

PART - 3: BEHAVIOUR TO CHEMICALS FOR NON HYDRAULIC APPLICATIONS
(guidelines from literature)

FLUID TYPE		NITRILE	CHLOROPRENE	CHLOROSULPHONATED POLYETHYLENE	CHLORINATED POLYETHYLENE	POLYESTER	
A	Acetaldehide	X	C	X	C	G	
	Acetic Acid, 10%	X	C	G	G	G	
	Acetic Acid glacial	X	X	C	G	C	
	Acetone	C	C	X	G	G	
	Air (60°C)	G	G	E	E	E	
	Air (100°C)	C	G	E	E	G	
	Air (150°C)	X	X	G	G	X	
	Ammonia, gaseous	C	G	-	-	X	
	Ammonia, liquid cold	E	E	G	-	X	
	Ammonia, liquid 70°C	X	C	C	-	X	
	Ammonium Hydroxide, 10%	G	G	E	E	-	
	Ammonium Hydroxide, conc	C	C	C	C	-	
	Ammonium nitrate (aqueous solutions)	G	G	G	G	G	
	Ammonium phosphate, mon-di-tri basic (aq. Sol)	E	E	E	E	C	
	Ammonium sulphate (aqueous solution)	E	E	E	E	C	
	Aniline	X	C	X	X	X	
	Aqua regia	C	C	X	C	-	
	ASTM oil n°1, 100°C	E	E	G	G	E	
	ASTM oil n°2, 100°C	E	G	C	C	E	
	ASTM oil n°3, 100°C	E	C	C	C	E	
	B	Benzene	X	X	X	C	C
		Boric acid 10% 100°C	G	G	G	X	G
		Brake fluid (SAE J 1703d)	X	-	X	G	-
Brine		E	C	C	G	G	
Butanol		E	G	G	G	E	
C	Calcium bicarbonate	E	E	E	E	-	
	Calcium hydroxide (Aqueous suspensions)	E	E	G	G	-	

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Carbonic anhydride	G	E	G	G	E
Chlorine	X	X	X	X	X
Chloroform	C	C	X	X	X
Citric Acid, 33%	G	G	G	-	E
Crude oil	E	X	X	X	G
D Detergent water solution	G	G	C	G	G
Dibenzyl ether	X	X	X	X	-
Diethyl phtalate (DEPH)	C	X	X	X	E
Diesel fuel (70°C)	G	C	C	G	E
Diesel fuel Bio RME	G	X	X	C	G
E Epichlorhydrine	X	X	C	X	X
Ethyl acetate	C	X	C	C	G
Ethyl alcohol	E	E	E	E	E
Ethyl ether	G	C	-	-	-
Ethylene	E	G	-	-	G
Ethylene glycole	E	E	G	G	E
Ethylene glycole (100°C)	E	G	G	G	G
F Formaldheyde	C	G	C	G	G
Formic acid 23°C (saturated solution)	G	G	G	X	G
Formic acid 75°C (saturated solution)	C	G	C	X	C
Fuel A (iso-octane)	G	C	X	C	E
Fuel B (70% iso-octane, 30% toluene)	G	C	X	X	E
Fuel C (50% iso-octane, 50% toluene)	C	X	X	X	E
G Glycerine	E	E	E	E	E
H Heptane	G	C	X	C	E
Hydraulic oils (see detailed table)	*	*	*	*	*
Hydrochloric acid, 10%	G	G	G	X	G

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Hydrochloric acid, 37%	C	C	C	X	X
Hydrochloric acid, 37% 70°C	X	X	X	X	X
Hydrocyanic acid 20%	C	C	-	-	-
Hydrogen sulphide	C	G	C	X	E
I Isobutyl alcohol	G	G	G	G	E
Isopropyl alcohol	G	E	E	E	E
Iso-octane	G	C	X	C	E
K Kerosene (aromatics 40%max, 70°C)	G	C	X	C	-
L Lead free petrol	G	C	X	C	E
M Magnesium hydroxide (aqueous solutions)	G	E	E	E	-
Mercury	E	E	E	E	E
Methanol	G	E	E	E	G
Methyl methacrylate	X	X	X	X	-
Methylethylketone (MEK)	X	C	X	C	E
N Nitric acid, concentrated 65%	X	X	X	X	X
Nitric acid, diluted 10% 50°C	C	X	X	C	X
Nitric acid fuming	X	X	X	X	X
Nitrogen	E	E	E	E	E
O Oleic acid	G	C	C	C	E
Oleum	X	X	X	X	X
Oxalic acid 25% 80°C	G	E	G	X	-
Oxygen (80°C)	C	G	C	G	E
P Paraffin	E	E	C	E	E
Pentane	G	C	X	C	E
Petrol	E	C	X	C	E
Petroleum, 70°C	E	G	X	C	E
Phenol	X	X	X	X	C

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Phosphoric acid 20%	G	E	E	X	-
Phosphoric acid 60% 50°C	C	G	C	X	-
Phosphoric acid 85%	C	G	C	X	-
Phosphorous tri-chloride	X	X	X	X	-
Picric acid 10% 100°C	C	C	G	G	-
Potassium chloride (aqueous solution)	E	E	E	E	-
Potassium hydroxide 70°C (medium high conc.)	G	G	-	-	E
Potassium sulphate (aqueous solution)	E	E	E	E	-
S Sea water	E	G	C	G	E
Soaps	E	G	G	G	E
Soda caustic	C	G	G	C	G
Sodium bicarbonate	E	E	E	E	G
Sodium chloride (aqueous solution)	E	E	G	G	E
Sodium hydroxide	C	G	G	C	E
Sodium hydroxide 70°C (medium high conc.)	C	G	G	C	F
Sodium hypochlorite (aqueous solutions)	C	G	C	X	E
Sodium silicate (aqueous solutions)	E	E	E	E	-
Sodium sulphate (aqueous solution)	E	E	E	E	-
Sodium sulphide	E	E	E	E	-
Stearic acid	E	E	C	E	E
Sulphur	X	X	G	G	-
Sulphur dioxide	X	X	X	X	-
Sulphuric acid (hot concentrated 96°C)	X	X	X	X	X
Sulphuric acid (diluted 20%)	X	X	C	C	E
Sulphuric anhydride	X	C	C	C	-
Sulphurous acid	X	X	C	C	X
T Tannic acid	G	G	G	X	E

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Tannin	E	E	E	E	E
Tartaric acid 20%	E	G	G	X	-
Tetraethyl lead	G	C	X	-	-
Toluene	X	X	X	X	E
Turpentine	G	X	X	X	-
U Urea	E	E	G	G	-
V Vinyl acetate	C	C	C	G	-
Vinyl chloride	X	X	X	X	-
W Water	E	G	X	G	E
X Xylene	C	X	X	X	G
Z Zinc chloride (aqueous solutions)	E	E	G	X	E
Zinc sulphate (aqueous solutions)	E	E	G	X	-

Tube compound categories:

NITRILE	std wire braid, textile braid & wire spiral hoses (Tractor, Harvester, Lyteflex, Firend, Goldenspir, Astro, Multitex, Pushfit, Cover, Spirtex/K, Rockmaster, Shieldmaster, Twinpower, GoldenISO, Goldenguard, Diamondspir, Xtraflow/4WS & 2WB, Pilot, Jackmaster)
CHLOROPRENE	Eternity/2, Nozone/2K, Goldenblast
CHLOROSULPHONATED POLYETHYLENE	Equator/1 (Blue & Black), Equator/2 (Blue & Black), Xtraflow/HT
CHLORINATED POLYETHYLENE	Mastertex
POLYESTER	Hydroplast, Hydrotwin

WARNING

No tests on finished hose assemblies in combination with the mentioned chemicals has been normally performed.

The possible good rating and on field performance of the hose with a chemical mentioned in the list, does not mean in any case the release by Manuli Hydraulics of the product for that application or any guarantee. The possible validation for use is under the sole and exclusive responsibility of the end user and no liability whatsoever can be attributed to Manuli Hydraulics in that regard. In fact Manuli Hydraulics hoses are designed for hydraulics use and applications, they are not intended for industrial diversified applications with various chemicals.

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