

# Chemical Resistance

1 = excellent resistance

3 = medium resistance

2 = good resistance

x = non-resistant

	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
accumulator acid (sulphuric acid 30%)	x	2	x	1	1	1	1	1	2	1	1	
acetaldehyde	3	2	2	3	2	x	2 to 3	1	3	1	1	1
acetamide	x	x	2	2	1 to 2	x	1	1	1		1	1
acetic acid 10%	3	2	2	1	2	3	1	1	1	1	1	1
acetic acid 100% (conc.)	x	x	2 to 3	3	x	x	x	1	x	1	1	1
acetic acid 25%	x	3	2 to 3	1 to 2	2	x	1	1	1 to 2	1	1	1
acetic acid 3%	2	1	1	1	2	1	1	1	1	1	1	1
acetic acid 50%	x	x	2 to 3	2	2	x	3	1	2 to 3	1	1	1
acetic acid anhydride 50%	x	x	1	1	x	x	3	1	2	1	1	
acetic acid ethyl ester (ethyl acetate)	x	x	2	x	x	x	2	1	3	1	1	1
acetone	3	x	2	2 to 3	x	3	1 to 2	1	3	1	1	1
acetyl salicylic acid (aspirin)					1	1	1					1
acetylacetone	3	x	x		x	x	x	1		1	1	x
acetylene gas	2-3	2-3	2	2	1	1	3	1	2	1	1	1
acids see spec. designation, applicable in general	x	3	2	2-3	1-2	1-2	2	1	3	1	1-2	
acrylic acid ethyl ester (ethyl acrylate)	x	x	2	1	x	x	x	1	x	1	1	x
acrylonitrile	x	x	2	3	2	x	1	1	3	1	1	1
adipic acid (hexane diacid)	3	1 to 3	x	1	1	1	1	1	2	1		
adipic acid diethyl ester				1	x	x		1		1	1	
adipose (animal grease)	1	1	3	1 to 2	1	2	2 to 3	1	3	1	2	1
air, atmospheric, oil-free, to +°C	85	80	175	120	200	70	90	200		200	125	1
air, oil-saturated, to +°C	85	80	175	120	200	70	90	200		200	125	1
alcohols see specific designations, applicable in general	2-3	2-3	1-2	1-2	1-2	1-2	1-2	1	2	1	2	1
aliphatics see gasoline low aromatic												
applicable in general	1-2	2	3-x	3	1	2-3	3-x	1	3	1	2-x	1
aldehyde see specific designations, applicable in general	3	3	2-3	2-3	2-x	3	1-2	1	3	1	2	
allyl alcohol (propenol)	3	3	x	1 to 3	3	3	1	1			1	1
allyl chloride (3-chloropropene)	x	x	1		x	x	x	1		1		x
alum (potassium aluminium sulphate)	2	1	1 to 2	1	1	1	1	1	2	3	1	1
aluminium acetate, aq. (basic aluminium acetate)	x	3	x	1	x	1	1	1	1	1	1	1
aluminium chloride, aq.	3	1 to 2	2	1 to 2	1	1	1 to 2	1	1	1	1	1
aluminium fluoride	3	3	2	1	1	1	1	1	1	1	1	1
aluminium hydroxide	3	2	1	1	1	1	1	1	1	1	1	1
aluminium nitrate, aq.	3	2	2	1	1	2	1	1	1	1	1	1
aluminium phosphate, aq.	2	1	1	1	1	1	1	1	1	1	1	1
aluminium sulphate, aq.	3	2	1	1	1	1	1	1	1	1	1	1
amines see specific designations, applicable in general	x	x	3	3	2-3	x	2-3	1	2-x	1	2	
amino acetic acid (glycine)	x	x	2 to 3	2 to 3	1	1		1			1	
ammonia nitrate, aq.	3	2	1	3	3	2	1	1	2	1	1	1
ammonia, aq. 25% (ammonia water)	x	x	1	3	1	1	1	1	2	x	1	1
ammonia, gaseous 20°C	x	3	1	2	1	1	1	1	1	1	1	1
ammonia, liquid 100%	x	x	3	2	x	3	2	1	1	1	1	1
ammonium acetate, aq.	x	x	3-x	1	x	1	2	1			1	1
ammonium carbonate, aq.	x	x	2 to 3	1	1	1	1	1	1	1	1	1
ammonium chloride, aq. 3%	3	1	1	2	1	1	1	1	1	1	1	1
ammonium diphosphate, aq.	3	1	1 to 2	1	1	1	1	1	1	1	1	1
ammonium fluoride, aq.	x	x		1	1 to 2	1 to 3	1	1			1	1
ammonium hydroxide, aq. (ammonia, aq.)	x	x	1	3	1	1	1	1	2	x	1	
ammonium metaphosphate	2	1	1	1	1	1	1	1	1	1	1	2
ammonium nitrate	1	1	2	1	1	2		1	1	1	1	1
ammonium persulphate, aq.	3	2	2 to 3	2	1	1	1	1	2	1	1	
ammonium phosphate, aq.	3	1	1	2	1	2	1	1	1	1	1	2
ammonium sulphate	2	1	1	1	1	1	1	1	1	1	1	1
ammonium thiocyanate	3	2	1		1	1	1	1		1	1	1
ammonium-urea-solution (liquid nitrogen fertiliser)	x	x				2	2	1				

\*) at +20 °C ambient temperature

\*1) as foodstuff, please order food-grade quality versions

\*2) please ask for our detailed consultation

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	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
amyl acetate* <sup>1</sup> (acetic acid pentyl ester, banana oil)	x	x	3	x	x	x	2	1	3	1	1	1
amyl alcohols (pentanols)	3	3	3	1	2	1	1 to 2	1	1	1	1	1
amyl borate	x	x	x	1	1			1	1	1	1	
amyl chloride	x	x	3	x	2	x	x	1	x	1	2	x
aniline (aminobenzene)	x	x	2	3	1 to 2	2 to 3	2 to 3	1	x	1	1	2
aniline dyes	x	x	2 to 3	2 to 3	1	1	3	1	2	1	1	
aniline hydrochloride	x	x	x	x	x	x	2 to 3	1	x			1
animal fats (oils and greases, adipose)	1	1	3	1 to 2	1	2	2 to 3	1	3	1	2	1
anise seed oil						x	3-x	1	x			1
anol (cyclohexanol)	3	x	2 to 3	1 to 2	1	x	1	1	2	1	2	1
anone (cyclohexanone)	3	x	x	x	x	x	2 to 3	1	x	1	2 to 3	1
anthraquinone sulfonic acid, aqu.	x	x	x	1	1	1	1	1			1	1
antichlorine (sodium thiosulphate)	3	2	1	1	1	1	1	1	1	1	1	
antifreeze see precise chem. designation												
antimony chloride 50%	3	2	x	1	1	1	1	1	1	1	1	1
antimony chloride, anhydrous	x	x	3	1	1 to 2	1	1	1			1	1
apple acid, aqu. * <sup>1</sup> (apple juice)	x	3	1	1	1	1	1	1	1	1	1	1
aqua fortis (nitric acid 50%)	x	x	x	3	1 to 2	2 to 3	2 to 3	1	x	1	1 to 2	
aqua regia (nitrohydrochloric acid)	x	x	3	3	2	2 bis 3	2	1	3	1	3	
arctones = ICI freontypes	ask for our detailed advice											
argon gas	1	1	1	1	1	1	1	1	1	1	1	1
aromatics see benzene, toluene, xylene												1
homologues, applicable in general	3-x	3-x	x	3-x	1-2	x	x	1	3	1	3-x	
arsenic acid	3-x	3-x	1	1	1	1	1	1	1	1	1	1
ascorbic acid (vitamin C)	2-3	1			1	1	1					
asphalt (pitch)	2	2	2	2	1	2	1	1	2	1	2 to 3	1
ASTM fuel A (isooctane, free of aromatics)	1	1	x	1	1	3-x		1	1		x	
ASTM fuel B	x	x	x	x	1	3-x		1	x		x	
ASTM fuel C	x	x	x	x	1	3-x		1	x		x	
ATS-brake fluid	x	x	3	1	1	1	1	1			2 to 3	1
avgas, aviation gasoline (kerosene)	1	1-2	x	2	1	3	2	1	2	1	x	1
bacon fat * <sup>1</sup>	1	1	2	3	1		1	1	x	1	1	
baking soda (sodium bicarbonate, aqu.)	x	2	1	1	1	1	1	1	1	2	1	
barium chloride, aqu.	2	1	1	1	1	1	1	1	1	1	1	1
barium hydroxide	3-x	2	1	1	1	1	1	1	1	1	1	1
barium sulphate (barite)	1	1	1	1	1	1 to 2	1	1	1	1	1	1
barium sulphide	2	2	1	1	1	1	1 to 2	1	1	1	1	1
barm (yeast), aqu.	x	1	1	1	1	1	1	1			1	1
bases (lyes) see exact designation, applicable in general	x	2	2	1	2	1	1 to 2	1	1 to 2	1	1 to 2	
beer * <sup>1</sup>	2	1	1	1	1	1	1	1	1	1	1	1
benzaldehyde (oil of bitter almonds, benzoic aldehyde)	3	3	2 to 3	x	2 to 3	3	2	1	x	1	2	1
benzene see also gasoline	x	x	x	3-x	2-3	3-x	3-x	1	x	1	x	1
benzoic acid, aqu.	x	x	3-x	x	1	1	1	1	x	1	1	1
benzyl alcohol	x	x	1	2 to 3	1	3	3	1	3	1	2	1
benzyl benzoate	x	x	1	1	1			1	x	1	2	
benzyl chloride	x	x	2	x	1	x	2 to 3	1	x	1	x	2
bicarb, bicarbonate of soda (sodium bicarbonate)	x	2	1	1	1	1	1	1	1	2	1	
bio-gas clean	2	3	3-x	2-3	1	2	1	1	2-3	1		
bio-gas (marsh-gas)	ask for detailed advice and give exact chem. designation											
biphenyl (diphenyl)	x	x	x	3	1	x	2	1	x	1	3	2
biphenyls, polychlorinated (pyranols, transformer oils)	2	2	x	x	1	3	3	1	2-3	1	x	3
bis (2-hydroxyethyl) ether	3	3	2	2	1	3	1-2	1	1	1	1	
bismuth carbonate	1	1	1		1	1	1	1	1	1	1	1
bisulphite lye containing SO <sub>2</sub>					1	1	1	1	1	1	1	1

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	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
bitter-salt (magnesium sulphate)	1	1	1	1	1	1	1	1	1	1	1	1
bitumen 20°C (see also hot bitumen)	2	2	3	3	1	x	1	1	x	1	2 to 3	1
black lye (cellulose extraction)	x	x	x	1	1			1				
blanc-fixe (barium sulphate)	1	1	1	1	1	1	1	1	1	1	1	1
bleaching lye (javelle-lye, potassium hypochlorite)	3	2	2	2 to 3	1	1	3	1	2 to 3	3	1 to 2	3
blood						1	1	1				1
bone oil	1	1	2 to 3	x	1	2		1	x		x	
borax (sodium borate)	1	1	2	2	1	1	1	1	1	2	1	1
boric acid, aqu.	3	1	1	1	1	1	1	1	x	1	1	1
brake fluid, ATS-	x	x	3	1	1	1	1	1			2 to 3	1
brake fluid, glycol-ether-based	x	x								1	1	
brandy, all kinds*1	2	1	1	1	1	1	1	1	1	1	1	1
brine (table or common salt solution)*1	3	1	1	1	1	1	1	1	1	1	1	1
bromine	x	x	x	x	1	3	x	1	x	1	3	x
bromine water	x	x	x	2 to 3	1	x	x	1	x	1	3	x
bromobenzene	x	x	x	x	1	x	x	1	x	1	x	1
butadiene	2	1 to 2	x	2	2	3	2 to 3	1	2	1	2	2
butan diols (butylene glycols)	1	1		1	2	3	1	1			1 to 2	1
butane diacid	x	3	3	1	1	1	1	1			1	
butane gas	1	1	3-x	2	1	2	3-x	1	2	1	2	3
butane, liquid	1	1	3	1	1	2	1	1	1	1	2	1
butanol (butyl alcohol)	3	3	2	1	2 to 3	1	1 to 2	1	1	1	1	1
butanone (methyl ethyl ketone MEK)	x	x	x	x	x	x	2	1	3	1	1	1
butine diol	1	1		2	3			1				
butter milk*1	1	1	1	1	1	1	1	1	2 to 3	1	1	1
butter*1	1	2	2	2	1	2	1	1	2	1	2	1
butyl acetate (acetic acid butyl ester)	x	x	3	3	x	x	3-x	1	x	1	2	1
butyl benzoate	1	1	x	x	1			1	x	1	2	
butyl carbitol	x	x	2 to 3	2	1			1	3	1	2	
butyl ether	x	3	3		x	1	1	1	2 to 3	1	2	
butyl glycol	3	3	2		1	x	1	1	x	1	2	1
butyl oleate	x	x	1	x	1			1	x	1	2	
butyl phenols	x	x		x	3	x	1 to 2	1				1
butyl stearate	1	1	1	2 to 3	1	1	x	1	x	1	2	x
butylamine	2 to 3	2 to 3	2 to 3	x	x	x	3	1	3	1	1	3
butylene, liquid (butene)	2 to 3	2 to 3	2 to 3	3	1	1	x	1	x	1	1	2
butyraldehyde	x	x	3	3	x		1	1	3	1	1	1
butyric acid, aqu.*1	x	x	3	2 to 3	2	2	x	1	x	1	1	1
calcinated soda (sodium carbonate anhydrous)	2	2	1	1	1	1	1	1	1	2	1	
calcium acetate	2	2	2	2	x		1	1	2	1	1	1
calcium bisulphate, aqu.	3	1	3	1	1	1	1	1	1	1	1	1
calcium bisulphite, aqu.	3	2	1	1	1	2	1	1	1	1	1	1
calcium carbonate	1	1	1	1	1	1	1	1	1	1	1	1
calcium chloride, aqu.	3	1	1	1	1	1	1	1	1	1	1	1
calcium hydroxide, aqu. (slaked lime)	3	2	1	1	1	2	1	1	1	1	1	1
calcium hypochlorite, aqu.	x	x	2 to 3	1 to 2	1	1	1	1	3	1	1 to 2	1
calcium nitrate	1	1	2	1	1	1	1	1	1	1	1	1
calcium oxide = calcinated lime	1	1	1	1	1	1	1	1	1	1	1	1
calcium phosphate, aqu.	2	2	1	1	1		1	1			1	1
calcium sulphate (gypsum), aqu.	3	1	1	1	1	1 to 2	1 bis 2	1	2	1	1	1
calcium sulphide	2	1	2	1	1			1	1	1	1	
camphor (camphor oil)	x	x		3-x	3-x		3	1				1
cane sugar (sugar), aqu.	3	1	1	1	1	1	1	1	1	1	1	
carbamide, urea, aqu.	x	x	x	1	1	2	1	1			1	
carbitol (diethylene glycol monoethyl ether)	x	x	2	2	2	3	1	1	3	1	1	
carbolic acid (phenol)	3-x	3-x	3	2 to 3	1	x	x	1	3	1	2 to 3	1
carbolineum, aqu.	x	x	x	1	1	3	1	1	1	1		
carbon bisulphide	3	2	x	x	1	2 to 3	x	1	x	1	2	

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carbon dioxide solid (dried ice -80°C) resistant, but elastomers and plastomers become stiff to brittle												1
carbon dioxide, gaseous, wet and dry	1	1	1	1	1	1	1	1	1	1	1	1
carbon monoxide	1	1	1	2 to 3	1	1	1	1	2	1	1	
carbon tetrachloride (tetrachloromethane)	x	3	x	x	1	x	x	1	x	1	x	
carbonic acid see carbon dioxide												
Caro`s acid (peroxymonosulphuric acid)				2-3		1	x		x	1		x
castor oil, ricinus oil*1	1	1	1	1	1		2 to 3	1	2	1		1
caustic lime (calcium oxide)	1	1	1	1	1	1	1	1	1	1	1	
caustic potash see potassium hydroxide												
caustic soda see sodium hydroxide												
cellulose acetate (acetyl cellulose)	2	1	1				1	1	1	1	1	1
cellulube (hydraulic oil, phosphate ester based)	x	x	2 to 3	x	1	x	x	1	x	1	1	
ceolithe	x	x	1	x	1			1	1		1	
chile salpêtre (sodium nitrate)	2	1	3	1	1	1	1	1	2	1	1	1
china wood oil (wood oil)	3	2	3	3	1	3	2	1	x	1	2	2
chloral hydrate (trichloroacetaldehyde hydrate)	x	x		2	3	x	1	1	2	2		
chloramine	2	2		1	1						1	
chloric acid, aqu.				1	x	1	1	1	1	1	1	1
chlorinated hydrocarbons see specific desig.												x
applicable in general	x	x	x	x	2	x	x	1	x	1	x	
chlorinated lime (calcium hypochlorite)	x	x	2 to 3	1 to 2	1	1	1	1	3	1	1 to 2	1
chlorinated water 3%	x	3	2 to 3	3	1	1	2	1	x	1	1 to 2	2
chlorine dioxide	x	x	3	1	1	2 to 3	x	1	1	1		x
chlorine, dry	x	x	x	2-3	1	3-x	x	1	3-x	1	2-3	x
chlorine, wet	x	x	x	2-3	1	x	x	1	x	1	2-3	x
chloroacetic acid (monochloroacetic acid)	x	x	x	2	x	2	x	1	3	1	2	1
chlorobenzene (monochlor benzene)	x	x	x	x	1	x	3	1	x	1	x	1
chlorobiphenyl (clophen)	x	x	2	x	1	x	1	1	x	1	3	
chlorobromomethan	x	3	x	x	1	x	2	1	x	1	3	2
chlorocalcium (calcium chloride)	3	1	1	1	1	1	1	1	1	1	1	1
chloroethanol (ethylene chlorhydrine)	x	x	x	2	x	x	3	1	x	x	2	
chloroethyl (ethyl chloride)	x	x	x	x	1-2	3-x	3-x	1	3	1	2-3	1
chloroform (trichloromethane)	x	x	x	x	1	x	x	1	x	1	x	3
chloromethane (methyl chloride)	x	x	x	x	2	x	3	1	x	1	2	3
chloroprene (chlorinated butadiene)	x	x	x	2	1	x	3	1	x	1	3	3
chlorosulfonic acid	x	x	x	x	x	x	x	1	x	1	1 to 2	
chlorothene (trichloroethane)	x	x	x	x	1	3	x	1	x	1	2	
chromic acid 10%	x	3	3	2 to 3	2	1	3	1	3	1	1	3
chromic acid 25%	x	x	x	2 to 3	1	2	x	1	x	1	1	x
chromic acid 50%	x	x	x	2 to 3	1	x	x	1	x	1	2	x
chromium trioxid see chromic acid												
citric acid aqu.*1	3	1	1	1	1	1	1	1	1	1	1	
clophen (chlorobiphenyl)	x	x	2	x	1	x	1	1	x	1	3	
coal tar (see also hot tar, creosote)	3	3	x	x	1	2 to 3	2 to 3	1	3	1	2	
coconut grease and oil*1	2	2	1	3	1	1	1	1	2	1	2	1
cod-liver oil*1	1	1	2	2	1	1	1	1	2	1	2	1
common salt (sodium chloride)	3	2	1	1	1	1	1	1	1	3	1	1
compressed air, oil-saturated, to +°C	85	80	175	120	200	70	90	200		200	125	
copper acetate	x	x	x	2	x		1	1	2	1		1
copper chloride, aqu.	3	1	1	2	1	1	1	1	2	1	1*	1
copper cyanide	3	1	1	1	1	1	1	1	1	1	1*	1
copper fluoride	x	x	3	1	1		1	1			1	1
copper hydroxide	1	1	1				1	1		1	1*	1
copper nitrate, aqu.	x	3	1	1	1	2	2	1	1	1	1*	1
copper sulphate, aqu. (blue vitriol)	2	1	1	2	1	1	1	1	1	1	1*	1
corn oil*1	1	1	1	2	2	2	1	1	2	1	2 to 3	

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corn sugar (glucose, dextrose, grape sugar)*1	2	1	1	1	1	1	1	1	1	1	1	
cottonseed oil*1	1	1	1 to 2	1 to 2	1	1 to 2	1	1	2 to 3	1	2	1
cow suet	1	1	3	1 to 2	1	2	2 to 3	1	3	1	2	
creosote	3	3	x	x	1	2-3	2-3	1	3	1	2	2
cresols, cresylic acids	x	x	x	x	1	x	2 to 3	1	3	1	2	2
crotonaldehyde (2-butenal)	3-x	2 to 3		1	1	x	1	1	1		1	1
crude oil, high aromatic	2	2	x	2	1	3	3	1	3	1		
cumene (isopropylbenzene)	3	3-x	x	x	1	x	x	1	x	1	x	x
cupric hydroxide (mountain blue)	1	1	1				1	1		1	1*	1
cyankali (potassium cyanide)	3	2	1	1	2	1	1	1	1 to 2	3	1	1
cyclohexane (hexahydrobenzene)	2	2	x	x	1	x	2	1	x	1	3-x	1
cyclohexanol (hexaline)	3	x	2 to 3	1 to 2	1	x	1	1	2	1	2	1
cyclohexanone	3	x	x	x	x	x	2 to 3	1	x	1	2 to 3	1
cyclohexylamine	x	x	x	3-x	x	1		1			x	
decalin (decahydronaphthalene)	1	1	x	x	1	1	2	1	x	1	x	
detergents, synth. 20°C	3	2	1	1	1	1	1	1	2	1	1	
dextrose (glucose, corn sugar, grape sugar)*1	2	1	1	1	1	1	1	1	1	1	1	1
diacetone alcohol	3	2	2	2	x	x	1	1	3	1	1	1
dibenzyl ether	2 to 3	2 to 3	2	x	1	x		1	x	1	3	
dibutyl amine	x	x	3	x	x		x	1	x	1	2	x
dibutyl phthalate	x	3	2	3-x	2	3	2	1	x	1	2	
dibutyl sebacate	x	x	2	x	2	3	1	1	x	1	2	1
dichlorobenzene	x	x	x	x	2 to 3	x	3	1	x	1	3	1
dichloroethane	x	x	x	x	2-3	x	2-3	1	x		3	1
dichloroethylene (dichloroethene)	x	x	x	x	2	x	x	1	x	1	3	x
dichloro-isopropyl ether	2	2	x	x	3		3	1	x	1	2	x
dichloromethane (methylene chloride)	x	x	x	x	2	x	x	1	x	1	3	3
diesel oil	1	2	3	3	1	3	2	1	x	1	3	1
diethanolamine			2 to 3				1	1		1	2	1
diethyl ether (ether)	2	2	x	3-x	3-x	3	x	1	3	1	2	1
diethyl sebacate			2	x	2			1	x	1	2	1
diethylamine	x	3	2	3	2	x	3-x	1	2	1	1	1
diethylbenzene	x	x	x	x	1	1	x	1	x	1	x	1
diethylene glycol monoethyl ether (carbitol)	x	x	2	2	2	3	1	1	3	1	1	1
diethylene glycol (diglycol)	3	3	2	2	1	3	1 to 2	1	1	1	1	1
diglycolic acid, aqu.	x	x	3	2	1	2	1	1			1	1
dilutions for paints and lacquers determine composition												
dimethyl ether (methyl ether)	2	2		3	3	x	2	1	x	1	1	2
dimethyl formamide (DMF)	x	3	2 to 3	3	3	x	1	1	x	1	1	1
dimethyl heptanone (diisobutyl keton)	x	x			x			1				
dimethyl phthalate	3	3	3	x	2	3		1	x	1	2	
dimethyl sulphoxide (DMSO)	x	x	x		x	x	2	1	2-3		1	
dimethylamine			2	x	x	x	3	1	x	1	1	3
dimethylaniline (xylidine)	x	x	2 to 3	3	1	x		1	x	1	2	x
dioctyl phthalate (DOP)	2 to 3	2 to 3	3	x	1 to 2	3	2	1	x	1	2	1
dioctyl sebacate	2	2	3	x	2			1	x	1	2	1
dioxane (diethylene dioxide)	x	x	x	x	x	x	1	1	x	1	2	1
dipentene (limonene)	x	x	x	3	1			1	2		x	
diphenyl	x	x	x	3	1	x	2	1	x	1	3	2
diphenyl oxid (diphenyl ether)	x	x	2	x	2 to 3	x	2 to 3	1	x	1	2	1
dipropylene glycol			2	1	1		1	1	1	1	1	1
dodecyl alcohol (lauryl alcohol)			2 to 3		1		2	1	1	1	3	1
DOWTHERM A (glycole)	x	3-x	x	2 bis 3				1	2 to 3		x	
drilling oil: determine chem. composition												
Eau de Javelle (potassium hypochlorite)	3	2	2	2 to 3	1	1	3	1	2 to 3	3	1 to 2	
epichlorohydrin, liquid	x	x	x	x	x	x	1	1	x	1	1	1
epsom salt (magnesium sulphate)	1	1	1	1	1	1	1	1	1	1	1	1

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	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
esters see specific designations, applicable in general	2	2	x	3-x	3-x	2-3	2-3	1	2	1	2	
ethane (gas)	2	2	3	2 to 3	1	1	1	1	2	1	2	
ethanol (ethyl alcohol)	2	2	2	1	1	2-3	1-2	1	1	1	1	1
ethanolamine (2-aminoethanol)	x	x	2 to 3	2 to 3	3	3	1	1	2 to 3	1		
ethene (ethylene)	1	1	2	x	1	1	1	1	2 to 3	1	2	1
ethers see specific designations, applicable in general	2	2	x	3-x	3-x	2-3	2-3	1	2	1	2	
ether (ethyl ether, diethyl ether)	2	2	x	3-x	3-x	3	x	1	3	1	2	1
etheric oils *1	2	2	x	3	1	x	x	1	x	1	2	1
ethyl acetate	x	x	2	x	x	x	2	1	3	1	1	1
ethyl acrylate (acryl acid ethyl ester)	x	x	2	1	x	x	x	1	x	1	1	1
ethyl alcohol (denatured = spirits)*1	2	2	2	1	2 to 3	1 to 3	1	1	1	1	1	1
ethyl benzene	x	x	x	x	2	x	x	1	x	1	x	1
ethyl bromide (bromomethane)	2	2	x	x	1	x	2	1	x	1	2 to 3	2
ethyl chloride (chloroethane)	x	x	x	x	1 to 2	3-x	x	1	3	1	2 to 3	1
ethyl dichloride (dichloroethylene)	x	x	x	x	2	x	x	1	x	1	3	x
ethyl ether (ether)	2	2	x	3-x	3-x	3	x	1	3	1	2	1
ethyl glycol acetate	x	x			x		1	1		1	2	
ethyl mercaptan	x	x	3	2	x			1	x	1	2	
ethylene chloride (dichloroethylene)	x	x	x	x	2	x	x	1	x	1	3	1
ethylene chlorhydrine (chloroethanol)	x	x	x	2	x	x	3	1	x	x	2	1
ethylene diamine	x	x	2	2	2	x	1	1	2	1	1	1
ethylene (gas) (ethene)	1	1	2	x	1	1	1	1	2 to 3	1	2	1
ethylene glycol (glycol, ethane-1,2-diol)	2 to 3	2 to 3	1	1	1	1	1	1	1	1	1	1
ethylene oxid (1,2-epoxy methane), liquid	x	x	3-x	x	x	x	2 to 3	1	x	1	1	2
fats in general see oils and greases	x	x	x	x	x	x	1-2	1	x	1		
fatty acids, with >7 C-atoms, in general	2	1	3	2 to 3	1	1	3	1	3	1	2	2
fatty acids, with 1-7 C-atoms, in general	3-x	2 to 3	3	2 to 3	1	1	3	1	3	1	2	2
fatty alcohols (longchain, aliphatic alcohols)	3	2	2	2	2	2	1	1			3	1
fermented fruit juice*1	3	1	1	1	1	1	1	1	1	1	1	1
ferric chloride (ferri), aqu.	2 to 3	2	2	2	1	1	1	1	1	1	1	1
ferric sulphate, ferric vitriol, aqu.	2 to 3	2	2	1	1	1	1	1	1	1	2	1
fertilizing salt, aqu.	x	3		1	1	1	1	1			1	1
fish-liver oil*1	2	2	1	3	1	2	1	1	1		2	1
fluorhydric acid see hydroflouric acid												
fluorine, liquid	x	x	x		2	2 to 3	x	1	x	1	x	1
fluorobenzene	x	x	x	x	1			1	x	1	x	
fluoroboric acid 65%		x	x	1 to 2	2	1	1	1	2	1	x	1
fluorosilicic acid, aqu.	x	x	2 to 3	1 to 2	1	2 to 3	2	1	2	1	1	
formaldehyd (methanal)	2 to 3	2 to 3	1 to 2	1 to 2	2 to 3	2	1	1	2	1	1	1
formaline (30-40% aqu. formaldehyd solution with 8 -12 % methyl alcohol additive)	3	2	2	2	1	1	1	1	2	1	1	
formamide	x	x		1	2 to 3	x	1	1			1	1
formic acid:												
0,03	2	1	1	1	2	1	1	1	1		1	1
0,1	3	2	2	1 to 2	3	1 to 2	1	1	1		2	1
1	x	x	x	x	x	2 to 3	1	1	1	2-x		1
freons and frigenes ask for detailed advisory												
frost protection agents s. exact chem. designation												
fruit juices*1	3	1	1	1	1	1	1	1	1	1	1	1
fruit pulp*1	3	1	1	1	1	1	1	1	1	1	1	1
fuel see gasoline												
fuming sulphuric acid: (oleum)	x	x	x	x	1	x	x	1	x	1	x	x
fungi (microbes)	x	1	3	1	1	1	2 to 3	1			2 to 3	2
furan	x	x	x	x	x	1	x	1	x	x		x
furfural alcohol (furfurol)	x	x	2	3	3	1	x	1	3	x	2	1
gallic acid	3	3	2 to 3	2	1	1 to 2	1	1 to 2	2 to 3	1	2	
gasoline in general (see specific designations)	1-2	1-2	3-x	2-x	1	3-x		1	1-2		x	1

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# Chemical Resistance

1 = excellent resistance

3 = medium resistance

2 = good resistance

x = non-resistant

	PUR-Ester	PUR-Ether	Silicone	Hypalon®	Viton®	PVC	PE	PTFE	Neoprene®	Kapton®	TPV	PE-EL
gasoline, lead-free	1	1	x	2-3	1	2-3	1	1	2-3		2-3	
gasoline, super	2-3	2-3	x	2-3	1	1	1	1	2-3		2-3	
gasoline, ASTM fuel A (isooctan, free of aromatics)	1	1	x	1	1	3-x		1	1		x	
gasoline, ASTM fuel B	x	x	x	x	1	3-x		1	x		x	
gasoline, ASTM fuel C	x	x	x	x	1	3-x		1	x		x	
gasoline, diesel, heating oil	1	1	3	2	1	3-x	2	1	x	1	x	1
gasoline, aviation (kerosene)	1	1 to 2	x	2	1	3	2	1	2	1	x	1
gasoline, high aromatic	3	2 to 3	x	2 to 3	1	2 to 3	2 bis 3	2	1	1	x	
gasoline, low aromatic	2	2	x	x	1	3	x	1	1	1	x	
gasoline, test- (heavy g., white spirit, mineral turpentine)	1-2	1-2	x	x	1	3	1-2	1			x	
gasoline/benzene (50/50)	3	3	x	x	2	3		1			x	
gasoline/benzene (60/40)	2	2	x	x	2	3		1			x	
gasoline/benzene (70/30)	2	2	3	x	1	3		1			x	
gasoline/benzene (80/20)	2	3	3	x	1	3	3	1			x	3
gasoline/benzene/ethanol (50/30/20)	3	3	x	3-x	x	3		1			3-x	
gelatins, aqu.*1	3	1	1	1	1	1	1	1	1	1	1	1
glacial acetic acid (acetic acid pure)	x	x	2 to 3	3	x	x	x	1	x	1	1	1
Glauber's salt (sodium sulphate)	3	1	1	1	1	1	1	1	1	1	1	1
glucose (dextrose, corn sugar, grape sugar)*1	2	1	1	1	1	1	1	1	1	1	1	1
glue, animal	2	2	1	1	1	1	1	1	1	1	1	1
glycerine (glycerine, propane-1,2,3-triol)	1	1	1	1	1	1	1	1	1	1	1	1
glycine (amino acetic acid), aqu. 10%	x	x	2 to 3	2 to 3	1	1		1			1	
glycols determine exact designation, applicable in general	2	2	1-2	1	1	2	1	1	2	1	1	
glycolic acid (hydroxy acetic acid), 30%	x	3-x	1	1	1	1	1	1			1	1
grape juice unfermented*1	3	1	1	1	1	1	1	1	1	1	1	1
grape sugar (glucose, corn sugar, dextrose)*1	2	1	1	1	1	1	1	1	1	1	1	1
greases in general, see oils and greases	x	x	x	x	x	x	1-2	1	x	1		
gypsum (calcium sulphate)	3	1	1	1	1	1 to 2	1 bis 2	1	2	1	1	
halogenes (look at: fluorine, chlorine, bromine, iodine)												
halogenated hydrocarbons see spec. design. applicable in general	x	x	x	x	1-2	x	x	1	x	1	3	
heavy gasoline (white spirit or mineral turpentine)	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	
helium	1	1	1	1	1	1	1	1	1	1	1	1
heptane	2	2	x	2	1	2 to 3	2 to 3	1	2 to 3	1	x	1
hexahydrobenzene (cyclohexane)	2	2	x	x	1	x	2	1	x	1	3-x	
hexaldehyde	2	3	3	2	x		1	1	2	1	2	1
hexaline (cyclohexanol)	3	x	2 to 3	1 to 2	1	x	1	1	2	1	2	
hexane (n-hexane)	2	2	x	1 to 2	1	1 to 2	3	1	1 to 2	1	x	1
hexanol (hexyl alcohol)	3	x	2 to 3	2	2	2	1	1	1	1	2	1
hexane-triol	x	x	1	1	1	1	1	1			1	
hexene	1	1	x	3	1		1	1	2			1
hot air see air												
hot bitumen to °C	x	x	x	x	180	x	x	200	x	200	x	
hydraulic oils and -liquids:												
-glycol based	1	1 to 2	2					1		1	1	1
-mineral oil based	1	1	3	2	1	3	3	1	2	1	3	3
-phosphate ester based (pydraul)	x	x	2 to 3	x	1	x	x	1	x	1	1	1
hydrazines (diamides)	x	x	3	2	2 to 3	1	1	1	2 to 3	1	1	1
hydrazine hydratee, aqu.	x	x	3	1	1	1	1	1	2	1	1	1
hydrobromic acid	x	3	3	1	1	2 to 3	1 bis 2	1	1	1	1	1
hydrocarbons aliphatic general (see spec. designation.)	1-2	2	3-x	3	1	2-3	3-x	1	3	1	2-x	
hydrocarbons aromatic general (see spec. designation.)	3-x	3-x	x	3-x	1-2	x	x	1	3	1	3-x	

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	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
hydrocarbons halogenated general (see spec. designation.)	x	x	x	x	1-2	x	x	1	x	1	3	
hydrochloric acid 15%	3	2	3	1 to 2	1	1	1	1	3	1	1	
hydrochloric acid 38% (conc.)	x	x	3	1 to 2	1	2	1 to 2	1	3	1	1	
hydrochloric acid, (hydrochlorous) gaseous	3	2	1	1 to 2	1	1	1	1	2	1	1	
hydrocyanic acid see prussic acid												1
hydrofluoric acid 10%	x	2	2 to 3	1	1 to 2	1 to 2	1 to 2	1	2	1	1	1
hydrofluoric acid 30%	x	2	3	1 to 2	1 to 2	2	1 to 2	1	3	1	2	1
hydrofluoric acid 75%	x	3	x	2	2	3	3	1	x	1	3	x
hydrofluoricsilicic acid, aqu.	x	x	2 to 3	1 to 2	2 to 3	2 to 3	2	1	2	1	1	
hydrogen (gaseous)	1	1	3	1	1	1	1	1	1	1	1	1
hydrogen cyanide see prussic acid												1
hydrogen peroxide 10%	x	2	1	2	1 to 2	1	2	1	x	1	1 to 2	1
hydrogen peroxide 30%	x	2	1 to 2	2	1	2	2 to 3	1	x	1	2 to 3	1
hydrogen sulphide, dry	x	3	2 to 3	1 to 2	1	x	1	1	2 to 3	1	1	1
hydrogen sulphide, wet	x	3-x	1	1 to 2	1	x	1	1	2 to 3	1	1	1
hydroquinone, aqu.	x	x	3	2 to 3	2	2	1	1	3		3	1
hydroxylamine sulphate, aqu.	x	x	1	1	1	1		1			1	
ink	1	1	1	1	1	3	1	1			1	1
iodine tincture (5-10% alcohol iodine solution)	x	x	x	2	1	2 to 3	2 bis 3	1	3	1	1	2
isobutanol (isobutyl alcohol)	3	x	1	1	1	1	1	1	1	1	2	1
isooctane	2	2	3	2	1	1	3	1	3	1	x	1
isooctanol (isooctyl alcohol)	3	3	2	2	1	1	1	1	3	1	2	1
isophoron	3-x	3-x	3-x	x	x			1	x	1	3	
isopropanol (isopropyl alcohol)	2	3	1	1	1	2	1	1	2	1	1	1
isopropyl acetate	3	3	3	x	x	3	2 to 3	1	x	1	1	1
isopropyl benzene (cumen)	3	3-x	x	x	1	x	x	1	x	1	x	x
isopropyl chloride	3	3	x	x	1			1	x	1	2	
isopropyl ether	2	2	x	3	3	2 to 3	2 bis 3	1	x	1	2	1
Javelle lye (potassium hypochlorite)	3	2	2	2 to 3	1	1	3	1	2 to 3	3	1 to 2	n.a.
jet fuel DPI-IPS			x	x	1	2 to 3	x	1	2 to 3	1		
kerosene	2	1	3	2 to 3	1	1	3	1	2	1	x	1
ketones see specific designations, applicable in general	3-x	x	2-x	x	x	x	2-3	1	3-x	1	2-3	1
lacquers, composition must always be determined												
lactic acid* <sup>1</sup>	x	2	2	2	1	3	2	1	3	1		1
lanolin (wool grease)	1	1	3	3	1	2	1 to 2	1	3	1	2	1
lard (oils, animal)	1	1	3	1 to 2	1	2	2 to 3	1	3	1	2	1
laughing-gas (nitrous oxide)	1	1	1	1	1	1	1	1	1	1	1	1
lauryl alcohol (dodecyl alcohol)			2 to 3		1		2	1	1	1	3	
lavender oil* <sup>1</sup>	x	x	x	2 to 3	1			1	2 to 3			
lead acetate, aqu.	3	1	1	1	1	1	1	1	2	1	1	1
lead arsenate, aqu.	3	1	1			1	1	1	1	1	1	1
lead nitrate	2	1	2	1	1	1	1	1	1	1	1	1
lead sulphate	1	1	1	1	1	1	1	1	1	1	1	1
lignite tar oil (see coal tar)	3	3	x	x	1	2 to 3	2 to 3	1	3	1	2	2
lime, quick (calcium oxide)	1	1	1	1	1	1	1	1	1	1	1	
lime, slaked (calcium hydroxide)	3	2	1	1	1	2	1	1	1	1	1	
limestone (calcium carbonate)	1	1	1	1	1	1	1	1	1	1	1	
limonene 90% (citric oil)	2	2	x			x	2-3	1			2	
linseed oil* <sup>1</sup>	1	2	1	2	1	2	2	1	2	1	2 to 3	1
liquefied petroleum gases (LPG) see chem. identification of the gases												
lithium chloride, aqu.	x	x	1	1	1	x	1	1	1		1	1
lubricants and greases see mineral oils, attend additives												
lyes see exact designation, applicable in general	2-x	2	1-2	1-2	2	1-2	1-2	1	2	2	1	1

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# Chemical Resistance

1 = excellent resistance

3 = medium resistance

2 = good resistance

x = non-resistant

	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
machine oil, see oils, mineral												
magnesium chloride, aqu.	3	1	1	1 to 2	1	1 to 2	1	1	1 to 2	1	1	1
magnesium hydroxide	3	1	1	1	1	1	1	1	1	1	1	1
magnesium silicate (talc)	1	1	1	1	1	1	1	1	1	1	1	1
magnesium sulphates	1	1	1	1	1	1	1	1	1	1	1	1
magnesium sulphite, aqu.	3	1	1	1	1	1	1	1	1	1	1	1
maize oil*1	2	2	2	1	1	2	2	1	1			1
maleic acid, aqu.	x	x		x	1	1	2	1	3-x	1	1	1
maleic anhydride				x	3				x		2	
manure	x	1	1	1	1	1	1	1	1	1	1	
margarine-greases and oils*1	1	1	3	1 to 2	1	2	37714	1	2	1	2	1
marsh gas (mine damp, methane)	2	3	3-x	2-3	1	1-2	1	1	2-3	1	2	1
mash*1	3	1	1	1	1	1	1	1	1	1	1	1
MEK (methyl ethyl ketone)	x	x	x	x	x	x	2	1	3	1	1	1
melamine			3		1	x		1	x			
menthol	3	3	x	1	1		1	1			1 to 2	1
mercury	1	1	1	1	1	2	1	1	1 to 2	1	1	1
mercuric chloride (sublimite)	1	1	1	1 to 2	1	2	1	1	1 bis 2	1	1	1
mercurious nitrate	2	1	1		1	1	1	1		1	1	1
mesityl oxide	x	x	x	x	x	x	3	1	x	1	3	3
methane (gas)	2	3	3-x	2 to 3	1	1 to 2	1	1	2 to 3	1	2	1
methanol (methyl alcohol)	2	3	1	1	2	1	1	1	1	1	1	1
methyl acetate (acetic acid methyl ester)	x	x	x	x	x	x	2	1	2	1	1	1
methyl acrylate	x	x	x	x	x	x		1	2			
methyl alcohol	2	3	1	1	2	1	1	1	1	1	1	1
methyl bromid (bromomethane)	x	x	x	3	2	x	3	1	x		x	3
methyl chloride (chloromethane)	x	x	x	x	2	x	3	1	x	1	2	3
methyl chloroform (trichloroethane)	x	x	x	x	1	3	x	1	x	1	2	1
methyl ethyl ketone (MEK)	x	x	x	x	x	x	2	1	3	1	1	1
methyl glycol (methylcellosolve)	x	x	x	3	x	x	2	1	2 to 3	1	1	
methyl glycol acetate	x	x	x		x			1	x	1	1	
methyl isobutyl keton	x	x	3	x	x	x	2 to 3	1	x	1	2	2
methyl oxiran (propylene oxide)	x	x	x	x	x		2	1	x	1	1	
methyl phthalate (dimethyl phthalate)				x	2			1	x	1	2	
methylamine, aqu.	x	x	x	1	2 to 3	3	1	1	2	1	1	1
methylated spirits (ethanol denaturated)	2	2	2	1	1	2-3	1-2	1	1	1	1	
methylene chloride (dichloromethane)	x	x	x	x	2	x	x	1	x	1	3	3
microbes	x	1	3	1	1	1	2 to 3	1			2 to 3	2
milk of lime (lime water) see calcium hydroxide												1
aqu. milk*1	3	2	1	1	1	1	1	1	1	1	1	1
mineral oil see oils, mineral												
mixed acid II (sulphuric acid/phosphoric acid/water)	x	x		1	1	1	3	1	2	1	2	1
mixed acid I (sulphuric acid/nitric acid/water)	x	x	x	x	x	x	x	1	1 to 2	1	3	1
molasses*1	1	1	1	1	1	1	1	1	1	1	1	1
monochloroacetic acid	x	x	x	2	x	2	x	1	3	1	2	1
monochlorobenzene	x	x	x	x	1	x	3	1	x	1	x	
monochloromethane (methyl chloride)	x	x	x	x	2	x	3	1	x	1	2	
mono ethylene glycol	1											
monostyrol (styrol, styrene, monomeric)	x	3	x	x	2	x	x	1	x	1	x	
morpholine	x	x	x	2	2	x	1	1	3		1	1
motor oil see oil and greases, clarify mineral additives												
mountain blue (cupric hydroxide)	1	1	1				1	1		1	1*	1
must fermented (fermented fruit juice)	3	1	1	1	1	1	1	1	1	1	1	
must, unfermented*1	3	1	1	1	1	1	1	1	1	1	1	1
mustard	1	1		1	x	1 to 2	1	1	1			1
myristyl alcohol, myristic alcohol (tetradecanol)	1	1	2	1	1	1		1	1	1	2	

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	PUR-Ester	PUR-Ether	Silicone	Hypalon®	Viton®	PVC	PE	PTFE	Neoprene®	Kapton®	TPV	PE-EL
naphtha	2	2	3	x	1	2 to 3	2 to 3	1	3	1	3-x	1
naphthalene (stone oil)	2	2	3	2-3	1	x	x	1	x	1		1
natron (sodium bicarbonate)	x	2	1	1	1	1	1	1	1	2	1	
natural gas, wet	2	1-2	2-3	1	1	1	2	1	1	1	2	1
natural gas, dry	1	1	2-3	1	1	1	1	1	1	1	2	1
n-hexane	2	2	x	1 to 2	1	1 to 2	3	1	1 to 2	1	x	
nickel acetate	3	2	2	x	x		1	1	2		2	1
nickel chloride, aqu.	3	2	1 to 2	1 to 2	1	1	1	1	2	1	2	1
nickel sulphate, aqu.	2 to 3	2	1	1	1	1	1	1	1	1	1	1
nitrate (nitrate of sodium)	2	1	3	1	1	1	1	1	2	1	1	1
nitrating acid (mixed acid I)	x	x	x	x	x	x	x	1	x	1	3	
nitric acid 10%	3	3	3	1 to 2	1	1	2	1	2	1	1	1
nitric acid 25%	x	x	x	2	1 to 2	1	2 to 3	1	3	1	1	1
nitric acid 50% (aqua fortis)	x	x	x	3	1 to 2	2 to 3	2 to 3	1	x	1	1 to 2	2
nitric acid 60%	x	x	x	3-x	2	2 to 3	x	1	x	1	3-x	
nitric dilution	2	2	x	1		x	2 to 3	1	1		2 to 3	
nitro-benzene	x	x	x	x	2	x	3	1	x	1	1	1
nitrogen	1	1	1	1	1	1	1	1	1	1	1	1
nitrogen oxides (nitrous gases)	x	x	x	3	3	x	1	1	x		x	1
nitro-glycerin	x	x	x	1	1	2	2	1			x	1
nitrohydrochloric acid (aqua regia)	x	x	3	3	2	2 to 3	2	1	3	1	3	
nitro-methane	x	x	x	2 to 3	x	2 to 3	1	1	3			1
nitro-propane	x	x	x	x	x			1	x	1	1	
nitro-toluole	x	x		x	3	x	1	1	x	1	x	
nitrous fumes (nitrogen oxides)	x	x	x	3	3	x	1	1	x		x	1
nitrous oxide (laughing gas)	1	1	1	1	1	1	1	1	1	1	1	
N-methylpyrrolidone (NMP)	3	3			3	3		1				
nonyl alcohol (nonanol)	x	x	2	2	1		2	1	3	1	2	1
octane	1	1	x	x	1		1	1	x	1	x	1
octanol = octyl alcohol	x	x	2	1	1	x	1	1	1	1	2	1
oils and greases:												
-animal*1	1	1	3	1 to 2	1	2	2 to 3	1	3	1	2	1
-ASTM-oil Nr. 1 20°C	1	1	2	1	1	2	2	1	1	1	3	
-ASTM-oil Nr. 2 20°C	1	2	3	2	2	2	3	1	1	1	x	
-ASTM-oil Nr. 3 20°C	1	2	3	2	2	2	3	1	x	1	x	
-crude oil, high aromatic	2	2	x	2	1	3	3	1	3	1		
-diesel oil	2	2	3	3	1	3	2	1	x	1	3	
-heating oil	2	2	3	3	1	3	2	1	x	1	3	
-hydraulic oils and -liquids:												
-glycol based	1	1 to 2	2					1		1	1	
-mineral oil based	1	1	3	2	1	3	3	1	2	1	3	
-phosphate ester based (pydraul)	x	x	2 to 3	x	1	x	x	1	x	1	1	
-mineral, without additives, at 20°C	1	1	2 to 3	2 to 3	1	2	2	1	x	1	2 to 3	
-mineral, without additives, to °C	60	60	x	150	200	x	30	200		200	100	
-silicon based	1	1	2 bis 3	1	1	1	1	1	2 to 3	1	1	
-transformer oils (pyranols)	2	2	x	x	1	3	3	1	2 to 3	1	x	
-vegetable *1	1-2	1-2	2-3	2	1	2	2-3	1	2-3	1	2	
oil of bitter almonds (benzaldehyde)	3	3	2 to 3	x	2 to 3	3	2	1	x	1	2	1
oleic acid, olein	1	1	x	3-x	2	2	2 to 3	1	x	1	2	
oleum (fuming sulphuric acid)	x	x	x	x	1	x	x	1	x	1	x	x
oleum vapours	x	x	x	3	3	3	x	1	x	1	x	x
olive oil*1	1	1	2	1 to 2	1	1	1	1	2	1	2	1
oxalic acid, aqu.	x	x	2	2	1	2	1	1	3	1	1	1
oxidant see specific designations, applicable in general	2-3	2-3	2-3	2	1	2	2-3	1	3	1	1	
oxirane (ethylene oxide)	x	x	3-x	x	x	x	2 to 3	1	x	1	1	2
oxygen pure to +°C	80	80	175	120	200	70	70	200		200	100	

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# Chemical Resistance

1 = excellent resistance

3 = medium resistance

2 = good resistance

x = non-resistant

	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
ozone (atmospherical concentrations)	1-2	2-3	1	1	1	2	3	1	2-3	1	1	x
ozone 100%	3	3-x	1	2-3	1	3	x	1	x	1	2	x
palm oil, palm pip oil*1	1	2	1	3	1	1 to 2	1 to 2	1	x	1	2	1
palmitic acid	1	1	3	3	2	2	1	1	3	1	1	1
paraffin, paraffin oils	1	2	2	3	1 to 2	1 to 2	2 to 3	1	2 to 3	1	2	1
paraformaldehyde	2	1	1		2		1	1	2	1	1	1
pectine	1	1		1	1	1		1			1	
pentachlorophenol	x	x	3				1 to 2	1		1	2	
pentane	3	x	x	2	1	1	x	1	2	1	3	x
pentanols (amyl alcohols)	3	3	3	1	2	1	1 to 2	1	1	1	1	1
peracetic acid (mixture, cold disinfection)						3-x	2	1			2-3	
perborate (sodium borate)	1	1	2	2	1	1	1	1	1	2	1	
perchloric acid, aqu.	x	x	x	1 to 2	1	2 to 3	2	1	2	1	1	2
perchloroethylene (tetrachloroethylene)	x	x	x	x	1	3	x	1	x	1	x	
perhydrol see hydrogen peroxide												
permanganate (potassium permanganate) 10 %	3	1	1	1	1	1	1	1	2	2	1	1
peroxomonosulphuric acid				2 to 3		1	x		x	1		
petrol see gasoline												
petroleum, without additives, at 20°C	1	1	2 to 3	2 to 3	1	2	2	1	3	1	2 to 3	
petroleum, without additives, to °C	65	60	x	150	200	x	30	200		200	100	
petroleum spirit (white spirit, solvent naphta)	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	
phenol (carbolic acid), aqu.	3-x	3-x	3	2 to 3	1	x	x	1	3	1	2 to 3	1
phenyl ether (diphenyl oxide)	x	x	2	x	2 to 3	x	2 to 3	1	x	1	2	1
phenylbenzene (biphenyl)	x	x	x	x	1	x		1	x		1	
phorone (diisopropylidene acetone)	x	x	x	x	x			1	x		1	
phosphoric acid 3%	2 to 3	2	2	2	1	1	1	1	1	1	1	1
phosphoric acid 50%	3	2	3	2	1	1	2	1	2	1	1	1
phosphoric acid 85%	x	x	3	2	1	1	2	1	3	1	1	
phosphoric alumina (aluminium phosphates, aqu.)	2	1	1	1	1	1	1	1	1	1	1	
phosphorus oxychloride	x	x	x	3	1	x	2 to 3	1	3	1	1	x
photo-emulsions, in general (see exact chem. designation)	x	x	2	1	2	1 to 2	1	1	1 to 2	1	1	
phthalic acid			2	1	x	2	1	1	1		1	
phthalic acid anhydride, aqu.				1	x	3	1	1	1	1	1	
phthalic acid ester (phthalates)	x	3	x	1	1	1	1	1			2 to 3	1
picric acid	2 to 3	2 to 3	3	2	1 to 2	2 to 3	1	1	2	1	1	1
pigs fat (oils, animal)	1	1	3	1 to 2	1	2	2 to 3	1	3	1	2	1
pine oil*1	1	1	x	x	1	3	3	1	x	1		
polychlorinated biphenyls (pyranols, transformer oils)	2	2	x	x	1	3	3	1	2 to 3	1	x	
potash (potassium carbonate)	3	2	1	1	1	1	1	1	1	3	1	
potassium acetate, aqu.	x	x	x	x	2 to 3	1	1	1	2 to 3	1	1	
potassium aluminium sulphate (alum)	2	1	1 to 2	1	1	1	1	1	2	3	1	1
potassium bicarbonate (potassium hydrogen carbonate)	2	2	1	1	1	1	1	1	1	3	1	1
potassium bichromate (potassium dichromate)	3	2	2	1 to 2	1	1	1	1	1	3	1	
potassium bisulphate, aqu.	x	3-x	2	1	1		1	1			1	1
potassium borate, aqu.	3	1	1	1	1	1	1	1	1	3	1	1
potassium bromate, aqu., 10%	x	x	2 to 3	1	1	1	1	1			1	1
potassium bromide, aqu.	2 to 3	1	1	1	1	1	1	1	1	3	1	1
potassium carbonate (potash)	3	2	1	1	1	1	1	1	1	3	1	1
potassium chlorate, aqu.	3	2	2	1	1	1	1	1	1	3	1	1
potassium chloride, aqu.	2	1	1	1	1	1	1	1	1	3	1	1
potassium chromate, aqu., 40%	x	x	2 to 3	1	1	1 to 2	1	1	1		1	1
potassium cyanide (cyankali), aqu.	3	2	1	1	2	1	1	1	1 to 2	3	1	1
potassium dichromate, aqu.	3	2	2	1 to 2	1	1	1	1	1	3	1	1
potassium hydroxide (caustic potash, -lye) 10%	2 to 3	2	3	1 to 2	1	2	1	1	1	3	1	

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	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
potassium hydroxide (caustic potash, lye) 50%	x	3	x	1 to 2	2 to 3	2 bis 3	1	1	1	x	1	
potassium hypochlorite (Javelle)	3	2	2	2 to 3	1	1	3	1	2 to 3	3	1 to 2	3
potassium iodide, aqu.	3	2	2	1	1	1 to 2	1 to 2	1	1	2	1	1
potassium nitrate, aqu.	2 to 3	1	1	1	1	1	1	1	1	3	1	1
potassium perchlorate, aqu.	x	x	2	1	1	1		1			1	
potassium permanganate 10%, aqu.	3	1	1	1	1	1	1	1	2	2	1	1
potassium peroxy disulphate (potassium persulphate)	x	3-x	3-x	1	1	2	1	1			1	1
potassium phosphate (mono and dibasic)	1	1	x	1	1		1	1	1	3	1	1
potassium sulphate	1	1	1	1	1	1	1	1	1	3	1	1
potassium sulphite	1	1	1	1	1	1	1	1	1	3	1	1
propane gas	1	1	x	2 to 3	1	1	2	1	1	1	1	
propane, liquid	1	1	3	3	1	1	x	1	2 to 3	1	1	x
propanol (propyl alcohol)	2	3	1 to 2	1 to 2	1	1 to 2	1	1	1 to 2	1	1	
propargyl alcohol, aqu. 7%	x	x	2	2	1		1	1	1		2	1
propionic acid (propane acid)	x	x	x	3	1	1	1	1	x	1	1	1
propyl acetates (acetic acid propyl esters)	x	x	x	x	x		2	1	x	1	1	2
propyl alcohol (propanol)	2	3	1 to 2	1 to 2	1	1 to 2	1	1	1 to 2	1	1	
propylamine	x	x	x	x	x			1	x	1	1	
propylene (propene)	x	x	x	x	1	2		1	x	1	1	
propylene dichloride			x				x	1		1	2	x
propylene glycols (propandiols)	x	x	1	1	1	3	1 to 2	1	2 to 3	1	1	1
propylene oxide (methyloxiran)	x	x	x	x	x		2 to 3	1	x	1	1	2
prussic acid 20%	3	2	2 to 3	1 to 2	1 to 2	1 to 2	1	1	2 to 3	1	1	1
prussic acid 98% (conc.)	3	2	2 to 3	1 to 2	1 to 2	1 to 2	1	1	2 to 3	1	1 to 2	1
pydraul (hydraulic liquids phosphate ester based)	x	x	2 to 3	x	1	x	x	1	x	1	1	
pyranols (oils, transformer oils)	2	2	x	x	1	3	3	1	2 to 3	1	x	
pyrantone (diacetone alcohol)	3	2	2	2	x	x	1	1	3	1	1	
pyridine	x	x	x	3	3	x	1	1	x	1	2 to 3	1
pyrrol	x	x	2	3	3			1	3		1	
quick lime (calcium oxide)	1	1	1	1	1	1	1	1	1	1	1	1
radiation, radioactive	2	2	x	1		3	x	x	1		2	x
radiation, UV	2	2	2	1	1	2	3	1			x	3
radioactive radiation: applicable in general	2	3	x	x	x	x	3	x	x	x	1 to 2	x
rapeseed oil <sup>*)</sup>	2	2	x	2 to 3	1		x	1	2 to 3	1	2	x
raw sugar sap	x	3	1	1	1	1	1	1	2	1	1	1
redoil (aniline)	x	x	2	3	1 to 2	2 to 3	2 to 3	1	x	1	1	
ricinus oil, castor oil <sup>*)</sup>	1	1	1	1	1		2 to 3	1	2	1		1
rock salt	3	2	1	1	1	1	1	1	1	3	1	2
saccharose (sugar) aqu.	3	1	1	1	1	1	1	1	1	1	1	
sal ammoniac (ammonium chloride) aqu. 3%	3	1	1	2	1	1	1	1	1	1	1	1
salicylic acid (spiric acid), aqu.	2	1	1	1	1	2	1	1	2	1	1	1
salmiac (ammonium chloride)	3	1	1	2	1	1	1	1	1	1	1	1
salpêtre (potassium nitrate)	2 to 3	1	1	1	1	1	1	1	1	3	1	1
salt (table or common salt, sodium chloride)	3	2	1	1	1	1	1	1	1	3	1	1
salted water (brine, sea water)	3	2	1	1	1	1	1	1	1-2	1	1	1
sangajol = turpentine oil substitue, mineral	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	
seawater	3	2	1	1	1	1	1	1	1-2	1	1	1
sebacic acid ester	x	x		x	3-x	x		1			2	1
sewage	x	ask for advice	2	1	1	1	1	1	1	1	2	1
silicon dioxide (silicic acid, chert, silica)	1	1	1	1	1	1	1	1	1	1	1	
silicon oils and -greases	1	1	3	1	1	1	1	1	2-3	1	1	1
silver nitrate, aqu.	1	1	1	1	1	2	1	1	1 to 2		1	1
skydrol (hydraulic liquids, phosphate ester based)	x	x	2 to 3	x	1	x	x	1	x	1	1	
slaked lime (calcium hydroxide, aqu.)	3	2	1	1	1	2	1	1	1	1	1	1
soapsuds, -solution, detergents)	x	2	1	1	1	1	1	1	1	1	1	

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# Chemical Resistance

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	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
soda ash (sodium carbonate anhydrous)	2	2	1	1	1	2	1	1	1	2	1	1
soda lye see sodium hydroxide												
soda salpêtre (sodium nitrate)	2	1	3	1	1	1	1	1	2	1	1	1
soda, calcinated (sodium carbonate anhydrous)	2	2	1	1	1	1	1	1	1	2	1	1
soda, crystallised (sodium carbonate aqu.)	x	2-3	1	1	1	2	1	1	1	2	1	1
sodium bicarbonate (sodium-hydrogencarbonate), aqu.	x	2	1	1	1	1	1	1	1	2	1	
sodium bisulphate (sodium-hydrogensulphate)	x	x	1	1	1	1	1	1	1	2	1	
sodium bisulphite (sodium-hydrogensulphite), aqu.	x	x	1	1	1	1	1	1	1	2	1	
sodium borate (borax)	1	1	1 to 2	1 to 2	1	1	1	1	1	2	1	
sodium bromide				1 to 2	1	1 to 2	1	1	1		1	1
sodium carbonate (soda) aqu.	x	2-3	1	1	1	2	1	1	1	2	1	1
sodium chlorate, aqu.	3	2	1	1	1	1	1	1	1	3	1	
sodium chloride (muriate of soda, common or table salt)* <sup>1</sup>	3	2	1	1	1	1	1	1	1	3	1	1
sodium chlorite				1	1	3	2 to 3	1			2	2
sodium cyanide	3	3	1	1	1	1	1	1	1	3	1	1
sodium dichromate	3	3	2	1	1		1	1	1	3	1	1
sodium fluoride	3	2	2	1	1	1	1	1	1	3	1	1
sodium fluoroaluminate 10%	3	2 to 3	2		1	1	1	1	1	3	1	
sodium hydroxide (sod lye) 25%, 100°C	x	x	x	3	x	x	x	1	x	3	1	
sodium hydroxide (sod lye) 25%, 20°C	x	2	2	1	3	1	x	1	2	2	1	
sodium hypochlorite 10%	3	2	2	1	1	1	2	1	2 to 3	1	2 to 3	1
sodium hypochlorite 30%	x	3	3	1	2 to 3	1	2	1	1	1	x	
sodium metaphosphate	1	1	1	2	1	1	1	1	2	1	1	1
sodium nitrate, aqu.	2	1	3	1	1	1	1	1	2	1	1	1
sodium nitrite	2	1	1	1	1	1	1	1	1	1	1	1
sodium perborate	x	x	2	2	1	2	1	1	2	1	1	1
sodium percarbonate (bleaching agent)			2-3		1		1	1			1	
sodium peroxide	3	2	3	2	1 to 2	2	1	1	2 to 3	1	1	
sodium phosphate (see also trisodium phosphate)	2	2	x	2	1	1	1	1	2	1	1	1
sodium silicate, aqu.	x	3	1	1	1	1	1	1	1	1	1	1
sodium sulphide, aqu.	2	2		1	x	1	1	1	1	1	1	1
sodium sulphate (Glauber's salt), aqu.	3	1	1	1	1	1	1	1	1	1	1	1
sodium sulphite, aqu.	2	1	1	1	1	1	1	1	1	1	1	1
sodium thiosulphate (antichlorine)	3	2	1	1	1	1	1	1	1	1	1	1
solvent naphta (petroleum spirit, white spirit)	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	
solvents see specific designations												
soyabean oil* <sup>1</sup>	2	2	1	2 to 3	1	1	1 to 2	1	2 to 3	1	2	1
spindle oil (oils, mineral)												
spirits (ethanol, denaturated)	2	2	2	1	1	2-3	1-2	1	1	1	1	
spirits of ammonia (ammonia 25% in water)	x	x	1	3	1	1	1	1	2	x	1	
spruce needle oil	2	2	2	x	1 to 2	x	2	1				1
staining solution (20% nitric acid 4% hydrofluoric acid)	x	x		1				1	x		x	
starch syrup* <sup>1</sup>	2	2	1	1	1	1	1	1	1	1	1	1
starch, aqu.* <sup>1</sup>	1	1	1	1	1	1	1	1	2	1	1	1
steam of water to °C	x	x	120	100	150	x	x	200		200	135	90
stearin (stearic acid)	3	2	1 to 2	2 to 3	2	1 to 2	1 to 2	1	2	1	1	1
stone oil (naphthalene, liquid paraffine)	2	2	3	3	1	x	2 to 3	1	x	1		
styrene, monomer	x	3	x	x	2	x	x	1	x	1	x	
sublimate (mercury chloride)	1	1	1	1 to 2	1	2	1	1	1 to 2	1	1	
sugar aqu. * <sup>1</sup> (see also raw sugar juice)	3	1	1	1	1	1	1	1	1	1	1	1
sulfonic acids, in general	x	x	1	1	2	1		1			2 to 3	1
sulfur dioxide see sulphuric acid												
sulfur trioxide (sulphuric acid anhydride)	3	2	2 to 3	3	1	1	1	1	x	1	1	3
sulfur, molten, 90°C	3	2	1	1	1	x	x	1	2	1	2 to 3	
sulphuric acid 10%	3	2	3	1	1	1	1	1	2	1	1	1
sulphuric acid 30%	x	2	x	1	1	1	1	1	2	1	1	1

<sup>\*)</sup> at +20 °C ambient temperature

<sup>\*)</sup> as foodstuff, please order food-grade quality versions

<sup>\*)</sup> please ask for our detailed consultation

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	PUR-Ester	PUR-Ether	Silicone	Hyalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
sulphuric acid 50%	x	2	x	1	1	1	1	1	2	1	1	1
sulphuric acid 75%	x	x	x	1 to 2	1	2	2	1	2 to 3	1	1	2
sulphuric acid 90%	x	x	x	2	1	x	3	1	3	1	1	2
sulphuric acid conc. (oleum, fuming sulphuric acid)	x	x	x	3-x	1	x	3	1	x	1	x	2
sulphuric ether see ether												
sulphuric acid 10%, moist	3	2	2	1 to 2	2	2	1	1	3	1	1	1
sulphuric acid 75%, moist	x	x	3	2 to 3	2	2 to 3	2	1	3	1	1	2
table salt (sodium chloride)	3	2	1	1	1	1	1	1	1	3	1	1
talc (magnesium silicate)	1	1	1	1	1	1	1	1	1	1	1	1
tallow	1	1	1	1	1	1	1	1	1	1	2	1
tannic acid (tannin)	2 to 3	2	2	1 to 2	1 to 2	1	1	1	1 to 2	1	1	1
tar (see also hot tar)	x	x	2	x	1	2	2	1	3	1	x	1
tartaric acid, aqu.*1	3	1	1	1	1	1	1	1	1 to 2	1		1
tensides (washing or cleaning agents, synth.)	3	2	1	1	1	1	1	1	2	1	1	
test gasoline = white spirit	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	1
tetrachlorocarbon (tetrachloromethane, tetra, carbon tetra chloride)	3	3	x	x	1	x	x	1	x	1	x	
tetrachloroethans	x	x	x	x	2	3	x	1	x		x	1
tetrachloroethylene (perchloroethylene)	3	3	x	x	1	x	2 to 3	1	x	1	x	1
tetrahydrofurane (THF)	3	3	x	x	x	x	3	1	x	1	2	1
tetraline = tetrahydronaphthalene	x	x	x	x	1	1	3	1	x	1	x	1
thionyl chloride	x	x	x	x	3	x	x	1	x		x	x
thiophene	x	x	x	x	x	x	1	1			x	1
tin-II-chloride, aqu.	3	1	1	2	1	1	1	1	1	1	1	1
toluol	x	x	x	x	1	x	3-x	1	x	1	x	1
tooth pasts						1	1	1				
town gas, coal gas, illuminated gas (natural gas see later)		3	3	3	1	1	1	1	x	1	2	1
train-oil	1	1	2	2	1	1	1	1	2	1	2	
transformer oils	2	2	x	x	1	3	3	1	2 to 3	1	x	1
tributyl phosphate (TBP)	x	x	x	x	x	x	1	1	x	1	1	1
trichloro acetic acid (TCA)	x	x	x	x	3	2	1 to 2	1	x		3	1
trichloroethane (methylchloroform)	x	x	x	x	1	3	x	1	x	1	2	1
trichloroethylene (ethylene trichloride)	x	x	x	x	1 to 2	x	x	1	x	1	2	1
trichloromethane (chloroform)	x	x	x	x	1	x	x	1	x	1	x	3
tricresyl phosphate	x	x	3	x	1 to 2	x	3	1	3	1	1	3
triethanolamine	x	x	1	2 to 3	1	x	1	1	2	1	1	1
triethylamine	2	2	x		x	2	1	1	2	1	1	1
triethylene glycol (triglycol)	2	2	2	1	1			1			1	
trioctyl phosphate	x	x	3	x	x	x	1	1	x	1	1	1
trisodium phosphate	3	3	1	1	1	1	1	1	1	1	1	1
tung oil	3	2	3	3	1	3	2	1	x	1	2	
turpentine (-oil)	3	x	x	x	1	x	x	1	x	1	3-x	1
turpentine, surrogate, mineral	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	
urine	3	1	1	1	1	1	1	1	1	1	1	1
varnish	3	2	x	x	1	x	1	1	x		x	
vaseline see oils u. greases, mineral												1
vegetable oils	1-2	1-2	2-3	2	1	2	2-3	1	2-3	1	2	1
vinegar*1	x	3	1	1	1	2	1	1	2	1	1	1
vinyl acetate (acetic acid vinyl ester)	x	x	x	1	2	x	1	1	x	1	1	1
vinyl chloride (chloroethene), monomer	x	x	x	x	1	x	x	1	x	1	2	x
vitamin C	2-3	1			1	1	1					
vitriol oil (oleum)	x	x	x	x	1	x	x	1	x	1	x	x
vitriol blue (copper sulphate)	2	1	1	2	1	1	1	1	1	1	1*	
washing agent synth. (detergent) 20°C	3	2	1	1	1	1	1	1	2	1	1	
water:	3	2	1	1	1	1	1	1	1	1	1	1

\*) at +20 °C ambient temperature

\*1) as foodstuff, please order food-grade quality versions

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# Chemical Resistance

1 = excellent resistance

3 = medium resistance

2 = good resistance

x = non-resistant

	PUR-Ester	PUR-Ether	Silicone	Hypalon*	Viton*	PVC	PE	PTFE	Neoprene*	Kapton*	TPV	PE-EL
-aqua regia	x	x	3	3	2	2 to 3	2	1	3	1	3	
-condensed, distilled, desalinated or demineralised does not effect polymers but polymers effect water												
-drinking- or mineral water, without additives*1 to°C	25	60	120	100	150	70	80	200		200	100	
-mineral water CO2 saturated*1	3	1	1	1	1	1	1	1	1	1	1	
-seawater	x	2	1	1	1	1	1	1	1	1	1	1
weathering	2	1	1	1	1	1	2	1	1	1	1 bis 2	
white spirit (petroleum spirit, solvent naphta)	1 to 2	1 to 2	x	x	1	3	1 to 2	1			x	1
wines red and white*1	3	1	1	1	1	1	2	1	2 to 3	1	1	1
wood oil	3	2	3	3	1	3	2	1	x	1	2	2
wool grease (lanoline)	1	1	3	3	1	2	2	1	3	1	2	1
xylamon (wood protection)	3	3	x	x	2			1			x	
xylene	x	x	x	x	1 to 2	x	2 to 3	1	x	1	x	1
xylidine (dimethyl aniline)	x	x	1	1	1			1	1		3	
zinc acetate, aqu.	x	x	x	x	x		1	1	x	1	1	1
zinc chloride, aqu.	2 to 3	2	1	1	1 to 2	1	1	1	1	1	1	1
zinc sulphate, aqu.	2 to 3	2	1	1	1	1	1	1	1	1	1	1

The values listed in the table "Chemical Resistance" are based on the qualified listings of various raw materials suppliers, our own tests, as well as customer experience reports. These are explicitly intended as a guideline only and have been compiled according to the best of our knowledge; they are, however - especially in consideration of third parties - non-binding. Risks in regard to applicability, proper use and suitability remain the responsibility of the purchaser.

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