



## VALVE MATERIAL SERVICE RESISTANCE CORROSION SUITABILITY GUIDE

CORROSIVE MEDIA	Carbon Steel	St. St. 12% Cr.	St. St. F304	St. St. F316	Monel	Inconel	Hastelloy 'B'
Acetic Acid - pure	C	A	B	A	A	A	A
Acetic Acid - 10%	C	B	B	A	A	A	A
Acetic Anhydride	C	B	B	A	A	A	A
Acetone	B	A	A	A	A	A	A
Alcohol Methyl (Methanol)	B	A	A	A	A	A	A
Alcohol Methyl 65°C	B	C	C	B	B	A	A
Ammonia - Conc. & Aq. Sol.	B	A	A	A	B	A	A
Ammonia - Gas	A	A	A	A	B	A	B
Ammonium Chloride - Still	C	C	B	B	B	A	B
Ammonium Nitrate	B	B	A	A	C	A	D
Ammonium Phosphate - Sat.	D	B	A	A	B	A	B
Ammonium Sulphate							
1% & 5% - Agit. & Aer.	C	C	B	B	D	B	B
Ammonium - Saturated	C	C	C	A	B	B	B
Amyl Acetate	C	C	B	B	B	A	A
Aniline	C	C	B	B	B	B	B
Arsenic Acid - 65°C	D	C	B	B	D	D	D
Asphalt	B	A	A	A	A	A	A
Barium Chloride - Sat.	C	C	B	B	B	B	B
Barium - Aqueous Sol.	C	C	B	A	A	A	A
Benzoic Acid	D	C	A	A	A	A	A
Benzol	B	B	A	A	A	A	A
Boric Acid	D	C	B	B	A	A	A
Butane Gas	B	B	B	B	B	B	B
Butyric Acid	D	A	B	A	B	B	B
Calcium Bisulphite	D	C	C	B	D	D	C
Calcium Carbonate	D	C	B	A	B	B	B
Calcium Chloride	C	C	C	B	A	B	B
Calcium Hypochlorite	D	D	C	C	C	B	B
Carbon Tetrachloride	C	C	B	A	A	A	B
Carbonic Acid	D	C	B	A	B	A	A
Chlorine - Dry Gas	B	B	B	B	B	A	B
Chlorine - Moist.	D	D	D	D	D	D	D
Chromic Acid	C	C	B	A	B	B	D
Citric Acid - 5% - Still	D	A	A	A	A	A	A
Citric Acid - Sat.	D	D	C	B	B	B	A
Copper Nitrate	D	D	A	A	D	C	D
Copper Sulphate	D	C	B	A	C	B	C
Creosote - crude	B	B	A	A	A	A	A
Dowtherms	B	A	A	A	A	A	A
Ethers	A	B	A	A	D	C	B
Ethyl Alcohol	B	B	A	A	B	B	B
Ethyl Glycol	A	A	A	A	A	A	A
Ferric Chloride	D	D	D	D	D	D	D

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Ferric Sulphate	D	C	B	A	C	B	C
Ferrous Chloride	D	D	D	C	C	C	D
Ferrous Sulphate	D	B	B	A	B	B	D
Fluorine	D	D	C	B	B	B	B
Formaldehyde - cold	B	B	B	A	A	A	A
Formic Acid	D	C	C	B	B	A	C
Furtural	B	B	B	B	B	B	B
Gasoline Sour	B	B	A	A	C	C	C
Gasoline Refined	A	A	A	A	A	A	A
Gelatine	D	C	B	A	A	A	A
Glucose	B	B	A	A	A	A	A
Glue - Dry	A	A	A	A	A	A	A
Glycerine	A	A	A	A	A	A	A
Hydrochloric Acid (Muriatic)	D	D	D	C	C	C	B
Hydrocyanic Acid	C	C	A	A	C	B	B
Hydrofluoric Acid	D	D	D	D	B	D	B
Hydrogen - Gas	B	A	A	A	A	A	A
Hydrogen Peroxide	D	D	C	B	B	B	B
Hydrogen Sulphide - Dry	B	B	A	A	A	A	A
Hydrogen Sulphide - Wet	C	C	B	A	B	A	A
Iodine - Dry - Wet	D	D	D	D	A	A	C
Kerosene	B	A	A	A	A	A	A
Laquer Solvents	B	B	A	A	B	A	A
Lactic Acid - 1%	D	B	A	A	C	A	B
Lactic Acid - 5%	D	B	A	A	C	A	A
Lactic Acid - 5% - Boiling	D	D	C	B	D	B	B
Lactic Acid - 10% - 65°C	D	D	C	B	C	B	B
Lactic Acid - Conc. - 21°C	D	D	D	D	D	B	B
Lime Sulphur	A	A	A	A	B	B	B
Linseed Oil	B	B	B	B	B	B	B
Lubricating Oil - Sour	C	B	A	A	C	B	B
Lubricating Oil - Refined	A	A	A	A	B	A	A
Magnesium Chloride	D	C	B	B	A	A	A
Magnesium Hydroxide	B	B	A	A	A	A	A
Magnesium Sulphate	B	C	B	B	A	B	A
Mecuric Chloride	D	D	D	C	D	D	C
Mecury	B	B	A	A	B	A	A
Methane Gas	B	B	B	B	B	B	B
Methylethylketone	A	A	A	A	A	A	A
Milk (Fresh or Sour)	D	B	A	A	A	A	A
Naphtha (Crude or Pure)	B	B	A	A	B	A	B
Natural Gas	B	A	A	A	A	A	A
Nickel Chloride	D	C	B	B	B	B	A
Nickel Sulphate	D	D	B	B	B	B	D

A=Good resistance B=Satisfactory C=Poor D=Not recommended



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Nitric Acid - Crude	D	D	C	B	D	B	D
Nitric Acid - 5 - 50%	D	D	B	B	D	B	D
Nitric Acid - Conc. 21°C	D	D	A	A	D	B	D
Nitric Acid - Conc. Boiling	D	D	D	D	D	D	D
Nitric Acid - Fuming Conc. 43°C	D	D	C	C	D	D	D
Nitric Acid - Fuming Conc. Boiling	D	D	D	D	D	D	D
Nitrobenzene	D	D	B	A	B	B	A
Oils - Miner. & Veget	B	B	A	A	B	C	B
Oxalic Acid 10% - 21°C	C	C	A	A	B	B	B
Oxalic Acid - 10% - Boiling	D	D	D	C	B	A	B
Oxygen	B	A	A	A	A	A	A
Petroleum Oils - Crude	B	A	A	A	A	A	A
Phosphoric Acid - Crude	D	D	D	D	D	B	A
Phosphoric Acid - 5% & Boiling	D	D	C	A	B	A	A
Phosphoric Acid - 10% Still	D	C	B	A	C	A	A
Phosphoric Acid - 10% Agitated	D	D	C	B	D	A	A
Phosphoric Acid - 10% Aer. - Boil.	D	D	D	C	D	B	A
Picric Acid	C	C	A	A	D	D	B
Potassium Chloride	D	D	C	B	A	A	B
Potassium Cyanide	B	B	B	B	B	B	B
Potassium Hydroxide - 5% - Still	B	B	A	A	A	A	A
Potassium Hydroxide - 50% - Boil.	D	D	B	A	A	A	A
Potassium Nitrate	B	A	A	A	B	B	C
Propane Gas	B	A	A	A	A	A	A
Sea Water	D	D	B	A	A	A	A
Soap Solution	A	A	A	A	A	A	A
Sodium Bicarbonate	C	C	A	A	B	B	B
Sodium Carbonate - 5-50%	B	B	A	A	B	A	A
Sodium Chloride	C	C	B	A	A	A	B
Sodium Cyanide	B	C	B	B	B	B	B
Sodium Hydroxide	C	C	B	A	A	A	A
Sodium Hypochlorite	D	D	C	B	C	C	B

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Sodium Nitrate	B	B	B	A	B	A	D
Sodium Phosphate (di - Basic)	C	C	B	B	B	B	B
Sodium Phosphate (tri - Basic)	B	B	B	B	B	A	B
Sodium Sulphate	B	B	B	A	A	B	D
Sodium Sulphide	B	B	B	A	A	A	D
Steam	A	A	A	A	A	A	A
Stearic Acid - Conc.	C	C	A	A	B	A	A
Sulphur - 260°C - Molten	C	B	A	A	A	A	B
Sulphur Dioxide	B	B	A	A	B	B	B
Sulphuric Acid - <10%	D	D	D	C	B	B	A
Sulphuric Acid - 50% - 21°C	D	D	D	D	B	B	A
Sulphuric Acid - 50% - Boil.	D	D	D	D	C	D	A
Sulphuric Acid - Conc. - 21°C	B	B	B	A	D	D	A
Sulphuric Acid - 149°C	D	D	D	D	D	D	D
Sulphuric Acid - Fuming	D	D	C	B	D	D	A
Sulphurous Acid - Sat.	D	D	C	B	D	D	D
Sulphurous Acid - Spray	D	D	C	C	D	D	D
Tannic Acid - 10%	D	D	B	A	B	B	B
Tannic Acid - 10% - Boil.	D	D	C	B	C	C	B
Tar	B	A	A	A	A	A	A
Tartaric Acid - 21°C	D	C	B	A	A	A	B
Tartaric Acid - 65°C	D	D	B	A	B	A	B
Trichloroethylene	C	C	B	B	D	D	B
Turpentine	B	B	A	A	A	A	A
Tomato Juice	C	B	A	A	A	A	A
Vinegar	D	A	A	A	A	A	A
Water (Fresh)	C	A	A	A	A	A	A
Water Distilled (Labor. Grade)	D	D	A	A	B	A	A
Water Distilled (Return. Cond.)	B	B	A	A	A	A	A
Zinc Chloride	D	D	D	B	B	B	B
Zinc Sulphate	D	C	B	A	A	B	B

A=Good resistance    B=Satisfactory    C=Poor    D=Not recommended

*This table is intended as a general guide only and does not imply guarantee of service performance. Final selection of material should be dictated by the specific environmental requirements. Factors such as:- temperature, valve type, pressure, flow conditions, other trim components, etc., can all have a significant effect on material selection hence this is only a rough guide. Australian Pipeline Valve recommends that customers' engineers analyse service requirements and specify the materials they consider optimum for their service conditions.*

For a more detailed chemical resistance chart on valve body, seat and seal materials go to <http://www.globalsupplyline.com.au>

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