

BRAUDE SELF PRIMING CHEMICAL TRANSFER PUMP CHEMICAL RESISTANCE CHART (FITTED WITH HASTELLOY C SEAL)

The following table was compiled from information gathered from many sources and is intended as a guide for selecting Braude pumps from a chemical resistance stand point only. It does not imply any guarantee of service since many factors outside the control of E. Braude (London) Ltd may affect the suitability of materials in a particular situation.

Although the table may indicate satisfactory service for individual chemicals, combinations may have adverse effects upon pump materials. For any application not indicated in the table or any questionable uses, please consult the factory.

Unless otherwise indicated a maximum pumping temperature of 90°C can be tolerated.

S – Satisfactory within limited indicated. N – Not Recommended.

Liquid and formula	Code	Liquid and formula	Code	Liquid and formula	Code
Acetone – CH ₃ COCH ₃	N	Brine – NaCl	S	Cupric Chloride (to 75°F) – CuCl ₂	S
Acetic Acid (10-100%) – CH ₃ COOH	S	Bromine Water – Br ₂ • H ₂ O	S	Detergents (to 10%)	S
Alcohol	S	Butyl Acetate – CH ₃ COOCH ₂ CH ₂ CH ₂ CH ₃	N	Diethanolamine – (HOCH ₂ CH ₂) ₂ NH	S
Aluminum Hydroxide – Al(OH) ₃	S	Butyl Alcohol – CH ₃ (CH ₂) ₂ CH ₂ OH	N	Epsom Salts (Magnesium Sulphate)- Mg SO ₄ • 7H ₂ O	S
Aluminum Chloride - AlCl ₃	S	Calcium Carbonate – CaCO ₃	S	Ether – (C ₂ H ₅) ₂ O	N
Aluminum Fluoride – AlF ₃	N	Calcium Chloride – CaCl ₂	S	Ethanol – C ₂ H ₅ OH	S
Aluminum Potassium Sulphate – AlK(SO ₄) ₂ • 12H ₂ O	S	Calcium Hypochlorite (to 16%, 100°F) – Ca(OCl) ₂	S	Ethyl Acetate – CH ₃ COOC ₂ H ₅	N
Ammonium Bicarbonate (Aqueous) – NH ₄ HCO ₃	S	Calcium Hydroxide – Ca(OH) ₂	S	Ethyl Acrylate – CH ₃ CHCOOC ₂ H ₅	N
Ammonium Chloride – NH ₄ Cl	S	Calcium Nitrate – Ca(NO ₃) ₂	S	Ethyl Chloride – C ₂ H ₅ Cl	N
Ammonium Fluoride – NH ₄ F	N	Calcium Phosphate (to 50%) – CaH ₄ (PO ₄) ₂ • H ₂ O	S	Ethylene Dichloride 0 ClCH ₂ CH ₂ Cl	N
Ammonium Hydroxide (to 10%) – NH ₄ OH	S	Calcium Sulphate - CaSO ₄ • 2H ₂ O	S	Ethylene Glycol (to 78°F) – CH ₂ OHCH ₂ OH	S
Ammonium Metaphosphate – (NH ₄) ₂ HPO ₄	S	Carbon Tetrachloride – CCl ₄	N	Ferric Chloride – FeCl ₃	S
Ammonium Nitrate (to 60%) – NH ₄ NO ₃	S	Carbonic Acid –H ₂ CO ₃	S	Ferric Nitrate – Fe(NO ₃) ₃ • 9H ₂ O	S
Ammonium PerSulphate – (NH ₄) ₂ S ₂ O ₈	S	Caustic Lye (30% to 108°F), (50% to 75°F) – NaOH	S	Ferric Sulphate – Fe ₂ (SO ₄) ₃	S
Ammonium Phosphate – NH ₄ H ₂ PO ₄	S	Chlorinated Water - Cl ₂ • H ₂ O	S	Ferrous Sulphate – FeSO ₄ • 7H ₂ O	S
Ammonium Sulphate (Aqueous) – (NH ₄) ₂ SO ₄	S	Chloric Acid – HClO ₃ • 7H ₂ O	S	Fluosilicic Acid – H ₂ SiF ₆	S 2
Amyl Acetate – CH ₃ COOC ₃ H ₁₁	N	Chloroacetic Acid – CH ₂ ClCOOH	S	Formic Acid (to 10%) – HCOOH	S
Amyl Alcohol – C ₅ H ₁₁ OH	N	Chlorobenzene – C ₆ H ₅ Cl	N	Formaldehyde – HCHO	S
Aqua Ammonia (to 10%) – NH ₄ OH	S	Chloroform – CHCl ₃		Freon	N
Aqua Regia (to 75°F) – HNO ₃ And HCl	S	Chrome Alum – CrK(SO ₄) ₂ . 12H ₂ O	S	Fuel Oil	N
Aromatics	N	Chrome Alum – CrK(SO ₄) ₂ . 12H ₂ O	S	Gasoline	N
Barium Carbonate – BaCO ₃	S	Chromic Acid (3% Max to 75°F) – H ₂ CrO ₄ (Above 3%)	N	Glycerine – C ₃ H ₅ (OH) ₃	S
Barium Chloride (Aqueous) (to 20%) – BaCl ₂ • 2H ₂ O	S	Chromium Potassium Sulphate – CrK(SO ₄ • 12H ₂ O	S	Halogenated Hydrocarbons	N
Barium Hydroxide – Ba(OH) ₂	S	Citric Acid (to 10%) – HOOCCH ₂ C(OH)(COOH)CH ₂ COOH • H ₂ O	S	Heptane – CH ₃ (CH ₂) ₅ CH ₃	N
Barium Sulphate – BaSO ₄	S	Copper Chloride (to 75°F) – CuCl ₂	S	Hexane – CH ₃ (CH ₂) ₄ CH ₃	N
Barium Sulphide – BaS	S	Copper Cyanide – Cu(CN) ₂	S	Hydrobromic Acid (to 20%) – HBr	S
Benzene – C ₆ H ₆	N	Copper Nitrate – Cu(NO ₃) ₂ • 3H ₂ O	S	Hydrochloric Acid (to 175°F) – HCl	S
Benzyl Alcohol – C ₆ H ₅ CH ₂ OH	N	Copper Sulphate - CuSO ₄ • 5H ₂ O	S	Hydrofluoric Acid (to 20% 80°F) – HF	S 2
Bismuth Carbonate – (BiO) ₂ CO ₃	S			Hydrogen Peroxide (to 30%) – H ₂ O ₂	S
Borax Solution – Na ₂ B ₄ O ₇ • 10H ₂ O	S			Hydrofluosilicic Acid – H ₂ SiF ₆	S 2
Boric Acid (to 50%) – H ₃ BO ₃	S			Isopropyl Alcohol – (CH ₃) ₂ CHOH	S

Kerosene	N	Potassium Acetate – $\text{KC}_2\text{H}_3\text{O}_2$	S	Sodium Sulphate – Na_2SO_4	S
Ketones	N	Potassium Bicarbonate – KHCO_3	S	Sodium Sulphide (to 30%) – Na_2SO_3	S
Lacquer Thinner	N	Potassium Bromide – KBr	S	Sodium Tetraborate – $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{IOH}_2\text{O}$	S
Lactic Acid – $\text{CH}_3\text{CHOHCOOH}$	S	Potassium Carbonate (to 40%) – K_2CO_3	S	Sodium Sulphide (to 30%) – Na_2SO_3	S
Lead Acetate – $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$	S	Potassium Chlorate – KClO_3	S	Sodium Tetraborate – $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{IOH}_2\text{O}$	S
Lemon Oil	N	Potassium Chloride (Aqueous) – KCl	S	Sodium ThioSulphate – $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$	S
Lestoil	N	Potassium Cyanides (Aqueous) – KCN	S	Stannic Chloride – SnCl_4	S
Linseed Oil	N	Potassium Dichromate (to 40%) – $\text{K}_2\text{Cr}_2\text{O}_7$	S	Stannous Chloride – SnCl_2	S
Lithium Bromide (to 62%) – LiBr	S	Potassium Ferricyanide – $\text{K}_2\text{Fe}(\text{CN})_6$	S	Sulphuric Acid (60% to 80°F)(10% to 130°F) – H_2SO_4 over 90% 80° max	S
Lube Oils	N	Potassium Ferrocyanide – $\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$	S	Sulphurous Acid – H_2SO_3	S
Lye (30% to 180°F) (50% to 180°F) – NaOH or KOH	S	Potassium Fluoride – KF	N	Tartaric Acid (1%) – $\text{HOOC}(\text{CHOH})_2\text{COOH}$	S
Magnesium Chloride – MgCl_2	S	Potassium Hydroxide (30% to 180°F) (50% to 75°F) – KOH	S	Tannic Acid (to 10%) – $\text{C}_{76}\text{H}_{52}\text{O}_{46}$	S
Magnesium Hydroxide – $\text{Mg}(\text{OH})_2$	S	Potassium Hypochlorite – KOCl	S	Tetra Hydro Furane 0 $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{O}$	N
Magnesium Sulphate (Epsom Salts) – $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	S	Potassium Nitrate – KNO_3	S	Titanium Tetrachloride – TiCl_4	N
Mercuric Chloride – HgCl_2	S	Potassium Perchlorate (to 10%) – KClO_4	S	Toluene – $\text{CH}_3\text{C}_6\text{H}_5$	N
Mercuric Cyanide – $\text{Hg}(\text{CN})_2$	S	Potassium Permanganate (to 20%) – KMnO_4	S	Tri-Sodium Phosphate – $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$	S
Methanol – CH_3OH	S	Potassium Sulphate (Aqueous) – K_2SO_4	S	Tri-iso Octyl Phosphate – $(\text{C}_8\text{H}_{17})_3\text{PO}_4$	N
Methyl Acrylate – $\text{CH}_2=\text{CHCOOCH}_3$	N	Potassium Sulphide – K_2S	S	Trichloroethylene – $\text{CHCl}:\text{CCl}_2$	N
Methyl Chloride – CH_3Cl	N	Potassium Sulphite – $\text{K}_2\text{SO}_3 \cdot 2\text{H}_2\text{O}$	S	Trichloroacetic Acid (to 10%) – CCl_3COOH	S
Methyl Ethyl Ketone – $\text{CH}_3\text{COC}_2\text{H}_5$	N	Propionic Dichloride - $\text{CH}_3\text{CHClCH}_2\text{Cl}$	S	Turpentine	N
Mineral Oil	N	Sal Ammoniac – NH_4Cl	S	Vegetable Oils	S
Muriatic Acid (to 175°F) – HCl	S	Salicylic Acid – $\text{C}_6\text{H}_4(\text{OH})(\text{COOH})$	S	Vinegar	S
Naptha	N	Sea Water	S	Vinyl Acetate – $\text{CH}_3\text{COOCH}:\text{CH}_2$	S
Naphthalene – C_{10}H_8	N	Silver Bromide – AgBr	S	Water (Deionized)	S
Nickel Chloride – NiCl_2	S	Silver Chloride – AgCl	S	Whiskey	S
Nickel Nitrate – $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	S	Sodium Acetate – $\text{NaC}_2\text{H}_3\text{O}_2$	S	Wine	S
Nickel Sulphate – NiSO_4	S	Sodium Bicarbonate (Aqueous) – NaHCO_3	S	Xylene – $\text{C}_6\text{H}_4(\text{CH}_3)_2$	N
Nitric Acid (10% to 185°F) (30% to 130°F)	S	Sodium Bisulphate – NaHSO_4	S	Zinc Chloride – ZnCl_2 (crystallizes)	S
HNO_3 Above 30%	N	Sodium Bisulphite – NaHSO_3	S	Zinc Cyanide – $\text{Zn}(\text{CN})_2$	S
Nitrobenzene – $\text{C}_6\text{H}_5\text{NO}_2$	N	Sodium Borate – $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{IOH}_2\text{O}$	S	Zinc Sulphate – $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	S
Nitroethane - $\text{CH}_3\text{CH}_2\text{NO}_2$	N	Sodium Chlorate (to 180°F) – NaClO_3	S		
Nitrous Oxide – N_2O	S	Sodium Chlorite (to 20%) – NaClO_2	S		
Oleic Acid – $\text{CH}_3(\text{CH}_2)_7\text{CH}:\text{CH}(\text{CH}_2)_7\text{COOH}$	N	Sodium Cyanide – NaCN	S		
Oxalic Acid (to 175°F) – $\text{HOOC}\text{COOH} \cdot 2\text{H}_2\text{O}$	S	Sodium Ferricyanide – $\text{Na}_3\text{Fe}(\text{CN})_6 \cdot \text{H}_2\text{O}$	S		
Phosphoric Acid (60% to 80°F) (30% to 180°F) – H_3PO_4	S	Sodium Ferrocyanide – $\text{Na}_4\text{Fe}(\text{CN})_6 \cdot 10\text{H}_2\text{O}$	S		
Photographic Developers	S	Sodium Hydroxide (30% to 180°F) (50% to 75°F) – NaOH	S		
Phthalic Acid (to 100°F) – $\text{C}_6\text{H}_4(\text{CO}_2\text{H})_2$	S	Sodium Hypochlorite (to 16%, 100°F) – NaOCl	S		
Potash Alum (Aqueous) _ $\text{AlK}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	S	Sodium Silicate – $2\text{Na}_2\text{O} \text{SiO}_2$	S		
Phthalic Anhydride – $\text{C}_6\text{H}_4(\text{CO})_2\text{O}$	N				

Note: All the above relate to pumps supplied with Hastelloy C Seals only. The following special instructions apply:

1. PTFE Rotating face to replace carbon in the seal
2. PTFE or Silicon Carbide to replace ceramic in the seal

Other seals available are:-

Non metallic – a Viton bellows is used instead of the spring in the seal.
Stainless Steel – SS spring with nitrile rubbers. To be used for weak solutions and to be treated as a disposable seal.



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