AM Grades)

The aramid fibre is "Tecnora", a higher specification fibre than Kevlar, with excellent temperature, tensile and abrasion resistant properties.

For applications requiring minimum weight for maximum pressure reinforcement

SPECIFICATIONS FOR FL 10 HOSE GRADES

Nominal Hose Size		Hose Grade	Outside Diameter	Minimum Bend Radius	Maximum Working Pressure (MWP)	Minimum Burst Pressure	Weight	Max Continuous Length
inch	mm.		mm.	mm.	Bar	Bar	Kg/mtr	mtrs.
1/4"	6,5	TO	9.0	38	4	16	0.041	
		SS	9.6	19	88	352	0.092	
		AM	9.6	38	62	248	0.056	
3/8"	9,5	TO	12.5	50	4	16	0.070	
		SS	13.5	25	80	320	0.160	
		AM	13.5	50	56	224	0.100	
1/2"	12,7	TO	16.2	76	4	16	0.110	
		SS	17.5	38	60	240	0.225	
		AM	17.5	76	42	168	0.140	
5/8"	16	TO	20.0	100	3	9	0.161	
		SS	21.4	50	50	200	0.336	
		AM	21.4	100	35	140	0.204	
3/4"	19	TO	23.2	126	3	9	0.179	
		SS	24.2	63	42	168	0.383	
		AM	24.2	126	29	116	0.283	
1"	25	TO	30.3	150	2	8	0.268	
		SS	31.7	75	40	160	0.540	
		AM	31.7	150	28	112	0.354	
1"1/4	32	TO	37.3	140	3	12	0.45	
		SS	39.5	100	45	180	0.85	
1"1/2	38	TO	45	180	2	8	0.66	
		SS	47	140	40	160	1.10	
2"	50	TO	59.1	300	2	8	1.25	
		SS	61	200	30	120	1.90	

PROPERTIES

Temperatures and Pressures :

SS Grades - The MWP listed above should be reduced by 1% for each 1°C above 160°C (1% for each 1.8°F above 320°F) up to a maximum of 260°C (500°F).

- AM Grades - The MWP listed above should be reduced by 1% for each 1°C above 130°C (1% for each 1.8°F above 266°F) up to a maximum of 180°C (356°F).

Vacuum Resistance :

SS Grades are fully vacuum resistant up to 130°C (266°F).

Excellent Flow Rates :

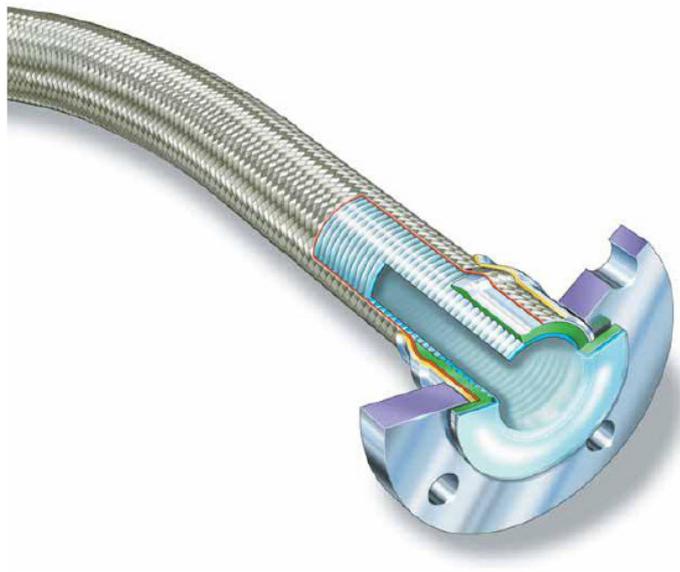
Compared with conventional convoluted hose designs, FL 10 has excellent flow rates due to the smooth bore, which prevents the turbulent fluid flow which occurs in convoluted hose products.

Reduced Diffusion Rates :

GFL10 is much more resistant to diffusion of liquids or gases than other PTFE hose products, due to its highly compressed, non-porous PTFE matrix. FL 10 has been successfully tested to SAE J1737 for resistance to automotive fuel diffusion.

Non-Stick Internal Surface :

GFL10 hose has a smooth bore, non-stick liner which is effectively "self-cleaning", and which resists material build-up inside the hose which may cause bore constriction.



Cleaning & Sterilising Systems - CIP, SIP and Autoclave

CIP & SIP – PTFE liner tubes are chemically resistant to all CIP, SIP and Autoclave conditions. The primary consideration is whether the cleaning and purging cycle is likely to develop an electrostatic charge on the internal surface of the liner, in which case AS (Anti-Static) grade hose is required. AS grade hose and Electrostatic charge generating systems are fully described in the hose liner section. CIP systems using high electrical resistivity solvents like Toluene will require AS grade hose. Another electrostatic generation problem arises when wet steam is used, or when the cleaning fluids or WFI are purged out of the line using nitrogen, compressed air or another gas, because droplets of liquid or water in the gas then generate a multiphase condition until they are cleared out, which will generate a static charge, and so will require AS grade hose.

In static generating applications where AS grade hose is not acceptable due to the black PTFE liner, alternative solutions are available. Autoclave sterilisation does not normally involve any high flow rates through the hose bore, so static generation is not a problem.

The rubber covered grades EPDM, (RC) and Silicone Rubber (RC, SI) are able to withstand at least 100 x 30 minute autoclave cycles at relatively high autoclave temperatures (121°C, 250°F or 135°C, 275°F).

PTFE Hose-Use with Alkali Metals, Halogens and Halogen containing Chemicals

PTFE hose liners react chemically with Fluorine, Chlorine Trifluoride and molten Alkali Metals. When PTFE lined hose is used to carry Chlorine or Bromine, either as gasses or fluids, they will diffuse into and through the PTFE liner wall thickness. Trace quantities will then combine with atmospheric moisture to corrode any braid/rubber outer coverings.

Heavily halogenated chemicals, like Hydrogen Fluoride, Hydrogen Chloride, Phosgene (Carbonyl Chloride) Carbon Tetrachloride and other organic chemicals with a high halogen content can also be absorbed and transmitted through the PTFE liner tube.

Other “Penetrating” Fluids and Gases

Sulphur Trioxide, Methyl Methacrylate and Glacial Acetic Acid are some other chemicals which can be absorbed and transmitted through the PTFE liner tube wall.

Generally, however, as a hydrophobic (non-wetting) material, PTFE is very resistant to the absorption of chemicals. In some cases, PTFE has superior resistance to diffusion, for example to the diffusion of automotive fuels, in comparison with all other plastics and rubbers.

Gas/Fluid Cycling

There are some applications where the fluid passing through the hose turns into a gas, then back into a fluid, then into a gas etc, in a cyclic sequence.

This is normally associated with changes in temperature and/or pressure. For complex reasons these conditions are extremely damaging to the hose liner, whatever material it is made from.

For example, hoses are sometimes used to pass steam, water, etc into rubber moulding presses, in order to heat the mould, then rapidly cool it before reheating in the next cycle. Hoses of all types fail rapidly in such an application and PTFE lined hoses are no exception.

Certifications & approval

USP CLASS VI and ISO 10993-5, 6, 10 and 11 GUIDELINES

Natural and Antistatic PTFE Hose Liners, Platinum Cured Silicone Rubber Covers (White and Clear) and EPDM Rubber Cover (Blue) have been independently tested in accordance with USP protocols and are found to conform to the requirements of USP Class VI Chapter <88>.

Natural and Antistatic PTFE Hose Liners now also meet the more stringent USP Class VI and ISO 10993-6,10 and 11 guidelines at 121 °C (250 °F) with a "no reaction" classification.

Natural and Antistatic PTFE Hose Liners and Platinum Cured Silicone Rubber Covers (White and Clear) have also been tested in accordance with USP protocols and are found to conform to the requirements of USP Class VI <87>, the L929 MEM Elution Test and are considered non-cytotoxic.

Natural and Antistatic PTFE Hose Liners have now been further tested and have passed the more stringent USP Class VI and ISO 10993-5 guidelines at 121 °C (250 °F).

FDA

The Materials used to manufacture the natural PTFE Tube liner conforms to FDA 21 CFR 177.1550, and the antistatic PTFE liner conforms to FDA 21 CFR 178.3297.

3-A SANITARY STANDARDS

The PTFE used in the liner is manufactured solely from materials which meet the requirements of the 3-A Sanitary Standards.

BPSA LEACHABLES and EXTRACTABLES TESTING

Natural and Antistatic PTFE Hose Liner Tube has been independently tested in accordance with BPSA recommendations, and found to be satisfactory.

ATTESTATIONS OF CONFORMITY TO ATEX DIRECTIVE 94/9/EC (POTENTIALLY EXPLOSIVE ATMOSPHERES)

Available for hose and assemblies for components used in Gas Zones 1 & 2 and Dust Zones 21 & 22, when applicable.

MATERIAL CERTIFICATION TO EN10204

Available for all the hose or hose assembly components.

CERTIFICATES OF CONFORMITY TO EN45014

Are available for all products.

HOSE TESTING

Each assembly may be pressure tested to 1.5 times maximum working pressure before despatch, and pressure test certificates can be supplied.

