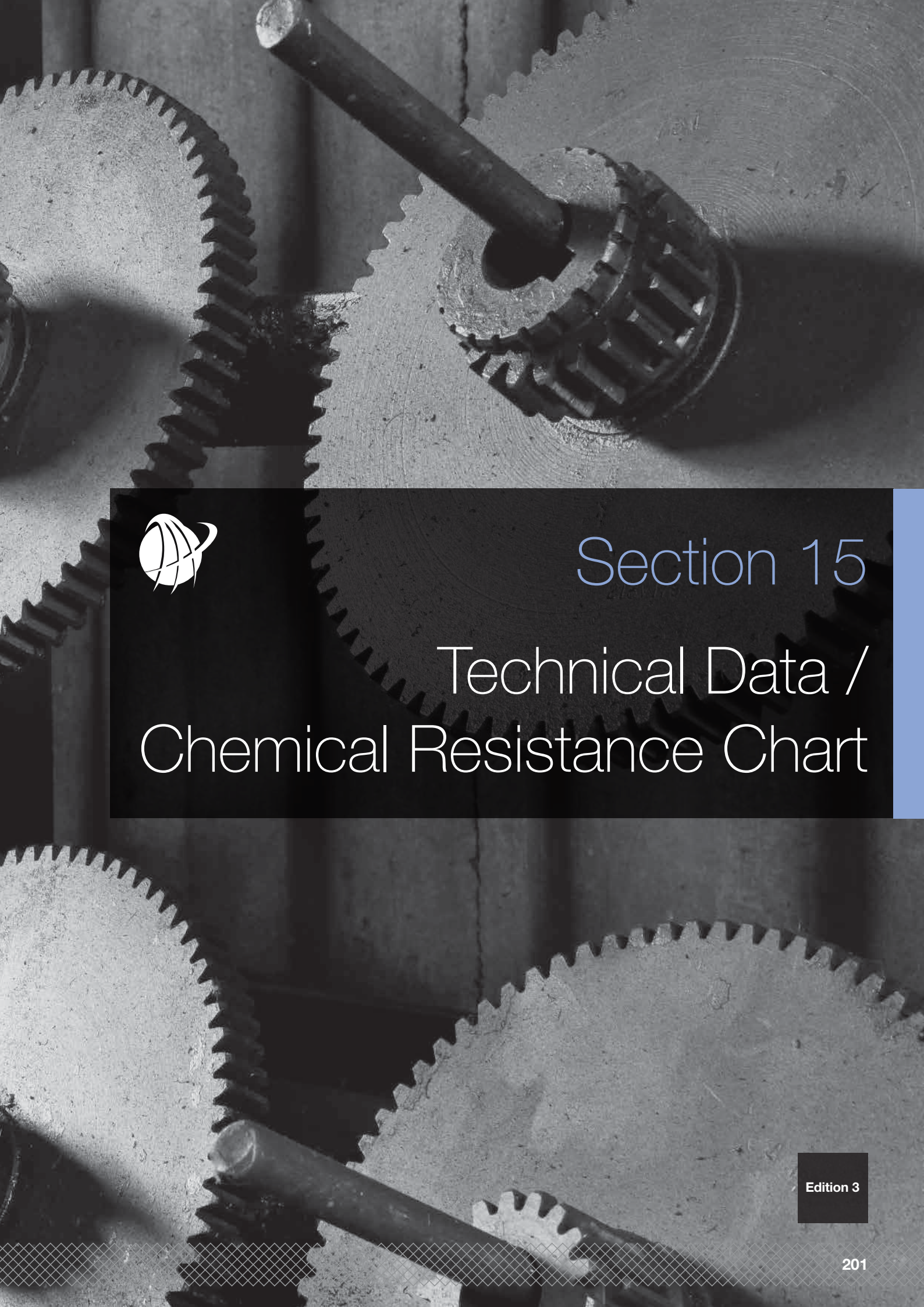

Section 15

Technical Data / Chemical Resistance Chart

Edition 3

Summary of threads for AAP Products

Fittings Thread Summary												
	Steel Fittings			Stainless Steel Fittings			Galvanised Malleable Fittings			High Pressure Fittings		
	Unions	Sockets	Other Fittings	Unions	Sockets	Other Fittings	Unions	Sockets	Other Fittings	Unions	Sockets	Other Fittings
Female	Sealing Taper (RC)	Sealing Parallel (RP)	Sealing Parallel (RP)	Fastening (G)	Fastening (G)	Fastening (G)	Sealing Parallel (RP)	Sealing Parallel (RP)	Sealing Parallel (RP)	Sealing Taper (RC)	Sealing Taper (RC)	Sealing Taper (RC)
Male	Sealing Taper (R)	N/A	Sealing Taper (R)	Sealing Taper (R)	N/A	Sealing Taper (R)	Sealing Taper (R)	N/A	Sealing Taper (R)	Sealing Taper (R)	N/A	Sealing Taper (R)

Valve Thread Summary						
	DR Brass Ball Valve	Gas Ball Valves	General Purpose Ball Valves	Gate Valves	Check's and Strainers	
					General Purpose	Stainless Steel
Female	Sealing Parallel (RP)	Sealing Parallel (RP)	Fastening Parallel (G)	Sealing Parallel (RP)	Fastening Parallel (G)	Fastening (G)
Male	Sealing Taper (R)	Sealing Taper (R)	Fastening (GB)	N/A	N/A	N/A

Thread Specifications

AS1722 – Pipe Threads of Whitworth Form

AS1722 Part 1: Sealing Pipe Threads

Connections intended to be pressure-tight by way of a 'sealing pipe thread', shall comply with the relevant requirements of AS1722.1 or IS0 7.1

External Thread – Series R (External Taper Pipe Thread)
External Thread – Series RL (External Parallel Long screw Thread)
Internal Thread – Series RC (Internal Taper Pipe Thread)
Internal Thread – Series RP (Internal Parallel Pipe Thread)

N.B Except for the method of designation, the external taper pipe threads and internal pipe threads given in this standard are in agreement with ISO 7. In response to a demand from the Australian industry the long screw thread is included in this standard, but is not given in ISO 7.

AS 1722 Part 2: Fastening Pipe Threads

Connections intended to be compression joints, such as union couplings and compression connections utilizing a "fastening pipe thread" to effect the connection, shall comply with the relevant requirements of AS1722.2 or ISO 228.1

External Threads – Series GB (Parallel Class B Tolerance)

Internal Threads – Series G (Parallel)

N.B This standard is technically equivalent to ISO 228

ISO 7 – Pipe Threads where pressure joints are made on the threads
ISO 7 Part 1: Dimensions, Tolerance and designation
ISO 7 Part 2: Verification by means of limit gauges
ISO 228 – Pipe Threads where pressure Joints are not made on threads
ISO 228 Part 1: Dimension, Tolerance and Designation
ISO 228 Part 2: Verification by means of limit gauges

** For further clarification please refer directly to the standard

Conversion Table

Conversion Table				
MEASUREMENT	METRIC UNITS	U.S CUSTOMARY UNITS	FROM METRIC TO U.S UNITS	FROM U.S TO METRIC UNITS
Area	Square Centimetres (cm^2)	Square Inches (In^2)	cm^2 x 0.155 = In^2	In^2 x 6.452 = cm2
Length	Metres (m)	Feet (ft)	m x 3.281 = Ft	Ft x 0.305 = m
Weight	Kilograms (kg)	Pounds (lbs)	Kg x 2.2046 = lbs	lbs x .04535 = kg
Volume	Cubic Centimetres (cm^3)	Cubic Feet (Cu.ft)	cm^3 x 0.061 = Cu.ft	Cu.ft x 16.39 = cm^3
	Litres (lt)	Gallons (gal)	lt x 0.2641 = gal	gal x3.78 = lt
Power	Kilowatts (Kwh)	Horsepower (HP)	HP x 0.7457 = Kwh	Kwh x 1.3410 = HP
Frequency	Hertz (Hz)	Cycles/second (cps)	HZ = cps	cps = HZ
Load	Metre Kilograms (Kgm)	Feet-pounds (lbf)	Kgm x 7.233 = lbf	lbf x 0.1383
Pressure	Bar (Bar)	Pounds/sq inches (P.S.I)	Bar x 14.5 = P.S.I	P.S.I X 0.0689 = Bar
	Kilopascals (kPa)	Pounds/sq inches (P.S.I)	kPa x .145 = P.S.I	P.S.I X 6.8948 = kPa
	Atmospheres (Atm)	Pounds/sq inches (P.S.I)	Atm x 14.7 = P.S.I	P.S.I x 0.0680 = Atm
Density	Gram/Cubic centimetres (gr/cm^3)	Pounds/cu.inches (pci)	$gr.cm^3$ x .03613 = pci	pci x 27.68 = gr/cm^3
Temperature	Degrees celsius °C	Degrees Fahrenheit °F	C° = F° - 32 / 1.8	F° = C° x 1.8 + 32

Temperature Conversion

Temperature Conversion			
°C	°F	°C	°F
-50	-58	90	194
-40	-40	95	203
-30	-22	100	212
-20	-4	105	221
-10	14	110	230
-5	23	115	239
0	32	120	248
5	41	125	257
10	50	130	266
15	59	135	275
20	68	140	284
25	77	145	293
30	86	150	302
35	95	155	311
40	104	160	320
45	113	165	329
50	122	180	356
55	131	185	365
60	140	190	374
65	149	195	383
70	158	200	392
75	167	210	410
80	176	220	428
85	185	230	446

Length Conversions

Length Conversions					
INCH	DECIMAL	MILLIMETRES	INCH	DECIMAL	MILLIMETRES
1/64	0.02	0.40	1 1/2	1.5	38.1
1/32	0.03	0.80	1 3/4	1.75	44.45
1/16	0.06	1.59	2	2	50.8
1/8	0.13	3.18	2 1/4	2.25	57.15
3/16	0.19	4.76	2 1/2	2.5	63.5
1/4	0.25	6.35	2 3/4	2.75	69.85
5/16	0.31	7.94	3	3	76.2
3/8	0.38	9.53	3 1/4	3.25	82.55
7/16	0.44	11.11	3 1/2	3.5	88.9
1/2	0.50	12.70	3 3/4	3.75	95.25
9/16	0.56	14.29	4	4	101.6
5/8	0.63	15.88	4 1/4	4.25	107.95
11/16	0.69	17.46	4 1/2	4.5	114.3
3/4	0.75	19.05	4 3/4	4.75	120.65
13/16	0.81	20.64	5	5	127
7/8	0.88	22.23	5 1/4	5.25	133.35
15/16	0.94	23.88	5 1/2	5.5	139.7
1	1.00	25.40	5 3/4	5.75	146.05
1 1/4	1.25	31.75	6.00	6.00	152.4

Mass Conversions

Mass Conversions			
Kilograms (kg)	Pounds (lbs)	Kilograms (kg)	Pounds (lbs)
1	2.21	60	132.30
2	4.41	65	143.33
3	6.62	70	154.35
4	8.82	75	165.38
5	11.03	80	176.40
6	13.23	85	187.43
7	15.44	90	198.45
8	17.64	95	209.48
9	19.85	100	220.50
10	22.05	150	330.75
15	33.08	200	441.00
20	44.10	300	661.50
25	55.13	400	882.00
30	66.15	500	1102.50
35	77.18	600	1323.00
40	88.20	700	1543.50
45	99.23	800	1764.00
50	110.25	900	1984.50
55	121.28	1000	2205.00

Pressure Conversions

Pressure Conversions				
Bar	Mpa	kPa	kg/cm2	PSI
1	0.1	100	1.02	14.5
2	0.2	200	2.04	29.0
3	0.3	300	3.06	43.5
4	0.4	400	4.08	58.0
5	0.5	500	5.10	72.5
6	0.6	600	6.12	87.0
7	0.7	700	7.14	101.5
8	0.8	800	8.16	116.0
9	0.9	900	9.18	130.5
10	1	1000	10.2	145
20	2	2000	20.4	290
30	3	3000	30.6	435
40	4	4000	40.8	580
50	5	5000	51.0	725
60	6	6000	61.2	870
70	7	7000	71.4	1015
80	8	8000	81.6	1160
90	9	9000	91.8	1305
100	10	10000	102	1450
200	20	20000	204	2900
300	30	30000	306	4350
400	40	40000	408	5800
500	50	50000	510	7250
600	60	60000	612	8700
700	70	70000	714	10150
800	80	80000	816	11600
900	90	90000	918	13050
1000	100	100000	1020	14500

Chemical Resistance Chart

This Chemical Resistance Chart has been compiled to assist in selecting chemical-resistant materials. It is emphasized that these resistance tables are intended only as a guide and are not necessarily valid for all operating conditions. Many conditions can affect the material choices.Temperature, pressure and chemical concentrations must be considered as it may affect the suitability and durability of the metals, plastics and elastomers. In cases of doubt when considering our products, we strongly recommend the customer to test samples with various material combinations, in order to establish and check their suitability under the actual operating conditions of the application. No guarantees can be given in respect of the information contained in this publication. All recommendations assume ambient temperatures unless specified.

"Chemical Effect Rating: A - No effect (Excellent) B - Minor effect (Good) C - Moderate effect (Fair) D - Severe effect (Not recommended) Blank - No data available"	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminium	Titanium	Hastelloy C	Cast Bronze	Brass	Cast Iron	Carbon Steel	Kynar	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	Polypropylene	Ryton	Carbon	Ceramic	Viton	Buna N (Nitrile)	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
A																															
Acetaldehyde5	A	A	A		B	A	A	D			C		D	D	A		A	A	D	C	B	A	A	A	D	B	B	D	B	C	A
Acetamide		B	A								C						B							A	A	A		A	A	D	A
Acetate Solvent2	A	B	A	B	B			A	C	B	A		B	D	A			A		B	D		A	A	D	D		D			A
Acetic Acid, Glacia1		B	A	A	B	A	A	C	C	D	A		C	B	A	C	D	D	D	B	B	A	A	A	D	D	B	C	B	C	B
Acetic Acid 20%		B	A			A	A		C			A	B		A	A		D			A	A		A	A	C		C			B
Acetic Acid 80%		B	A			A	A		C			A	D		A	B		D			B			A	A	C		D			B
Acetic Acid		B	A	B	B	A	A	C	C	D	C	B	A	B	A	A	D	D	C	B	A	A	A	A	C	C		C	B	C	A
Acetic Anhydride	B	A	A	B	B	A	A	C	D	B	D	D	D	D	A	D	D	D	D	A	A	A	A	A	D	A	C	B	B	C	A
Acetone6	A	A	A	B	A	A	A	A	A	A	A	D	D	D	A	D	B	A	D	C	B	A	A	A	D	D	B	C	A	D	B
Acetyl Chloride		C	A					D							A							A			A					A	A
Acetylene2	A	A	A	A	A	B		B		A	A		B				A	A			D	A	A	A	A	A	C	B	A	C	A
Acrylonitrile	A	A	C		B	B	B	A		C							B		D		B	A	A	A	C	D		D	D		A
ALCOHOLS:																															
- Amyl	A	A	A		C	A	A	A	B	C	C	A	A	B	A	C	A	A	B	B	B	A	A	A	A	A	D	A	A	C	A
- Benzyl		A	A		B	A	A	A	C				D	B		A	A	A	D	D	A		A	A	A	D		B	B	D	A
- Butyl	A	A	A		B	B	A	B	C	C	C	A	A	B	A	A	A	A		B	B	A	A	A	A	A	D	A	A	A	A
- Diacetone2		A	A		A	A	A	A	C		A		D			A	A	A			D		A	A	D	D		D	A	D	A
- Ethyl		A	A	A	B	A	A	A	C	A	A		A	C		A	B	A	B	B	A		A	A	A	A	B	A	B	A	A
- Hexyl		A	A		A	A	A	A	C		A					A	A	A			A		A	A	A	A	D	B	A	A	A
- Isobutyl		A	A		B	A	A	A	C		A					A	A	A	B		A		A	A	A	C	B	A	A	A	A
- Isopropyl		A	A		B	A	A	A	C	C	A					A	A	A			A		A	A	A	C	C	B	A	A	A
- Methyl6		A	A	A	B	A	A	A	C	A	A		B		A	A	C	A	D	B	A		A	A	C	B		A	A	A	A
- Octyl		A	A		A	A	A	A	C		A					A	A	A					A	A	A	B		B	A	C	A
- Propyl		A	A		A	A	A	A			A	B	A		A	A	A	A			A		A	A	A	A	B	A	A	A	A
Aluminum Chloride 20%		D	C	D	B	A	A	D		D	A		A	B		A	C	A		B	A	A	A	A	A	A		A	A	A	A
Aluminum Chloride	C	D	C		D	C	A	C		D	B	A	A	A	A	A		D			A	A	A	A	A	A	C	A			A
Aluminum Fluoride		D	C	D		D	B				A	A	A		A	A	C	D		B	A		A		A	A	C	A		C	A
Aluminum Hydroxide6		A	A	A	A			A		D	A		A		A	A	B	A			A		A	A	A	A		A		A	A
Aluminum Potassium Sulfate (Alum), 10%		A			A		B			D	A		A		A			A		A			A	A	A			A		A	A
Aluminum Potassium Sulfate (Alum), 100%		D	A	B	B		B	C			A		A	B	A	A	C	D		B	A		A	A	A	A		A		A	A
Aluminum Sulfate		C	C	A	A	A	A	C	C	D	A	A	A	B	A	A	C	A		B	A	A	A	A	A	A		A	A	A	A
Amines	A	A	A		A	B	A	B		A	B		C	A	A	B	D	A					A	A	D	D	C	B	B	C	A
Ammonia 10%			A			A	A					D	A		A	A		A			A	A		A	A	D		A			B

1. PVC—Satisfactory to 22°C, 2. Polypropylene—Sati sfactory to 22°C, 3. Polypropylene—Satisfactory to 49°C, 4. Buna-N—Satisfactory for O-Rings, 5. Polyac etal—Satisfactory to 22°C, 6. Ceramag—Satisfactory to 22°C

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"Chemical Effect Rating: A - No effect (Excellent) B - Minor effect (Good) C - Moderate effect (Fair) D - Severe effect (Not recommended) Blank - No data available"	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminium	Titanium	Hastelloy C	Cast Bronze	Brass	Cast Iron	Carbon Steel	Kynar	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	Polypropylene	Ryton	Carbon	Ceramic	Viton	Buna N (Nitrile)	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Ammonia, Anhydrous	A	B	A	A	B	B	A	D		D	B	D	A	B	A	A	D	A		B	A	B	C	A	D	B	B	A	A	D	A
Ammonia, Liquids		A	A	A	D		B	D		A	A		A	B	A	A	D			D	A		A	A	D	B	B	A	A	D	A
Ammonia, Nitrate		A	A	A	C			D			A		B	B		A	C				A		A	A		A		C			A
Ammonium Bifluoride		C	A		D		B						A			A	D				A			A	A	A		A			A
Ammonium Carbonate	B	A	A	A	C	A	B	B		C	B		A	B	A	A	D	A			A		A	A	B	D	C	A	A		A
Ammonium Casenite			A													A	D											A			A
Ammonium Chloride	C	A	C	A	C	D	A	D	C	D	D	A	A	B	A	A	B	A		B	A	A	A	A	A	A	C	A	A	A	A
Ammonium Hydroxide	A	A	A	A	C	A	A	D	D	A	C		A	B	A	A	D	A	B	B	A	A	A	A	B	B	B	A	A	C	A
Ammonium Nitrate	A	A	A	A	B	A	A	D	D	A	D		A	B	A	A	C	D		B	A	A	A	A	D	A	C	A	A	A	A
Ammonium Oxalate		A	A	A			A				A						B						A			A		A			A
Ammonium Persulfate		A	A	A	C	C	A	A		D	A	D	A		A	A	D	D			A		A	A	C	A		A	A	A	A
Ammonium Phosphate, Dibasic	B	A	A	A	B	A	A	C			D		A		A	A	B	A		B	A		A	A	A	A	B	A	A	A	A
Ammonium Phosphate, Monobasic		A	A	A	B	A	A	D			A		A	A	A	A	B	A		B	A		A	A	A	A	B	A	A	A	A
Ammonium Phosphate, Tribasic	B	A	A	A	B	A	A	C		C	D		A		A	A	B	A		B	A		A	A	A	A	B	A	A	A	A
Ammonium Sulfate	C	D	B	A	B	A	A	B	C	C	C	A	A	D	A	A	B	D		B	A	A	A	A	D	A	B	A	A	A	A
Ammonium Thio-Sulfate			A			A				D	A						B						A	A		A		A			A
Amyl-Acetate	B	A	A	C	B	A	A	C			C	C	D	D	A	D	A	B		D	D	A	A	A	D	D	D	D	A	D	A
Amyl Alcohol		A	A		B	A	A	A			A	A	A	B	A	C	A	A		B	A		A	A	B	B	D	A	A	C	A
Amyl Chloride		C	B		D		A	A			A	A	D	C	A	D	A	C		D	D		A	A	A	D		D	D	D	A
Aniline	B	A	A	A	C	A	B	C			C	C	D	D	A	D	D	C	D	C	B	A	A	A	C	D	C	D	B	D	A
Antifreeze		A	A		A		A	B	B	B	C		A	B	A	A	A	A	B	B	A	A	A	A	A	A	C	A	A	A	A
Antimony Trichloride		D	D		D	C	A						A	A	A			D		A				A	A			C		A	A
Aqua Regia (80%, HCL, 20%, HNO)		D	D		D	A	D	D				C	D	D	A	D	D	D		D	C			D	C	D	C	D	D	D	D
Arochlor 1248											A					D							A		A	D		D	B	D	A
Aromatic Hydrocarbons			A		A			A		A	A		D			D	A			C			A		A	D		D	D	D	A
Arsenic Acid	B	A	A		D			D	B	D	D	A	A	B	A	A	D	A		B	A		A	A	A	A		A		C	A
Asphalt		B	A		C			A		C			A				A	A			A	A		A	A	B	C	B	D	D	A
B																															
Barium Carbonate	B	A	A	A	B	A	A	B		B	B		A	A	A	A	A	A		B	A		A	A	A	A		A		A	A
Barium Chloride	C	D	A	A	D	A	A	B			C	A	A	B	A	A	A	B		B	A	A	A	A	A	A	B	A	A	A	A
Barium Cyanide			A					C			A						B			B			A		A	C		A	A		A
Barium Hydroxide	B	C	A	A	D	B	B	B		C	C	A	A		A	A	D	A		B	A	A	A	A	A	A	C	A	A	A	A
Barium Nitrate		A	A			A		D		A	A		B			A	A						A	A	A	A		A	A		B
Barium Sulfate	B	A	A	A	D	A	A	C		C	C	A	A		A	A	A	A		B	A	A	A	B	A	A	D	A	A		B
Barium Sulfide	B	A	A		D	B		C		C	C		A	A	A	A	A	A		B	A		A	A	A	A	C	A	A	A	A
Beer2	A	A	A		A	A	A	A	B	D	D	A	A		A	A	B	D	B	B	D		A	A	A	D	C	A	A	A	A
Beet Sugar Liquids	A	A	A		A			A	B	A			A		A	A	B	A	B		A		A	A	A	A		B	A	A	A
Benzaldehyde3	A	A	B		B	A	A	A		B	A	C	D	D	A	D	A	C	D	D	D	A	A	A	D	D	B	D	A	D	A
Benzene2	B	A	A	A	B	A	B	B	A	B	C	B	D	C	A	D	A	A	D	D	D	A	A	A	A	D		D	D	D	A

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Benzoic Acid2	B	A	A	A	B	A	A	B		D		A	A	B	A	A	B	D		B	D		A	B	A	D		D	D	D	A
Benzol		A	A		B	A	A	B	A				D		A	D	A	A			A		A	A	D	D		D			A
Borax (Sodium Borate)		A	A	A	C	B	A	A	B	A	C	A	A	A	A	A	A	A		B	A	A	A	A	A	B	C	A	A	C	A
Boric Acid	B	A	A	A	B	A	A	B	C	D		A	A	B	A	A	A	A		B	A		A	A	A	A		A	A	A	A
Brewery Slop			A					A		A							A						A	A	A	A		A			A
Bromine2 (wet)	D	D	D	D	D	A	A	C		D	D	A	B	B	A	D	D	D	D	D	D	D	D	A	A	D	D	D	D	D	C
Butadiene	A	A	A		A			C	A	C	C	A	A		A		A	A				B	A	A	A	A		B	A		A
Butane2 1	A	A	A		A			A	A	C	C	A	A	C	A	D	A	A	B	C	D	A	A	A	A	A	D	B	D	D	A
Butanol		A	A		A		A	A							A																
Butter		B	A		A			D		D				B		B	A		B				A	A	A	A		B	A	D	A
Buttermilk	A	A	A	A	A			D		D				B	A	A	A	A	B				A	A	A	A		A		D	A
Butylene	A	B	A		A			A	A	A	A		B		A		A					A	A	A	A	B			D	D	A
Butyl Acetate1			C		A		A	A			A	C	D	D	A	D	A			C	D	A	A	A	D	B	D	D	B	D	A
Butyric Acid1	B	B	A	A	B	A	A	C		D		A	B		A	A	C	D	D		A		A	D	D	D		D	B		A
C																															
Calcium Bisulfate	C	D	A		D			D	D	D			A	A	A			A							A	A	C	C		A	A
Calcium Bisulfide			B		C	A	A	C					A		A	A	D	A		B	A		A	A	A	A		A	D		A
Calcium Bisulfite		B	A		C	A	A	C				A	A		A	A		A			A			A	A	A		A		A	
Calcium Carbonate	B	A	A	A	C	A	A	C		D			A	A	A	A	A	A		B	A		A	A	A	A		A		A	A
Calcium Chlorate		B	A			B	B	C					A	A	A			A		A			A		A			A		A	A
Calcium Chloride	C	A	D	C	C	A	A	B		C		A	A	A	A	A	D	A	B	B	A	A	A	A	A	A	B	D	A	A	A
Calcium Hydroxide	B	A	A		C	A	A	B					A	A	A	A	B	A		B	A		A	A	A	A	C	A	A	A	A
Calcium Hypochlorite	D	D	C	C	C	A	B	D		D		A	D		A	A	D	D		B	A		A	A	A	B	C	D	A	C	A
Calcium Sulfate	B	A	A	A	B	A	B	B				A	A	A	A	A	A	A	C	B	A	A	A	A	A	A		D		C	A
Calgon		A	A					C		D						A	B				A		A	A	A	A		A			A
Cane Juice2		A	A		B			B	C	A			A				A	A			D		A	A		A		A		A	A
Carbolic Acid (See Phenol)																															
Carbon Bisulfide2	B	A	A	A	A			C		B			D	D			A	A			D		A	A	A	D		D	D	D	A
Carbon Dioxide (wet)		A	A		C		A	C	C	C					A								A	A							
Carbon Disulfide2		B	A		C			C	C	B	C		D	C	A	D	A	A		D	D	A	A	B	A	D		D	D	D	A
Carbon Monoxide		A	A		A								A			B	A	A		B	A		A	A	A	A	B	B	A	C	A
Carbon Tetrachloride2 1	B	B	B	A	C	A	A	C	A	C	D	A	C	C	A	D	A	A	D	D	D	C	A	A	A	C	C	D		D	C
Carbonated Water	B	A	A	A	A			B		D			A			A	A	A			A		A	A	A	A		A	A		A
Carbonic Acid	B	A	B	A	A		A	B		D		A	A		A	A	A	A		B	A		A	A	A	B	B	A	A	A	A
Catsup		A	A	A	D			C		D			A			A	B	A	B		A		A	A	A	A		C			A
Chloracetic Acid2	D	D	D	D	C	A	A	D		D		D	A	D	A		D	D		D	D		A	A	D	D		D	B	D	B
Chloric Acid		D	D										D		A											D		D			D
Chlorinated Glue		A	A		D			C		D						C		C	D					A	A	C		D	B	D	A
Chlorine, Anhydrous Liquid		D	D	D	D	D	A	D		C			D	B	A	A	D	D		D	D	C	A	D	A	D		D	B	D	B
Chlorine (dry)	B	A	A		D	D	A	A	B	A					A							C	A	A	D			D		D	D
Chlorine Water	D		D		D	A	B	D	D	D		A	A		A	C		D			D	C	C	A	A	D	C	D			

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Chemical Resistance Chart

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Chlorobenzene (Mono)	A	A	A		B		A	B		B	C	A	D	D	A	D	A	A	D	D	D	A	A	A	A	D		D	D	D	A
Chloroform	A	A	A	A	D	A	A	B		D	C	C	D	C	A	D	A	C	D	D	D	C	A	A	A	D	D	D	D	D	A
Chlorosulfonic Acid1	D	D		D	D	A	B	D			D	D	C	C	A	D	D	D		D	D	D		C	D	D	D	D	D	D	C
Chlorox (Bleach)		A	A		C		A	A		D	C		A	B	A	A	D	D	B		D	C	A	A	A	C		B	B	D	A
Chocolate Syrup		A	A		A					D						A	A	A			A			A	A	A		A		D	A
Chromic Acid 5%		A	A	B	C	A	A	D	D	D			A	B		C	D	D	B	B	A	A	D	C	A	D	C	D	A	B	B
Chromic Acid 10%		B				A	A		D			A	A		A	A		D			A			A	A	D		D			C
Chromic Acid 30%		B				A	A		D			B	A		A	D		D			A			A	A	D		D			D
Chromic Acid 50%	C	B	B		C	A	A	D	D	D		C	B	B	A	D	D	D	C	C	B	B	D	A	A	D		D	A	D	C
Cider		A	A	A	B			A		D			A			A	B			B			A	A	A	A		A			A
Citric Acid		A	A	A	C	A	A	D	C	D		A	A		A	A	B	C	C	B	B		A	A	A	D	C	A	A	A	A
Citric Oils		A	A		C			B								A	B				A		A	A	A	A	C	D			A
Coffee	A	A	A	A	A			B		C					A	A	A	A			A		A	A	A	A		A		A	A
Copper Chloride	C	D	D	B	D	A	A	D		D		A	A	B	A	A	B	D		B	A	A		A	A	A		A	A	A	A
Copper Cyanide		A	A	A	D	A	A	C		D		A	A		A	A	B	A		B	A	A	A	A	B	B		A	A	A	C
Copper Fluoborate		D	D		D		B	D		D			A		A		B			A			A		A	B		A		A	A
Copper Nitrate	B	A	A	B	D	A	A	D				A	A		A	A	B	D		B	A		A	A	A	A		A			A
Copper Sulfate (5% Solution)		A	A	A	D	A	A	D	D	D			A		A	A	B	D		B	A	A	A	A	A	A	C	A		C	A
Copper Sulfate		B	B			A	A	C	D			A	A		A	A		C			A			A	B	B		A	A		A
Cream		A	A		A			C		D						A	A	A			A		A	A	A	A		C			A
Cresols2		A	A		B			D	C				D	D			D		D	D	C	A	A	A	D	D	D	D	D	D	A
Cresylic Acid	B	A	A		C	A	B	C				B	B	D	A		D	D		C			A	A	A	D		D	D	D	A
Cyclohexane		A			A	A		A			A			D		D	A				D	A	A	A	A	A	D	D	D	D	A
Cyanic Acid		A															D								C		D			A
Cycolic Acid							A							A		A	C			B	A	A	A		A	A		A			A
D																															
Detergents		A	A		A			A			A		A			A	B	A	B	B	A	A	A	A	A	A		B	A	C	A
Dichlorethane		A	A				A						D	D	A			A		D					B			D			A
Diesel Fuel	A	A	A		A			A		A	A					D	A				D	A	A	A	A	A		D	D	D	A
Diethylamine	A	A			A			A					D		A	B	D				C		A	A	D	B		B	B	C	A
Diethylene Glycol		A						A								A	A	A	B	B			A	A	A	A	C	A	A	A	A
Diphenyl Oxide		A						A									A						A	A	A	D		D	D	D	A
Dyes		A	A		B			C								A	A								A			C			A
E																															
Epsom Salts (Magnesium Sulfate)	B	A	A	A	A	A	B	B					A			A	A				A		A	A	A	A		A		C	A
Ethane	A	A			A			A								D	A						A	A	A	A		B	D	D	A
Ethanolamine		A	A								C						D					A	A	A	D	B	C	B		C	A
Ether3	A	A	A	A	A		B	B	A		B		D	C		D	A	C				A	A	A	C	D		D	C	D	A
Ethyl Acetate2		A	A		B		B	B			C	D	D	D	A	D	A	A	D	C	C	A	A	A	D	D	C	D	B	D	A
Ethyl Chloride		A	A	A	B	A	B	B		C	D	A	D	D	A	D	A	A		D	D	A	A	A	A	D	D	C	A	A	A

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Ethyl Sulfate		D															B						A	A	A	A					A
Ethylene Chloride2		A	A		C	B	B	A		C	C		D		A	D	A		D		D	A	A	A	A	D	D	D	C	D	A
Ethylene Dichloride		A	A		D	A	B	C			C		D	D	A	D	A	A		D	A	A	C	A	A	D	D	D	C	D	A
Ethylene Glycol4		A	A		A		A	B	B	B	C	A	A	B	A	A	A	A	B	B	A	A	A	A	A	A	C	A	A	A	A
Ethylene Oxide			A		A			A					D		A	A	A	A					A	A	D	D	D	D	C	D	A
F																															
Fatty Acids		A	A		B	A	A	C		D		A	A	B	A	B	A	A		B	A		A	A	A	C	C	B	C	C	A
Ferric Chloride		D	D	D	D	A	B	D	D	D		A	A	B	A	A	B	D		B	A	A	A	A	A	C	C	B	C	C	A
Ferric Nitrate		A	A	A	D	A	A	D				A	A		A	A	B	D		B	A	A	A	A	A	A	D	A	A	A	A
Ferric Sulfate		A	C	A	D	A	A	D	D	D		A	A	B	A	A	B	A	C		A	A	C	A	A	B	C	A		A	A
Ferrous Chloride		D	D		D	A	B	C		D		A	A	B	A	A	B	D		B	A	A	A	A	A	B	C	A		A	A
Ferrous Sulfate	B	A	C		D	A	B	C		D	D	A	A	B	A	A	B	D		B	A	A	A	A	A	B		A		A	A
Fluoboric Acid		D	B			D	A			D		A	A	B	A	B	B	C		B	A		A	D	A	B		A			A
Fluorine	D	D	D		D	D	A	D		D	D		C		C			D		C			D								D
Fluosilicic Acid			B		D	D	B			D		A	A	B	A	A	B	D		B	A		A	D	B	A		A			C
Formaldehyde 40%			A			A	A					B	B		A	A		D			A	A		A	D	B	B	A			A
Formaldehyde	A	A	A		A	A	B	A	B	D	A		A	B	A	D	A	A		B	A	A	A	A	D	C	B	D	B	C	A
Formic Acid6	C	A	B	B	D	C	A	C	C	D	D	A	D	B	A	A	D	D		B	A	A	A	A	B	D	C	D	A	C	B
Freon 111	A		A		B			B		C	B		B	D	A	D	A	A	D	C		A	A	A	B	C	D	D	D	D	A
Freon 12 (wet)2			D		B			B					B	D	A	D	A	A	B	C	A	A	A	A	A	A	D	B	B	D	A
Freon 22			A		B			B					D	D		B	A	A				A	A	A	D	D	D	A	A	A	A
Freon 113			A		B			B					C	D			A	A				A	A	A	C	A	D	A		D	A
Freon T.F.4			A		B			B					B	D		D	A	A			D	A	A	A	B	A	D	A	D	D	A
Fruit Juice	A	A	A	A	B			B		D	D		A		D	A	B	A		B	A		A	A	A	A		A			A
Fuel Oils	A	A	A		A	A	A	B		C	B	A	A		A	A	A	A		D	B	A	A	A	A	A	C	B	D	D	A
Furan Resin		A	A		A			A		A	A				A		A					A		A	A	D		D		D	A
Furfural1	A	A	A		A		B	A			A	D	D		A	D	B	A	D	D	D	A	A	A	D	D	D	D	B	D	A
G																															
Gallic Acid	B	A	A		A		A	A		D	D		A	A	A			A							B	A					
Gasoline1 4	A	A	A	A	A	D	A	A		A	A	A	C		A	D	A	A	D	D	C	A	A	A	A	A	D	D	C	D	A
Gelatin	A	A	A	A	A		A	A	C	D	D		A		A	A	A	A			A		A	A	A	A		A	A	A	A
Glucose	A		A		A			A	A	B	B		A	B	A	B	A	A	B	B	A		A	A	A	A	B	A	A	A	A
Glue P.V.A.1	B	B	A		B	A		A			A		A	B	A		A	A					A	A	A	A		A			A
Glycerine	A	A	A	A	A	A	A	A	B	B	B	A	A	B	A	A	A	A	C		A		A	A	A	A	B	A	A	A	A
Glycolic Acid							A							A		A	C			B	A	A	A		A	A		A			A
Gold Monocyanide			A					A		D							A						A	A	A	A		A			A
Grape Juice		A	A		B			B		D			A			A	B		B	B			A	A	A	A		A			A
Grease4	A	A	A		A			B		A	A				A		A	A					A	A	A	A		D			A
H																															
Heptane1	A		A		A		A	A			B	A	A		A	D	A	A	C	D	D	A	A	A	A	A		B	D		A
Hexane1	A	A	A		A		A	B			B	A	C		A	D	A	A	D		C	A	A	A	A	A	B	B	D	D	A
Honey		A	A		A			A		A			A			A	A	A	B		A		A	A	A	A		A	A		A

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Hydraulic Oils (Petroleum)1	A	A	A		A			B		A	A				A		A	A			D		A	A	A	A		B	D	D	A
Hydraulic Oils (Synthetic)1		A	A		A			A		A							A	A			D		A	A	A	C	D				A
Hydrazine		A	A							C							D						A		A	B	D	B	A	C	A
Hydrobromic Acid 20%			D			A	A					A	A		A	A		D			A			B	A	D		C			B
Hydrobromic Acid4	D	D	D	D	D	A	A	D		D	D	A	A	B	A	C	D	D		B	B		A	A	A	D	D	D	A	A	A
Hydrochloric/Muratic Acid (Dry gas)	D	C	A		D		A				D		A		A								A						A		A
Hydrochloric/Muratic Acid (20%)4		D	D	D	D	C	B	D		D		A	A	B	A	A	D	D	B	A	A	D	A	A	A	C		C	A	C	A
Hydrochloric/Muratic Acid (37%)4		D	D	D	D	C	B	D		D		A	A	B	A	A	D	D	C	A	A	D	A	C	A	C	C	C	C	D	A
Hydrochloric/Muratic Acid (100%)		D	D		D	D	C	D		D			A	A	A			D		A			A	C	C	D		C		A	A
Hydrocyanic Acid	A	A	A	C	A	A	A	D	D		C		A	B	A	A	B	A		B	A		A	A	A	C		B		A	A
Hydrocyanic Acid (Gas 10%)		D	D										A		A													C	A	C	A
Hydrofluoric Acid (20%)1		D	D	D	D	D	B	D		D			D	B	A	A	D	D		C	A	C	B	C	A	D		C	A	C	B
Hydrofluoric Acid (75%)1 2		C	D		D	D	C	D		D		A	C	B	A	D	D	D		C	B	C	D	D	A	D	D	D	C	C	C
Hydrofluoric Acid 100%	D	D	D		D	D	B	D		D	D		C	D	A					D		C	D	D		D		D		D	A
Hydrofluosilicic Acid (20%)		D	D		D	D	B	A		D			D		A	B	D	D			A		A	D	A	B		B	A	A	C
Hydrofluosilicic Acid		D	D		C		C	D						C	A								A				D	A			
Hydrogen Gas	A	A	A		A			A		B	B	A	A		A										A						A
Hydrogen Peroxide 10%		C	C		A	C	A	D	D	D			A	A	A			D		A		B	A	A		A		D		C	D
Hydrogen Peroxide 30%			B			B	A		D				A		A			D			A	C			A	D		C			B
Hydrogen Peroxide		A	B	A	A	B	A	D	D	D	D	C	A	C	A	B	D	D		B	A	C		A	A	D	C	D	C	C	A
Hydrogen Sulfide, Aqueous Solution		D	A	C	C	A	A	D	C	D		A	A	B	A	A	D	D		B	A	A	A	A	D	C		B	A	D	A
Hydrogen Sulfide (dry)	A	C	A		D		A	D	C	B	B		A		A			D				A		A	D					A	A
Hydroxyacetic Acid (70%)					D	B							A				D						A	A	A	A		A	A		A
I																															
Ink	A	A	A		C			C		D	D					B	A	A		B			A	A	A	A		A			A
Iodine		D	D	D	D	A	B	D		D			D	B	A	A	C	D	D	D	D		D	A	A	B		D	B	D	A
Iodine (In Alcohol)			B			D	A						D		A	C		D			B			A	A	D		D			
Iodoform	B	C	A		A			C		C	B				A			A							A						
Isotane2					A											D	A				D			A	A	A				D	A
Isopropyl Acetate			B		C												A						A	A	D	D		D	B	D	A
Isopropyl Ether2	A		A		A			A			A				A	D	A				D		A	A	D	B		D	D	D	
J																															
Jet Fuel (JP#, JP4, JP5)	A	A	A		A			A		A	A	A	A		A	D	A	A			D	A	A	A	A	A	D	D	D	D	A
K																															
Kerosene2	A	A	A	A	A	A	A	A	A	A	B	A	A	D	A	D	A	A	B	D	D	A	A	A	A	A	D	D	A	D	A
Ketones	A	A	A		B	A	A	A		A	A	D	D	D	A	D	B	A		D	D	A	C	A	D	D		D	D	C	C
L																															
Lacquers	A	A	A		A			A	C	C	C			D		C	A	A			A		A	A	D	D		D		D	A

1. PVC—Satisfactory to 22°C, 2. Polypropylene—Sati sfactory to 22°C, 3. Polypropylene—Satisfactory to 49°C, 4. Buna-N—Satisfactory for O-Rings, 5. Polyac etal—Satisfactory to 22°C, 6. Ceramag—Satisfactory to 22°C

Chemical Resistance Chart

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Lacquer Thinners			A			A	A		C				C		A	D		A			B			A		D		D	A		
Lactic Acid	A	A	B	C	C	A	A	D		D	D	C	A	B	A	A	B	C		B	A	A	A	A	B	B		A	B	A	A
Lard	B	A	A	A	A			A		A	C		A				A	A	C		A		A	A	A	A	C	B		D	A
Latex		A	A		A			A								A	A	A		B				A	A	A		C	A		A
Lead Acetate	B	A	A		D	A	A	C			D		A	B	A	A	A	A		B	A		A	A	D	B		D	A	A	A
Lead Sulfamate																	A				A				A	B	C	A	D	C	A
Ligroin3			A					A								D	A				D			A	A	A		B	A	D	A
Lime		A	A		C	A		A		A			A			A	D		C				A	A	A	A	C	B	D		A
Lubricants		A	A		A	A	A	B					A		A		A	A	B		A	A	A	A	A	A	C	D		D	A
M																															
Magnesium Carbonate		A	A	A			B						A			A	A			B	A			A		A		A	A		A
Magnesium Chloride	B	B	B	A	D	A	A	B	C	D	C		A	B	A	A	A	A		B	A	A		A	A	A		A	A	A	A
Magnesium Hydroxide	A	A	A		D	A	A	C	B	B	B	A	A		A	A	A	A		B	A	A	A	A	A	B		B		C	A
Magnesium Nitrate		A	A	A		A	A						A		A	A	A	A		B	A			A	A	A		A			A
Magnesium Oxide		A	A														A							A		A		A	A		A
Magnesium Sulfate	B	B	A		B	A	B	B	B	C	B		A	B	A	A	A	A		B	A	A	A	A	A	A		A	D	C	A
Maleic Acid	C	A	A	A	B	A	A	C			B		A	B	A	A	C	A			C		A	A	A	D		A	D	D	A
Maleic Anhydride							A										C						A	A	A	D		D		D	A
Malic Acid	B	A	A		C		A	D			D		A		A			A						A	B			A		A	
Mash		A	A					A								A	A						A	A		A		A			A
Mayonnaise	A	A	A		D			D		D	D				A	A	A	A	B		A		A	A	A	A					A
Melamine		D	D					D									D						A	A		C					A
Mercuric Chloride (Dilute Solution)	D	D	D	D	D	A	B	D	D	D	D		A	A	A	A	A	A		B	A		A	A	A	A		A	A	A	A
Mercuric Cyanide	A	A	A		D	A		D			D		A		A	A	A			B	A		A	A		A					A
Mercury	A	A	A	A	C	C	A	D	D	A	A		A		A	A	A	A		B	A		A	A	A	A		A	A	A	A
Methanol (See Alcohol Methyl)																															
Methyl Acetate	A		A		A		A	A			B				A		A		D				A	A	D	D	D	B	B	D	
Methyl Acrylate																	A						A	A	D	D		B	B	D	A
Methyl Acetone	A		A		A			A		A	A				A	D	A							A	D	D		D			C
Methyl Alcohol 10%	A		A		C		A	C			B		A		A			A								B				A	A
Methyl Bromide																	A			D			A	A	A	B		D	D	D	B
Methyl Butyl Ketone			A		A											D	B						A	A	D	D	C	D	A	D	B
Methyl Cellosolve					A			A								C	B				A		A	A	D	D		D	B	D	C
Methyl Chloride		A	A		D	A	A	A				A	D		A	D	A	A		D	D		A	A	A	D	D	D	C	D	A
Methyl Dichloride																D	A						A	A	A	D		D	D	D	A
Methyl Ethyl Ketone		A	A		A	A	A	A				D	D		A	D	B	A	D	D	A	A	A	A	D	D	C	D	A	D	B
Methyl Isobutyl Ketone2			A			A	A					D	D		A	D	B	A	D		C	A	A	A	D	D	C	D	C	D	B
Methyl Isopropyl Ketone			A													D	B	A					A	A	D	D	B	D	B	D	B
Methyl Methacrylate																	A						A	A	D	D		D	D	D	A
Methylamine	A		A		A			D		B	B					B	D						A	A		B					A

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Methylene Chloride	A	A	A		A	A	A	A	C		B	D	D		A	D	A	D		D	D		A	A	D	D		D	D	D	A
Milk	A	A	A	A	A			C	C	D	D		A			A	A	A	B	B	A		A	A	A	A	B	A	A	A	A
Molasses	A	A	A	A	A			A	B	A	A		A			B	A	A		B	A		A	A	A	A		A			A
Mustard	A	A	A	A	B			B		C	B		A			B	B	A	B		A		A	A	A	B	C	C			A
N																															
Naphtha	A	A	A	A	A	A	A	B		B	B	A	A	C	A	D	A	A	C	D	A	A	A	A	A	B	D	D	D	D	A
Naphthalene	B	A	B		B	A	A	C		B	A	A	D		A	D	A			D	B	A	A	A	B	D		D	D	D	A
Nickel Chloride		A	B		D	A	A	D		D		A	A	B	A	A	B	A		B	A		A	A	A	A		A	A	A	A
Nickel Sulfate	B	A	B		D	A	B	C	C	D	D	A	A	A	A	A	B	A		B	A		A	A	A	A		A	A	C	A
Nitric Acid (10% Solution)	A	A	A	A	D	A	A	D		D	D	A	A	B	A	A	D	D	C	B	A	D	C	B	A	D		D	B	D	A
Nitric Acid (20% Solution)		A	A	A	D	A	A	D		D		B	A	B	A	A	D	D	D	B	A	C	D	C	A	D		D	D	D	B
Nitric Acid (50% Solution)		A	A	A	D	A	A	D		D		B	A	B	A	A	D	D	D	C	D	C	D	A	A	D		D	D	D	D
Nitric Acid (Concentrated Solution)		D	B	A	B	A	B	D	D	D			D	C	A	D	D	D	D	D	D	C	D	A	B	D		D	D	D	D
Nitrobenzene2	B	A	B		C	A	B	D		B	B	D	D	D	A	D	B	C	D	D	C	B	A	A	B	D	D	D	D	D	B
O																															
OILS:																															
- Aniline		A	A		C	A	D	A		A			D		A	D	D	C	D		A		A	A	A	D		D	B	D	A
- Anise		A	A														A						A	A				D			A
- Bay		A	A														A						A	A	A			D			A
- Bone		A	A					A									A						A	A	A	A		D			A
- Castor		A	A		A			A		A			A				A						A	A	A	A		A	B	A	A
- Cinnamon		A	A												A		A				A		A	A	D			D			A
- Citric		A	A					D		D							A	A			A		A	A	A	A		D			A
- Clove		A	A														A	A			B		A	A		A					A
- Coconut		A	A		B			A		A							A	A			A		A	A	A	A		A	A	D	A
- Cod Liver		A	A		B												A	A	C		A		A	A	A	A		B	A	D	A
- Corn		A	A	A	B			B		A							A	A	C		A		A	A	A	A		D	C	D	A
- Cotton Seed	B	A	A	A	B			B		A	C		A		A		A	A	C		A	A	A	A	A	A		D	C	D	A
- Creosote2		A	A		A												D				D		A	A	A	A		B	D	D	A
- Diesel Fuel (2D, 3D, 4D, 5D)		A	A		A			A								D	A	A			A	A	A	A	A	A		D	D	D	A
- Fuel (1, 2, 3, 5A, 5B, 6)		A	A		A	A	A	A					A		A	D	A				B		A	A	A	B		D	D	D	A
- Ginger		A	A														A						A	A	A	A		A			A
- Hydraulic (See Hydraulic)																															
- Lemon		A	A														A				D		A	A	A			D			A
- Linseed		A	A	A	A			A		A			A	B			A	A	C		A		A	A	A	A		D	D	D	A
- Mineral	A	A	A	A	A			A		A	B		A			B	A	A			B	A	A	A	A	A		B	D	D	A
- Olive	A	A	A		A			B		A	B		A		A		A	A			A		A	A	A	A	C	B		D	A
- Orange		A	A												A		A	A			A		A	A	A	A		D			A
- Palm		A	A		A			B					A				A	A					A	A	A	A		D			A
- Peanut3		A	A		A			A		A			A				A				D		A	A	A	A		D		D	A

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- Peppermint2		A	A					A									A				D		A	A	A	D		D			A
- Pine	A	A	A		A			D		C	B		A		A		A						A	A	A	A		D		D	A
- Rape Seed		A	A					A					A				A						A	A	A	B		D		D	A
- Rosin		A	A		A												A	A			A		A	A	A	A					A
- Sesame Seed		A	A		A			A		A			A				A						A	A	A	A		D			A
- Silicone		A	A					A		A						A	A	A			A		A	A	A	A		A		A	A
- Soybean		A	A		A			B		A			A				A	A			A		A	A	A	A		D		D	A
- Sperm		A	A					A					A				A						A	A	A	A		D			A
- Tanning		A	A														A						A	A	A	A		D			A
- Turbine		A	A		A			A		A			A				A		C				A	A	A	A		D		D	A
Oleic Acid	B	A	A	B	B		B	B	C	C	C		A	C	A	C	B	A	B	D	C		A	A	D	B	D	D	D	D	A
Oleum 25%							A					B	D		A	D								A	A	D	D	D	D		D
Oleum	B		A		B			C	C		B	D	D		A		D				D			A	A	C	D	D	D	D	A
Oxalic Acid (cold)	C	A	B	A	C	C	B	B	C	D	D		A	B	A	C	C	D		A	A		A	A	A	B	C	B	A	C	A
P																															
Paraffin	A	A	A	A	A			A		B	B	A	A		A	B	A	A	B		A		A	A	A	A					A
Pentane	A	C	C		A		B	A		B	B				A	D	A	A	D				A	A	A	A		B	D	D	A
Perchloroethylene2	B	A	A		A			C		B	B	A			A	D	A		D		D	A	A	A	A	C	D	D	D	D	A
Petrolatum	A		A		B			B		C	C				A	D	A	A	B				A	A	A	A		B	A	D	A
Phenol 10%	B	A	A		A		B	C		B	D		A	C	A			D				A			B	D		C	D	C	C
Phenol (Carbolic Acid)	B	A	A	A	B	C	A	B	D	D	D	A	A	C	A	C	D	D		D	B	A	A	D	A	D		D	D	D	B
Phosphoric Acid (40% Solution)		B	A	A	D	A	A	D	D	D			A	B	A	A	D	D	C	B	A	A	B	C	A	D		D	B	C	A
Phosphoric Acid (40% - 100% Solution)		C	B	B	D	B	A	D	D	D			A	B	A	A	D	D	D	C	A	A	B	D	A	D		D	B	C	C
Phosphoric Acid (Crude)		D	C	C	D	C	A	D	D	D	D	A			A		D	D	D	C		A	C	D	A	D		D	B		A
Phosphoric Anhydride (Dry or Moist)		A	A						D				D	D	A								A		D	D		D		A	
Phosphoric Anhydride (Molten)		A	A		D			D	D				D		A			A		D					D	C		D		D	A
Photographic (Developer)		C	A	C	C	A	A			D			A			A	C			B	A		A	A	A	A		A			A
Phthalic Anhydride	B	A	B		B		A	B		C	C				A			A							A	C					
Picric Acid	B	A	A		C		A	D	D	D	D		A	A	A			A		A					A	A	D	A		A	A
PLATING SOLUTIONS																															
- Antimony Plating 130° F			A			A	A						A		A	A		D			A			A	A	A	D	A			B
- Arsenic Plating 110° F			A			A	A						A		A	A		A			A			C	A	A	D	A			B
Brass Plating																															
- Regular Brass Bath 100° F			A			A	A						A		A	A		A			A			C	A	A	D	A			B
- High Speed Brass Bath 110° F		A			A	A				A		A	A		A			A			D	A	A	D	A		B				

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Bronze Plating																															
- Copper Cadmium Bronze Bath R.T.		A			A	A				A		A	A		A			A			C	A	A	D	A		B				
- Copper-Tin Bronze Bath 160° F		A			A	A				D		A	A		A			A			D	A	A	D	B		C				
- Copper-Zinc Bronze Bath 100° F		A			A	A				A		A	A		A			A			C	A	A		A		B				
Cadmium Plating																															
- Cyanide Bath 90° F		A			A	A				A		A	A		A			A			C	A	A		A		B				
- Fluoborate Bath 100° F		A			D	A				A		A	A		D			A			D	A	B		C		B				
Chromium Plating																															
- Chromic-Sulfuric Bath 130° F		C			A	A				A		A	D		D			A			A	C	D		D		D				
- Fluosilicate Bath 95° F		C			C	A				A		A	D		D			A			B	C	D		D	D	D				
- Fluoride Bath 130° F		D			C	A				A		A	D		D			A			B	C	D		D		D				
- Black Chrome Bath 115° F		C			A	A				A		A	D		D			A			A	C	D		D		D				
- Barrel Chrome Bath 95° F		D			C	A				A		A	D		D			A			A	C	D		D		D				
Copper Plating (Cyanide)																															
- Copper Strike Bath 120° F				A	A	A						A	A								C	B			A						
- Rochelle Salt Bath 150° F		A			A	A				D		A	A		A			A			D	A	A		B		C				
- High Speed Bath 180° F		A			A	A				D		A	A		A			A			D	A	A		B		C				
Copper Plating (Acid)																															
- Copper Sulfate Bath R.T.		D			A	A				A		A	A		D			A			D	A	A		A		D				
- Copper Fluoborate Bath 120° F		D			D	A				A		A	A		D			A			D	A	B		C		D				
Copper (Misc.)																															
- Copper Pyrophosphate 140° F		A			A	A				A		A	A		A			A			B	A	A		A		B				
- Copper (Electroless) 140° F							D			A		A	A		A			A			D	A	D		D		B				
Gold Plating																															
- Cyanide 150° F		A			A	A	C			D		A	A		A			A			B	A	A		A		D				
- Neutral 75° F		C			A	A				A		A	A		A			A			A	A	A		A		A				
- Acid 75° F		C			A	A				A		A	A		A			A			A	A	A		A		A				
Indium Sulfamate Plating R.T.		C			A	A				A		A	A		D			A			A	A	A		A		A				
Iron Plating																															
- Ferrous Chloride Bath 190° F		D			A	D				D		A	A		D			C			A	A	B		D		D				

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Chemical Resistance Chart

"Chemical Effect Rating: A - No effect (Excellent) B - Minor effect (Good) C - Moderate effect (Fair) D - Severe effect (Not recommended) Blank - No data available"	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminium	Titanium	Hastelloy C	Cast Bronze	Brass	Cast Iron	Carbon Steel	Kynar	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nyton	Cycolac (ABS)	Polyethylene	Polypropylene	Ryton	Carbon	Ceramic	Viton	Buna N (Nitrile)	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
- Ferrous Sulfate Bath 150° F		C			A	A				D		A	A		D			A			A	A	A		B		D				
- Ferrous Am. Sulfate Bath 150°		C			A	A				D		A	A		D			A			A	A	A		B		D				
- Sulfate-Chloride Bath 160° F		D			A	D				D		A	A		D			A			A	A	B		C		D				
- Fluoborate Bath 145° F		D			D	B				D		A	A		D			A			D	A	B		C		D				
- Sulfamate 140° F		D			A	B				A		A	A		D			A			A	A	A		A		A				
Lead Fluoborate Plating		C			D	A				A		A	A		D			A			D	A	B		C		A				
Nickel Plating																															
- Watts Type 115 - 160° F		C			A	A				D		A	A		A			A			A	A	A		A		D				
- High Chloride 130 - 160° F		C			A	A				D		A	A		D			A			A	A	A		B		D				
- Fluoborate 100 - 170° F		C			D	A	D			D		A	A		D			A			D	A	B		C		D				
- Sulfamate 140° F		C			A	A				A		A	A		A			A			A	A	A		A		A				
- Electroless 200° F										D		A	D		D			D			A	A	D		D		B				
Rhodium Plating 120° F		D			D	D				A		A	A	D	D			A			A	A	A		B		A				
Silver Plating 80 - 120° F		A			A	A				A		A	A		A			A			B	A	A		A		A				
Tin-Fluoborate Plating 100° F		C			D	A				A		A	A		D			A			D	A	B		C		A				
Tine-Lead Plating 100° F		C			D	A				A		A	A		D			A			D	A	B		C		A				
Zinc Plating																															
- Acid Chloride 140° F		D			A	D				A		A	A		D			A			A	A	A		A		A				
- Acid Sulfate Bath 150° F		C			A	A				D		A	A		D			A			A	A	A		B		D				
- Acid Fluoborate Bath R.T.			C		D					A		A	A		D			A			D	A	B		C		A				
- Alkaline Cyanide Bath R.T.			A		A	A				A		A	A		A			A			D	A	A		A		A				
Potash	A		A	C		A	C	B		A	B		A	B	A		B	A		A	A	A	A		B	B	A				
Potassium Bicarbonate	A		B	C	A	B	B	D	A	A		A	A	C	A	C	B	A	A	A	A	A	A		A	B	A				
Potassium Bromide	A	A		B	C	A	B	C		D	D	A	A		A	A	A	C		B	A	C	A	A	A	A		A	A	B	A
Potassium Carbonate	B	A		A	C	A	A	C		B	B	A	A	B	A	A	B	A		B	A	A	A	A	A	B		A		B	A
Potassium Chlorate	B	A	A	A	B	A		B		B	B	A	A	B	A	A	B	D		B	A	A	A	A	A	A		A		B	A
Potassium Chloride	C	A	A	B	B	A	A	C	C	B	B	A	A	A	A	A	A	B	C	B	A	A	A	A	A	A		A	A	A	A
Potassium Chromate			B	B	A		B	A		A			A			A	C			B		A	A	D	A	A		A		B	C
Potassium Cyanide Solutions	B	A	B	A	D	A	A	D		B	B	A	A		A	A	C	A		B	A	A	C	A	B	A		A	A	A	A
Potassium Dichromate	B	A	A	A	A	A	B	C		B	C	A	A		A	A	C	D		B	A	A	A	A	B	A		A	A	A	A
Potassium Ferrocyanide	B	A		A	C		B	A			C		A		A			A		A						D				A	A
Potassium Hydroxide (50%)	A	B	B	B	D	C	A	D	D	C	A	D	A	B	A	A	D	A	C	B	A	A		D	D	B	C	A	A	C	A
Potassium Nitrate	B	A	B	A	B	A	B	B			B	A	A	C	A	A	B	C		B	A	C	A	A	B	A		A	A	A	A
Potassium Permanganate	B	A	B	B	B	B	B	B		B	B	A	A		A	A	C	D	C	B	B	A	A	A	B	A		A		B	B
Potassium Sulfate	B	A	B	B	A	A	A	B	B	B	B	A	A	A	A	A	B	C		B	A	A	A	A	A	A	C	A	A	C	A
Potassium Sulfide	A	A		A	B		B	B		B	B		A		A											A					

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Propane (Liquified)1 2	A	A		A	A			A	A		B		D		A	D	A	A			D		A	A	A	A	D	B	D	D	A
Propylene Glycol	B	B		A	A			B		B	B				A		B	B	B	B			A	A	A	A		C			A
Pyridine		C		B	B					B	A	D		D	A	D	D			C	B	A	A	A	D	D		D	B	D	A
Pyrogallic Acid	B	A	A	A	B		A	B		B	B		A		A		D	A					A	A	A	A					A
R																															
Rosins	A	A	A	A	A		B	A	C		C				A		B	A			A		A	A		A					A
Rum		A		A									A			A	A	A			A		A	A	A	A		A			A
Rust Inhibitors		A		A				A		A							A				A		A	A	A	A		C			A
S																															
Salad Dressing		A		A	B			B		D			A			A	A	A			A		A	A	A	A					A
Sea Water	A	A	C	A	C	A		C			D		A		A	A	A	A		B	A		A	A	A	A	B	B	A	A	A
Shellac (Bleached)	A	A		A	A			A	B	B	A				A		A	A			A			A		A					A
Shellac (Orange)	A	A		A	A			A	C	C	A				A		A	A			A			A		A					A
Silicone		B		A	B			A								A	A	A			A		A	A	A	A	B	A	A	A	A
Silver Bromide		C	C	B	D											A	C						A								A
Silver Nitrate	B	A	B	A	D	A	A	D		D	D	A	A	B	A	A	C	A		B	A		A	A	A	C		A	C	A	A
Soap Solutions	A	A	A	A	C	A	B	B		B	A		B	B	A	A	A	A		B	A	A	A	A	A	A	B	B		C	A
Soda Ash	B	A	B	B	C	A	A	B	B	B	B	A	A	B	A	A	A	A	C	B	A	A	B	A	A	A		A	A	A	A
Sodium Acetate	B	A	A	B	B	A		B		C	C	A	A		A	A	B	A		B	A		A	A	D	D		C		A	A
Sodium Aluminate	B			A	C	B	B	B			C				A	A	B	A				A	A	A	A	A		A	A	B	A
Sodium Bicarbonate	B	A	A	A	A		B	A	C	C	A	A	B	B	A	A	B	A	B	B	A	A	A	A	A	A	C	A	A	A	A
Sodium Bisulfate	A	A		A	D	B	B	C	C	D	D	A	A	B	A	A	B	C	C	B	A	A	A	A	B	A	C	A		A	A
Sodium Bisulfite		A			A	A	B	C		D		A	A	B	A	A	B	D	B	B	A	A	A	A	A	A	C	A		A	A
Sodium Borate	B	A		A	C		A	A		C	C		C		A			A		A					A		B	A			
Sodium Carbonate	B	A	B	B	C	A	A	B	B	B	B	A	A	B	A	A	A	A	C	B	A	A	B	A	A	A		A	A	A	A
Sodium Chlorate	B	A		A	B	A	B	B			C	A	A	B	A	A	D	A		B	A	A	A	A	A	D		A		A	A
Sodium Chloride	B	A	C	B	C	A	A	B	C	B	C	A	A	B	A	A	A	A	B	B	A	A	A	A	A	A	C	A	A	B	A
Sodium Chromate	A	A	A		D		B	B		B	B				A	A	D	A			A	A	A	B	B	A		A			C
Sodium Cyanide	B	A		A	D	A		D	D	B	B	A	A		A	A	D	C		B	A	A	A	A	A	A	D	A	A	A	A
Sodium Fluoride	B	C		C	C	A	A	C		D	D		D	D	A			A		C					B	D		D		D	A
Sodium Hydrosulfite					A		A	C					C	A	A			A						A	A			A		A	
Sodium Hydroxide/ Caustic Soda (20%)		A	A	A	D	A	A	C	D	A		A	A	B	A	A	D	C	C	B	A	A	C	D	A	A	D	B	A	A	A
Sodium Hydroxide/ Caustic Soda (50%)		A	B		D	A	A	C	D	B		D	A	B	A	A	D	C	C	C	A	B	C	D	D	D	D	C		A	A
Sodium Hydroxide/ Caustic Soda (80%)		A	D		D	A	B	C	D	C			A	B	A	A	D	C	C	C	A	B	C	D	B	D	D	C		B	A
Sodium Hypochlorite/ Bleach3 (to 20%)		C	C	C	C	A	A	D	D	D			A	B	A	A	D	A		B	C	C	D	A	A	C	D	D	B	C	B
Sodium Hypochlorite/ Bleach	D		D		D	A	A	D		D	D	A	A		A	A		A			C	C		D	B	B	C	A			A
Sodium Hyposulfate		A	A		D			D							A													C		C	C
Sodium Metaphos-phate2	A		A		A			C	C	B	B				A		B	A			D		A	A	A	A		B	A	A	A

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Sodium Metasilicate	A		A		B			B		C	C				A		D						A		A	A	D	A			A
Sodium Nitrate	B	A	A	A	A	A	B	B	C	A	B	A	A	B	A	A	B	A		B	A		A	A	D	C	D	B	A	C	A
Sodium Perborate	B		C		B			C	C	B	B				A	A	B	A			A		A	A	A	B	D	B	A	C	A
Sodium Peroxide	B	A	A		C		B	C	C	D	C		A		A		D	D					A	A	A	C	D	B	A	C	A
Sodium Polyphosphate (Mono, Di, Tribasic)		A	A		D	A	A	C							A	A	B						A	A	A	A		D	A	A	A
Sodium Silicate	B	A	B	A	C	A	B	C	C		B		A	B	A	A	C	A			A		A	A	A	A		A	A	A	A
Sodium Sulfate	B	A	A	C	B	A	B	B	B	A	B		A		A	A	B	A		B	A	A	A	A	A	A		A	A	C	A
Sodium Sulfide	B	A	B		D	A	B	D	D	A	B		A	B	A	A	B	A		B	A	A	A	A	A	C		A	A	C	A
Sodium Sulfite		C	C		C	A	A	C		A			A	A	A		D			A			A	A	A	A		A		A	A
Sodium Tetraborate			A										A			A	B						A	A	A	A					A
Sodium Thiosulphate (-Hypo-)	A	A	A		B	A		D	D	C	B		A		A	A	C	A			A	A	A	A	A	B		A	A	C	A
Sorghum		A	A							A							A	A					A	A	A	A		A			A
Soy Sauce		A	A		A			A		D						A	A	A					A	A	A	A		A		D	A
Stannic Chloride	D	D	D		D	A	B	D		D	D	A	A		A	A	C	A		B	A			A	A	A	D	A	A	A	A
Stannic Fluoborate			A							D						A	C							A	A	A		A			A
Stannous Chloride	D	D	C		D	A	A	D		D	D		A	A	A			D		A					B	C	D	D		A	A
Starch	B	A	A		A			B		C	C		A		A	A	A	A		B			A	A	A	A		A			A
Stearic Acid2	B	A	A	A	B	A	A	C	C	C	C	A	A	B	A	A	A	A		B	D		A	A	A	B	D	B	B	C	A
Stoddard Solvent	A	A	A	A	A	A	A	A	A	B	B	A	A	D	A	D	A	A	B	D	D	A	A	A	A	B	D	D	D	D	A
Styrene	A	A	A		A			A			A				A	A	A						A	A	B	D	D	D	D	D	A
Sugar (Liquids)	A	A	A	A	A		A	A		B	B				A	A	A	A	B		A		A	A	A	A		B		A	A
Sulfate Liquors		C	C		B		A	C									D				A		A	A				C			A
Sulfur Chloride		D	D	D	D			C	D				A	C	A	A	D	A		A	D		A	C	A	D		D	D	D	C
Sulfur Dioxide2		A	A	C	A	A	B	B				B	D	B	A	D	B	D	D	C	D	A	A	A	D	D	C	B	A	D	A
Sulfur Dioxide (dry)	A	A	A		A		A	A	C	A	B		D		A			A		D			A	A	D			D		D	D
Sulfur Trioxide (dry)	A	A	C		A			B		B	B		A	B	A	D	D	D					B	A	A	D		D	B	C	A
Sulfuric Acid (to 10%)		D	C	C	C	A	A	D	D	D		A	A	B	A	A	D	D	B	B	A	A	A	A	A	C		D	D	C	A
Sulfuric Acid (10% - 75%)2		D	D	D	D	C	B	D	D	D		A	A	B	A	B	D	D	B	C	A	B	A	A	A	D		D	D	D	B
Sulfuric Acid (75% - 100%)			D			D	B		D			A	B		A	A		D			B	C		A	A	D		D			D
Sulfurous Acid	C	C	B	C	C	A	B	D		D	D		A	B	A	A	D	D		B	A		B	A	A	C	D	B	B	C	A
Sulfuryl Chloride													A		A									A							A
Syrup		A	A	A	A			D					A			A	A	A	B		A		A	A	A	A		B		A	A
T																															
Tallow		A	A		A											A	A	A		C			A	A	A	A					A
Tannic Acid	B	A	A	A	C	A	B	B		C	C	A	A	B	A	A	B	D		B	A		A	A	A	D	C	A	A	A	A
Tanning Liquors		A	A		C	A	A	A					A	B	A		B				A		A	A	A	C					A
Tartaric Acid	B	A	B	B	C	A	B	A	C	D	D	A	A	B	A	A	B	A		B	A		A	A	A	D	C	A		A	A
Tetrachlorethane			A			A	A						D		A	D	A	A			A		A	A	A	D			D	D	A
Tetrahydrofuran		A	A		D			D		D	A	D	D		A	D	A	A		D	C	A	A	A	D	D		D	B	D	A

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Toluene, Toluol3	A	A	A		A	A	A	A	A	A	A	A	D	D	A	D	A	A	D	D	D	A	A	A	C	D	D	D	D	D	A
Tomato Juice	A	A	A		A			C		C	C				A	A	B	A	B		A	A	A	A	A	A		A			A
Trichlorethane		C	A		C	A	A	C		C					A	D	A						A	A	A	D	D	D	D	D	A
Trichlorethylene2	B	A	A		B	A	A	B	A	C	B	A	D		A	D	A	C	D	D	D	C	A	A	A	D	D	D	D	D	A
Trichloropropane			A					A								D	A		D				A	A	A	A		A			A
Tricresylphosphate			A			B	A	A					D		A	C	C						A	A	B	D		D	A		A
Triethylamine								A					A			B	D						A	A	A	A	D	B			A
Turpentine3	B	A	A		C		A	B	C	B	B	A	A	B	A	D	A	A		D	B	A	A	A	A	D		D	D	D	A
U																															
Urine		A	A		B			C		B			A			A	A	A		B	A		A	A	A	A		D	A		A
V																															
Vegetable Juice		A	A		A			C		D						A	A	A					A	A	A	A	B	D		D	A
Vinegar	A	A	A	A	D	A	A	B	B	C	D	A	A		A		B	A	B	B	A	A	A	A	A	C		B	A	C	A
Varnish (Use Viton for Aromatic)	A	A	A	A	A			A	B		C				A	D	A	A			A		A	A	A	B	C	D		D	A
W																															
Water, Acid, Mine		A	A		C			C	D	C			A	B		A	D	A	B		A	B	A	A	A	A		B		B	A
Water, Distilled, Lab Grade 7		A	A		B			A		D			A	B	A	A	A	A	A		A	A	A	A	A	A		B	A	A	A
Water, Fresh	A	A	A		A			A	C	B	D		A	B	A	A	A	A	A	A	A	A	A	A	A	A		B	A	A	A
Water, Salt		A	A		B			B	C	D			A	B		A	A	A			A	A	A	A	A	A		B	A	A	A
Weed Killers		A	A		C			C									A	A					A	A	A	B		C			A
Whey		A	A		B												A						A	A	A	A					A
Whiskey and Wines	A	A	A	A	D			B	B	D	D		A		A	A	A	A		B	A		A	A	A	A	B	A	A	A	A
White Liquor (Pulp Mill)		A	A				A	D		C			A		A	A	D	A			A		A	A	A	A		A			A
White Water (Paper Mill)		A	A					A									B	A			A		A	A	A			A			A
X																															
Xylene2	A	A	A		A		A	A	A	A	B	A	D		A	D	A	A	D	D	D	A	A	A	A	D	D	D	D	D	A
Z																															
Zinc Chloride	D	D	B	B	D	A	B	D	D	D	D	A	A		A	A	C	A		B	A	A	A	A	A	A		A	A	A	A
Zinc Hydrosulphite			A		D			D		D						A	C					A	A	A		A		A	A		A
Zinc Sulfate	B	A	A	A	D	A	B	B	C	C	D	A	C	B	A	A	C	A		B	A	A	A	A	A	A		A	A	C	A

The ratings for these materials are based upon the chemical resistance only. Added consideration must be given to selections when the chemical is abrasive, viscous in nature, or has a Specific Gravity greater than 1.1

1. PVC—Satisfactory to 22°C, 2. Polypropylene—Sati sfactory to 22°C, 3. Polypropylene—Satisfactory to 49°C, 4. Buna-N—Satisfactory for O-Rings, 5. Polyac etal—Satisfactory to 22°C, 6. Ceramag—Satisfactory to 22°C