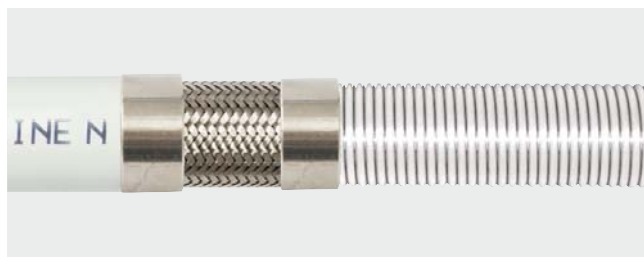


Pharmaline N and X Hose Liners

Pharmaline N GP - General Purpose Liner



Pharmaline X GP - General Purpose Liner



Purpose

Pharmaline N or X GP hose is the 'General Purpose' grade, for use in all applications where fluids or gases are being conveyed which do not generate a risk of static charge development (see 'AS').

Materials & Specifications

GP Grade has a virgin PTFE liner, manufactured from hose grade PTFE which conforms to the requirements of:

FDA 21 CFR 177.1550

Both the PTFE liner tube and the platinum cured silicone rubber covers have been tested and conform to the requirements of **USP Class VI**. Additionally, the PTFE liner tube meets the requirements of **USP Class VI** at 121°C (250°F) - see page 22.

Both the Braid and Helix wires are high tensile Grade 316L Stainless Steel.

Alternative colours for the silicone rubber cover are only available for Bioflex Ultra SI grade hose, to special order.

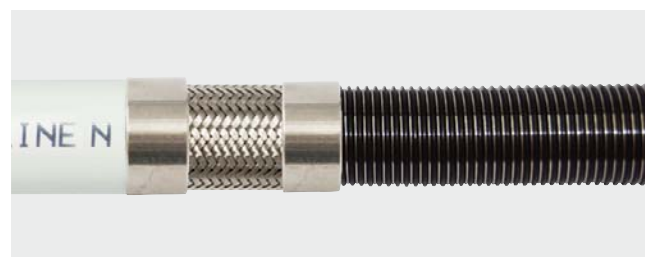
EC = Electrically Continuous, also referred to as 'Electrically Bonded'

EC grade hose assemblies are electrically continuous, or conductive, between metal end fittings at each end of the hose. This can apply whether the hose is GP or AS grade.

The requirements for this are specified in the German Document BRG 132 and EN ISO 8031 Annex A, when tested in accordance with EN ISO 8031, which requires that the resistance between end fittings shall be $<10^2$ ohms per assembly. For hose assemblies which meet this requirement a Grade 'M' marking can be applied in accordance with EN ISO 8031 Annex A if requested.

Pharmaline N hose assemblies are normally EC, and Pharmaline X are not EC, but if EC or not EC is a specific requirement for either hose, it must be stated on the enquiry/order.

Pharmaline N AS - Anti-Static PTFE Liner



Pharmaline X AS - Anti-Static PTFE Liner



Purpose

Pharmaline N or X AS Grade is an essential requirement in applications where there is the risk of an electrostatic charge build-up on the inside surface of the PTFE tube which may then discharge through the tube wall. Media passing through which create such a risk are fluids which have a Conductance of less than 10^{-8} S/m (Siemens per Metre), or 10^{-4} pS/m such as fuels, solvents, freons, some WFI (ultra-pure "Water for Injection") and non-polar organics which are being transferred at a medium to high flow velocity.

All twin or multi phase media, and any non-mixing media, such as powder in air, or water droplets in steam, in gases or in oil, also colloidal fluids constitute a particular hazard for static charge generation, and always require grade AS.

Materials & Specifications

Pharmaline N and X AS Grade hose has a black anti-static PTFE liner manufactured from FDA 21 CFR 177.1550 approved PTFE, and less than 2.5% of "high purity" Carbon Black material to FDA requirement 21 CFR 178.3297 and European Commission Directive 2007/19/EC. AS Grade also conforms to the requirements of USP Class VI, at 37°C (99°F), 70°C (158°F) and 121°C (250°F) - see page 22.

Antistatic Hose Assemblies

When 'AS' (Antistatic) grade hose is specified, then the hose or hose assembly supplied will be tested in accordance with EN ISO 8031 and meet the Antistatic requirements of EN ISO 8031 Annex A. This requires, for an antistatic liner or antistatic cover, that the resistance between an appropriately placed foam electrode and a metallic end fitting will be between 10^3 to 10^8 ohms per assembly. For hose assemblies which meet these requirements an appropriate Grade 'Ω' marking can be applied in accordance with EN ISO 8031 Annex A if requested.

NOTE: When in service, at least one end fitting must be connected to earth, to permit dissipation of the static charge from the end fitting.