

B CORROSION CHART

An R indicates that the material is resistant to the named chemical up to the temperature shown, subject to the limitations given in the notes. The notes are given at the end of the table.

A blank indicates that the material is unsuitable. ND indicates that no data was available for the particular combination of material and chemical.

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NOTE

This appendix should be used as a guide only.
Before a material is used its suitability should be
cross-checked with the manufacturer.

METALS											
	Aluminium (a)	Aluminium Bronze	Brass (b)	Cast Iron (c)	Copper	Gunmetal and Bronze (d)	High Si Iron (14% Si) (e)	Lead	Mild Steel BSS 15	Nickel (cast)	
Centigrade	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	
Acetaldehyde	R R R	R R R	R R R	R ND ND	R R R	R R R	R R R	R ND	No data	R R R	
Acetic acid (10%)	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R ND		R ²⁰ R R	
Acetic acid (glac. & anh.)	R ¹ R R	R R R	R R R	R R R	R R R	R R R	R R R	R ND		R R R	
Acetic anhydride	R ¹ R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R		R R R	
Acetone	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R ¹¹	R R R	
Other ketones	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	No data	R R R	
Acetylene	R R R		R R R ⁸²	R R R			R R R	R R	R R R	R R R	
Acid fumes	R ² R R	R ² R ² R ²						R ² R			
Alcohols (most fatty)	R ¹ R R	R R R	R R R	R ²⁴ R R	R R R	R R R	R R R	R R	R R R	R R R	
Aliphatic esters	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	No data	R R R	
Alkyl chlorides	No data	No data		R ¹¹ R R	R R R	R R R	R R R	R	R ¹¹	R R R	
Alum	R R R	R R R			R R R	R R R	R R R	R R ¹⁸ R ¹⁰		R	
Aluminium chloride	R ¹¹ ND ND	R ²⁰ R ²⁰			R R R	R R R	R R R	R ⁴⁺¹⁰			
Ammonia, anhydrous	R R R	R R R		R	R R R ⁸³	R R R	R R R	R R R ⁶²	R R R		
Ammonia, aqueous	R R R			R R			R R R	R R	R R		
Ammonium chloride	R ⁸⁴ R R			R R			R R R	R R		R R R	
Amyl acetate	R R R	R R R		R ¹¹ R R	R R R	R R R	R R R	R ¹ ND ND	No data	R R R	
Aniline	R R R			R R R	R R R	R R R	R R R	R R	No data	R R R	
Antimony trichloride		No data		R ¹¹ R R	No data	R	R ¹¹ R R	R ⁴ R		R ¹¹ R R	
Aqua regia											
Aromatic solvents	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R ¹¹	R R R	
Beer	R R R	R R R	R R R	R R ND	R R R	R R R	R R ND	R R R		R R R	
Benzoic acid	R R R	R R R	R R R		R R R	R R R	R R R	R ⁴		R R R	
Boric acid	R R R	R R R	R R R		R R R	R R R	R R R	R R R ⁶²		R R R	
Brines, saturated	R R R	R R R		R ⁸⁴	R R R ²⁰	R R R	R R R	R R R		R R R	
Bromine	R ¹¹ R R	R ²⁰		R ¹¹ R			R	R ²⁴			
Calcium chloride	R R R	R R R		R R	R R R	R R R	R R R	R ⁴		R ²⁰ R R	
Carbon disulphide	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R		R	
Carbonic acid	R R R	R R R						ND		R	
Carbon tetrachloride	R	R R R	R R R	R ¹¹ R R	R R R	R R R	R R R	R R ¹¹	R ¹¹ R	R R R	
Caustic soda & potash		R		R R	R R R	R R R			R R	R R R	
Chlorates of Na, K, Ba	R ¹¹ R R	R R R			R R R	R R R	R R R	R R R		R R R	
Chlorine, dry	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R ⁴	R R R	R R R	
Chlorine, wet								R R			
Chlorides of Na, K, Mg	R R R	R R R			R R R ²⁰	R R R	R R R	R R R ^{4,22}		R R R	
Chloroacetic acids		No data			No data	No data			No data	R ¹¹ R R	
Chlorobenzene	R ND ND	R R R	No data	R R R	No data	R R R	R R R	R R	R ¹¹ R	R R R	
Chloroform	R ¹ R R	R R R	R R R	R R R	R R R	R R R	No data	R R	R ¹¹ R	R R R	
Chlorosulphonic acid		R ²⁰ R ²⁰	No data	R ¹¹ R R			R R	R ⁴	R		
Chromic acid (80%)							R R	R R			
Citric acid	R R R	R R R			R R R	R R R	R R R	R R ²⁵		R R R	
Copper salts (most)		R R R					R R R	R ¹⁶ R		R	
Cresylic acids (50%)	R R R	R R R			R R R	R R R	R R R	R R R		R R R	
Cyclohexane	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	No data	R R R	
Detergents, synthetic	R R R	No data	R R R	No data	R R R	R R R	No data	R R	No data	R R R	
Emulsifiers (all conc.)	R R R	R R R	No data	No data	R R R	No data	No data	R R	No data	No data	
Ether	R ¹ R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	
Fatty acids (> C ₆)	R R R	R R R			R R R	R R R	R R R	R ⁴ R ⁵⁶		R R R	
Ferric chloride								R ⁴			
Ferrous sulphate		R ²⁰ R ²⁰ R ²⁰						R R R			
Fluorinated refrigerants, aerosols, e.g. <i>Freon</i>	R ¹¹ ND ND	R R R	R R R	R R R	R R R	R R R	R R R	R R	R ¹¹ ND ND	No data	
Fluorine, dry	R R R	R R R ¹¹			R R R	R R R		R ⁴ R	R R R	R R R	
Fluorine, wet				No data				R ND		R R R	
Fluosilicic acid								R R R ⁵⁰		R ²⁰ R R	
Formaldehyde (40%)	R	R R R	R	R	R R R	R R R	R R R	No data	R	R R R	
Formic acid	R	R R R	No data		R R R	R R R	R R R	R ³⁰ R ³⁶		R R R	

METALS										
Nickel-Copper Alloys (c)	Ni Resisit (High Ni Iron) (c)	Platinum	Silver	Stainless Steel 18/8 (f)	Molybdenum Stainless Steel 18/8 (f)	Austenitic Ferritic Stainless Steel (x)	Tantalum	Tin (g)	Titanium	Zirconium
20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
R R R	R ND	R R R	R R R	R R R	R R R	R R R	R R R	R R	R R R	R R R
R R R	R	R R R	R R R	R R R	R R R	R R R	R R R	R	R R R	R R R
R R R	R	R R R	R R R	R R R	R R R	R R R	R R R	R	R R R	R R R
R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R
R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R
R ² R R	R R R	R R R	R ¹⁶ R R	R ² R R R	R ² R R R	R ¹⁰² R ¹⁰² R ¹⁰²	R ⁵ R R R	R ¹⁴ R R	R ND ND	R R R
R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R R R R	R ² R ² R ²	R ² R R R
R R R	R R R R	R R R R	R R R R	R ¹¹ R R R	R ¹¹ R R R	R R R R	R R R R	R R R R	R ⁹³ R ⁹³	R R R R
R R	R R	R R R	R R R R	R R ¹³	R R	R R	R R R R	R R ⁵⁷	R R R R	R R R R
R R R	R R R	R R R	R R R R	R ³⁴	R ⁸⁴ R	R R R	R R R R	R R R	R R R ¹⁰	R R R R
R	R R R	R R R	R ⁷⁰ R R	R R R	R R R	R R R	R R R R	R ¹³	R R R R	R R R R
R R R	R R R R	R R R R	R R R R	R R R	R R R	R R R	R R R R	R R R R	R R ND	R R R R
R ND ND	R R R R	R R R R	R R R R	R ¹¹	R ¹¹ R ¹¹	R R R	R R R R	R R R R	R R ND	No data
R R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R R	R R ND	R R R
R R R	R R ND	R R R	R R R R	R R R	R R R	R R R	R R R R	R R	R R R	R R R
R R R	R R R	R R R	R R R R	R R R	R R R	No data	R R R R	R R R	R R R	R R R
R R R	R R R R	R R R R	R R R R	R ⁴²	R ⁴²	R R R	R R R R	R R R	R R R	R R R
R R R	R R R	R R R	R R R R	R ⁴²	R ⁴²	R R R	R R R R	R R R	R ⁹⁰	R ⁹⁰ R R
R R R	R R R	R R R	R R R R	R R ND	R R ND	R R R	R R R R	R R R	R R R	R R R
R R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R R R	R R R
R R R	R R R	R R R	R R R R	R ¹¹ R R	R ¹¹ R R	R R R	R R R R	R ¹¹ R R	R R R	R R R
R R R	R R R	R R R	R R R R	R R R ¹³	R R R ¹³	R ¹⁰³ R ¹⁰³	R ¹⁰ R R	R R R	R R ¹⁵	R R R
R	R R R	R R R	R R R R	R ¹⁶ R R	R ¹⁶ R R	R R R	R R R R ²⁵	R R	R ⁷⁹ R ⁷⁹ R ⁷⁹	R ²⁵ R ²⁵ R ²⁵
R R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R ⁹¹ R R	R R R
R R R	R R R	R R R	R R R R	R ⁸⁴	R ⁸⁴ R	R ⁵⁶ R ⁵⁶	R R R R	R ⁵⁷ R R	R R R	R R R
R R R	ND ND ND	R R R	R R R	R ⁸⁴	R ⁸⁴ R	R R R	R R R R	R R R	R R R	R R R
R R R	R R R	R R R	R R R R	R ¹¹ R ND	R ¹¹ R R	R R R	R R R R	No data	No data	R R R
R R R	R R R	R R R	R R R R	R ¹¹ R R	R ¹¹ R R	R R R	R R R R	R ¹¹ R R	R R ND	R R R
R R	R R R	R R R	R R R R	R ⁸⁴	R ⁸⁴	No data	R R R R	R R R	R R R	R R R
R R	R R R	R R R	R R R R	R ¹³ R R	R R R ¹³	R R R	R R R R	R R R	R R R ¹⁹	R R R
R	R ND ND	R R R	R ³⁰ R R	R ¹⁰ R R	R ¹⁶ R R	R ¹⁶ R ¹⁶ R ¹⁶	R R R R	R R R	R R R	R ¹⁶ R R
R R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R ND ND	R R R
R R R	No data	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R R ND	R R R
No data	No data	R R R	R R R R	R R R	R R R	R R R	R R R R	R	No data	R R R
R R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R R ND	R R R
R R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R R R	R R R
R R	R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R R	R R R	R R R
R R R	R R R	R R R	R R R R	R ¹¹ R R	R ¹¹ R R	R R R	R R R R	R R R	R R R	R R R
R R R	No data	R R R	R R R R	R ND ND	R ND ND	R R	R R R	R R R	R ⁵ R R	R R R
R R R	No data	R R R	R R R R	R ND ND	R ND ND	R R	R R R	R R R	R R R	R R R
R R R	R ¹² R ¹² ND	R R R	R R R R	R R R	R R R	R R R	R R R R	R R	R R R	R R R
R R	R R R	R R R	R R R R	R R R	R R R	R R R	R R R R	R R	R ⁰⁷ R ⁰⁹	R ¹⁰ R ²⁰

METALS											
	Aluminium (a)	Aluminium Bronze	Brass (b)	Cast Iron (c)	Copper	Gunmetal and Bronze (d)	High Si Iron (14% Si) (e)	Lead	Mild Steel BSS 15	Nickel (cast)	
Centigrade	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	
Fruit juices	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	No data	R R R	
Gelatine	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	No data	R R R	
Glycerine	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	
Glycols	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	
Hexamine									No data	R R R	
Hydrazine	R ND ND			No data ND ND			No data	ND	R R R	R ND ND	
Hydrobromic acid (50%)		R								R	
Hydrochloric acid (10%)		R ⁶²									
Hydrochloric acid (conc.)											
Hydrocyanic acid	R R R	R ²⁰ R ²⁰ R ²⁰					R R R	R R R		R R R	
Hydrofluoric acid (40%)		R ⁶²								R ²⁰	
Hydrofluoric acid (75%)		R ⁶²								R	
Hydrogen peroxide (30%)	R R R									R	
(30-90%)	R R R									R	
Hydrogen sulphide	R R R	R ¹¹ R R	R ¹¹ R R	R	R ¹¹ R R	R ¹¹ R R	R R R	R R R	R ¹¹ R R	R ¹¹ R R	
Hypochlorites		R					R R R	R ^{4,14,16}			
Lactic acid (100%)	R R R	R R			R R	R ⁴ R ⁴	R R R	ND		R R R	
Lead acetate	R ¹¹ R R	No data		No data						R R R	
Lime (CaO)	R ¹¹	R R R	R R R	R R R	R R R	R R R	R R R	R ¹	R ¹¹ R R	R R R	
Maleic acid	R R R	No data	No data		R R R	No data	R R ND		No data	R R R	
Meat juices	R R R	R R R		No data			No data	No data	No data	No data	
Mercure chloride							R				
Mercury				R R R			R R R		R R R	R ²⁷ R R	
Milk & its products	R R R	R R R		No data		R R R	No data			R R R	
Moist air	R R R	R R R			R R R	R R R	R R R	R R R		R R R	
Molasses	R R R	R ³⁰ R ³⁰ R ³⁰	R ³⁰ R	R R R	R ³⁰ R R	R ³⁰ R R	R R R		No data	R R R	
Naphtha	R R R	R R R	R R R	R R R	R R R	R R R	No data	R R R	R	R	
Naphthalene	R R R	No data	No data	R R R	R R R	No data	R R R	R R R	R	R R R	
Nickel salts		No data		No data			R R R	R R R		R ⁴⁰ R R	
Nitrates of Na, K, NH ₃	R R R	R ⁷³ R ⁷³ R ⁷³		R ¹¹ R R			R R R	R R R		R R R	
Nitric acid (<25%)							R				
Nitric acid (50%)							R R R				
Nitric acid (95%)	R R R						R R R		R		
Nitric acid, fuming	R ND ND						R R R		R		
Oils, essential	R R R	R R R	R R R	R R R	R R R	R R R	R R R	No data	R R R	R R R	
Oils, mineral	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	
Oils, vegetable & animal	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	
Oxalic acid	R ⁶⁰	R R R	No data		R R R	R R R	R R R	R ¹			
Ozone	R R R	No data	No data	R ND ND	No data	No data	R R R	No data	R ¹¹ R R	No data	
Paraffin wax	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R ND	R R R	R R R	
Perchloric acid			No data				R R R				
Phenol	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R ⁴ R R ¹⁰	No data	R R R	
Phosphoric acid (25%)	R	R R R			R R R		R R R	R R R			
Phosphoric acid (50%)		R R R					R R R	R R R	R ¹		
Phosphoric acid (95%)		R R R					R R R	R R R			
Phosphorus chlorides		R ¹¹ R ¹¹ R ¹¹		R ¹¹ R			R R R ¹¹	R R R			
Phosphorus pentoxide	R ¹¹ ND ND	No data					R R R		R ¹¹ R R	No data	
Phthalic acid	R R R	R R R	No data		R R R	R R R	R R R	R R R	No data	R R R	
Picric acid	R ND ND						R R R	R ¹		R ¹¹	
Pyridine	R R R	No data		R R R			R R R	R R R	No data	R R R	
Sea water	R R R	R R R	R ⁶² R R	R ⁸¹			R R R	R R R		R ND ND	
Sillicic acid	R R R		No data		R R R	No data	R R ND	R R	No data	R R ND	
Silicone fluids	R R R	R R R	R R R	R R R	R R R	R R R	No data		No data	R R R	
Silver nitrate				ND ND			R R R				
Sodium carbonate	R ⁶² R	R R R ¹	R R R	R ¹¹ R R	R R R	R R R	R R R	R ¹	R R R	R R R	
Sodium peroxide				R ¹⁰ R R			R ¹⁰ R ¹⁰ R ¹⁰			R R R	

METALS										
Nickel-Copper Alloys (c)	Ni Resist (High Ni Iron) (c)	Platinum	Silver	Stainless Steel 18/8 (f)	Molybdenum Stainless Steel 18/8 (f)	Austenitic Ferritic Stainless Steel (s)	Tantalum	Tin (g)	Titanium	Zirconium
20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
R R R R R	R R R R R R R R R R R R ND ND	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R ³⁴ R R R ¹⁶ R R R R R R R R R R R	R R R R ¹⁶ R R R R R R R R R R R	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R ND	R ⁵ ND ND R ⁹ R ND R R ND R R ND No data	R R R R R R R R R R R R R ND ND
R R R R R R ²⁷ R R	No data R R R R R R R R R R ²	R ¹⁹ R R R R R R ²⁰ R R R R R R ¹⁹ R R R ¹⁹ R R R R R	R ⁴⁵ R R R R ³⁶ R R R R R R ⁴⁸	R R R R R R R R R R R R R R R R ⁸⁷ R R R	R R R R R R R R R R R R R ⁶¹ R R R	R R R R R R R R R R R R R ¹¹ R ¹¹ R ¹¹	No data R R R R R R R R R R R R	R ¹³ R R R R R R R R R R R R R R R	No data R R R R ²⁵ R R ²⁸ R ²⁸ ND No data	R ND ND R ³⁰ R R R R R R ⁹² R ⁹² R ⁹² No data
R R R R R R R R R No data	R No data R R R R R R ND ND	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R ³⁶ R R R R R R R R	R R R R R R R R R R R R R R R R R R R ⁸⁹	R R R R R R R R R R R R R ¹³ R ¹³ R ¹³ R R R	R R R R R R R R R R R R R R R R R R	R R R R R R R R R R R R No data R R R	R R R R R R R R R R R R R R R	R R R R ND ND No data R R R R R R No data	R R R R R R R R R R R R R ND ND R R R R R R
R R	R R R R R R R R R R ND ND R R R	R R	R R	R ⁸⁹	R R R R R R R R R R ¹⁶ R R R R R R R R R R R R R R	R R	R R R R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R R R R R ND R R R R R R R R R R R R R R R R R R	R R
R R R R R R R R R R R R	R R R R ND ND R ND ND R R R	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R R	R R R R ¹¹ R R ¹⁰ R R R R R R R	R R R R R R R R R R R R R R R R ¹⁰⁴ R ¹⁰⁴ R ¹⁰⁴ R R R	R ND ND R R R R R R R R R R ⁹⁹ R R R R R	R ND R R R R R R R R ND R R R	R R ND R R ND No data R R ND R R R	R R R R ND ND No data R R R R R R R R R R R R R R R
R R R R R R R R R R R R R R R	R R R No data ND ND ND R R R R ¹⁰ R ¹⁰	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R ¹⁰ R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R	R R R R R R R R R R R R R	No data R ND ND No data R R ND R R R No data R R R R R R	No data R ND ND No data R R R R R R R R R R R R R R R R R R

METALS										
	Aluminium (a)	Aluminium Bronze	Brass (b)	Cast Iron (c)	Copper	Gunmetal and Bronze (d)	High Si Iron (14% Si) (e)	Lead	Mild Steel BSS 15	Nickel (cast)
Centigrade	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
Sodium silicate	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R
Sodium sulphide	R R R	R R R	R R R	R R R	R R R	R R R	R ND	R ⁴ R R	R R R	R R R
Stannic chloride		R ¹¹					R R			
Starch	R R R	R R R	No data	R R R	R R R	R R R	R R R	No data	No data	R R R
Sugar, syrups, jams	R R R	R R R	R R R	R R ND	R R R	R R R	R R R	No data	No data	R R R
Sulphamic acid	R ⁶⁰	No data					R R R		No data	No data
Sulphates (Na, K, Mg, Ca)	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R
Sulphites	R R R	R R R		R ³⁸ R R	R R R	R R R	R ³⁸ R	R R R	R R R	R R R
Sulphonic acids	No data	No data	No data	R ¹¹			No data	R R R	No data	No data
Sulphur	R R R	R R R		R R			R R R	R R R	R R R	R R R
Sulphur dioxide, dry	R R R	R R R	R R R	R R	R R R	R R R		R R R	R R R	R R R
Sulphur dioxide, wet	R ⁴ R R	R R R						R R R	R R R	R R R
Sulphur trioxide		R ¹¹ R R	R ¹¹ R R		R ¹¹ R R	R ¹¹ R R	R R R	R R ⁴ R R	R ¹¹ R R	R R R
Sulphuric acid (< 50%)		R R R			R R R		R R R	R R R	R R R	
Sulphuric acid (70%)		R R ⁶²		R			R R R	R R R	R	
Sulphuric acid (95%)				R R			R R R	R R R	R R	
Sulphuric acid, fuming	R ⁴			R R R			R R R	R R R	R R	
Sulphur chlorides				R ¹¹ R ¹¹			No data	R ⁴		No data
Tallow	R R R	R R R	No data	R R R	R R R	No data	R R R	R R	No data	No data
Tannic acid (10%)	R R R	R R R	R R R	R R R	R R R	R R R	R R R			R ND ND
Tartaric acid	R R R	R R R	R R R	R R R		R R R	R R R	R ⁴ R R		R ²⁰ R R
Trichlorethylene	R R R	R R R	R R R	R R	R R R	R R R	R R ND	R R	R ¹¹ R	R R R
Vinegar	R R R	R R R					R R R	R R R		R R R
Water, distilled	R R R	R ⁵³ R		R R R	R ⁵³ R	R ⁵³ R R	R R R	R ⁵³ R R	R ⁵³ R R	R R R
Water, soft	R ⁴³ R R	R R R	R R R	R	R R R	R R R	R R R	R R R	R ⁵³ R R	R R R
Water, hard	R ⁴³ R R	R R R	R R R	R R	R R R	R R R	R R R	R R R	R R R	R R R
Yeast	R R R	No data	No data	R R	R R R	R R R	R R R	No data	No data	R R R
Zinc chloride		R R R						R ⁴ R		R ²⁰ R R

THERMOPLASTIC RESINS										
	Acrylic Sheet (e.g. Perspex)	Acrylonitrile Butadiene Styrene Resins (I)	Nylon 66 Fibre (m)	Nylon 66 Plastics (m)	PC/PE	PTFE (m)	PVDF (y)	Rigid Unplasticised PVC	Plasticised PVC	
Centigrade	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	
Acetaldehyde	R R ⁵⁰	R	R ND ND	R R ⁵⁰ ND	R R ND	R R R	R R R	R ⁶	R	
Acetic acid (10%)	R R ⁵⁰			R ⁵⁰	R R R	R R R	R R R	R R		
Acetic acid (glac. & anh.)	R ⁵⁰		R R R	No data	R R R ⁵⁰	R R R	R R	R ⁵⁰		
Acetic anhydride			R R R	No data	R R	R R R	R ND ND			
Acetone			R R R	R R	R R ³⁷	R R R	R ¹⁰⁶ ND ND			
Other ketones			R R R	R ND ND	R R ³⁷	R R R				
Acetylene	No data	No data	No data	No data	No data	R R R	R ND ND	R R	No data	
Acid fumes	R R ⁶⁸				R R R	R R R	R R R	R R	No data	
Alcohols (most fatty)			R R R	R R ⁵⁰ R ⁵⁰	R R R	R R R	R R R	R ³³	No data	
Aliphatic esters			R R R	R ND	R	R ⁵⁰ R R	R R R		No data	
Alkyl chlorides	No data		R R R	R ⁴⁶ ND ND	R ND ND	No data	R R R	No data	No data	
Alum	R R	R R	R R R	R R R	R R R	R R R	R R R	R R	R R	
Aluminium chloride	R R ⁶⁸	R R	R ⁴³ R R	R ND ND	R R R	R ⁵⁰ R R	R R R	R R	R R	
Ammonia, anhydrous		R	No data	R ND ND	R R R	R R R	R ¹⁰⁷ R ¹⁰⁷ R ¹⁰⁷	R R		
Ammonia, aqueous	R R ⁴	R	R R ND	R ND ND	R R R	R R R	R ¹⁰⁷ R ¹⁰⁷ R ¹⁰⁷	R R	No data	
Ammonium chloride	R R	R R	R R R	R ND ND	R R R	R ⁵⁰ R R	R R R	R R	R R	
Amyl acetate			R R R	R ND ND	R R	R R R	R R R			
Aniline				R ⁵⁰	R ND	R R R	R R R			
Antimony trichloride	R ⁶⁸ R	R R		R ⁵⁰ ND ND	No data	No data	R R R	R R	R R	
Aqua regia					R R R	R R R	R R R	R R ¹³	No data	
Aromatic solvents			R R R	R R ⁵⁰ R	R ¹⁴ R	R ⁵⁰ R R	R R R		No data	
Beer	R R	R R	R R R	R R R	R R R	R R R	R R R	R ND	R	
Benzoic acid	R ND	R R	No data	R ⁵⁰	R R ND	R R R	R R R	R R ⁸⁰	ND	
Boric acid	R R ⁶⁸	R R	R ⁴³ R R	R R R	R R R	R R R	R R R	R R	R	
Brines, saturated	R R	R R	R R R	R R R	R R R	R R R	R R R	R R	R R	
Bromine					R R R	R ¹⁴ R R	R R R			
Calcium chloride	R R	R R	R R ⁴³ R	R ⁵⁰ ND ND	R R R	R R R	R R R	R R	R R	
Carbon disulphide			R R ND	R ⁵⁰ ND ND	R R ND	R R R	R R ND			
Carbonic acid	R R	R R	No data	R R ND	R R R	R R R	R R R	R R	R R	
Carbon tetrachloride			R R R	R ND ND	R	R ¹⁴ R R	R R R	R ¹⁴		
Caustic soda & potash	R R	R R	R R R	R R R	R R R	R R R	R ¹⁰⁷ R ¹⁰⁷ R ¹⁰⁷	R R	No data	
Chlorates of Na, K, Ba	R R ⁶⁸	R R		R R ND	R R R	R R R	R R R	R R	No data	
Chlorine, dry	ND	R R			R R R	R R R	R R R	R R	No data	
Chlorine, wet	R ⁴	R R			R R R	R R R	R R R		No data	
Chlorides of Na, K, Mg	R R	R R	R R R	R R R	R R R	R R R	R R R	R R	R R	
Chloroacetic acids	No data				R R R	R ² R ² R ²	R ND ND	R	No data	
Chlorobenzene			R R R	R ND ND	R	R ¹⁴ R R	R R R			
Chloroform			R R R		R	R ¹⁴ R R	R R R			
Chlorosulphonic acid					R R ND	R R R		ND		
Chromic acid (80%)		R			R R R	R R R	No data	R ¹⁹ R ¹⁹		
Citric acid	R R	R R	R R ⁴³ R	R ⁵⁰ ND ND	R R R	R R R	R R R	R R	R	
Copper salts (most)	R ⁶⁸ R	R R	R R R ³¹	R R R	R R R	R R R	R R R	R R	R R	
Cresylic acids (50%)					R R ND	R R R	R R R			
Cyclohexane			R R R	R ND ND	R R R	R R R	R R R		No data	
Detergents, synthetic	R R	R	R R R	R R R	R R R	R R R	R R R	R R	R	
Emulsifiers (all conc.)	R R	No data	R R R	R R R	R R R	R R R	R R R	R R	R R	
Ether			R R R	R ND ND	R R R	R R R	R R R		No data	
Fatty acids (>C ₆)	R ND	R R	R R ND	R ND ND	R R R	R R R	R R R	R R	No data	
Ferric chloride	R R	R R	R R R	R ^{30,50}	R R R	R ⁵⁰ R R	R R R	R R	R R	
Ferrous sulphate	R R	R R	R R R	R R R	R R R	R R R	R R R	R R	R R	
Fluorinated refrigerants, aerosols, e.g. Freon	No data		No data	R ND ND	R	R ¹⁴ R R	R R R	R R		
Fluorine, dry	No data				R R	R ⁴⁸ R R	R R R			
Fluorine, wet	No data				R R	No data	R R R	R R		
Fluorsilicic acid	No data		R ⁴³ R		No data	No data	R R R	R ¹⁵ R	No data	
Formaldehyde (40%)	R ND	R R		R ⁵⁰ R ⁵⁰	R R ND	R R R	R R R	R R ³⁰	R	
Formic acid	R ¹⁰	R ³² R ¹⁰			R	R R R	R R R	R	No data	

THERMOPLASTIC RESINS					THERMOSETTING RESINS				
Polyethylene Low Density	Polyethylene High Density	Polycarbonate Resins	Polypropylene	Polystyrene	Melamine Resins (6)	Furane Resin	Epoxy Resins (f)	Phenol Form- aldehyde Resins (f)	Polyester Resins
20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
R ²⁷	R R ⁶⁰	R R ND	R R ND	No data	R ⁴ ND ND	No data	R R	R ND ND	No data
R R	R ⁵⁶ R	No data	R R ND	No data	No data	R R R	R ND	R R R	R R ²³
R ²⁷	R ⁵⁶ R ^{50,56}		R R			R R R	R ³⁰ ND	R R	R ³⁰
ND	R R ⁵⁰		R R			R R ND	R ⁶⁸ ND	R ND ND	
No data	R R		R R ND		R R	R R ND	R ⁴ ND	R	
No data	R R	R ND ND	No data	No data	R R R	No data	No data	No data	No data
No data	R R	No data	R ² R	R ² R	R R R	R R R	R ² R ³⁰	R R R	No data
R ²⁷	R ⁵⁶ R	R ⁶ ND ND	R R ND	R R ¹³	R R	R R R	R ⁶⁰ R ^{30,71}	R R	R R
No data	R R	ND	R		R R	R R R	R ⁵⁰ R ^{30,71}	R R	No data
R R	R R	R	R		R R	R R R	R ^{30,71}	No data	No data
R R	R R	R ND ND	R R R	R R	R R	R R R	R R	R R R	R R ³⁰ R ⁶⁵
R R	R R	R ND ND	R R R	R R	R	ND ND ND	R R	R R R	R R ³⁰
R R	R R	ND	R R R	R ND ND	R	ND ND ND	No data	No data	R R ³⁰
R R	R R	R ND ND	R R R	R R	R	R	R ND	R R R	R ³⁰
R R	R R	R	R R	R R	R R	R R R	R ND	R R R	R
R R	R ⁵⁰ R	ND	R R R		R R	R R R	R ³⁰ ND	R R	R ³⁰
R R	R ⁵⁰ R	R ⁷ ND ND	R R R	No data	ND ND	R R ND	R ³⁰ ND	R ND ND	R ND ND
R R	R R		R ⁵⁶ R			No data	R ⁶⁸ ND	R ND ND	R ND ND
No data	R ⁶⁰		R		R R	R R R	R R ^{4,30}	R R R	
R R	R R	R ND ND	R R ND	R R	R ND ND	No data	R R	R R R	R R R
R R	R ¹ R	R R ND	R R ND	R R	R R R	R R R	R R	R R R	R R ³⁰ R
R R	R R	R ND ND	R R R	R	R R ND	R R R	R R	R R R	R R ³⁰ R ⁶⁵
R R	R R	R R R	R R R	R R	R ND ND	R R R	R R	R R R	R R ³⁰ R ⁶⁵
R R	R R	R R R	R R R	R R	R ND ND	R R R	R R	R R R	R R ³⁰
R R	R ⁵⁰		R	R	R	R ND ND	No data	R R	
R R	R R	R ND ND	R R ND	R R	R R R	No data	R ⁷⁰ R ³⁰	R R R	R R
R R	R ¹⁹ R		R R R	R R	R R	R R ND	R R ¹⁹	R R R	R ³⁰
R R	R R	R ⁷	R R ND	No data	ND ND	No data	R R	R ND ND	R R ³⁰ R ⁶⁵
R R	R ⁶⁰	ND			No data		R R ^{4,30}		R R ³⁰
R R	R ⁵⁰		R R R	R R	R R	R R R	R R	R R R	R R ³⁰ R ⁶⁵
No data	R R	R ND ND	R R ND	No data	R R	R R R	R R	R R R	R ³⁰
R R	R ⁵⁰	ND	R ND ND	No data	R ND ND	R R R	R ³⁰ ND	R R R	R ¹⁰
R R	R ⁵⁰ R	R R	R R ND	R	R ND ND	R R R	R R ^{4,30}	R R R	R R R ³⁰
R	R R	R R	R R ND	R	No data	R R R	R R	R R R	R R ³⁰
No data	R ¹³ R		No data	No data	R R	No data	R R ND	R R	No data
R ⁵⁶ R	R ⁵⁰ R ⁵⁰	R	R R R	R R	R R	R R ND	R ⁶⁸ R ⁶⁸	R R R	No data
R ⁵⁶ R	R ⁵⁶ R	R ⁹⁸ R ⁹⁸	R R R	R R	R R	R R R	R R	R ND ND	R ⁶² R ⁶²
	R ⁵⁶ R	ND	R R ND	No data	R R	R R R	R R	R R R	No data
No data	R ⁵⁶ R ⁵⁰		R ⁵⁰ R ND		R R	R ND ND	R ND	R	
R	R ⁵⁶ R ⁵⁶	ND	R R ND	R R	R R	R R R	R R	R R R	R R ⁵⁰
R	R R	R R	R R R	R R	No data	R ND ND	R R	R R R	R R ³⁰ R ⁶⁵
R	R R	R ND	R R R	R R	No data	R ND ND	R R	R R R	R R ⁵⁰ R ⁶⁵
R ⁵⁰	R ⁵⁰	R	No data		R R	R ND ND	R R	R ND ND	No data
		ND			No data	No data	R ²⁰ R		No data
		ND			No data	No data	R ²⁰ R ^{4,30}		No data
R ³ R ⁴	R ⁶ R	ND	R R ND	No data	R R	R R ND	R R	R ND ND	R ¹⁵
R R	R ⁵⁶ R	R R	R R ND		R	R R ND	R ^{4,30}	R R R	R ³⁰ R
R R	R ⁵⁶ R	R ¹² R ¹²	R ND ND	R	R	R	R ^{4,30}	R	R ¹⁵

H.D. Polyethylene is suitable for a number of applications at 103°C for limited periods, depending on the environment.

THERMOPLASTIC RESINS					THERMOSETTING RESINS				
Polyethylene Low Density	Polyethylene High Density	Polycarbonate Resins	Polypropylene	Polystyrene	Melamine Resins (M)	Furanic Resin	Epoxy Resins (P)	Phenol Form- aldehyde Resins (T)	Polyester Resins
20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
R R	R R	ND	R R R	No data	R	R R R	R R	R	R R R ⁶⁵
R R	R R	No data	R R R	No data	R	R R R	R R	No data	R R R ⁶⁵
R R	R R	No data	R ⁷ R R	R ¹ R	ND ND	R R ND	R ⁶⁸	R ND ND	No data
R R	R R	R ND	R R R	R R	R R	No data	R R	R R R	No data
R R	R R	R	R R ND	R R	R R	No data	R R	R R R	No data
ND ND	No data	No data	R R ND	No data	R ND ND	R ND ND	No data	No data	No data
R R	R R	R R ND	R R ND	R R	R R	R R R	R R ³⁰	R R R	R R ³⁰ R ⁶⁵
R ¹⁴	R R	No data	R R ND	R R	R R	R R R	R R	R R	R R ³⁰ R ⁶⁵
No data	No data	No data	No data	No data	No data	R R ND	R R ²⁴	No data	No data
R R	R R	No data	R R ND	No data	R R	R R R	R R	No data	No data
R R	R R	No data	R R	R R	R	R R R	R R	R ND ND	R ND ND
R	R R	ND	R R ND	R R	R	R R R	R	R ND ND	R ³⁰ ND ND
R R	R R	ND	No data	R	R ¹⁰	R R R	R R ³⁰	R ND ND	R ³⁰ ND ND
R R ³⁰	R R ³⁰	R R ND	R R	R	R ¹⁰	R R R	R R ³⁰	R R R	R ³⁰ R
R ⁵⁰	R ²⁰ R ³⁰	R ⁶⁰	R ²⁶						
ND ND	No data	R ⁶⁰	No data	No data	ND ND	R R R	No data	R ND ND	No data
R	R ³⁰ ND ND	R ND	R R ND	R	R R	No data	R R	R R R	No data
R R	R ³⁶ R	ND	R R ND	R R	R R	No data	R R ³⁰	R R R	R R R
R R ¹⁰	R R	R R	R R ND	R R	R	No data	R R ³⁰	R R R	R R R
R R	R R	No data	R R ND	R	R R	R R R	R R ³	R R R	R R ³⁰
R R	R R	R R R	R R R	R R	R R	No data	R R	R R R	R R R ³⁰
R R	R R	R R R	R R R	R R	R R	R R R	R R	R R R	R R R ³⁰
R R	R R	R R R	R R R	R R	R R	R R R	R R	R R R	R R R ³⁰
R R	R R	R R R	R R R	R R	R R	R R R	R R	R R R	R R R ³⁰
R ND	R R	ND	R R ND	No data	R R	No data	R R	No data	No data
R R	R R	R R	R R ND	R R	R	R R R	R ND	R ND ND	R R ³⁰ R ⁶⁵

RUBBERS																					
	Butyl Rubber and Halo-Butyl Rubber			Ethylene Propylene Rubber (q)		Hard Rubber (Ebonite) (h)		Soft Natural Rubber (h)		Neoprene (i)		Nitrile Rubber		Chlorosulphonated Polyethylene		Polyurethane Rubber (v)		Silicone Rubbers (s)			
	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°
Acetaldehyde	R	R	ND	R	R	ND	R	R	R	R ⁹⁰	R ⁹⁰	ND	R	R		ND	ND		R	R	R
Acetic acid (10%)	R ¹⁴	R	R	R	R ¹⁴	ND	R	R	R	R	R	R ¹⁴	R	R	R	R ⁸⁰	R ⁸⁰		R	R	R
Acetic acid (glac. & anh.)	R ¹⁴	R	R	R ¹⁴	R ¹⁴	ND	R	R ¹⁴	R	R ⁸⁵			R ¹⁴	R	ND	R ⁸⁰	R ⁸⁰		R ¹⁷	R	R
Acetic anhydride	R ⁸⁰	R	R	No data			R	R ³⁰		R	R	ND	R	R	ND				R	R	R
Acetone	R	R	R	R ⁶⁰	R ⁶⁰		R	R	R	R ⁶⁰	R	ND			R ¹⁵	ND	ND		R ¹⁷	R	R
Other ketones	R ¹³	R	R	R ⁶⁰	R ⁶⁰		R ¹¹	R	R	R ⁹⁰	R								R ¹⁷	R	R
Acetylene	R	R ⁹⁰		No data			R ⁸⁰	R	R				R ¹⁴	R	R	ND	ND		No data		
Acid fumes	R ²	R	R	R ²	R ²	R ²	R ²	R	R	R ²	R	R ²⁽⁹⁰⁾	R ²	R	R	R	R	R	R ²	R	R
Alcohols (most fatty)	R	R		R ⁶⁰	R ⁶⁰		R ³⁰	R	R	R ⁶⁰	R		R	R	R	R	R	R	R	R	R ³⁰
Aliphatic esters													No data						R ³⁰	R	R
Alkyl chlorides																			R ²¹	R	R
Alum	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Aluminium chloride	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R ²¹
Ammonia, anhydrous	R	R	ND	R	R	ND	R	R	R	R ⁸⁰			R	R	R	R ⁸⁰	R ⁸⁰		R ⁸⁰	R	R
Ammonia, aqueous	R	R	R	R	R	R	R	R	R	R	R	R ⁹⁰	R	R	R	R	R	R	R	R	R
Ammonium chloride	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Amyl acetate	R ⁸⁰																		R ²¹	R	R
Aniline	R	R	ND																	R	R
Antimony trichloride	R	R	R	No data			R	R	R	No data			No data		R	R	R	ND	ND	R	R
Aqua regia															R ⁸⁰					R	R
Aromatic solvents													R ⁶²	R						R ²¹	R
Beer	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Benzoic acid	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Boric acid	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Brines, saturated	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Bromine				No data																	
Calcium chloride	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Carbon disulphide													R	ND	ND				R	R	R
Carbonic acid	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Carbon tetrachloride																				R ²¹	R
Caustic soda & potash	R	R	R	R	R	R	R	R	R ¹³	R	R	R	R	R	R	R	R	R	R	R	R ³⁰
Chlorates of Na, K, Ba	R	R	R	R	R	R	R	R	R	No data			No data		R	R	R	R	R	R	R ³⁰
Chlorine, dry	R ⁵⁰	R	R	R ⁵⁰	R ⁵⁰	R ⁵⁰	R ³⁰	R	R						No data					R	R
Chlorine, wet	R ⁸⁰	R	R	R ⁵⁰	R ⁵⁰	R ⁵⁰	R ¹³	R	R				R ¹³	ND	ND					R	R
Chlorides of Na, K, Mg	R	R	R	R	R	R	R	R	R	R	R	R ⁹⁰	R	R	R	R	R	R	R	R	R
Chloroacetic acids	R ¹⁰						R ²	R	R	R	R	ND			R					R	R
Chlorobenzene																					R ²¹
Chloroform	R ¹³	R ¹³		R ¹³	R ¹³		R ¹³	R	ND						No data					No data	
Chlorosulphonic acid	R ¹³	R ¹³		R ¹³	R ¹³		R ¹³	R	ND						R ⁸⁰	R	ND			R ¹⁹	R
Chromic acid (80%)															R ⁸⁰	R	ND			R	R
Citric acid	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Copper salts (most)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Cresylic acids (50%)	R ⁴			No data											R					R ²¹	R
Cyclohexane															R					R ²¹	ND
Detergents, synthetic	R ¹³	R	R	R ¹³	R ¹³	R ¹³	R	R	R	R ⁸⁰	R ⁸⁰	R	R	R	R	R	R	R	R	R	R
Emulsifiers (all conc.)	R	R	R	No data			R	R ⁴	R ⁴	No data			R ³⁰	R	R	R	R	R	R	R	R
Ether																					
Fatty acids (>C ₁₂)	R ¹	R ⁹⁰	R	R ⁸⁰	R ⁸⁰		R ⁸⁰	R ¹³	R				R	R	R	R	R	R	R	R	R
Ferric chloride	R	R	R	R	R	R	R	R	R	R ⁸⁰	R	R	R	R	R	R	R	R	R	R	R
Ferrous sulphate	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Fluorinated refrigerants, aerosols, e.g. Freon	R ⁴	ND	ND	No data			No data			No data			R ³⁰	R	ND	ND	ND	ND		R ⁴⁻²¹	
Fluorine, dry	R ⁸⁰	ND	ND	R ⁸⁰	ND	ND	R ¹³	R ¹³	ND						No data						
Fluorine, wet	R ⁸⁰	ND	ND	R ⁸⁰	ND	ND	R ¹³	R ¹³	ND						No data						
Fluosilicic acid	R	R	R	R	R	R	R	R	R	R	R	R	No data		R	R	R	R	R	R	R
Formaldehyde (40%)	R ⁸⁰			R ⁸⁰			R	R	R	R	ND	ND	R		R	R	R	R	R	R	R
Formic acid	R ¹³	R	R	R ¹⁴	R ¹⁴		R	R ⁸⁰		R ⁸⁰			R		R	R	R	R	R	R	ND

MISCELLANEOUS																	
Concrete (c)			Glass (t)			Graphite (u)			Porcelain and Stoneware			Vitrious Enamel (w)			Wood (z)		
20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°
No data			No data			R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R	R	R	R	R	R			
			No data			R	R	R	R	R	R	R	ND	ND			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	No data			R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
			R ⁵	R	R	R	R	R	R	R	R	R ¹	R	ND			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
			R ³⁰	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	ND			
R	R	R	No data			R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R ³⁰	R	R	R	R	R	R	R	ND				
			R	R	R	R	R	R	R	R	R	R	ND		R	R	
			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			No data			R	R	R	R	R	R	R	R	R			
			No data			R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	ND			
R	R	R ³⁵	R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	ND			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	ND			
R ⁴⁴	R	R	R	ND	ND	R	R	R	R	R	R	R	ND				
R	R	R	R	ND	ND	R	R	R	R	R	R	R	R	R			
R ⁵⁰	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
R ⁷²	R	R	ND			R ¹³	R	R	R ¹⁰			R ¹⁰					
R	R	R	R	R	R	R	R	R	R	R	R	No data					
			No data			R	R	R	R	R	R	R	R	R	R	ND	ND
						R	R	R	R	R	R	No data					
R ¹²	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	ND	ND			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
			No data			R	R	R	R	R	R	No data					
			R	R	ND	R	R	R	R	R	R	R	ND	ND			
			R	R	ND	R	R	R	R	R	R	R	R	R			
R ⁵⁴	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
			No data			R	R	R	R	R	R	R	R	ND			
R	R	R	No data			R	R	R	R	R	R	R	R	R			
R ⁸⁴	R	R	R ¹⁵	R ³⁰		R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	ND				
			R	R	R	R	R	R	R	R	R	R	ND		R ¹⁴		
R	R	R	No data			R	R	R	R ³⁹	R	R	No data			R	R	R
						R	R	R				R	ND		No data		
			No data			R	R	R				No data			No data		
R	R	R				R	R	R							No data		
R ⁸⁰			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			

NOTES

Explanatory notes at lower temperatures may be taken to apply also at higher temperatures unless otherwise shown.

- 1 Not anhydrous
- 2 Depending on the acid
- 3 35%
- 4 Fair resistance
- 5 Not HF fumes
- 6 Up to 40%
- 7 Saturated solution
- 8 Pineapple and grapefruit juices 20°C
- 9 Photographic emulsions up to 20°C
- 10 10%
- 11 Anhydrous
- 12 Not Mg
- 13 Depending on concentration
- 14 Discoloration and/or swelling and softening
- 15 Up to 25%
- 16 Not chloride/ret if chloride ions present
- 17 Not fluorinated silicone rubbers
- 18 Up to 60%
- 19 Up to 50%
- 20 Not aerated solutions
- 21 Fluorinated silicone rubbers only
- 22 ND for Mg
- 23 5%
- 24 Pure only
- 25 Up to 30%
- 26 If no iron salts or free chlorine
- 27 May crack under stressed conditions
- 28 45%
- 29 55%
- 30 Depending upon composition
- 31 Chloride
- 32 20%
- 33 Depending on alcohol
- 34 Data for sodium
- 35 Fresh
- 36 Over 85%
- 37 Some attack at high temperature
- 38 Neutral
- 39 Attacked by fluoride ions
- 40 Sulphate and nitrate
- 41 Softening point
- 42 In strong solutions only when inhibited
- 43 Depending on water conditions
- 44 Dilute
- 45 Up to 15%
- 46 Not methyl
- 47 Drawn wire
- 48 Some attack, but protective coating forms
- 49 Using anodic passivation techniques
- 50 Some attack/absorption/slow corrosion
- 51 Not sulphate
- 52 70%
- 53 In absence of dissolved O₂ and CO₂
- 54 75%
- 55 80%
- 56 May cause stress cracking
- 57 Pitting possible in stagnant solutions
- 58 In presence of H₂SO₄
- 59 Not ethyl
- 60 May discolor liquid
- 61 The material can cause decomposition
- 62 Depending on type
- 63 95%
- 64 Slight plating will occur
- 65 Not recommended under certain conditions of temperature, etc.
- 66 65%
- 67 Aerated solution
- 68 Estimated effect
- 69 Up to 90%
- 70 Not oxidising conditions
- 71 Not lower members of series
- 72 Not high alumina cement concrete

MISCELLANEOUS						
Concrete (c)	Glass (l)	Graphitic (t)	Porcelain and Stoneware	Vitreous Enamel (w)	Wood (z)	
20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
R R R	R R R	R R R	R R R	R R R	R R R	R R R
No data	R ND ND	R R R	R R R	R R R	R	R R R
No data	R R R	R R R	R R R	R R R	No data	No data
	R R R ⁵⁰	R R R	R R R	No data		
	R R R ⁵⁰	R R R	R R R	R R R	R	
	R R R ⁵⁰	R R R	R R R	R R ND	R R ND	R R
	R R	R R R	R R R	R ND ND		
No data	R R R	R R R	R R R	R R R		
No data	R R R	R R R	R R R	R R R		
R ²² R R	R R R	R R ¹⁷ R ³⁷	R R R	R R ND		R R R
No data	No data	R R R	R R R	R R R		R
R R R	R R R	R R R	R R R	R R ND	R ¹⁴	R R R
No data	No data	R R R	R R R	R R R		R R R
No data	R R R	R R R	R R R	R R R		R R R
R R R	R R R	R R R	R R R	No data		R R
R ³⁵ R R	R R R	R R R	R R R	R R ND		R R R
R R R	R R R	R R R	R R R	R R R		R R R
R	R R R	R R R	R R R	R R R		R R
R R R	No data	R R R	R R R	R R R		R R R
R R R	No data	R R R	R R R	R R R		R R R
No data	R R R	R R R	R R R	No data		R R R
R ³³ R R	R ND ND	R R R	R R R	R ND ND		R R
	R R R ⁵⁰	R R R	R R R	R R R		
	R R R ⁵⁰		R R R	R R ND		
	R R R ⁵⁰		R R R	R R ND		
No data	R R R	R R R	R R R	R R R		R R R
R R R	R R R	R R R	R R R	R R R		R R R
R R R	R R R	R R R	R R R	R R R		R R R
R R R	R R R	R R R	R R R	R R R		R R R
R R R	R R R	R R R	R R R	No data		No data
R R R	R R R	R ¹⁵ R ¹⁰	R R R	No data		R R R
	R ND ND	R R R	R R R	R R R		R R R
	R R R	R R R	R R R	R R R		R R R
	R R R	R R R	R R R	R R R		R R R
	R R R	R R R	R R R	R R ND		R R ND
	R R R	R R R	R R R ⁴	R R ND		R R ND
	R ND ND	R R R	R R R	No data		No data
	R R R	R R R	R R R	No data		No data
	R R R	R R R	R R R	R R R		R R
	R R R	R R R	R R R	R R R		No data
No data	R R R	R R R	R R R	R R R		R ¹⁴
R R R	R R R	R R R	R R R	R R R		R R R
R R R	R R ND	R R R	R R R	R R ND		R R R
R ¹⁴ R R	R R R	R R R	R R R	R R R		R R R
No data	R R R	R R R	R R R	R R R		R R
R ²² R R	R	R R R	R R R	R R R		
R ²² R R	R ND ND	No data	R R R	No data		

- 73 Not ammonium
 - 74 Not chlorsilanes
 - 75 Data for ammonium
 - 76 Data for calcium
 - 77 Data for potassium
 - 78 In presence of heavy metal ions
 - 79 ND for Ba
 - 80 Limited service
 - 81 Except those containing sulphate
 - 82 Provided less than 70% copper
 - 83 Water less than 150 ppm
 - 84 May cause some localised pitting
 - 85 60% in one month
 - 86 Low taste and odour
 - 87 Catalyses decomp. of H₂O₂
 - 88 65%
 - 89 1-2 days
 - 90 Wet gas
 - 91 Less than 0-005% water
 - 92 In absence of heavy metal ions oxidising agents
 - 93 Stress corrosion in MeOH and halides (not in other alcohols)
 - 94 When free of SO₂
 - 95 50% swell in 28 days
 - 96 60% swell in 3 days
 - 97 Could be dangerous in black loaded compounds
 - 98 Not alkaline
 - 99 Ozone 2% Oxygen 98%
 - 100 This is the softening point
 - 101 Nitric acid less than 5% concentration
 - 102 Acid fumes dry. Attack might occur if moisture present and concentrated condensate built up
 - 103 Stainless steels not normally recommended for caustic applications
 - 104 In the absence of impurities
 - 105 10% w/w in alcohol
 - 106 Swelling with some ketenes
 - 107 Some stress cracking at high pH
- (a) **Aluminium:** In many cases where the chart indicates that aluminium is a suitable material there is some attack, but the corrosion is slight enough to allow aluminium to be used economically.
- (b) **Brass:** Some types of brass have less corrosion resistance than is shown on the chart, others have more, e.g. Al brass.
- (c) **Cast iron:** This is considered to be resistant if the material corrodes at a rate of less than 0.25 mm per annum. When choosing cast iron, Ni-Resist or high Si iron for a particular application the very different physical properties of these materials must be taken into account.
- (d) **Gunmetal:** The data refer only to high tin gunmetals.
- (e) **Nickel-copper alloys:** The physical properties are for annealed material. Both the tensile strength and hardness can vary with form and heat treatment condition.
- (f) **Stainless steels:** Less expensive 13% chromium steels may be used for some applications instead of 18/8 steels. Under certain conditions the addition of titanium increases the corrosion resistance of 18/8 steels. Also, it produces materials which can be welded without the need for subsequent heat treatment. These steels are, however, inferior in corrosion resistance to the more expensive 18/8/Mo steels.
- (g) **Tin:** Data refer to pure or lightly alloyed tin; not to discontinuous tin coatings.
- (h) **Soft natural rubber and ebonite:** Performance at higher temperatures depends on method of compounding.
- (i) **Neoprene:** Brush or spray applied 1.5 mm thick, and properly cured.
- (k) **Silicone rubbers:** Withstand temperatures ranging from -90°C to above 250°C and are resistant to many oils and chemicals. In some cases particularly good resistance is shown by the fluorinated type.

RUBBERS									
	Butyl Rubber and Halo-Butyl Rubber	Ethylene Propylene Rubber (q)	Hard Rubber (Ebonite) (h)	Soi: Natural Rubber (b)	Neoprene (i)	Nitrile Rubber	Chlorosulphonated Polyethylene	Polyurethane Rubber (v)	Silicone Rubbers (t)
	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°	20° 60° 100°
Sodium silicate	R R R	R R R	R R R	R R R	R R R	R R ND	R R R	R R R	R R R
Sodium sulphide	R R R	R R R	R R R	R R R	R R R	R R ND	No data	R ND	R R R
Stannic chloride	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R
Starch	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R R
Sugar, syrups, jams	R ¹³ R R	R ⁶⁰ R ⁶⁰ R ⁶⁰	R ¹³ R R	R ¹³ R R	R R R	R R R	R R R	R R R	R R R
Sulphamic acid	No data	R R ND	R ¹³ R	No data	R ND ND	No data	R R R	R R	No data
Sulphates (Na, K, Mg, Ca)	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R R R
Sulphites	R R R	R R R	R R R	R ³⁰ R ⁸⁰	R R R	R R R	R R R	R R	R R R
Sulphonic acids	R ¹³ R	R ¹³ R ¹³ R ¹³	R ² R ² R ²	R R R	R R R	ND	R R R	R ND	No data
Sulphur	R R R	R R R	R R R	R	R R R	R ³⁰ R R	R R R	ND ND	R R R
Sulphur dioxide, dry	R R R	R R R	R R R		R R R			ND ND	R R ND
Sulphur dioxide, wet	R R R	R R R	R R R ⁴		R R R		R ⁴ R R	ND ND	R R ND
Sulphur trioxide						No data			R R R
Sulphuric acid (<50%)	R R R	R R R	R R R	R R	R R	R	R R R	R ²⁵ R ²⁵ R ²⁵	R R R
Sulphuric acid (70%)		R ⁶⁰	R ⁶⁰		R		R R		No data
Sulphuric acid (95%)							R		
Sulphuric acid, fuming						No data	No data		
Sulphur chlorides									
Tallow	R R R ⁴	R R ⁴ ND	R R R	R R R	R R R	R R R	R R R	R ND	R ³⁰ R R
Tannic acid (10%)	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R R R
Tartaric acid	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R R R
Trichloroethylene						R ⁶⁵			R ²¹ R R
Vinegar	R R R	R R ¹⁴	R R R	R ⁸⁰ R	R R R	R R ³⁷ R	R R R	R ⁸⁰ R ⁸⁰	R R R
Water, distilled	R R R	R R R	R ³⁰ R R	R ³⁰ R R	R R R	R R R	R R R	R R	R R R
Water, soft	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R R R
Water, hard	R R R	R R R	R R R	R R R	R R R	R R R	R R R	R R	R R R
Yeast	R R R	No data	R R R	R R R	R R R	R ND ND	R R R	ND ND	R R R
Zinc chloride	R R R	R R R	R R R	R R R	R R R	R R ND	R R R	R R	R R R

MISCELLANEOUS																	
Concrete (s)			Glass (t)			Graphite (u)			Porcelain and Stoneware			Vitrous Enamel (w)			Wood (z)		
20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°
R	R	R	R	R	R	R	R	R	R	R	R	No data			R		
			R	R	R	R	R	R	R	R	R	No data					
			R	R	R	R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
No data			R	R	R	R	R	R	R	R	R	No data			No data		
			R	R	R	R	R	R	R	R	R	R	R	ND	R	R	
			R	R	R	R	R	R	R	R	R	R	R	R	R		
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
			R	R	ND	R	R	R	R	R	R	R	R	R			
No data			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R	R	R	R	R	R	R	R	R			
			R	R	R	R ²	R	R	R	R	R	R	R				
			R	R	R	R	R	R	R	R	R	R	ND	ND			
			R	R	R	R	R	R	R	R	R	R	ND	ND			
No data			R	R	R	R	R	R	R	R	R	R	ND	ND	No data		
			R	R	R	R	R	R	R	R	R	R	R	R			
R ²⁰			No data			R	R	R	R	R	R	R	R	R	R	R	R
			R	ND	ND	R	R	R	R	R	R	R	R	R			
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R ⁵⁰	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R ⁵⁰	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	ND	ND	R	R	R	R	R	R	R	R	ND			

(l) **Acrylonitrile butadiene styrene resins:** The information refers to a general purpose moulding grade material.

(m) **Nylon:** Prolonged heating may cause oxidation and embrittlement. Data on nylon 66 plastics refer to *Maranyl* products. Other nylons, such as types 6 and 610, can behave differently, e.g. towards aqueous solutions of salts.

(n) **P.T.F.E.:** Is attacked by alkali metals (molten or in solution) and by certain rare fluorinated gases at high temperatures and pressures. Some organic and halogenated solvents can cause swelling and slight dimensional changes but the effects are physical and reversible.

(o) **Melamine resins:** The information refers mainly to laminates surfaced with melamine resins. Melamine coating resins are always used in conjunction with alkyd resins and the specifications will depend on the alkyd resin used.

(p) **Epoxy resins:** Data are for cold curing systems.

(q) The information given is based on compounds made from ethylene propylene terpolymer rubber.

(r) **Phenol formaldehyde resins:** These are of several types and care should be taken that the right type is chosen.

(s) **Concrete:** Usually made from Portland cement, but if made from Cement fondu or gypsum slag cement might have superior resistance in particular applications.

(t) **Glass:** The information refers to heat-resistant borosilicate glass.

(u) **Graphite:** Data refer to resin-impregnated graphite. Other specially treated graphites have improved corrosion resistance to many chemicals.

(v) Chemical resistance of polyurethanes is dependent on the particular structure of the material and is not necessarily applicable to all polyurethanes. Specially designed polyurethanes can be used at higher temperatures than 60°C but chemical resistance is temperature dependent.

(w) **Vitrous enamel:** Special enamels may be required to withstand particular reagents.

(x) Data is based on Ferralium alloy 255.

(y) Data is based on Solef.

(z) **Wood:** The behaviour of wood depends both on the species used and on the physical conditions of service. Aqueous solutions of some chemicals may cause more rapid degradation. Organic solvents may dissolve out resins, etc. Hydrogen peroxide (over 50% w/w) produces a fire risk.