CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
vinegar		✓*		✓	✓	✓		✓	✓	✓?	
vinyl acetate		x*	x*								
water		✓	✓	✓	✓			✓	✓		
	100°C					?					
	70°C					✓	✓				
	40°C (up to)									✓	o
steam	110°C					x					
	100°C			x	x	?		x		x	x
water, sea - see sea water											
water, soda - see soda water											
wetting agents	All concentrations	✓*	✓*								
white spirit				✓	✓?	✓		?*	x*	✓	?
wines and spirits				✓		✓		✓		✓	o
xylene (dimethyl benzene)		x*	x*	✓	?	?	?	x*	x	x	x
xylenol (dimethyl phenol)		x*	x*								
yeast		✓*									
zinc ammonium carbonate		✓*	✓*								
zinc carbonate		✓*	✓*								
zinc chloride		✓*	✓*	✓	✓*	✓	✓*	✓	✓	✓?*	o
zinc oxide		✓*	✓*								
zinc sulphide		✓	✓								

CHEMICAL RESISTANCE TABLES

The resistance of plasticised PVC, Nylon, Polyester Elastomer Lining, low density Polyethylene & Polyurethane to a wide range of chemicals is listed in the following table.

The symbols used to denote performance are as follows:-

✓ **Satisfactory**

? **Some attack or absorption**: the material may be considered for use when alternative materials are unsatisfactory and where limited life is acceptable. When PVC is to be used with such chemicals fullscale trials under realistic conditions are particularly necessary.

x **Unsatisfactory**: so rated because of decomposition, solution, swelling, loss of ductility etc. of the samples tested.

In order to give guidance, the resistance of PVC to some chemicals has been predicted from its resistance to other chemicals which have a similar composition. Such predictions are shown using an asterisk (*) with the symbols listed above.

It may be safely assumed that chemical resistance decreases with both increasing temperature and with increasing concentration of reagent, and that the reverse is also true.

No valid assumptions can be made, however, if the temperature and concentration move in compensating directions. The rating 'some attack or absorption' (symbol - ?) should not be assumed to apply at conditions different from those shown.

o

Chemical resistance of polyurethane hoses and composite hoses sleeved with polyurethane.

The polyurethane is not recommended for continuous use in contact with water above 40°C (or solutions containing water above 40°C) because of its hydrolising effect. Hydrolysis can also occur with long exposure to:

a) high humidity at elevated temperatures,
b) acid and alkali solutions,
c) aerated water,
d) fungi and bacteria.

Some substances having a satisfactory rating may give swelling but this is usually minimal. The assumption should not be made that this indicates deterioration of the polyurethane.

		PLASTICISED PVC (PVC-P)		NYLON		POLYESTER ELASTOMER LINING		POLYETHYLENE LOW DENSITY, LDP		POLYURETHANE	
	CONCENTRATION	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C
acetaldehyde										x*	
	40% aq. solution		x*	✓	x			?	x		
	100%	x*	x*					?	x		
acetic acid	Dilute									?*	o
	10% aq. solution	✓		✓	?-x			✓	✓		
	20%					✓	✓*				
	30%					✓	✓*				
	50%			?-x	x						
	60% aq. solution	✓	?					✓	✓		
	Higher concs.									x*	o
	Concentrated			?-x	x						
	Glacial (conc.)	x	x	x	x	✓	?*	?	x	x*	
							(? at 38°C)				
acetic anhydride		x*	x*	?	x	✓*		?*	x	x*	
acetone (dimethyl ketone)				✓	?	?	?*	x	x	x	
	Traces	x	x	✓	?	?	?*				
	100%	x	x								
acetonitrile			x*								
acetophenone (methyl phenyl ketone)		x*	x*								
acetophenetidine		✓*	✓*								
acetylene gas				✓	✓	✓	✓*			✓?	
adipic acid											
alcohol, allyl		x*	x*								
alcohol, amyl		✓									
alcohol, benzyl		x*	x*								
alcohol, butyl		✓									
alcohol, cetyl		✓*	✓*								
alcohol, dodecyl (dodeconol)		✓*	✓*								
alcohol, ethyl	40% w/w water	✓									
	100%	✓*									
alcohol, furfuryl		x*									
alcohol, hexyl		✓*									
alcohol, isopropyl		✓									
alcohol, lauryl		✓*	✓								
alcohol, methyl	6% aq. solution	✓	✓								
	100%	?									
alcohol, nonyl (nonanol)		✓*									
alcohol, octyl (octanol)		✓*									
alcohol, propargyl		✓									
aliphatic hydrocarbons											
allyl chloride		x*	x*								
alum		✓	✓	✓*	✓*	✓*		✓	✓	✓?*	o
aluminimum acetate		✓*									
aluminium chloride		✓	✓	✓*	✓*	✓*	✓*	✓	✓	✓?*	o
aluminium fluoride		✓*									
aluminium hydroxide		✓*									
aluminium nitrate		✓*	✓*								
aluminium oxalate		✓*	✓*								
aluminium oxychloride		✓*									
aluminium potassium sulphate		✓	✓								
aluminium sulphate		✓*	✓*	✓*	✓*	✓*	✓*	✓	✓	✓?*	o
ammonia	0.88 s.g. aq. solution										
	Anhydrous gas			✓	✓			✓	✓	✓?*	
	Anhydrous liquid	x*	x*								
ammonia aqueous				✓	✓			✓	✓	?*	
ammonium bicarbonate		✓*	✓*								
ammonium bifluoride		✓*	✓*								
ammonium carbonate		✓*	✓*								
ammonium chloride		✓	✓	✓*	✓*	✓	✓*	✓	✓	✓?*	o
ammonium fluoride		✓*									
ammonium hydrosulphide		✓*									
ammonium hydroxide		✓		✓	✓	✓*	✓*	✓	✓		
	Dilute									✓?*	o
ammonium metaphosphate		✓*	✓*								
ammonium nitrate		✓*	✓*								
ammonium oxalate		✓*	✓*								
ammonium persulphate		✓*	✓*								
ammonium phosphate		✓*	✓*								
ammonium sulphate		✓	✓	✓	?	?	?*	✓	✓	✓?*	o
ammonium sulphide		✓	x								
ammonium thiocyanate		✓*	✓*								
amyl acetate (pentyl acetate)		x*	x*	✓	✓	?		x	x	x	
amyl alcohol				✓*	✓?*	✓		✓	x	?	
amyl chloride (pentyl chloride)		x*	x*								
anethole				✓				x	x		
aniline (amino benzene)		x	x	?	x	x	x	?*	x*	x	
aniline hydrochloride		x*	x*								

		PLASTICISED PVC (PVC-P)		NYLON		POLYESTER ELASTOMER LINING		POLYETHYLENE LOW DENSITY, LDP		POLYURETHANE	
CHEMICAL	CONCENTRATION	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C
aniline sulphate		✓*									
animal oils		✓*									
anthraquinone											
anthraquinone sulphonic acid											
antimony chloride		✓*	✓*								
antimony trichloride		✓*	✓*								
aqua regia	Dilute										
	Concentrated										
arcton 6 (refrigerant)								?			
arcton 11 (refrigerant)						✓*				?*	
arcton 12 (refrigerant)				✓		✓*				?*	
					(at 55°C)						
arcton 22 (refrigerant)				✓						?*	
arcton 113 (refrigerant)				x	x					x*	
arcton 114 (refrigerant)						✓*					
arsenic acid	Concentrated	✓	?								
arysulphonic acid			x*								
barium carbonate		✓*	✓*								
barium chloride		✓*	✓*	✓	✓	✓*	✓*	✓	✓	✓?*	o
barium hydroxide		✓*		✓*	?*	✓*		✓	✓		
	Dilute									✓?*	o
barium sulphate		✓*	✓*								
barium sulphide		✓	✓								
beer		✓		✓	✓	✓	✓	✓	✓	✓*	o
benzaldehyde	Traces	x*	x*	✓	x			x	x	x*	
	100%	x*	x*								
benzene		x	x	✓	?	?	x*	x	x	x	
benzoic acid			x*								
benzoyl chloride		x*	x*								
benzyl acetate			x*								
benzyl alcohol				?	x			x	x		
bismuth carbonate		✓*	✓*								
bleach (see calcium hypochlorite)											
borax (sodium tetraborate)		✓*		✓*	✓*	✓	✓*	✓	✓	✓*	o
boric acid		✓*		✓*		✓	✓*	✓	✓	✓?	o
boron trifluoride											
brine		✓*	✓*	✓	✓	✓*	✓*	✓	✓	✓	o
bromine	Traces, gas	x*	x*								
	100% (dry gas)	x*	x*	x	x			x	x		
	Liquid	x*	x*	x	x	x*	x*	x	x		
butadiene											
butane				✓	✓	✓	✓*	✓		✓?	
butanediol		x*	x*								
butyl acetate		x*	x*	✓	✓	?				x	
butyl alcohol (butanol)				✓?	x	✓*		✓	✓*	?*	
butyl chloride		x*	x*								
butyl phonel											
butyraldehyde		x*	x*								
butyric acid								x			
	20% aq. solution	✓*									
	Concentrated	x*	x*								
calcium arsenate				✓	✓						
calcium bisulphite		✓	✓								
calcium carbonate		✓*	✓*								
calcium chlorate		✓*	✓*								
calcium chloride	Aq. solution	✓	✓	✓	✓	✓	✓*	✓	✓	✓?*	o
	20% in methyl alcohol		x*								
calcium hydroxide (lime solution)		✓*		✓*		✓*		✓	✓		
	Dilute									✓?*	o
calcium hypochlorite		✓						✓	✓		
(chloride of lime, bleach)	Dilute			?*						✓	o
	(5%)					✓					
calcium nitrate		✓*	✓*								
calcium phosphate		✓*	✓*								
calcium sulphate		✓*	✓*								
carbitol acetate											
carbolic acid (phenol(s))				x	x	x	x	x	x	x	x
carbon dioxide		✓*	✓*	✓*	✓*	✓	✓*	✓	✓	✓	✓*
carbon disulphide		x	x	✓	x	?	x*	x	x	?*	x
carbon monoxide		✓*	✓*								
carbon tetrachloride		x	x	x	x	x	x*	x	x	x	x
carbonic acid		✓	✓*								
casein		✓	✓*								
castor oil		✓				?	?-x*	x	x	✓*	✓*
chloracetic acid			x*								

CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
chloral hydrate		x*	x*								
chloric acid											
chlorine	10% (dry gas)			x	x	x*	x*				
	100% (dry gas)			x	x	(Dry & Wet)	(Dry & Wet)	x	x	x	x
	10% (moist gas)										
chlorine trifluoride		x*	x*								
chlorine water	2%			x	x			✓	✓	x	x
	Sat. solution	?	x*					✓	x		
chlorobenzene		x	x								
chloroform		x*	x*	x	x	x	x	x	x	x	x
chlorosulphonic acid		x*	x*								
chrome alum (chrominium		✓*	✓*								
potassium sulphate)											
chromic acid										x	x
	Plating solution	x	x					✓	✓		
	10%			x	x			✓	✓		
cider		✓*		✓		✓*		✓	✓	✓	o
citric acid		✓		✓	?	✓	✓*	✓	✓		
	Dilute									✓?	o
coal gas				✓							
copper chloride		✓*	✓*								
copper cyanide		✓	✓								
copper fluoride		✓*	✓*								
copper nitrate		✓*	✓*								
copper sulphate		✓*	✓*	✓	✓	✓	✓*	✓	✓	✓*	o
creosote		x	x	x*	x*	x*	x*	x	x	x	x
cresols (inc. cresylic acid)		x	x	x*	x*	x*	x*	x	x	x	x
crotonaldehyde		x*	x*								
crude oil						✓*		x	x	✓?*	✓?*
	Petroleum oil			✓	✓						
cupric chloride		✓	✓								
cupric fluoride		✓*									
cupric nitrate		✓*	✓*								
cupric sulphate		✓	✓								
cyanide								✓	✓	✓?*	o
cyclohexane				✓	?	✓		x*	x*	x*	
cyclohexanol		x*	x*								
cyclohexanone		x*	x*	✓	x			x	x	x	
d.d.t. preparation				✓							
decalin				✓	✓						
detergents, alkaline						✓*	✓*	✓*	✓*		
detergent, synthetic	All concentrations	✓*				✓*	✓*	✓	✓	✓*	o
developers, photographic		✓*	✓*								
dextrin (starch gum)		✓*	✓*	✓*	✓*	✓*		✓	✓	✓*	o
dextrose		✓*	✓*	✓*	✓*	✓*	✓*	✓	✓	✓*	o
di acetone alcohol				✓	?						
di ammonium phosphate				✓	?						
diamyl ether		x*	x*								
diazo salts											
dibutyl phthalate		x*	x*	✓		✓		?	x	?*	
dichlorodifluoromethane											
dichlorethylene		x*	x*								
dichlorobenzene		x*	x*								
di chloro ethane				?							
di chloro methane				?							
di ethanolamine	20%			✓	?						
						x*	x*				
diesel oil				✓	✓?	✓*	✓*	?*	x*	✓	✓
diethylene glycol		✓*									
diethyl ether (ether)		x	x	✓				x	x	?*	
diethyl ketone		x*	x*								
di isocyanate				✓*							
dimethylamine											
dimethylcarbinol (isopropyl alcohol)		✓									
di methyl formamide				✓						x*	
di methyl sulphoxide				x	x						
di octyl phosphate				✓	✓						
dioctyl phthalate		x*	x*	✓	✓	✓		?	x	?*	
dioxane		x	x								
disodium phosphate		✓	✓					✓	✓*		
emulsifiers	All concentrations	✓*	✓*								
emulsions, photographic		✓*	✓*								
ethane											
ethyl acetate		x*	x*	✓	✓	?		?	x	x	x
ethyl acrylate		x*	x*								

CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
ethyl alcohol (ethanol)				✓?	x	✓				?	x
	40%							✓	x		
	100%							x	x		
ethyl butyrate		x*	x*								
ethyl chloride		x*	x*								
ethyl ether				✓				x	x	?*	
ethyl formate		x*	x*								
ethyl lactate		x*	x*								
ethyl sulphate											
ethylene bromide		x*	x*								
ethylene chlorhydrin				x	x						
ethylene chloride		x*	x*	?				x	x		
ethylene dibromide		x*	x*								
ethylene dichloride (dichloro ethane)		x*	x*	?		x	x	x	x		
ethylene glycol (glycol)		✓		✓	?	✓		✓	✓	?*	
ethylene oxide		x*	x*	✓	?	✓		✓			
ethylene oxide											
fatty acids				✓	✓						
ferric chloride		?	?	✓		✓*	✓*	✓	✓	✓*	o
ferric nitrate		✓*	✓*	✓							
ferric sulphate		✓	✓								
ferrous ammonium citrate		✓*	✓*								
ferrous chloride		?	?								
ferrous sulphate		✓*	✓*								
fixing solution, photographic		✓*	✓*								
flavours & essences				✓	✓	✓*		✓*		✓*	o
fluorine		x*	x*	x	x			?	x		
fluosilicic acid											
formaldehyde	40% w/w in water	✓		✓	x	?		✓	✓	?	
formic acid	3% aq. solution					?		✓	✓	x*	x*
	10% aq. solution							✓	✓		
	25% aq. solution							✓	✓		
	50% aq. solution		x*	x	x			✓	✓		
	100%	x*	x*					✓	✓		
french polish				✓?*		✓		✓*		?*	x*
freon 11 (refrigerant)				✓	?	✓*				?*	
freon 12 (refrigerant)				✓	?	✓*				?	
freon 22 (refrigerant)				✓	?	✓*				?	
freon 113 (refrigerant)				✓	?					x*	
	55°C					✓					
freon 114 (refrigerant)											
fructose		✓*	✓*								
fruit juice				✓		✓*		✓	✓	✓*	o
fruit pulp		✓	✓*								
fuel oil				✓	✓?	✓*	✓*	?	x	✓	?*
furfural (furfuraldehyde)		x*	x*								
furfuryl alcohol				✓	?			x	x		
gallic acid		✓									
gas, coal or town - see coal gas											
gas, natural (mainly methane)-											
see natural gas											
gas oil				✓	?	✓*		?*	x*	✓?*	
gaz (liquified petroleum gas)											
glacial acetic acid		x	x								
glucose		✓	✓*	✓	✓	✓*	✓*	✓	✓	✓*	o
glycerine		✓*		✓	?	✓	✓*	✓	✓	✓	
glycerol		✓*									
glycerol monobenzyl ether		x*	x*								
glycol - see ethylene glycol											
glycolic acid											
grape sugar		✓*	✓*	✓	✓	✓*	✓*	✓	✓	✓*	o
greases, general				✓	✓			?*	x*	✓?*	
greases, mineral				✓	✓	✓*	✓*	?*	x*	✓	✓*
ground nut oil				✓*	✓*	✓*	✓*	?	x	✓*	✓*
heptane				✓				x	x	✓*	
hexadecanol (cetyl alcohol)		✓*	✓*								
hexane				✓		x	x			✓*	
hydrazine						x	x			x*	
hydrobromic acid	50% aq. solution	✓	✓								
	100%	✓*	✓*								
hydrochloric acid	Dilute									?x*	o
	1%			✓	x						
	10% aq. solution	✓	✓	✓	x			✓	✓		

CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
	20%					?					
	22% aq. solution	✓	✓					✓	✓		
	37%					x					
	Concentrated	✓	?	x	x			✓	✓	x*	x*
hydrocyanic acid											
hydrofluoric acid	Dilute									?*	x*
	4% aq. solution	✓	✓					✓	✓		
	40% aq. solution	✓						✓	✓		
	48,75% and anhydrous					x		✓	✓		
	60% aq. solution	x	x					✓	✓		
	Concentrated	x	x					✓	?		
hydro fluosilicic acid	20%			?							
	31%							✓*	✓*		
hydrogen		✓*	✓*	✓	✓	✓	✓*	✓	✓	✓	✓*
hydrogen bromide	Anhydrous	✓*									
hydrogen chloride	Anhydrous	✓*									
hydrogen fluoride	Anhydrous	✓*									
hydrogen peroxide	3% (10 vol.)	✓						✓	✓		
	6% w/w (20 vols)			✓	x			✓	✓		
	10%									?*	
	12% (40 vol.)	✓						✓	✓		
	30% (100 vol.)	✓						✓	✓		
	90% and above	✓						✓	✓		
	90% and above							(Up to 90%)			
hydrogen phosphide (phosphine)		✓*	✓*								
hydrogen sulphide		✓									
hydroquinone		✓									
hydroxylamine sulphate											
hypochlorous acid		?	x*								
industrial methylated spirits (I.M.S.)				✓?*	x*	✓*		?	x	?	x*
iodine, tincture of										?x*	x*
solution in potassium	iodide	x*	x*					x	x	?x*	x*
iso cyanates				✓*				x*	x*		
isophorone		x*	x*								
iso propyl alcohol				✓	x	✓		✓		?*	x*
jet fuel				✓*		✓		?*	x*	?*	
kerosene (paraffin oil)				✓	✓?	✓*	✓*	?	x		
	Up to 40°C									✓	?*
lactic acid (dodecanoic acid)				✓	✓	✓*				?*	o
	10% aq. solution	✓		✓				✓	✓		
	100%	x*	x*					✓	✓		
lanoline		✓*									
lauric acid		✓*									
lauryl chloride											
lead acetate		✓*	✓*					✓	✓	✓?*	o
lead arsenate		✓*	✓*								
lead nitrate		✓*	✓								
lead tetraethyl (see tetraethyl lead)		✓*									
lime solution											
(see calcium hydroxide)											
linoleic acid											
linseed cake				✓	✓						
linseed oil				✓*	✓*	✓*		?	x	✓	✓*
magnesium carbonate		✓*	✓*								
magnesium chloride		✓*	✓*			✓*	✓*	✓	✓	✓?*	o
	50%			✓	✓						
magnesium hydroxide	Dilute									✓?*	o
		✓*	✓*	✓		✓*		✓	✓		
magnesium nitrate		✓*	✓*								
magnesium sulphate		✓*	✓*								
maleic acid	25% aq. solution										
	50% aq. solution										
	Concentrated		x*								
malic acid		✓									
manganese sulphate		✓*	✓*								
melamine acid - catalyst lacquers											
mercuric chloride		x*	x*								
mercuric cyanide		✓*	✓*								
mercurous nitrate		✓*	✓*								
mercury		✓*	✓*	✓	✓	✓	✓*	✓	✓	✓*	✓*
mesityl oxide		x*	x*								

CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
metallic soaps (water soluble)		✓*									
methane				✓	✓					✓?*	
methyl acetate		x	x	✓	✓			x	x		
methyl alcohol (methanol)				✓	x	✓				?	x*
	6%							✓	?*		
	100%							?	x		
methyl bromide		x*	x*	✓	x						
methyl chloride (chloro methane)		x*	x*	✓	x			x	x		
methyl cyclohexanone		x*	x*								
methyl ethyl ketone (M.E.K.)		x*	x*	✓	?	?		?	x	x	x
methyl isobutyl ketone (M.I.B.K.)		x*	x*	✓	?	?*		x	x	x*	x*
methyl methacrylate		x*	x*								
methyl sulphate		x*	✓	?							
methyl sulphonic acid											
methyl sulphuric acid	50% aq. solution										
	60% aq. solution										
	75% aq. solution										
	90% aq. solution										
methylated spirit				✓?*	x*	✓*		?	x	?	x*
methylene chloride		x	x	?	x	x	x	x	x	x*	x*
(dichloro methane)											
milk		✓		✓	✓	✓*		✓	✓	✓*	o
mineral oils		✓	x								
mixed acids (sulphuric /nitric)	Various proportions		x*								
molasses		✓	✓*								
monochlorbenzene		x	x								
mustard				✓		✓*		✓*		✓*	o
naphtha				✓	✓?	✓		✓	✓	?	x*
naphthalen		x*	x*	✓	✓	?		x	x		
natural gas (mainly methane)				✓	✓*					✓?*	
nickel chloride		✓*	✓*								
nickel nitrate		✓*	✓*								
nickel salts				✓				✓	✓	?*	o
nickel sulphate		✓*	✓*								
nicotine											
nicotinic acid											
nitric acid	Dilute									?x*	o
	5% aq. solution	✓	✓					✓	✓		
	10% aq. solution	✓				?		✓	✓		
	25% aq. solution	✓				x		✓	✓		
						(30% to conc.)					
	50% aq. solution	✓	?					?	x		
	70% aq. solution	?	x*					?	x		
	95% aq. solution	x*	x*					x	x		
	All concentrations			x	x						
	Concentrated									x	x
nitrobenzene		x	x								
nitrogen				✓*		✓*	✓*	✓*		✓	✓*
nitropropane		x	x								
nitrous fumes	Moist		x*								
nitrous oxide gas											
oil, ASTM Oil No. 1						✓	✓			✓	✓?*
						(at 149_C)					
oil, ASTM Oil No. 3						✓	✓			✓	✓?*
						(at 149_C)					
oil, ASTM Ref. Fuel A						✓	✓			✓	✓?*
						(at 70_C)					
oil, ASTM Ref. Fuel B						✓	✓			✓?	?*
						(at 70_C)					
oil, ASTM Ref. Fuel C						✓	?				
						(at 70_C)					
oil, animal						✓		?	x	✓?*	✓?*
oil, crude - see crude oil											
oil, diesel - see diesel oil											
oil, etheral											
oil, fuel - see fuel oil											
oil, gas - see gas oil											
oil, hydraulic, petroleum base				✓						✓	(Mineral)
synthetic base				✓		✓				x	x
					Pydraul 312C				(Pydraul)		
				Skydrol 500				(Skydrol 500)			
oil, mineral				✓	✓	✓	✓	x	x	✓	✓?*

CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
(including common lubricating oils)											
oil, paraffin - see kerosene											
oil, transformer - see transformer oil											
oil, of turpentine - see turpentine											
oil, vegetable				✓	✓	✓		?	x	✓	✓?*
oleic acid		✓		✓	✓	✓		x	x	?*	
oxalic acid		✓		✓	?			✓	✓		
	10%										?*
oxygen		✓*	✓*	✓	?			✓	✓*	✓	
ozone		✓*		?	x			x	x	✓	
palmitic acid		✓*									
paraffin		?									
penthane											
perchloric acid			x*								
perchloroethylene				?	x	x	x	x*	x*	x*	x*
petrol											
petrol, aliphatic 2 star				✓	✓	✓		x	x	✓	
3 star				✓	✓	✓		x	x	✓	
4 star				✓	✓	✓		x	x	✓	
5 star				✓	✓?			x	x	✓	
High Octane				✓	✓?			x	x	✓?	
petrol, aromatic (containing benzene)				✓*	✓?*			x	x	✓?*	
petrol/benzene mixture	80:20 ratio	x*	x*								
petroleum ether		x	x	✓				x	x	?*	
phenol (s) (carbolic acid)			x*	x	x	x		x	x	x	x
phenylcarbinol (benyl alcohol)		x	x*								
phenylhydrazine		x*	x*								
phenylhydrazine hydrochloride			x								
phosgene	Gas										
	Liquid										
phosphates		`✓*	✓*								
phosphoric acid Dilute										?*	o
	20% aq. solution	✓	✓								
	25%							✓	✓		
	30% aq. solution	✓	✓					✓	✓		
	50% aq. solution			✓	x			✓	✓		
	90%							✓	✓		
	95% aq. solution										
phosphoric anhydride		✓*									
phosphorus											
phosphorus pentoxide		✓*		?				✓	✓		
phosphorus trichloride		x*	x*								
photographic developers		✓*	✓*								
photographic emulsions		✓*	✓*								
photographic fixing solutions		✓*	✓*								
phthalic anhydride		✓*	✓*								
picric acid (trinitro phenol)	1% w/w in water	✓*	✓*	?	x			✓			
	10% w/w in alcohol	✓*									
polyester emulsions				✓*		✓*					
polystrene emulsions				✓*		✓*					
polyglycol ethers		x*	x*								
potassium acid sulphate		✓	✓								
potassium antimonate		✓	✓								
potassium bicarbonate		✓*	✓*								
potassium bichromate		✓*									
potassium bisulphite		✓	✓*								
potassium borate		✓*	✓*								
potassium bromate		✓*	✓*								
potassium bromide		✓*	✓*								
potassium carbonate		✓*	✓*								
potassium chlorate		✓*	✓*								
potassium choride		✓	✓								
potassium chromate		✓*	✓*								
potassium cuprocyanide		✓	✓								
potassium cyanide		✓	✓								
potassium dichromate		✓	✓			✓*		✓	✓	✓*	o
potassium ferricyanide		✓*	✓*								
potassium ferrocyanide		✓*	✓*								
potassium fluoride		✓*	✓*								
potassium hydroxide (caustic potash)						✓					o
	Dilute									✓?*	
	1% aq. solution	✓	✓					✓	✓		
	10% aq. solution	✓	✓					✓	✓		
	50%			✓	x			✓	✓		
	Concentrated	✓	x					✓	✓	x	o

CHEMICAL	CONCENTRATION	PLASTICISED PVC (PVC-P) 20°C	PLASTICISED PVC (PVC-P) 60°C	NYLON 20°C	NYLON 60°C	POLYESTER ELASTOMER LINING 20°C	POLYESTER ELASTOMER LINING 60°C	POLYETHYLENE LOW DENSITY, LDP 20°C	POLYETHYLENE LOW DENSITY, LDP 60°C	POLYURETHANE 20°C	POLYURETHANE 60°C
potassium hypochlorite		✓									
potassium nitrate (nitre, saltpetre)		✓*	✓*	✓	x	✓*		✓	✓	✓?*	o
potassium perborate		✓*	✓*								
potassium perchlorite		✓*									
potassium permanganate		✓*						✓	✓		
	Dilute									?*	
	5%			x	x						
potassium persulphate		✓*	✓*								
potassium phosphate		✓*	✓*								
potassium sulphate		✓*	✓*	✓	✓			✓	✓	✓?*	
potassium sulphide		✓	✓								
potassium thiosulphate		✓	✓								
propane				✓	✓					✓?*	
propylene dichloride		x*	x*								
(1,2 dichloro propane)											
propylene glycol		✓*									
propylene oxide		x*	x*								
pyridine				?	x	x	x			x	x
saccharose		✓*	✓*								
salicylic acid											
(ortho hydoxy benzoic acid)											
saltpetre - see potassium nitrate											
sea water		✓*	✓*	✓	✓	✓		✓	✓	✓	
selenic acid											
silver acetate		✓*	✓*								
silver cyanide		✓*	✓*								
silver nitrate				✓				✓	✓		
	Dilute									?*	o
soap solution		✓		✓		✓		✓	✓		
soda water				✓	✓	✓*		✓*	✓*	✓*	o
sodium acetate		✓*									
sodium acid sulphate		✓	✓								
sodium aluminate		✓*	✓*								
sodium antimonate		✓	✓								
sodium benzoate		✓*	x*								
sodium bicarbonate		✓*		✓	✓	✓*		✓	✓	✓*	o
sodium bisulphate		✓*	✓*								
(sodium hydrogen sulphate)											
sodium bisulphite		✓									
sodium borate		✓*									
sodium bromide		✓*	✓*								
sodium carbonate (washing soda)		✓*		✓	?			✓	✓		
	Dilute									?*	o
sodium chlorate		✓*	✓*	?				✓	✓	✓?*	o
sodium chloride (common salt)		✓	✓	✓	✓	✓		✓	✓	✓*	o
sodium cyanide		✓	✓								
sodium ferricyanide		✓*	✓*								
sodium ferrocyanide		✓*	✓*								
sodium fluoride		✓*									
sodium hydroxide (caustic soda)	Dilute									✓?*	o
	1% aq. solution	✓						✓	✓		
	10% aq. solution	✓	?					✓	✓		
	20%					✓		✓	✓		
	40% aq. solution	✓	x					✓	✓		
	46%					?		✓	✓		
	50%			✓	x			✓	✓		
	Concentrated	✓	x					✓	✓	x*	x*
sodium hypochlorite	5%					✓					
(a bleaching agent)	15% Cl	✓	?					✓	✓		
	Dil.			?						✓*	o
sodium hyposulphate		✓*	✓*								
sodium metaphosphate		✓*	✓*								
sodium nitrate		✓*	✓*	✓*	✓*	✓*		✓	✓	✓?*	o
sodium nitrite		✓*	✓*								
sodium perborate		✓*									
sodium peroxide		✓*	✓*								
sodium phosphate		✓*	✓*								
sodium silicate		✓*	✓*								
sodium sulphate		✓*	✓*								
sodium sulphide				✓	?	✓*				✓?*	o
	25% aq. solution	✓	✓					✓	✓		
	Concentrated	✓	✓					✓	✓		
sodium sulphite				✓*	?*	✓*		✓	✓	✓?*	o
sodium tetraborate		✓*									
sodium thiosulphate		✓	✓								
soft soap		✓									

		PLASTICISED PVC (PVC-P)		NYLON		POLYESTER ELASTOMER LINING		POLYETHYLENE LOW DENSITY, LDP		POLYURETHANE	
CHEMICAL	**CONCENTRATION**	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C	20°C	60°C
solvent naptha				✓	✓?	✓*		?*	x*	✓?*	
stannic chloride		✓	✓								
stannous chloride		✓	✓								
starch		✓*	✓*								
steam - see water											
stearic acid		✓*	✓*	✓	✓	✓*		✓	✓		
stearin (also stearine)				✓	✓			✓*	✓*		
styrene				✓		x*	x*			?*	
sucrose (cane or beet sugar)		✓*	✓*	✓*	✓*	✓*	✓*	✓	✓	✓*	o
sulphamic acid				x	x						
sulphur				✓*	✓*					?*	
	Colloidal			✓				✓	✓		
	Molten					✓*	✓*				
sulphur dioxide	Gas & Liquid					✓*					
	Dry	✓*	✓*					✓	✓		
	Moist		x*					x	x		
	Liquid		x*								
	10%			?	x						
sulphur trioxide				?	x			x	x		
sulphuric acid	Dilute									?*	o
	1%			✓	?	✓					
	10% aq. solution	✓	✓			✓		✓	✓		
	20% aq. solution	✓	✓			✓		✓	✓		
	30% aq. solution	✓	✓			✓		✓	✓		
	40% aq. solution	✓	✓			✓		✓	✓		
	45% aq. solution	✓	✓			✓		✓	✓		
	50% aq. solution	✓	?			x		✓	✓		
	55% aq. solution		?			x		✓	✓		
	60% aq. solution	?	?			x		✓	✓		
	70% aq. solution	?				x		✓	?		
	80% aq. solution	?				x					
	90% aq. solution					x					
	95% aq. solution					x		?	x		
	98% aq. solution	x	x	x	x			?	x		
	Fuming	x	x					x	x		
	Concentrated									x*	x*
sulphurous acid	10% aq. solution	✓									
	30% aq. solution	✓									
surface active agents (emulsifiers,	All concentrations	✓*	✓*								
(synthetic detergents & wetting agents)											
synthetic detergents	All concentrations	✓*									
tallow		✓*									
tannic acid		✓									
tanning extracts		✓*									
tartaric acid		✓		✓	✓	✓*					
	Dilute									?*	o
	10%							✓	✓		
tetra ethyl lead		✓*		✓				✓	x		
tetrahydrofuran		x*	x*								
tetrahydronaphthalene		x	x								
tetralin		x	x								
thionyl chloride											
toluene		x*	x*	✓	?	?	x	x	x	x	x
town gas - see coal gas											
transformer oil		✓	x	✓*				?	x	?*	?x*
tributyl phosphate		x*	x*	✓	✓	✓*		?*	x*	?*	
trichloracetic acid			x*								
trichloroethane		x*	x*	?	x	x*	x*			x*	x*
trichloroethylene		x	x	?	x	x	x	x	x	x	x
trichlorobenzene		x*	x*								
tricresyl phosphate		x*	x*	✓	✓			x	x	?x*	x*
triethanolamine		✓	✓								
triethylene glycol		✓*									
trimethylamine											
trimethylpropane											
trisodium phosphate		✓	✓	✓	✓	✓		✓	✓	?*	?x*
turpentine				✓	✓?	✓*		?	x	✓	?*
turps substitute - see white spirit											
urea		✓*									
urea, formaldehde soln.				✓*		✓*					
urea, soln.				✓	?	✓*		✓	✓	✓?*	
uric acid				✓	✓						
	Dilute					✓*	✓*	✓	✓		
vegetable oils		✓									