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Appendix 1: Chemical resistance chart

The below chart contains chemical resistance information for Polyamide 11 (Nylon 11) and Fluoropolymer.

These are the most common core tube materials used for Parker Polyflex oil & gas hoses

Please refer to the hose datasheets for more detailed information.

Rating codes

E	Excellent	Good to excellent. Little or no swelling, tensile or surface change. Preferred choice.
A	Good	Good to excellent. Little or no swelling, tensile or surface change. Limitations with temperature and type of fluid.
B	Limited	Marginal or conditional. Noticeable effects but not necessary indicating lack of serviceability. Further testing is suggested for specific application. Very long-term effects.
X	Unsatisfactory	Poor or unsatisfactory. Not recommended without extensive and realistic testing.
-		Indicates that this was not tested.
*	Swelling	Increase of volume of material, due to absorption of a solvent.

Material code for hose core tube

N Polyamide

M Coextruded core tube with Fluorpolymer inner liner

Notes on chemical resistance table

The chemical resistance table is a simpified rating tabulation based on immersion tests. Higher temperatures tend to reduce ratings. Since final selection depends on pressure, fluid, ambient temperature and many other factors not known to Parker Hannifin, no performance guarantee is expressed or implied.

The indications do not imply any compliance with standards and regulations and do not refer to possible changes of colour, taste or smell.

Some hose applications must take into account legal and insurance regulations. The chemical resistance indicated does not express or imply approval by certain institutions.

Chemical resistance does not imply low permeation rates.

For gas applications, the cover may be pin-pricked. Pin-pricking reduces the potential of cover blistering due to permeation. However, pin-pricked wire reinforced hoses are not suitable for subsea use. Parker Polyflex wire reinforced hoses may be used without pin-pricking. In this case, time of permanent use with gas should be limited to 30 days. Hoses with ColorGard will not be pin-pricked. No special precautions on decompression rate are required, however, explosive decompression rate (>200 bar/sec) is not recommended. Note that hoses with coextruded core tube with Fluorpolymer inner liner are not recommended for gas applications.

For fluids, not listed or for advice on particular applications, please contact Parker Hannifin, Polyflex Division in Lampertheim, Germany.

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Chemical	Concentration	N				M
		20°C (68°F)	40°C (104°F)	60°C (140°F)	90°C (194°F)	100°C (212°F)
Acetaldehyde		A	B	X	X	A
Acetic Acid	5%	A	A	A	B	E
Acetic Acid	10%	A	A	B	X	E
Acetic Acid	50%	B	X	X	X	E
Acetic Anhydride		B	X	X	X	E
Acetone	Pure	A	A	B	X	A
Acetylene		A	A	A	-	A
Air		A	A	A	A	A
Aluminium Sulfate	Saturated Solution	A	A	A	A	A
Ammonia	Liquid or Gas	A	A	A	X	A
Ammonium Chloride		A	A	A	-	A
Ammonium Hydroxide	Concentrated	A	A	A	A	A
Ammonium Nitrate		A	A	A	A	A
Ammonium Sulfate	Saturated Solution	A	A	B	-	E
Amyl Acetate		A	A	A	B	A
Aniline		B*	X	X	X	E
Asphalt		A	A	A	A	A
Barium Chloride	Saturated Solution	A	A	A	A	A
Benzaldehyde		A	B	X	X	E
Benzene		A	A*	B	X	E
Butane		A	A	A	A	A
Butyl Alcohol		A*	B	X	X	E
Calcium Arsenate		A	A	A	-	A
Calcium Chloride	Saturated Solution	A	A	A	A	A
Calcium Nitrate		A	A	A	-	A
Camphor		A	-	-	-	A
Carbon Dioxide		A	A	A	A	A
Carbon Monoxide		A	A	A	A	A
Carbon Disulfide		A*	B*	B	X	A

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Carbon Tetrachloride		X	X	X	X	A
Cement Slurries		A	A	A	-	A
Chlorinated Solvents		B	X	X	X	E
Chloroform		B	X	X	X	E
Chromic Acid		X	X	X	X	E
Citric Acid	Saturated Solution	A	A	B	X	E
Copper Sulfate		A	A	A	A	A
Cyclohexane		A	A	A	B	A
Cyclohaxanol		A	B	X	X	E
Cyclohexanone		A	B	X	X	E
Diammonium Phosphate		A	A	B	-	E
Dichloroethylene		B	X	X	X	E
Diesel		A	A	A	A	A
Diester Oils		A	A	A	B	A
Diethanolamine	20%	A	A*	A*	B	A
Diethyl Ether		A	-	-	-	E
Dioctylphthalate		A	A	A	B	A
Ethanol	Pure	A*	B	B	X	E
Ethyl Acetate		A	A	A	-	A
Ethylene Glycol		A*	A*	B	X	E
Ethylene Oxide		A	A	X	X	E
Fatty Acid Esters		A	A	A	A	A
Formaldehyde	Technical	A	B	X	X	E
Formic Acid	10%	X	X	X	X	E
Furfuryl Alcohol		A	A*	B	X	E
Gas (Coal)		A	A	-	-	A
Gasoline (High Octane)		A	A	A*	-	A
Glucose		A	A	A	A	A
Glycerine	Pure	A	A	B	X	E
Glycol		A	A	B	X	A
Heptane		A	A	A*	-	A
Hexane		A	A	A	A	A

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Hydrogen		A	A	A	A	A
Hydraulik Fluid (petroleum base)		A	A	A	A	A
Hydraulik Fluid (phosphate ester base)		A	A	A	B	A
Hydraulik Fluid (water base)		A	A	A	A	A
Hydrogen Peroxide	20%	A	B	-	-	E
Hydrochloric Acid	15%	A	B	X	X	E
Hydrochloric Acid	28%	X	X	X	X	E
Hydrochloric Acid	37%	X	X	X	X	A
Hydrofloric Acid	3%	A	B	X	X	E
Isocyanates		B	X	X	X	E
Isooctane		A	A	A	A	A
Isopropyl Alcohol		A	B	X	X	E
Kerosene		A	A	A*	B	A
Lactic Acid		A	A	A	B	E
LP Gas		A	A	A	A	E
Magnesium Chloride	50%	A	A	A	A	A
Mercury		A	A	A	A	A
Methane		A	A	A	A	E
Methanol	Pure	A	B	B*	X	E
Methyl-Cellosolve		A	A	A	X	A
Methyl Acetate		A	A	A	-	A
Methyl Bromide		A	X	X	X	E
Methyl Chloride		A	X	X	X	E
Methyl Sulfate		A	B	-	-	E
Methyl Ethyl Ketone		A	A	B	X	-
Methyl Isobutyl Ketone		A	A	B	X	E
Methylene Chloride		X	X	X	X	A
Monochlorobenzene		B	X	X	X	A
Naphta		A	A	A	-	A
Naphtalene		A	A	A	B	A

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Natural Gas		A	A	A	A	E
Nitric Acid		X	X	X	X	A
Nitrobenzene		B	X	X	X	A
Nitrogen Gas		A	A	A	A	E
Oil Crude		A	A	A	B	A
Oils Refined		A	A	A	B	A
Oleic Acid		A	A	A	B	A
Oxalic Acid		A	A	B	X	E
Oxygen Gas		A	A	B	X	A
Perchloric Acid		B	X	X	X	B
Perchloroethylene		B	X	X	X	E
Petroleum Ether		A	A	A	B	E
Phosphoric Acid	50%	A	B	X	X	E
Picric Acid		B	X	X	X	E
Potassium Carbonate		A	A	B	X	E
Potassium Chloride		A	A	B	X	E
Potassium Hydroxide	50%	A	B	X	X	E
Potassium Nitrate		A*	B*	X	X	E
Potassium Sulfate		A	A	A	A	A
Propane		A	A	A	A	A
Propylen Glycol		A	B	X	X	A
Pydraul F9		A	A	A	-	A
Pyridine	Pure	B	X	X	X	E
Sodium Borate		A	A	A	-	A
Sodium Carbonate	Saturated Solution	A	A	B	X	E
Sodium Chloride	Saturated Solution	A	A	A	A	A
Sodium Hydroxide	50%	A	B	X	X	E
Sodium Hypochlorite	Concentrated	B	X	X	X	E
Sodium Hypochlorite	Dilute Commercial	A	B	X	X	E
Sodium Sulfide		A	A	B	-	E
Stearin		A	B	B	-	E
Stearic Acid		A	A	A	B	A

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Styrene Monomer		A	A*	-	-	E
Sulphur Dioxide		B	X	X	X	A
Sulphur Hexafluoride Gas		A	A	A	A	A
Sulphuric Acid	10%	A	B	X	X	A
Sulfic Anhydride		B	X	X	X	E
Tartaric Acid		A	A	A	B	A
Tettraethyl Lead		A	-	-	-	E
Tetrahydrofurane		A	A	B	X	E
Toluene		A	A*	B	B	E
Trichloroethane		B	X	X	X	E
Trichloroethylene		B	X	X	X	E
Tricresyl Phosphate		A	A	A	B	A
Tributyl Phosphate		A	A	A	B	A
Trisodium Phosphate		A	A	A	A	A
Triphenyl Phosphate		A	A	B	-	A
Turpentine		A	A	B	-	A
Urea		A	A	B	B	E
Uric Acid		A	A	A	B	A
Vinegar		A	A	A	-	A
Water		A	A	A	A	A
Water Glycols		A	A	A	B	A
Water, Sea		A	A	A	A	A
Water, Soda		A	A	A	A	A
Xylene		A	A*	B	B	E
Zinc Chloride		A	A	B	X	E