



### Chemical Chart

The present tabulation is based on tests and on generally available sources, and believed to be reliable.

However must be used as a guidance only since it does not take in consideration all variable that may be encountered in actual use, such as and not limited to:

- temperature
- concentration
- pressure
- duration of exposure
- stability of the fluid and possible contamination

All application should always be tested: the compound should always be tested with the chemical it is going to handle

Please note: all data based on 21 °C (70 °F) unless noted

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### Resistenze chimiche dei fluoropolimeri\* / Fluoropolymers chemical resistance\*

	teflon® PTFE	PFA	MFA	FEP
Acetaldehyde	E	E	E	E
Acetamide, Sat.	E	E	E	E
Acetic Acid, 5%	E	E	E	E
Acetic Acid, 50%	E	E	E	E
Acetone	E	E	E	E
Acetonitrile	E	E	E	E
Acrylonitrile	E	E	E	E
Adipic Acid	E	E	E	E
Alanine	E	E	E	E
Allyl Alcohol	E	E	E	E
Aluminum Hydroxide	E	E	E	E
Aluminum Salts	E	E	E	E
Amino Acids	E	E	E	E
Ammonia	E	E	E	E
Ammonium Acetate, Sat.	E	E	E	E
Ammonium Glycolate	E	E	E	E
Ammonium Hydroxide, 5%	E	E	E	E
Ammonium, Hydroxide, 30%	E	E	E	E
Ammonium Oxalate	E	E	E	E
Ammonium Salts	E	E	E	E
n-Amyl Acetate	E	E	E	E
Amyl Chloride	E	E	E	E
Aniline	E	E	E	E

#### Legenda

E = Resistenza Eccellente; G = Buona Resistenza.

	teflon® PTFE	PFA	MFA	FEP
Benzaldehyde	E	E	E	E
Benzene	E	E	E	E
Benzoic Acid, Sat.	E	E	E	E
Benzyl Acetate	E	E	E	E
Benzyl Alcohol	E	E	E	E
Bromine	E	E	E	E
Bromobenzene	E	E	E	E
Bromoform	E	E	E	E
Butadiene	E	E	E	E
n-Butyl Acetate	E	E	E	E
n-Butyl Alcohol	E	E	E	E
sec-Butyl Alcohol	E	E	E	E
tert-Butyl Alcohol	E	E	E	E
Butyric Acid	E	E	E	E
Calcium Hydroxide, Conc.	E	E	E	E
Calcium Hypochlorite, Sat.	E	E	E	E
Carbazole	E	E	E	E
Carbon Disulfide	E	E	E	E
Carbon Tetrachloride	E	E	E	E
Cedarwood Oil	E	E	E	E
Cellosolve Acetate	E	E	E	E
Chlorine, 10% in Air	E	E	E	E
Chlorine, 10% (Moist)	E	E	E	E

#### Legend

E = Excellent Resistance; G = Good Resistance

**Resistenze chimiche dei fluoropolimeri\* / Fluoropolymers chemical resistance\***

	teflon® PTFE	PFA	MFA	FEP
Chloroacetic Acid	E	E	E	E
p-Chloroacetophenone	E	E	E	E
Chloroform	E	E	E	E
Chromic Acid, 10%	E	E	E	E
Chromic Acid, 50%	E	E	E	E
Cinnamon Oil	E	E	E	E
Citric Acid, 10%	E	E	E	E
Cresol	E	E	E	E
Cyclohexane	E	E	E	E
Decalin	E	E	E	E
o-Dichlorobenzene	E	E	E	E
p-Dichlorobenzene	E	E	E	E
Diethyl Benzene	E	E	E	E
Diethyl Ether	E	E	E	E
Diethyl Ketone	E	E	E	E
Diethyl Malonate	E	E	E	E
Diethylene Glycol	E	E	E	E
Diethylene Glycol Ethyl Ether	E	E	E	E
Dimethyl Formamide	E	E	E	E
Dimethylsulfoxide	E	E	E	E
1,4-Dioxane	E	E	E	E
Dipropylene Glycol	E	E	E	E
Ether	E	E	E	E
Ethyl Acetate	E	E	E	E
Ethyl Alcohol (absolute)	E	E	E	E
Ethyl Alcohol, 40%	E	E	E	E
Ethyl Benzene	E	E	E	E
Ethyl Benzoate	E	E	E	E
Ethyl Butyrate	E	E	E	E
Ethyl Chloride	E	E	E	E
Ethyl Cyanoacetate	E	E	E	E
Ethyl Lactate	E	E	E	E
Ethylene Chloride, Liquid	E	E	E	E
Ethylene Glycol	E	E	E	E
Ethylene Glycol Methyl Ether	E	E	E	E
Ethylene Oxide	E	E	E	E
Fluorides	E	E	E	E

**Legenda**

E = Resistenza Eccellente; G = Buona Resistenza.

	teflon® PTFE	PFA	MFA	FEP
Fluorine	G	G	G	G
Formaldehide, 10%	E	E	E	E
Formaldehide, 40%	E	E	E	E
Formic Acid, 3%	E	E	E	E
Formic Acid, 50%	E	E	E	E
Formic Acid, 98-100%	E	E	E	E
Fuel Oil	E	E	E	E
Gasoline	E	E	E	E
Glacial Acetic Acid	E	E	E	E
Glycerin	E	E	E	E
n-Heptane	E	E	E	E
Hexane	E	E	E	E
Hydrochloric Acid, 1-5%	E	E	E	E
Hydrochloric Acid, 20%	E	E	E	E
Hydrochloric Acid, 35%	E	E	E	E
Hydrofluoric Acid, 4%	E	E	E	E
Hydrofluoric Acid, 48%	E	E	E	E
Hydrogen Peroxide, 3%	E	E	E	E
Hydrogen Peroxide, 30%	E	E	E	E
Hydrogen Peroxide, 90%	E	E	E	E
Isobutyl Alcohol	E	E	E	E
Isopropyl Acetate	E	E	E	E
Isopropyl Alcohol	E	E	E	E
Isopropyl Benzene	E	E	E	E
Kerosene	E	E	E	E
Lactic Acid, 3%	E	E	E	E
Lactic Acid, 85%	E	E	E	E
Methoxyethyl Oleate	E	E	E	E
Methyl Alcohol	E	E	E	E
Methyl Ethyl Ketone	E	E	E	E
Methyl Isobutyl Ketone	E	E	E	E
Methyl Propyl Ketone	E	E	E	E
Methylene Chloride	E	E	E	E
Mineral Oil	E	E	E	E
Nitric Acid, 1-10%	E	E	E	E
Nitric Acid, 50%	E	E	E	E
Nitric Acid, 70%	E	E	E	E

**Legend**

E = Excellent Resistance; G = Good Resistance



## Resistenze chimiche dei fluoropolimeri\* / Fluoropolymers chemical resistance\*

	teflon® PTFE	PFA	MFA	FEP
Nitrobenzene	E	E	E	E
n-Octane	E	E	E	E
Orange Oil	E	E	E	E
Ozone	E	E	E	E
Perchloric Acid	G	G	G	G
Perchloroethylene	E	E	E	E
Phenol, Crystals	E	E	E	E
Phosphoric Acid, 1-5%	E	E	E	E
Phosphoric Acid, 85%	E	E	E	E
Pine Oil	E	E	E	E
Potassium Hydroxide, 1%	E	E	E	E
Potassium Hydroxide, Conc.	E	E	E	E
Propane Gas	E	E	E	E
Propylene Glycol	E	E	E	E
Propylene Oxide	E	E	E	E
Resorcinol, Sat.	E	E	E	E
Resorcinol, 5%	E	E	E	E
Salicylaldehyde	E	E	E	E
Salicylic Acid, Powder	E	E	E	E
Salicylic Acid, Sat.	E	E	E	E
Salt Solutions, Metallic	E	E	E	E
Silver Acetate	E	E	E	E
Silver Nitrate	E	E	E	E
Sodium Acetate, Sat.	E	E	E	E
Sodium Hydroxide, 1%	E	E	E	E
Sodium Hydroxide, 50% to Sat.	E	E	E	E
Sodium Hypochlorite, 15%	E	E	E	E
Stearic Acid, Crystals	E	E	E	E

### Legenda

E = Resistenza Eccellente; G = Buona Resistenza.

	teflon® PTFE	PFA	MFA	FEP
Sulfuric Acid, 1-6%	E	E	E	E
Sulfuric Acid, 20%	E	E	E	E
Sulfuric Acid, 60%	E	E	E	E
Sulfuric Acid, 98%	E	E	E	E
Sulfuric Acid, 20%	E	E	E	E
Sulfuric Acid, 60%	E	E	E	E
Sulfuric Acid, 98%	E	E	E	E
Sulfuric Acid, 20%	E	E	E	E
Sulfuric Acid, 60%	E	E	E	E
Sulfuric Acid, 98%	E	E	E	E
Sulfuric Dioxide, Liq., 46psi	E	E	E	E
Sulfuric Dioxide, wet or dry	E	E	E	E
Sulfur Salts	E	E	E	E
Tartaric Acid	E	E	E	E
Tetrahydrofuran	E	E	E	E
Thionyl Chloride	E	E	E	E
Toluene	E	E	E	E
Tributyl Citrate	E	E	E	E
Trichloroethane	E	E	E	E
Trichloroethylene	E	E	E	E
Triethylene Glycol	E	E	E	E
Tripropylene Glycol	E	E	E	E
Turpentine	E	E	E	E
Undecyl Alcohol	E	E	E	E
Urea	E	E	E	E
Vinylidene Chloride	E	E	E	E
Xylene	E	E	E	E
Zinc Stearate	E	E	E	E

### Legend

E = Excellent Resistance; G = Good Resistance

\*La tabella e' basata su test di laboratorio e su dati resi pubblici, e si ritiene sia accurata. Comunque deve essere utilizzata esclusivamente come guida indicativa in quanto non prende in considerazione tutte le variabili che si incontrano nell'uso del prodotto, come ad esempio temperatura, concentrazione, pressione, durata dell'esposizione al fluido, stabilita' e possibili contaminazioni del fluido stesso. Tutte le applicazioni devono essere sempre verificate; la miscela utilizzata deve essere sempre testata con il prodotto chimico che deve convogliare.

**Nota Bene:** tutti i dati sono basati su test condotti a 21 °C (70 °F) se non diversamente specificato

*\*The present tabulation is based on tests and on generally available sources, and believed to be reliable. However must be used as a guidance only since it does not take in consideration all variable that may be encountered in actual use, such as and not limited to: temperature, concentration, pressure, duration of exposure, stability of the fluid and possible contamination All application should always be tested: the compound should always be tested with the chemical it is going to handle*

**Please note:** all data based on 21 °C (70 °F) unless noted

**Tabella delle resistenze chimiche dei polimeri\* / Polymers chemical resistance chart\***

	NATURAL RUBBER NR	SBR SBR	CHLOROPRENE CH	NITRILE NBR	BUTYL IIR	hypalon® CSM	EPDM EPDM	EPR EPM	silicone VMQ	viton® FKM	CROSS-LINKED POLYETHYLENE XLPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE UHMWPE	teflon® PTFE
Acetic acid, diluite, 10%	B	C	C	C	A	C	A	A	B	B	A	A	A
Acetic acid glacial	C	X	X	X	B	C	B	A	C	X	A	A	A
Acetic acid anhydride	C	C	B	B	B	A	I	B	I	X	A	A	A
Acetone	B	C	B	X	A	B	A	A	X	X	A	A	A
Acetylene	A	A	B	A	A	B	A	A	C	A	A	A	A
Air 68°F (20°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Air 150°F (65°C)	A	A	A	A	A	A	A	A	A	I	A	A	A
Aluminium chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Aluminium fluoride 150°F (65°C)	A	A	A	A	A	A	A	A	B	I	A	A	A
Aluminium sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Alums 150°F (65°C)	A	A	A	A	A	A	A	A	A	I	A	A	A
Ammonia gas, anhydrous	A	A	A	A	A	A	A	A	I	X	A	A	A
Ammonia 10%water solution	B	B	B	A	A	A	A	A	A	A	A	A	A
Ammonia 30%water solution	B	B	B	A	A	B	A	A	C	A	A	A	A
Ammonium chloride	A	A	A	A	A	A	A	A	C	A	A	A	A
Ammonium hydroxide	C	B	B	B	A	A	A	A	C	B	A	A	A
Ammonium nitrate	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium phosphate monobasic	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium phosphate dibasic	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium phosphate tribasic	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium sulfate	A	A	A	A	A	A	A	A	A	A	A	A	A
Amyl acetate	B	X	X	X	B	X	A	B	X	X	A	A	A
Amyl alcohol	A	A	A	A	A	A	A	A	X	A	A	A	A
Aniline, Aniline oil	X	X	C	X	A	X	C	B	X	A	A	A	A
Aniline, dyes	B	B	B	X	A	B	C	A	X	B	A	A	A
Asphalt	X	X	B	B	X	B	X	X	I	A	A	A	A
Barium chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Barium hydroxide 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Barium sulfide 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Beer	A	A	A	A	A	A	A	A	A	A	A	A	A
Beet sugar liquors	A	A	A	A	A	A	A	A	A	A	A	A	A
Benzene, Benzol	X	X	X	X	X	X	X	X	X	A	A	A	A
Benzine, petroleum ether	I	I	I	I	I	I	I	I	X	A	I	B	A
Benzine, petroleum naphtha	X	X	C	A	X	B	X	X	X	A	A	B	A
Black sulfale liquor	A	A	A	A	A	A	A	A	A	I	A	A	A

**Legenda**

A = Resistenza Buona; B = Resistenza Abbastanza Buona;  
 C = Resistenza Mediocre; X = Non Adatta; I = Informazioni Insufficienti.

**Legend**

A = Good Resistance; B = Fair Resistance; C = Poor Resistance;  
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## Tabella delle resistenze chimiche dei polimeri\* / Polymers chemical resistance chart\*

	NATURAL RUBBER NR	SBR SBR	CHLOROPRENE CH	NITRILE NBR	BUTYL IIR	hypalon® CSM	EPDM EPDM	EPR EPM	silicone VMQ	viton® FKM	CROSS-LINKED POLYETHYLENE XLPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE UHMWPE	teflon® PTFE
Blast furnace gas	C	C	A	C	C	C	C	C	A	A	A	A	A
Borax	A	A	A	A	A	A	A	A	B	A	A	A	A
Boric acid	A	A	A	A	A	A	A	A	A	A	A	A	A
Bromine	X	X	X	X	X	C	X	X	X	A	X	X	A
Butane	X	X	A	A	X	A	X	X	X	A	A	A	A
Butyl acetate	X	X	X	X	B	X	B	B	X	X	A	A	A
Butyl alcohol, Butanol	A	A	A	A	A	A	A	A	C	A	A	A	A
Calcium bisulfate	C	C	A	A	B	A	B	A	C	A	A	A	A
Calcium chloride	A	A	A	A	A	A	A	A	A	A	A	A	A
Calcium hydroxide	A	A	A	A	A	A	A	A	A	A	A	A	A
Calcium hypochlorite	X	X	X	X	A	B	A	A	C	A	A	A	A
Caliche liquors	A	A	A	A	A	A	A	A	B	A	A	A	A
Cane sugar liquors	A	A	A	A	A	A	A	A	A	A	A	A	A
Carbolic acid, phenol	C	C	C	C	C	C	A	A	X	A	A	A	A
Carbon dioxide, dry-wet	A	A	A	A	A	A	A	A	A	A	A	A	A
Carbon disulfide	X	X	X	X	X	X	X	X	X	A	C	C	A
Carbon monoxide 140°F (60°C)	C	C	C	C	C	B	C	A	A	A	A	A	A
Carbon tetrachloride	X	X	X	C	X	X	X	X	X	A	A	C	A
Castor oil	A	A	A	A	A	A	A	A	A	A	A	A	A
Cellosolve acetate	B	B	X	X	A	I	A	A	X	X	A	A	A
CFC-12	X	X	A	A	B	I	B	C	I	C	I	I	A
China wood oil, tung oil	X	X	B	A	A	B	A	C	X	A	A	A	A
Chlorine, dry/wet	X	X	X	X	X	C	X	X	X	B	C	X	A
Chlorinated solvents	X	X	X	X	X	X	X	X	X	A	A	B	A
Chloroacetic acid	X	C	C	C	X	A	I	A	I	X	A	A	A
Chlorosulfonic acid	X	X	C	C	X	X	X	X	X	X	C	X	A
Chromic acid	X	X	X	X	C	A	I	I	C	A	A	C	A
Citric acid	A	A	A	B	A	A	A	A	A	A	A	A	A
Coke oven gas	X	X	X	X	X	A	I	I	B	A	A	X	A
Copper chloride 150°F (65°C)	C	A	B	A	A	B	A	A	A	A	A	A	A
Copper sulfate 150°F (65°C)	C	A	A	A	B	A	A	A	A	A	A	A	A
Corn oil	X	C	B	A	A	B	C	C	A	A	A	A	A
Cottonseed oil	X	C	B	A	A	B	C	C	A	A	A	A	A
Creosote, coal tar	X	X	B	A	X	B	X	X	C	A	A	A	A
Creosote, coal tar wood	X	X	B	A	X	I	X	X	X	A	A	A	A

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Creosols, cresylic acid	C	X	X	C	C	B	X	X	I	A	A	B	A
Dichlorobenzene	X	X	X	X	X	X	X	X	X	A	X	C	A
Dichloroethylene	X	X	X	X	X	X	X	X	X	A	C	X	A
Diesel fuel	X	X	C	A	X	B	X	X	X	A	B	B	A
Diethanolamine 20%	C	X	I	I	A	X	A	A	X	X	A	A	A
Diethylamine	B	B	B	C	B	C	B	B	B	X	A	A	A
Diisopropylamine	B	I	I	B	I	C	I	I	I	I	A	A	A
Diethylphthalate	X	X	X	X	B	X	B	A	X	A	A	A	A
Ethers	X	X	X	X	X	X	C	B	X	X	A	B	A
Ethyl acetate	X	X	X	X	B	X	B	A	B	X	A	A	A
Ethyl alcohol	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethyl cellulose	B	B	B	B	B	I	B	B	C	X	A	A	A
Ethyl chloride	X	X	X	X	B	X	C	C	C	A	A	C	A
Ethyl glycol	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferric chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferric sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	B	A	A	A	A
Formaldehyde	B	B	B	C	A	A	A	A	B	X	A	A	A
Formic acid	A	A	C	B	A	A	A	A	C	X	A	A	A
Fuel oil	X	X	A	A	X	B	X	X	X	A	A	A	A
Furfural	X	C	C	X	A	B	C	B	X	X	A	I	A
Gasoline, unleaded	X	X	X	A	X	C	X	X	X	A	A	B	A
Gasoline + MTBE	X	X	X	A	X	C	X	X	X	A	A	B	A
Gasoline Hi Test + MTBE	X	X	X	A	X	C	X	X	X	A	A	B	A
Gelatin	A	A	A	A	A	A	A	A	A	A	A	A	A
Glucose	A	A	A	A	A	A	A	A	A	A	A	A	A
Glue	B	B	A	A	B	A	A	A	A	A	A	A	A
Glycerine, glycerol	A	A	A	A	A	A	A	A	A	A	A	A	A
Green sulfate liquor	A	A	A	A	A	A	A	A	A	A	A	A	A
HFC-134A	B	X	A	A	A	B	A	A	I	X	A	I	A
Copper sulfate 150°F (65°C)	C	A	A	A	B	A	A	A	A	A	A	A	A
Corn oil	X	C	B	A	A	B	C	C	A	A	A	A	A
Cottonseed oil	X	C	B	A	A	B	C	C	A	A	A	A	A
Hydraulic fluids: Petroleum	X	X	B	A	X	B	X	X	C	A	I	A	A
Hydraulic fluids: Phosphate ester alkyl	X	X	C	X	A	X	A	A	X	I	I	I	A

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	NATURAL RUBBER NR	SBR SBR	CHLOROPRENE CH	NITRILE NBR	BUTYL IIR	hypalon® CSM	EPDM EPDM	EPR EPM	silicone VMQ	viton® FKM	CROSS-LINKED POLYETHYLENE XLPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE UHMWPE	teflon® PTFE
Hydraulic fluids: Phosphate ester aryl	X	X	X	X	C	X	C	C	X	I	I	I	A
Hydraulic fluids: Phosphate ester blends	X	X	X	X	X	X	C	C	X	A	I	I	A
Hydraulic fluids: Silicate ester	X	X	C	C	X	C	X	X	X	A	I	I	A
Hydraulic fluids: Water glycol	A	A	A	A	A	A	A	A	A	A	I	A	A
Hydrobromic acid	C	X	C	C	A	A	A	A	X	A	I	A	A
Hydrochloric acid	B	B	B	C	B	B	B	A	X	A	A	A	A
Hydrocyanic acid	B	B	C	B	C	A	C	B	B	A	A	A	A
Hydrofluoric acid	X	X	X	X	C	A	B	B	X	X	A	B	A
Hydrofluosilicic acid	A	B	B	B	A	I	A	A	I	A	I	A	A
Hydrogen gas 140°F (60°C)	B	A	A	A	A	I	A	A	C	A	A	A	A
Hydrogen peroxide	X	X	C	C	C	C	C	B	A	A	I	C	A
Hydrogen sulfide, dry	C	C	B	C	A	A	A	A	X	X	A	A	A
Hydrogen sulfide, wet	C	C	B	C	A	A	A	A	X	X	A	A	A
Isobutyl alcohol	A	A	A	B	A	A	A	A	A	A	A	A	A
Isopropyl alcohol	A	A	A	B	A	A	A	A	A	A	A	A	A
Isooctane	X	X	B	A	X	A	X	X	X	A	A	A	A
Kerosene	X	X	B	A	X	C	X	X	X	A	A	A	A
Lacquers	X	X	X	X	C	X	X	X	X	X	A	B	A
Lacquers solvents	X	X	X	X	C	X	X	X	X	X	A	B	A
Lactic acid	C	C	C	C	C	A	C	B	A	A	A	A	A
Linseed oil	C	C	B	A	A	A	A	B	A	A	A	A	A
Lubricating oil, crude	X	X	B	A	X	B	X	X	C	A	A	A	A
Lubricating oil, refined	X	X	B	A	X	B	X	X	C	A	A	A	A
Magnesium chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Magnesium hydroxide 150°F (65°C)	A	B	B	B	A	A	A	A	B	A	A	A	A
Magnesium sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Mercuric chloride	B	B	C	B	A	A	A	A	A	A	A	A	A
Mercury	A	A	A	A	A	A	A	A	A	A	A	A	A
Methyl alcohol, methanol	A	A	A	A	A	A	A	A	A	B	A	A	A
Methyl chloride	X	X	X	X	C	X	X	C	X	B	C	C	A
Methyl ethyl ketone	X	X	X	X	B	X	A	A	X	X	A	A	A
Methyl isopropyl ketone	X	X	X	X	B	X	C	C	C	X	A	A	A
Milk	A	A	A	A	A	A	A	A	A	A	A	A	A
MTBE	I	I	I	I	I	I	I	I	I	X	A	I	I

### Legenda

A = Resistenza Buona; B = Resistenza Abbastanza Buona;  
C = Resistenza Mediocre; X = Non Adatta; I = Informazioni Insufficienti.

### Legend

A = Good Resistance; B = Fair Resistance; C = Poor Resistance;  
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**Tabella delle resistenze chimiche dei polimeri\* / Polymers chemical resistance chart\***

	NATURAL RUBBER NR	SBR SBR	CHLOROPRENE CH	NITRILE NBR	BUTYL IIR	hypalon® CSM	EPDM EPDM	EPR EPM	silicone VMQ	viton® FKM	CROSS-LINKED POLYETHYLENE XLPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE UHMWPE	teflon® PTFE
Mineral oils	X	X	B	A	X	B	X	X	A	A	A	A	A
Natural gas	C	C	A	A	X	A	X	X	C	A	A	A	A
Nickel chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Nickel sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A	A
Nitric acid, crude	X	X	X	X	X	C	X	X	X	B	X	I	A
Nitric acid, diluted 10%	X	X	B	X	B	A	C	A	C	A	A	A	A
Nitric acid, concentrated 70%	X	X	X	X	C	C	X	C	X	B	C	X	A
Nitrobenzene	X	X	X	X	X	X	X	X	C	B	A	A	A
Oleic acid	X	X	C	C	B	B	B	C	X	B	A	A	A
Oleum	X	C	C	C	X	B	X	C	I	A	X	X	A
Oxalic acid	B	C	B	B	A	A	A	A	B	A	A	A	A
Oxygen	B	C	A	C	A		A	A	X	B	A	A	A
Palmitic acid	X	B	A	A	B	B	B	B	X	A	A	A	A
Perchloroethylene	X	X	X	C	X	X	X	X	C	A	C	C	A
Petroleum oils and crude 200°F (95°C)	X	X	B	A	X	C	X	X	X	B	C	X	A
Phosphoric acid, crude	C	C	C	C	C	A	B	A	C	A	A	A	A
Phosphoric acid, pure 45%	C	C	C	C	C	A	B	A	C	A	A	A	A
Picric acid, molten	C	C	C	C	C	I	I	I	X	A	C	X	A
Picric acid, water solution	A	C	B	B	A	A	I	I	I	A	A	A	A
Potassium chlorite	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium cyanide	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium hydroxide	B	B	C	X	A	A	A	A	C	X	A	A	A
Potassium sulfate	A	A	A	A	A	A	A	A	A	A	A	A	A
Propane	X	X	B	A	X	B	X	X	X	A	A	A	A
Sewage	C	C	B	A	C	A	C	C	B	A	A	A	A
Soap solution	A	A	B	A	A	A	A	A	A	A	A	A	A
Soda ash, sodium carbonate	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium bicarbonate, baking soda	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium bisulfate	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium chloride	A	A	A	A	A	A	A	A	A	A	A	A	A
Palmitic acid	X	B	A	A	B	B	B	B	X	A	A	A	A
Perchloroethylene	X	X	X	C	X	X	X	X	C	A	C	C	A
Petroleum oils and crude 200°F (95°C)	X	X	B	A	X	C	X	X	X	B	C	X	A

**Legenda**

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**Legend**

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## Tabella delle resistenze chimiche dei polimeri\* / Polymers chemical resistance chart\*

	NATURAL RUBBER NR	SBR SBR	CHLOROPRENE CH	NITRILE NBR	BUTYL IIR	hypon <sup>®</sup> CSM	EPDM EPDM	EPR EPM	silicone VMQ	viton <sup>®</sup> FKM	CROSS-LINKED POLYETHYLENE XLPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE UHMWPE	teflon <sup>®</sup> PTFE
Phosphoric acid, crude	C	C	C	C	C	A	B	A	C	A	A	A	A
Phosphoric acid, pure 45%	C	C	C	C	C	A	B	A	C	A	A	A	A
Picric acid, molten	C	C	C	C	C	I	I	I	X	A	C	X	A
Picric acid, water solution	A	C	B	B	A	A	I	I	I	A	A	A	A
Potassium chlorite	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium cyanide	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium hydroxide	B	B	C	X	A	A	A	A	C	X	A	A	A
Potassium sulfate	A	A	A	A	A	A	A	A	A	A	A	A	A
Propane	X	X	B	A	X	B	X	X	X	A	A	A	A
Sewage	C	C	B	A	C	A	C	C	B	A	A	A	A
Soap solution	A	A	B	A	A	A	A	A	A	A	A	A	A
Soda ash, sodium carbonate	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium bicarbonate, baking soda	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium bisulfate	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium chloride	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium cyanide	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium hydroxide to 50% at 140°F	B	B	B	B	A	B	A	A	A	A	A	A	A
Sodium hypochlorite	X	X	C	C	A	B	A	A	B	A	A	C	A
Sodium metaphosphate	A	A	C	A	A	B	A	A	A	A	A	A	A
Sodium nitrate	B	B	B	B	A	A	A	A	X	A	A	A	A
Sodium perborate	B	B	B	B	A	A	A	A	B	A	A	A	A
Sodium peroxide	B	B	B	B	A	A	A	A	C	A	A	C	A
Sodium phosphate, monobasic	A	B	B	B	A	A	A	A	X	A	A	A	A
Sodium phosphate, dibasic	A	B	B	B	A	A	A	A	X	A	A	A	A
Sodium phosphate, tribasic	A	B	B	B	A	A	A	A	X	A	A	A	A
Sodium silicate	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium sulfate	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium sulfide	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium thiosulfate, "hypo"	A	A	A	A	A	A	A	A	I	A	A	A	A
Soybean oil	X	C	B	A	A	A	A	C	A	A	A	A	A
Stannic chloride	A	A	A	A	B	A	B	A	B	A	A	A	A
Steam 450°F (230°C)	X	X	X	X	B	X	B	B	I	X	X	X	A
Stearic acid	X	X	C	B	B	C	B	A	A	A	A	A	A
Sulfur	X	X	A	X	A	A	A	A	B	A	A	A	A
Sulfur chloride	X	X	C	C	X	A	X	X	C	A	A	I	A

### Legenda

A = Resistenza Buona; B = Resistenza Abbastanza Buona;  
C = Resistenza Mediocre; X = Non Adatta; I = Informazioni Insufficienti.

### Legend

A = Good Resistance; B = Fair Resistance; C = Poor Resistance;  
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**Tabella delle resistenze chimiche dei polimeri\* / Polymers chemical resistance chart\***

	NATURAL RUBBER NR	SBR SBR	CHLOROPRENE CH	NITRILE NBR	BUTYL IIR	hypalon® CSM	EPDM EPDM	EPR EPM	silicone VMQ	viton® FKM	CROSS-LINKED POLYETHYLENE XLPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE UHMWPE	teflon® PTFE
Sulfur dioxide, dry	C	C	C	C	C	A	C	B	B	B	A	A	A
Sulfur trioxide, dry	X	C	C	C	C	B	C	B	B	A	X	X	A
Sulfuric acid, 10%	C	C	B	C	A	A	A	A	X	A	A	A	A
Sulfuric acid, 11% - 75%	X	X	X	X	B	A	C	A	X	A	A	A	A
Sulfuric acid, 76% - 95%	X	X	X	X	X	A	C	A	X	A	C	A	A
Sulfuric acid, fuming	X	X	X	X	X	X	X	X	X	A	X	X	A
Sulfurous acid	C	C	C	C	C	A	C	B	X	B	A	A	A
Tannic acid	A	C	A	C	A	A	A	A	B	A	A	A	A
Tar	X	X	C	C	X	C	X	X	B	A	X	I	A
Tartaric acid	A	C	C	C	B	A	B	B	A	A	A	A	A
Toluene, Toluol	X	X	X	X	X	X	X	X	X	A	C	C	A
Trichloroethylene	X	X	X	X	X	X	X	X	X	A	C	B	A
Turpentine	X	X	X	B	X	X	X	X	X	A	A	B	A
Urea, water solution	A	I	A	A	A	A	A	A	A	I	A	A	A
Vinegar	C	C	C	C	A	A	A	A	A	A	A	A	A
Vinyl acetate	X	X	X	X	A	X	B	A	X	X	I	A	A
Water, acid mine	A	A	B	A	A	A	A	A	A	A	A	A	A
Water, fresh	A	A	B	A	A	A	A	A	A	A	A	A	A
Water, distilled	A	A	B	A	A	A	A	A	A	A	A	A	A
Whiskey and wines	A	A	A	A	A	A	A	A	A	A	A	A	A
Xylene, xylol	X	X	X	X	X	X	X	X	X	A	C	C	A
Zinc chloride	A	A	A	A	A	A	A	A	A	A	A	A	A
Zinc sulfate	B	B	A	A	A	A	A	A	A	A	A	A	A

**Legenda**

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**Legend**

A = Good Resistance; B = Fair Resistance; C = Poor Resistance;  
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\*La tabella e' basata su test di laboratorio e su dati resi pubblici, e si ritiene sia accurata. Comunque deve essere utilizzata esclusivamente come guida indicativa in quanto non prende in considerazione tutte le variabili che si incontrano nell'uso del prodotto, come ad esempio temperatura, concentrazione, pressione, durata dell'esposizione al fluido, stabilita' e possibili contaminazioni del fluido stesso.

Tutte le applicazioni devono essere sempre verificate; la miscela utilizzata deve essere sempre testata con il prodotto chimico che deve convogliare

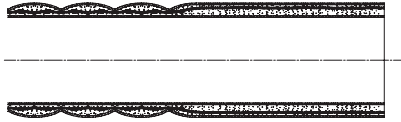
**Nota Bene:** tutti i dati sono basati su test condotti a 21 °C (70 °F) se non diversamente specificato.

*The present tabulation is based on tests and on generally available sources, and believed to be reliable. However must be used as a guidance only since it does not take in consideration all variable that may be encountered in actual use, such as and not limited to: temperature, concentration pressure, duration of exposure, stability of the fluid and possible contamination.*

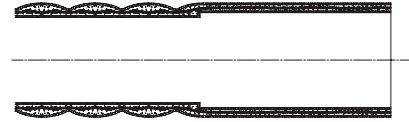
*All application should always be tested: the compound should always be tested with the chemical it is going to handle.*

**Please note:** all data based on 21 °C (70 °F) unless noted.

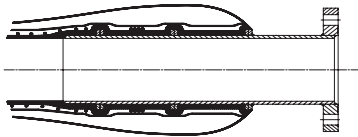
**I nostri tubi possono essere forniti con le seguenti estremità:  
Our hoses can be manufactured with the following ends:**



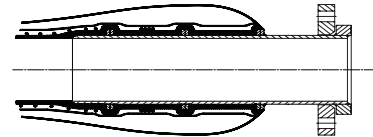
Manicotti lisci, sprovvisti di inserti metallici, per facilitare il fissaggio dei raccordi mediante fascette o collari di metallo.  
*Soft ends cuffs without metal wire permitting a better connection between the hose and the pipe using clamps or safety.*



Bocche allargate per creare uniformità di diametro interno tra il tubo di gomma e il raccordo di metallo.  
*Enlarged ends cuffs to achieve a better connection between the pipe end the hose.*

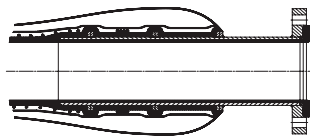


Raccordi vulcanizzati a flangia fissa; UNI - ASA - D.I. 1882 ecc.  
*Vulcanized fixed flanges, UNI - ASA - D.I. 1882 etc.*

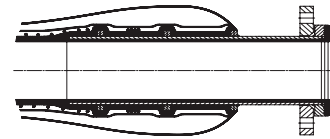


Raccordi vulcanizzati a flangia mobile; UNI - ASA - D.I. 1882 ecc.  
*Vulcanized swivel flanges, UNI - ASA - D.I. 1882 etc.*

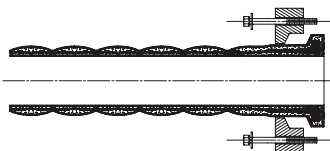
**Le sottoindicate soluzioni prevedono invece che nessuna parte metallica venga a contatto con il materiale convogliato:  
The below mentioned solutions allow a better protection of the nipple which is not in contact with the medium being conveyed:**



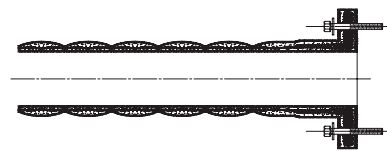
Raccordi vulcanizzati e rivestiti a flangia fissa; UNI - ASA - D.I. 1882 ecc.  
*Vulcanized built in rubber protected nipple and fixed flanges UNI - ASA - D.I. 1882 etc.*



Raccordi vulcanizzati e rivestiti a flangia mobile; UNI - ASA - D.I. 1882 ecc.  
*Vulcanized built in rubber protected nipple and swivel flanges UNI - ASA - D.I. 1882.I. 1882 etc.*



Talloni in gomma con semiflange mobili UNI - ASA - D.I. 1882 ecc.  
*Vulcanized beaded ends and split flanges UNI - ASA - D.I. 1882 etc.*



Flange in gomma con a richiesta semiflange mobili dimensionate UNI - ASA D.I. 1882 ecc.  
*Vulcanized rubber flanges which can be provided with swivel semi-flanges according to UNI - ASA D.I. 1882 etc.*

## Raccordi in acciaio inox normalmente applicati ai nostri tubi per uso alimentare *Inox couplings normally used with our foodstuff hoses*



DIN 11851



TRI CLAMP



BS/RJT



SMS



IDF/ISS



GAROLLA



MACOM



STORZ



GAS



KAMLOCK

EN 1092 (UNI) -  
ASME (ASA)SFERICO -  
SPHERIC FITTING

### Pulizia e disinfezione di impianti e relativi componenti

Suggerimenti estratti dalla "3-A Sanitary Standard for multiple-use rubber and rubber-like materials used as product contact surfaces in dairy equipment, number 18-03".

La "3-A Sanitary Standard" e la "3-A Accepted Practices" stabiliscono criteri per la sanificazione che sono applicabili ad impianti e relative parti usati nella produzione, processo e confezionamento di latte, prodotti caseari, altri prodotti deperibili e prodotti commestibili.

I nostri tubi, all'interno delle classificazioni utilizzate dalla "3-A Sanitary Standard", rientrano nella "Class II".

Ciò significa che possono essere sottoposti a sterilizzazione con vapore ad una temperatura di 121 °C (250 °F) per 30 minuti oppure possono essere sottoposti a lavaggio e a trattamento battericida con soluzioni chimiche ad una temperatura massima di 82 °C (180 °F). La temperatura massima dipende dalle soluzioni chimiche utilizzate e dalla loro concentrazione.

In particolare per i nostri tubi in Silicone una migliore sterilizzazione si ottiene sottoponendo i tubi a lavaggio con vapore alla temperatura di 135 °C (275 °F) per 18 minuti.

Solo per i tubi con sottostrato in PU (TUSI - LO/PU FORM) il lavaggio e la sterilizzazione si può effettuare con soluzione chimica e con temperatura non superiore a + 82°C come indicato nella 3 -A Sanitari Standard classe III.

### Cleaning and disinfection of systems and related equipment

Indications obtained from "3-A Sanitary Standard for multiple-use rubber and rubber-like materials used as product contact surfaces in dairy equipment, number 18-03".

The "3-A Sanitary Standard" and "3-A Accepted Practices" provide hygienic criteria applicable to equipment and systems used to produce, process and package milk, milk products, and other perishable foods or comestible products.

Tuder hoses, in the "3-A Sanitary Standard" classifications, are included in "Class II".

This means our hoses are suitable for temperature of steam sterilization up to 121 °C (250 °F) for 30 minutes or can be cleaned and subjected to a bactericidal treatment with chemical solutions at a temperature up to 82 °C (180 °F). Maximum temperature depends on different chemical solutions and their concentration.

Particularly our Silicone hoses can be sterilized with steam up to 135 °C (275 °F) for 18 minutes.

Please take note of the following recommendation for cleaning and sterilization only in case of hoses with PU tube (TUSILO/PU FORM): chemical solution, temperature up to + 82 °C max., as stated in the 3-A Sanitary Standard Class III.