

CHEMICAL RESISTANCE CHART

Recommendations in this chart are based upon careful examination of published data. However please remember that chemical resistance is affected by temperature, concentration,

environment, exposure to multiple chemicals, and other conditions. Other requirements, such as agency standards (CSA, FDA, etc may also dictate selection. Therefore this table must only be used as a general guide.

Chart key:

- E... excellent, no effect
- G... good, minor effect only
- C... conditional, moderate effect, may be suitable in limited applications
- X... severe effect, not recommended
- I... no data available

	302SS	304SS	316SS	440SS	Aluminum	Cast Bronze	Brass	Cast Iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal *	Viton Seal *
acetaldehyde	E	E	E	I	G	X	I	I	C	E	E	C	G	G	X
acetamide	I	G	E	I	I	I	I	I	C	I	I	I	I	E	E
acetate solvent	E	G	E	G	G	E	C	G	E	E	E	G	X	X	X
acetic acid	I	G	E	G	G	C	C	X	C	E	X	G	E	C	C
acetic acid 20%	I	G	E	I	I	I	C	I	I	E	X	I	E	C	E
acetic acid 80%	I	G	E	I	I	I	C	I	I	E	X	I	G	C	E
acetic acid, glacial	I	G	E	E	G	C	C	X	E	E	X	G	G	X	X
acetic anhydride	G	E	E	G	G	C	X	G	X	E	X	E	E	E	X
acetone	E	E	E	G	E	E	E	E	E	E	E	C	G	X	X
acetyl chloride	I	C	E	I	I	X	I	I	I	E	I	I	I	I	E
acetylene	E	E	E	E	E	G	I	E	E	I	E	I	X	E	E
acrylonitrile	E	E	C	I	G	E	I	C	I	I	I	I	G	X	C
alum potassium sulfate (alum), 10%	I	E	I	I	E	I	I	X	E	E	E	E	I	I	E
alum potassium sulfate (alum), 100%	I	X	E	G	G	C	I	I	E	E	X	G	E	E	E
aluminum chloride	C	X	C	I	X	C	I	X	G	E	X	I	E	E	E
aluminum chloride 20%	I	X	C	X	G	X	I	X	E	I	E	G	E	E	E
aluminum fluoride	I	X	C	X	I	I	I	I	E	E	X	G	E	E	E
aluminum hydroxide	I	E	E	E	E	E	I	X	E	E	E	I	E	E	E
aluminum sulfate	I	C	C	E	E	C	C	X	E	E	E	G	E	E	E
amines	E	E	E	I	E	G	I	E	G	E	E	I	I	X	X
ammonia 10%	I	I	E	I	I	I	I	I	I	E	E	I	E	X	E
ammonia, anhydrous	E	G	E	E	G	X	I	X	G	E	E	G	E	G	X
ammonia, liquids	I	E	E	E	X	X	I	E	E	E	I	X	E	G	X
ammonia, nitrate	I	E	E	E	C	X	I	I	E	I	I	I	E	E	I
ammonium bifluoride	I	C	E	I	X	I	I	I	I	I	I	I	E	E	E
ammonium carbonate	G	E	E	E	C	G	I	C	G	E	E	I	E	X	G
ammonium casenite	I	I	E	I	I	I	I	I	I	I	I	I	I	I	I
ammonium chloride	C	E	C	E	C	X	C	X	X	E	E	G	E	E	E
ammonium hydroxide	E	E	E	E	C	X	X	E	C	E	E	G	E	G	G
ammonium nitrate	E	E	E	E	G	X	X	E	X	E	X	G	E	E	X
ammonium oxalate	I	E	E	E	I	I	I	I	E	I	I	I	I	E	I
ammonium persulfate	I	E	E	E	C	E	I	X	E	E	X	I	E	E	C
ammonium phosphate, dibasic	G	E	E	E	G	C	I	I	X	E	E	G	E	E	E
ammonium phosphate, monobasic	I	E	E	E	G	X	I	I	E	E	E	G	E	E	E
ammonium phosphate, tribasic	G	E	E	E	G	C	I	C	X	E	E	G	E	E	E
ammonium sulfate	C	X	G	E	G	G	C	C	C	E	X	G	E	E	X
ammonium thio-sulfate	I	I	E	I	I	I	I	X	E	I	I	I	I	E	I
amyl alcohol	E	E	E	I	C	E	G	C	C	E	E	G	G	E	E
amyl alcohol	I	E	E	I	G	E	I	I	E	E	E	G	E	G	G
amyl chloride	I	C	G	I	X	E	I	I	E	E	C	X	X	X	E
amyl-acetate	G	E	E	C	G	C	I	I	C	E	G	X	X	X	X
aniline	G	E	E	E	C	C	I	I	C	E	C	C	G	X	C
aniline oil	I	E	E	I	C	E	I	E	I	E	C	I	E	X	E
anise oil	I	E	E	I	I	I	I	I	I	I	I	I	I	I	I
anti-freeze	I	E	E	I	E	G	G	G	C	E	E	G	E	E	E
antimony trichloride	I	X	X	I	X	I	I	I	I	E	X	E	I	I	E
aqua regia (80%, hcl, 20%, hno)	I	X	X	I	X	X	I	I	I	E	X	X	C	X	C
aromatic hydrocarbons	I	I	E	I	E	E	I	E	E	I	I	C	I	X	E
arsenic acid	G	E	E	I	X	X	G	X	X	E	E	G	E	E	E
asphalt	I	G	E	I	C	E	I	C	I	I	E	I	E	G	E
barium carbonate	G	E	E	E	G	G	I	G	G	E	E	G	E	E	E
barium chloride	C	X	E	E	X	G	I	I	C	E	G	G	E	E	E
barium cyanide	I	I	E	I	I	C	I	I	E	I	I	G	I	C	E
barium hydroxide	G	C	E	E	X	G	I	C	C	E	E	G	E	E	E
barium nitrate	I	E	E	I	I	X	I	E	E	I	I	I	I	E	E
barium sulfate	G	E	E	E	X	C	I	C	C	E	E	G	E	E	E
beet sugar liquids	E	E	E	I	E	E	G	E	I	E	E	I	E	E	E

* NOTE: The ratings given for BUNA N and VITON rubber are based on their use as seals in couplings. For Chemical Resistance of Hose components refer to the tables in our Hose Catalog.

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	302SS	304SS	316SS	404SS	Aluminum	Cast Bronze	Brass	Cast iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal *	Viton Seal *
benzaldehyde	E	E	E	I	G	E	I	G	E	E	C	X	X	X	X
benzene	G	E	E	E	G	G	E	G	C	E	E	X	X	X	E
benzoic acid	G	E	E	E	G	G	I	X	I	E	X	G	X	X	E
benzol	I	E	E	I	G	G	E	I	I	E	E	I	E	X	X
benzyl alcohol	I	E	E	I	G	E	C	I	I	I	E	X	E	X	E
bone oil	I	E	E	I	I	E	I	I	I	I	I	I	I	E	E
borax (sodium borate)	I	E	E	E	C	E	G	E	C	E	E	G	E	G	E
boric acid	G	E	E	E	G	G	C	X	I	E	E	G	E	E	E
brewery slop	I	I	E	I	I	E	I	E	I	I	I	I	I	E	E
bromine (wet)	X	X	X	X	X	C	I	X	X	E	X	X	X	X	E
butadiene	E	E	E	I	E	C	E	C	C	E	E	I	I	E	E
butane	E	E	E	I	E	E	E	C	C	E	E	C	X	E	E
butanol	I	E	E	I	E	E	I	I	I	E	I	I	I	I	I
butter	I	G	E	I	E	X	I	X	I	I	I	I	I	E	E
buttermilk	E	E	E	E	E	X	I	X	I	E	E	I	I	E	E
butyl acetate	I	I	C	I	E	E	I	I	E	I	C	X	G	E	X
butyl alcohol	E	E	E	I	G	G	C	C	C	E	E	G	G	E	E
butylene	E	G	E	I	E	E	E	E	E	E	I	I	I	G	E
butyric acid	G	G	E	E	G	C	I	X	I	E	X	I	E	X	X
calcium bisulfate	C	X	E	I	X	X	X	X	I	E	E	I	I	E	E
calcium bisulfide	I	I	G	I	C	C	I	I	I	E	E	G	E	E	E
calcium bisulfite	I	G	E	I	C	C	I	I	I	E	E	I	E	E	E
calcium carbonate	G	E	E	E	C	C	I	X	I	E	E	G	E	E	E
calcium chlorate	I	G	E	I	I	C	I	I	I	E	E	E	I	E	E
calcium chloride	C	E	X	C	C	G	I	C	I	E	E	G	E	E	E
calcium hydroxide	G	E	E	I	C	G	I	I	I	E	E	G	E	E	E
calcium hypochlorite	X	X	C	C	C	X	I	X	I	E	X	G	E	G	E
calcium sulfate	G	E	E	E	G	G	I	I	I	E	E	G	E	E	E
calgon	I	E	E	I	I	C	I	X	I	I	I	I	E	E	E
cane juice	I	E	E	I	G	G	C	E	I	I	E	I	X	E	I
carbolic acid (see phenol)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
carbon bisulfide	G	E	E	E	E	C	I	G	I	E	I	I	X	X	E
carbon dioxide (wet)	I	E	E	I	C	C	C	C	I	E	I	I	I	I	I
carbon monoxide	I	E	E	I	E	I	I	I	I	I	E	G	E	E	E
carbon tetrachloride	G	G	G	E	C	C	E	C	X	E	E	X	X	C	E
carbonated water	G	E	E	E	E	G	I	X	I	I	E	I	E	E	E
carbon disulfide	I	G	E	I	C	C	C	G	C	E	E	X	X	X	E
carbonic acid	G	E	G	E	E	G	I	X	I	E	E	G	E	G	E
castor oil	I	E	E	I	E	E	I	E	I	I	I	I	I	E	E
chloroacetic acid	X	X	X	X	C	X	I	X	I	E	X	X	X	X	X
chloric acid	I	X	X	I	I	I	I	I	I	E	I	I	I	X	I
chlorinated glue	I	E	E	I	X	C	I	X	I	I	C	I	I	C	E
chlorine (dry)	G	E	E	I	X	E	G	E	I	E	I	I	I	I	X
chlorine water	X	I	X	I	X	X	X	X	I	E	X	I	X	X	E
chlorine, anhydrous liquid	I	X	X	X	X	X	I	C	I	E	X	X	X	X	E
chlorobenzene (mono)	E	E	E	I	G	G	I	G	C	E	E	X	X	X	E
chloroform	E	E	E	E	X	G	I	X	C	E	C	X	X	X	E
chlorosulfonic acid	X	X	I	X	X	X	I	I	X	E	X	X	X	X	X
chlorox (bleach)	I	E	E	I	C	E	I	X	C	E	X	I	X	C	E
chocolate syrup	I	E	E	I	E	I	I	X	I	I	E	I	E	E	E
chromic acid 10%	I	G	I	I	I	I	X	I	I	E	X	I	E	X	E
chromic acid 30%	I	G	I	I	I	I	X	I	I	E	X	I	E	X	E
chromic acid 5%	I	E	E	G	C	X	X	X	I	I	X	G	E	X	E
chromic acid 50%	C	G	G	I	C	X	X	X	I	E	X	C	G	X	E
cider	I	E	E	E	G	E	I	X	I	I	I	G	I	E	E
citric acid	I	E	E	E	C	X	C	X	I	E	C	G	I	X	E
citric oils	I	E	E	I	C	G	I	I	I	I	I	I	E	E	E
cod liver oil	I	E	E	I	G	I	I	I	I	I	E	I	E	E	E
coffee	E	E	E	E	E	G	I	C	I	E	E	I	E	E	E
copper chloride	C	X	X	G	X	X	I	X	I	E	X	G	E	E	E
copper cyanide	I	E	E	E	X	C	I	X	I	E	E	G	E	G	E
copper florobate	I	X	X	I	X	X	I	X	I	E	I	E	I	G	E
copper nitrate	G	E	E	G	X	X	I	I	I	E	X	G	E	E	E
copper sulfate	G	G	I	I	I	C	X	I	I	E	C	I	E	G	E
copper sulfate (5% sol)	I	E	E	E	X	X	X	X	I	E	X	G	E	E	E
corn oil	I	E	E	E	G	G	I	E	I	I	E	I	E	E	E
cotton seed oil	G	E	E	E	G	G	I	E	C	E	E	I	E	E	E

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	302SS	304SS	316SS	404SS	Aluminum	Cast Bronze	Brass	Cast iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal *	Viton Seal *
cream	I	E	E	I	E	C	I	X	I	I	E	I	E	E	E
creosote	I	E	E	I	E	I	I	I	I	I	I	I	X	E	E
cresols	I	E	E	I	G	X	C	I	I	I	I	X	C	X	X
cresylic acid	G	E	E	I	C	C	I	I	I	E	X	C	I	X	E
cyanic acid	I	E	I	I	I	I	I	I	I	I	I	I	I	C	I
cyclohexane	I	E	I	I	E	E	I	I	E	I	I	I	X	E	E
detergents	I	E	E	I	E	E	I	I	E	I	E	G	E	E	E
diacetone alcohol	I	E	E	I	E	E	C	I	E	I	E	I	X	X	X
dichlorethane	I	E	E	I	I	I	I	I	I	E	E	X	I	I	G
diesel fuel	E	E	E	I	E	E	I	E	E	I	I	I	X	E	E
diesel fuel (2d, 3d, 4d, 5d)	I	E	E	I	E	E	I	I	I	I	E	I	E	E	E
diethylamine	E	E	I	I	E	E	I	I	I	E	I	I	C	G	X
diethylene glycol	I	E	I	I	I	E	I	I	I	I	E	G	I	E	E
diphenyl oxide	I	E	I	I	I	E	I	I	I	I	I	I	I	X	E
dyes	I	E	E	I	G	C	I	I	I	I	I	I	I	I	E
epsom salts (magnesium sulfate)	G	E	E	E	E	G	I	I	I	I	I	I	E	E	E
ethane	E	E	I	I	E	E	I	I	I	I	I	I	I	E	E
ethanol	I	E	E	E	G	E	C	E	E	I	E	G	E	E	E
ethanolamine	I	E	E	I	I	I	I	I	C	I	I	I	I	G	X
ether	E	E	E	E	E	G	E	I	G	I	C	I	I	X	C
ethyl acetate	I	E	E	I	G	G	I	I	C	E	E	C	C	X	X
ethyl chloride	I	E	E	E	G	G	I	C	X	E	E	X	X	X	E
ethyl sulfate	I	X	I	I	I	I	I	I	I	I	I	I	I	E	E
ethylene chloride	I	E	E	I	C	E	I	C	C	E	I	I	X	X	E
ethylene dichloride	I	E	E	I	X	C	I	I	C	E	E	X	E	X	E
ethylene glycol	I	E	E	I	E	G	G	G	C	E	E	G	E	E	E
ethylene oxide	I	I	E	I	E	E	I	I	I	E	E	I	I	X	X
fatty acids	I	E	E	I	G	C	I	X	I	E	E	G	E	C	E
ferric acid	I	X	X	X	X	X	X	X	I	E	X	G	E	X	E
ferric nitrate	I	E	E	E	X	X	I	I	I	E	X	G	E	E	E
ferric sulfate	I	E	C	E	X	X	X	X	I	E	E	I	E	G	E
ferrous chloride	I	X	X	I	X	C	I	X	I	E	X	G	E	G	E
ferrous sulfate	G	E	C	I	X	C	I	X	X	E	X	G	E	G	E
fluoboric acid	I	X	G	I	I	I	I	X	I	E	C	G	E	G	E
fluorine	X	X	X	I	X	X	I	X	X	C	X	C	I	I	I
fluosilicic acid	I	I	G	I	X	I	I	X	I	E	X	G	E	E	G
formaldehyde	E	E	E	I	E	E	G	X	E	E	E	G	E	C	X
formaldehyde 40%	I	I	E	I	I	I	I	I	I	E	X	I	E	G	X
formic acid	C	E	G	G	X	C	C	X	X	E	X	G	E	X	G
freon 11	E	I	E	I	G	G	I	C	G	E	E	C	I	C	G
freon 113	I	I	E	I	G	G	I	I	I	I	E	I	I	E	C
freon 12 (wet)	I	I	X	I	G	G	I	I	I	E	E	C	E	E	E
freon 22	I	I	E	I	G	G	I	I	I	I	E	I	I	X	X
freon t.f.	I	I	E	I	G	G	I	I	I	I	E	I	X	E	G
fruit juice	E	E	E	E	G	G	I	X	X	X	E	G	E	E	E
fuel (1,2,3,5a, 5b, 6)	I	E	E	I	E	E	I	I	I	E	I	I	G	G	E
fuel oils	E	E	E	I	E	G	I	C	G	E	E	X	G	E	E
furan resin	I	E	E	I	E	E	I	E	E	E	I	I	I	X	E
furfural	E	E	E	I	E	E	I	I	E	E	E	X	X	X	X
gallic acid	G	E	E	I	E	E	I	X	X	E	E	I	I	E	G
gasoline	E	E	E	E	E	E	I	E	E	E	E	X	C	E	E
gelatin	E	E	E	E	E	E	C	X	X	E	E	I	E	E	E
glucose	E	I	E	I	E	E	E	G	G	E	E	G	E	E	E
glue p.v.a.	G	G	E	I	G	E	I	I	E	E	E	I	I	E	E
glycerine	E	E	E	E	E	E	G	G	G	E	E	I	E	E	E
glycolic acid	I	I	I	I	I	I	I	I	I	I	I	G	E	E	E
gold monocyanide	I	I	E	I	I	E	I	X	I	I	I	I	I	E	E
grape juice	I	E	E	I	G	G	I	X	I	I	I	G	I	E	E
grease	E	E	E	I	E	G	I	E	E	E	E	I	I	E	E
heptane	E	I	E	I	E	E	I	I	G	E	E	X	X	E	E
hexane	E	E	E	I	E	G	I	I	G	E	E	I	C	E	E
hexyl alcohol	I	E	E	I	E	E	C	I	E	I	E	I	E	E	E
honey	I	E	E	I	E	E	I	E	I	I	E	I	E	E	E
hydraulic oils (petroleum)	E	E	E	I	E	G	I	E	E	E	E	I	X	E	E
hydraulic oils (synthetic)	I	E	E	I	E	E	I	E	I	I	E	I	X	C	E
hydrazine	I	E	E	I	I	I	I	C	I	I	I	I	I	G	E
hydrobromic acid	X	X	X	X	X	X	I	X	X	E	X	G	G	X	E

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	302SS	304SS	316SS	404SS	Aluminum	Cast Bronze	Brass	Cast iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal*	Viton Seal
hydrobromic acid 20%	I	I	X	I	I	I	I	I	I	E	X	I	E	X	E
hydrochloric acid (dry gas)	X	C	E	I	X	I	I	I	X	E	I	I	I	I	I
hydrochloric acid 100%	I	X	X	I	X	X	I	X	I	E	X	E	I	X	C
hydrochloric acid 20%	I	X	X	X	X	X	I	X	I	E	X	E	E	C	E
hydrochloric acid 37%	I	X	X	X	X	X	I	X	I	E	X	E	E	C	E
hydrocyanic acid	E	E	E	C	E	X	X	I	C	E	E	G	E	C	E
hydrocyanic acid (gas 10%)	I	X	X	I	I	I	I	I	I	E	I	I	I	I	I
hydrofluoric acid 100%	X	X	X	I	X	X	I	X	X	E	I	X	I	X	I
hydrofluoric acid 20%	I	X	X	X	X	X	I	X	I	E	X	C	E	X	E
hydrofluoric acid 75%	I	C	X	I	X	X	I	X	I	E	X	C	G	X	E
hydrofluosilicic acid	I	X	X	I	C	X	I	I	I	E	I	I	I	I	I
hydrofluosilicic acid 20%	I	X	X	I	X	E	I	X	I	E	X	I	E	G	E
hydrogen gas	E	E	E	I	E	E	I	G	G	E	I	I	I	I	E
hydrogen peroxide	I	E	G	E	E	X	X	X	X	E	X	G	E	X	E
hydrogen peroxide 10%	I	C	C	I	E	X	X	X	I	E	X	E	I	E	E
hydrogen peroxide 30%	I	I	G	I	I	I	X	I	I	E	X	I	E	X	E
hydrogen sulfide (dry)	E	C	E	I	X	X	C	G	G	E	X	I	I	I	X
hydrogen sulfide, aqueous solution	I	X	E	C	C	X	C	X	I	E	X	G	E	C	X
hydroxyacetic acid (70%)	I	I	I	I	X	I	I	I	I	I	I	I	I	E	E
indium sulfamate plating r.t.	I	I	C	I	I	I	I	I	I	E	X	I	E	E	E
ink	E	E	E	I	C	C	I	X	X	I	E	G	I	E	E
iodine	I	X	X	X	X	X	I	X	I	E	X	X	X	G	E
iodine (in alcohol)	I	I	G	I	I	I	I	I	I	E	X	I	G	X	E
iodoform	G	C	E	I	E	C	I	C	G	E	E	I	I	I	E
isobutyl alcohol	I	E	E	I	G	E	C	I	E	I	E	I	E	C	E
isopropyl acetate	I	I	G	I	C	I	I	I	I	I	I	I	I	X	X
isopropyl alcohol	I	E	E	I	G	E	C	C	E	I	E	I	E	C	E
isopropyl ether	E	I	E	I	E	E	I	I	E	E	I	I	X	G	X
isotane	I	I	I	I	E	I	I	I	I	I	I	I	X	E	E
jet fuel (jp#, jp4, jp5)	E	E	E	I	E	E	I	E	E	E	E	I	X	E	E
kerosene	E	E	E	E	E	E	E	E	G	E	E	X	X	E	E
ketones	E	E	E	I	G	E	I	E	E	E	E	X	X	X	X
lacquer thinners	I	I	E	I	I	I	C	I	I	E	E	I	G	X	I
lacquers	E	E	E	I	E	E	C	C	C	I	E	I	E	X	X
lactic acid	E	E	G	C	C	X	I	X	X	E	C	G	E	G	G
lard	G	E	E	E	E	E	I	E	C	I	E	I	E	E	E
latex	I	E	E	I	E	E	I	I	I	I	E	G	I	E	E
lead acetate	G	E	E	I	X	C	I	I	X	E	E	G	E	G	X
lead sulfamate	I	I	I	I	I	I	I	I	I	I	I	I	E	G	E
lime	I	E	E	I	C	E	I	E	I	I	I	I	I	E	E
linseed oil	I	E	E	E	E	E	I	E	I	I	E	I	E	E	E
lubricants	I	E	E	I	E	G	I	I	I	E	E	I	E	E	E
magnesium carbonate	I	E	E	E	I	I	I	I	I	I	I	G	E	E	I
magnesium chloride	G	G	G	E	X	G	C	X	C	E	E	G	E	E	E
magnesium hydroxide	E	E	E	I	X	C	G	G	G	E	E	G	E	E	E
magnesium nitrate	I	E	E	E	I	I	I	I	I	E	E	G	E	E	E
magnesium oxide	I	E	E	I	I	I	I	I	I	I	I	I	I	E	I
magnesium sulfate	G	G	E	I	G	G	G	C	G	E	E	G	E	E	E
maleic acid	C	E	E	E	G	C	I	I	G	E	E	I	C	X	E
maleic anhydride	I	I	I	I	I	I	I	I	I	I	I	I	I	X	E
malic acid	G	E	E	I	C	X	I	I	X	E	E	I	I	I	G
melamine	I	X	X	I	I	X	I	I	I	I	I	I	I	I	I
mercuric cyanide	E	E	E	I	X	X	I	I	X	E	I	G	E	E	I
mercuric chloride (dilute solution)	X	X	X	X	X	X	X	X	X	E	E	G	E	E	E
mercury	E	E	E	E	C	X	X	E	E	E	E	G	E	E	E
methanol	I	E	E	E	G	E	C	E	E	E	E	G	E	G	C
methyl acetate	E	I	E	I	E	E	I	I	G	E	I	I	I	X	X
methyl acetone	E	I	E	I	E	E	I	E	E	E	I	I	I	X	X
methyl acrylate	I	I	I	I	I	I	I	I	I	I	I	I	I	X	X
methyl alcohol 10%	E	I	E	I	C	C	I	I	G	E	E	I	I	G	I
methyl bromide	I	I	I	I	I	I	I	I	I	I	I	X	I	G	E
methyl butyl ketone	I	I	E	I	E	I	I	I	I	I	I	I	I	X	X
methyl cellosolve	I	I	I	I	E	E	I	I	I	I	I	I	E	X	X
methyl chloride	I	E	E	I	X	E	I	I	I	E	E	X	X	X	E
methyl dichloride	I	I	I	I	I	I	I	I	I	I	I	I	I	X	E
methyl ethyl ketone	I	E	E	I	E	E	I	I	I	E	E	X	E	X	X
methyl isobutyl ketone	I	I	E	I	I	I	I	I	I	E	E	I	C	X	X

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CHEMICAL RESISTANCE CHART

	302SS	304SS	316SS	440SS	Aluminum	Cast Bronze	Brass	Cast Iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal *	Viton Seal *
methyl isopropyl ketone	I	I	E	I	I	I	I	I	I	I	E	I	I	X	X
methyl methacrylate	I	I	I	I	I	I	I	I	I	I	I	I	I	X	X
methylamine	E	I	E	I	E	X	I	G	G	I	I	I	I	G	I
methylene chloride	E	E	E	I	E	E	C	I	G	E	X	X	X	X	X
milk	E	E	E	E	E	C	C	X	X	I	E	G	E	E	E
mineral oil	E	E	E	E	E	E	I	E	G	I	E	I	G	E	E
molasses	E	E	E	E	E	E	G	E	E	I	E	G	E	E	E
naphtha	E	E	E	E	E	G	I	G	G	E	E	X	E	G	E
naphthalene	G	E	G	I	G	C	I	G	E	E	I	X	G	X	G
nickel chloride	I	E	G	I	X	X	I	X	I	E	E	G	E	E	E
nickel sulfate	G	E	G	I	X	C	C	X	X	E	E	G	E	E	E
nitric acid (10% solution)	E	E	E	E	X	X	I	X	X	E	X	G	E	X	E
nitric acid (20% solution)	I	E	E	E	X	X	I	X	I	E	X	G	E	X	E
nitric acid (50% solution)	I	E	E	E	X	X	I	X	I	E	X	C	X	X	E
nitric acid (concentrated solution)	I	X	G	E	G	X	X	X	I	E	X	X	X	X	G
nitrobenzene	G	E	G	I	C	X	I	G	G	E	C	X	C	X	X
octyl alcohol	I	E	E	I	E	E	C	I	E	I	E	I	I	G	E
oleic acid	G	E	E	G	G	G	C	C	C	E	E	X	C	G	X
oleum	G	I	E	I	G	C	C	I	G	E	I	I	X	C	E
oleum 25%	I	I	I	I	I	I	I	I	I	E	I	I	I	X	E
olive oil	E	E	E	I	E	G	I	E	G	E	E	I	E	E	E
oxalic acid (cold)	C	E	G	E	C	G	C	X	X	E	X	E	E	G	E
paraffin	E	E	E	E	E	E	I	G	G	E	E	I	E	E	E
peanut oil	I	E	E	I	E	E	I	E	I	I	I	I	X	E	E
pentane	E	C	C	I	E	E	I	G	G	E	E	I	I	E	E
perchloroethylene	G	E	E	I	E	C	I	G	G	E	I	I	X	C	E
petrolatum	E	I	E	I	G	G	I	C	C	E	E	I	I	E	E
phenol (carbolic acid)	G	E	E	E	G	G	X	X	X	E	X	X	G	X	E
phenol 10%	G	E	E	I	E	C	I	G	X	E	X	I	I	X	G
phosphoric acid (crude)	I	X	C	C	X	X	X	X	X	E	X	C	I	X	E
phosphoric acid (to 40% solution)	I	G	E	E	X	X	X	X	I	E	X	G	E	X	E
phosphoric anhydride (dry or moist)	I	E	E	I	I	I	X	I	I	E	I	I	I	X	X
photographic (developer)	I	C	E	C	I	I	I	X	I	I	I	G	E	E	E
phosphoric acid (40-100% solution)	I	C	G	G	X	X	X	X	I	E	X	C	E	X	E
phosphoric anhydride (molten)	I	E	E	I	X	X	X	I	I	E	E	X	I	C	X
phthalic anhydride	G	E	G	I	G	G	I	C	C	E	E	I	I	C	E
picric acid	G	E	E	I	C	X	X	X	X	E	E	E	I	E	E
pine oil	E	E	E	I	E	X	I	C	G	E	I	I	I	E	E
plating solutions:															
- antimony plating 130°f	I	I	E	I	I	I	I	I	I	E	X	I	E	E	E
- arsenic plating 110°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- brass bath 100°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- bronze	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- cadmium cyanide bath 90°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- cadmium fluoborate bath 100°f	I	I	E	I	I	I	I	I	I	E	X	I	E	G	E
- chromium barrel chrome bath 95°f	I	I	X	I	I	I	I	I	I	E	X	I	E	X	C
- chromium black chrome bath 115°f	I	I	C	I	I	I	I	I	I	E	X	I	E	X	C
- chromium chromic-sulfuric bath 130°f	I	I	C	I	I	I	I	I	I	E	X	I	E	X	C
- chromium fluoride bath 130°f	I	I	X	I	I	I	I	I	I	E	X	I	E	X	C
- chromium fluosilicate bath 95°f	I	I	C	I	I	I	I	I	I	E	X	I	E	X	C
- copper (electroless) 140°f	I	I	I	I	I	X	I	I	I	E	E	I	E	X	E
- copper acid fluoborate bath 120°f	I	I	X	I	I	I	I	I	I	E	X	I	E	G	E
- copper acid sulfate bath r.t.	I	I	X	I	I	I	I	I	I	E	X	I	E	E	E
- copper cyanide rochelle salt bath 150°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- copper cyanide high speed bath 180°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- copper pyrophosphate 140°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- gold acid 75°f	I	I	C	I	I	I	I	I	I	E	E	I	E	E	E
- gold cyanide 150°f	I	I	E	I	I	C	I	I	I	E	E	I	E	E	E
- gold neutral 75°f	I	I	C	I	I	I	I	I	I	E	E	I	E	E	E
- iron ferrous am. sulfate bath 150°f	I	I	C	I	I	I	I	I	I	E	X	I	E	E	E
- iron ferrous chloride bath 190°f	I	I	X	I	I	I	I	I	I	E	X	I	C	G	E
- iron ferrous sulfate bath 150°f	I	I	C	I	I	I	I	I	I	E	X	I	E	E	E
- iron fluoborate bath 145°f	I	I	X	I	I	I	I	I	I	E	X	I	E	G	E
- iron sulfamate 140°f	I	I	X	I	I	I	I	I	I	E	X	I	E	E	E
- iron sulfate-chloride bath 160°f	I	I	X	I	I	I	I	I	I	E	X	I	E	G	E
- lead fluoborate	I	I	C	I	I	I	I	I	I	E	X	I	E	G	E
- nickel electroless 200°f	I	I	I	I	I	I	I	I	I	E	X	I	X	X	E

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CHEMICAL RESISTANCE CHART

	302SS	304SS	316SS	440SS	Aluminum	Cast Bronze	Brass	Cast Iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal *	Viton Seal *
plating solutions:															
- nickel fluoborate 100-170°f	I	I	C	I	I	X	I	I	I	E	X	I	E	G	E
- nickel high chloride 130-160°f	I	I	C	I	I	I	I	I	I	E	X	I	E	E	E
- nickel sulfamate 100-140°f	I	I	C	I	I	I	I	I	I	E	E	I	E	E	E
- nickel watts type 115-160°f	I	I	C	I	I	I	I	I	I	E	E	I	E	E	E
- rhodium plating 120°f	I	I	X	I	I	I	I	I	I	E	X	I	E	E	E
- silver plating 80-120°f	I	I	E	I	I	I	I	I	I	E	E	I	E	E	E
- tine-lead plating 100°f	I	I	C	I	I	I	I	I	I	E	X	I	E	E	E
- tin-fluoborate plating 100°f	I	I	C	I	I	I	I	I	I	E	X	I	E	G	E
- zinc acid chloride 140°f	I	I	X	I	I	I	I	I	I	E	X	I	E	E	E
- zinc acid fluoborate bath r.t.	I	I	I	C	I	I	I	I	I	E	X	I	E	G	E
- zinc acid sulfate bath 150°f	I	I	C	I	I	I	I	I	I	E	X	I	E	E	E
- zinc alkaline cyanide bath r.t.	I	I	I	E	I	I	I	I	I	E	E	I	E	E	E
potash	I	E	I	E	C	C	I	G	I	I	E	G	E	E	E
potassium bicarbonate	I	E	I	G	C	G	I	X	I	E	E	G	E	E	E
potassium bromide	E	E	I	G	C	C	I	X	X	E	C	G	E	E	E
potassium carbonate	G	E	I	E	C	C	I	G	G	E	E	G	E	G	E
potassium chlorate	G	E	E	E	G	G	I	G	G	E	X	G	E	E	E
potassium chloride	C	E	E	G	G	C	C	G	G	E	G	G	E	E	E
potassium chromate	I	I	G	G	E	E	I	E	I	I	I	G	I	E	E
potassium cyanide solutions	G	E	G	E	X	X	I	G	G	E	E	G	E	E	G
potassium dichromate	G	E	E	E	E	C	I	G	C	E	X	G	E	E	G
potassium ferrocyanide	G	E	I	E	C	E	I	I	C	E	E	E	I	X	I
potassium hydroxide (50%)	E	G	G	G	X	X	X	C	E	E	E	G	E	G	X
potassium nitrate	G	E	G	E	G	G	I	I	G	E	C	G	E	E	G
potassium permanganate	G	E	G	G	G	G	I	G	G	E	X	G	G	E	G
potassium sulfate	G	E	G	G	E	G	G	G	G	E	C	G	E	E	E
potassium sulfide	E	E	I	E	G	G	I	G	G	E	I	I	I	E	E
propane (liquified)	E	E	I	E	E	E	E	I	G	E	E	I	X	E	E
propyl alcohol	I	E	E	I	E	E	I	I	E	E	E	I	E	E	E
propylene glycol	G	G	I	E	E	G	I	G	G	E	G	G	I	E	E
pyridine	I	C	I	G	G	I	I	G	E	E	I	C	G	X	X
pyrogalllic acid	G	E	E	E	G	G	I	G	G	E	E	I	I	E	E
rape seed oil	I	E	E	I	I	E	I	I	I	I	I	I	I	G	E
rosins	E	E	E	E	E	E	C	I	C	E	E	I	E	E	I
sea water	E	E	C	E	C	C	I	I	X	E	E	G	E	E	E
shellac (bleached)	E	E	I	E	E	E	G	G	E	E	E	I	E	E	I
shellac (orange)	E	E	I	E	E	E	C	C	E	E	E	I	E	E	I
silicone	I	G	I	E	G	E	I	I	I	I	E	I	E	E	E
silicone oil	I	E	E	I	I	E	I	E	I	I	E	I	E	E	E
silver bromide	I	C	C	G	X	I	I	I	I	I	I	I	I	I	I
silver nitrate	G	E	G	E	X	X	I	X	X	E	E	G	E	C	E
soap solutions	E	E	C	E	G	E	I	G	G	E	E	E	E	I	G
sodium acetate	G	E	E	G	G	G	I	C	C	E	E	G	E	X	X
sodium aluminate	G	I	I	E	C	G	I	I	C	E	E	I	I	E	E
sodium bicarbonate	G	E	E	E	E	G	E	C	C	E	E	G	E	E	E
sodium bisulfate	E	E	I	E	X	C	C	X	X	E	C	G	E	E	G
sodium bisulfate	I	E	I	E	E	C	I	X	I	E	X	G	E	E	E
sodium borate	G	E	I	E	C	E	I	C	C	E	E	E	I	I	E
sodium carbonate (soda ash)	G	E	G	G	C	G	G	G	G	E	E	G	E	E	E
sodium chlorate	G	E	I	E	G	G	I	I	C	E	E	G	E	X	E
sodium chloride	G	E	C	G	C	G	C	G	C	E	E	G	E	E	E
sodium chromate	E	E	E	I	X	G	I	G	G	E	E	I	E	E	G
sodium cyanide	G	E	I	E	X	X	X	G	G	E	C	G	E	E	E
sodium fluoride	G	C	I	C	C	C	I	X	X	E	E	C	I	X	G
sodium hydrosulfite	I	I	I	I	E	C	I	I	I	E	E	I	I	I	E
sodium hydroxide (20%)	I	E	E	E	X	C	X	E	I	E	C	E	E	E	E
sodium hydroxide (50% solution)	I	E	G	I	X	C	X	G	I	E	C	C	E	X	X
sodium hydroxide (80% solution)	I	E	X	I	X	C	X	C	I	E	C	C	E	X	G
sodium hypochlorite	X	I	E	I	X	X	I	X	X	E	E	I	E	G	G
sodium hypochlorite (to 20%)	I	C	C	C	C	X	X	X	I	E	E	G	X	C	E
sodium hyposulfate	I	E	E	I	X	X	I	I	I	E	I	I	I	I	I
sodium metaphosphate	E	I	E	I	E	C	C	G	G	E	E	I	X	E	E
sodium metasilicate	E	I	E	I	G	G	I	C	C	E	I	I	I	E	E
sodium nitrate	G	E	E	E	E	G	C	E	G	E	E	G	E	C	X
sodium perborate	G	I	C	I	G	C	C	G	G	E	E	I	E	G	E

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CHEMICAL RESISTANCE CHART

	302SS	304SS	316SS	440SS	Aluminum	Cast Bronze	Brass	Cast iron	Carbon Steel	Teflon	Nylon	Polyethylene	Polypropylene	Buna N Seal *	Viton Seal *
sodium peroxide	G	E	E	I	C	C	C	X	C	E	X	I	I	C	E
sodium polyphosphate (mono, di, tribasic)	I	E	E	I	X	C	I	I	I	E	I	I	I	E	E
sodium silicate	G	E	G	E	C	C	C	I	G	E	E	I	E	E	E
sodium sulfate	G	E	E	C	G	G	G	E	G	E	E	G	E	E	E
sodium sulfide	G	E	G	I	X	X	X	E	G	E	E	G	E	C	E
sodium sulfide	I	C	C	I	C	C	I	E	I	E	X	E	I	E	E
sodium tetraborate	I	I	E	I	I	I	I	I	I	I	I	I	I	E	E
sodium thiosulphate ("hypo")	E	E	E	I	G	X	X	C	G	E	E	I	E	G	E
sorghum	I	E	E	I	I	I	I	E	I	I	E	I	I	E	E
soy sauce	I	E	E	I	E	E	I	X	I	I	E	I	I	E	E
soybean oil	I	E	E	I	E	G	I	E	I	I	E	I	E	E	E
stannic chloride	X	X	X	I	X	X	I	X	X	E	E	G	E	E	E
stannic fluoborate	I	I	E	I	I	I	I	X	I	I	I	I	I	E	E
stannous chloride	X	X	C	I	X	X	I	X	X	E	X	E	I	C	G
starch	G	E	E	I	E	G	I	C	C	E	E	G	I	E	E
stearic acid	G	E	E	E	G	C	C	C	C	E	E	G	X	G	E
stoddard solvent	E	E	E	E	E	E	E	G	G	E	E	X	X	G	E
styrene	E	E	E	I	E	E	I	I	E	E	I	I	I	X	G
sugar (liquids)	E	E	E	E	E	E	I	G	G	E	E	I	E	E	E
sulfate liquors	I	C	C	I	G	C	I	I	I	I	I	I	E	I	E
sulfur chloride	I	X	X	X	X	C	X	I	I	E	E	E	X	X	E
sulfur dioxide	I	E	E	C	E	G	I	I	I	E	X	C	X	X	X
sulfur dioxide (dry)	E	E	E	I	E	E	C	E	G	E	E	X	I	I	X
sulfur trioxide (dry)	E	E	C	I	E	G	I	G	G	E	X	I	I	X	E
sulfuric acid (to 10%)	I	X	C	C	C	X	X	X	I	E	X	G	E	C	E
sulfuric acid 10%-75%	I	X	X	X	X	X	X	X	I	E	X	C	E	X	E
sulfuric acid 75%-100%	I	I	X	I	I	I	X	I	I	E	X	I	G	X	E
sulfurous acid	C	C	G	C	C	X	I	X	X	E	X	G	E	C	E
sulfuryl chloride	I	I	I	I	I	I	I	I	I	E	I	I	I	I	I
syrup	I	E	E	E	E	X	I	I	I	I	E	I	E	E	E
tallow	I	E	E	I	E	I	I	I	I	I	E	C	I	E	E
tannic acid	G	E	E	E	C	G	I	C	C	E	X	G	E	X	E
tanning liquors	I	E	E	I	C	E	I	I	I	E	I	I	E	C	E
tartaric acid	G	E	G	G	C	E	C	X	X	E	E	G	E	X	E
tetrachlorethane	I	I	E	I	I	I	I	I	I	E	E	I	E	X	E
tetrahydrofuran	I	E	E	I	X	X	I	X	E	E	E	X	C	X	X
toluene, toluol	E	E	E	I	E	E	E	E	E	E	E	X	X	X	C
tomato juice	E	E	E	I	E	C	I	C	C	E	E	I	E	E	E
trichlorethane	I	C	E	I	C	C	I	C	I	E	I	I	I	X	E
trichlorethylene	G	E	E	I	G	G	E	C	G	E	C	X	X	X	E
trichloropropane	I	I	E	I	I	E	I	I	I	I	I	I	I	E	E
tricresylphosphate	I	I	E	I	I	E	I	I	I	E	I	I	I	X	G
triethylamine	I	I	I	I	I	E	I	I	I	I	I	I	I	E	E
turbine oil	I	E	E	I	E	E	I	E	I	I	I	I	I	E	E
turpentine	G	E	E	I	C	G	C	G	G	E	E	X	G	X	E
varnish	E	E	E	E	E	E	G	I	C	E	E	I	E	G	E
vegetable juice	I	E	E	I	E	C	I	X	I	I	E	I	I	E	E
vinegar	E	E	E	E	X	G	G	C	X	E	E	G	C	E	E
water, acid, mine	I	E	E	I	C	C	X	C	I	I	E	I	E	E	E
water, distilled, lab grade 7	I	E	E	I	G	E	I	X	I	E	E	I	E	E	E
water, fresh	E	E	E	I	E	E	C	G	I	E	E	X	E	E	E
water, salt	I	E	E	I	G	G	C	X	I	I	E	I	E	E	E
weed killers	I	E	E	I	C	C	I	I	I	I	E	I	I	G	E
whey	I	E	E	I	G	I	I	I	I	I	I	I	I	E	E
whiskey & wines	E	E	E	E	X	G	G	X	X	E	E	G	E	E	E
white liquor (pulp mill)	I	E	E	I	I	X	I	C	I	E	E	I	E	E	E
white water (paper mill)	I	E	E	I	I	E	I	I	I	I	E	I	E	I	E
xylene	E	E	E	I	E	E	E	E	G	E	E	X	X	X	E
zinc chloride	X	X	G	G	X	X	X	X	X	E	E	G	E	E	E
zinc hydrosulphite	I	I	E	I	X	X	I	X	I	I	I	I	I	E	E
zinc sulfate	G	E	E	E	X	G	C	C	X	E	E	G	E	E	E

* NOTE: The ratings given for BUNA N and VITON rubber are based on their use as seals in couplings. For Chemical Resistance of Hose components refer to the tables in our Hose Catalog.

NUMERICAL INDEX

Part #	Page	Part #	Page	Part #	Page	Part #	Page	Part #	Page	Part #	Page
100	155	600SF	124	C21B	118	C701H	136	CP38-23	122	G0808HLU	67
101	155	600SH	124	C2-23	116	C702	136	CP5	117	G0808M	60
104	155	600SM	124	C2-42	116	C702H	136	CP5-04	117	G0808MC	69
104C	155	711	158	C2-42B	116	C708H	136	CP5-42	117	G0808MU	65
107	155	800PF	125	C2-44	116	C709H	136	CP5-44	117	G0808XH	68
108	155	800PH	125	C25	118	C711	137	CP5-45	117	G0816B	92,96
11-208	157	800PM	125	C25-02	118	C712	137	CP6	117	G0816BH	92
119	155	800SF	124	C25-04	118	C718	137	CP60	121	G0816G	63
126	155	800SH	124	C26	118	C719	137	CP61	121	G0816M	63
127	155	800SM	124	C26-22	118	C8	116	CP61-03	121	G0816N	81
150	155	855	53	C26-24	118	C801	137	CP65	121	G0819M	65
151	155	856	53	C26-42	118	C802	137	CP66	121	G0848B	93,96
2CMF1	123	902	154	C26-44	118	C9	116,118	CP7	117	G0848G	63
20PF	125	906A	154	C26-45	118	C9-03	116,118	CP8	117	G0848M	63
20PH	125	908	154	C27	120	C9-06	116,118	CP9	117	G0898B	94,96
20PM	125	AKF02	150	C28	120	CHR	159	CP9-03	117	G0898G	61
20SF	124	AS211	160	C2B	116	CM2FE	123	CP9-45	117	G0898M	61
20SH	124	AS212	160	C301	131	CM2ME	123	CPST	127	G08T86B	95
20SM	124	AS213	160	C302	131	CP1	117	CPST-GHT	123	G08T88B	95,96
200	157	B30-3B	120	C308	131	CP10	117	CPSTH	127	G08T88G	64
2000L	29	B30-5B	120	C309	131	CP1-01	117	CST	126	G08T88M	64
200NT	158	B32	120	C35	122	CP10-23	117	CST-GHT	123	G08X88B	94
200T	158	B32E	120	C36	122	CP1-03	117	CSTH	126	G08X88G	65
201	157	B33	120	C37	122	CP1-42	117	CST-KEW	127	G08X88M	65
202	158	B33E	120	C37-03	122	CP1-44	117	DKF02	150	G10L	161
204-30A	157	B33-SL	120	C37-03B	122	CP17	119	F..B	149	G10LM	161
208	157	B34	120	C37B	122	CP17-02	119	F..D	149	G10P	161
209	158	B34-5B	120	C38	122	CP17-03	119	G0008B	91	G10PG	161
211	157	B35	120	C38-23	122	CP17-06	119	G0008MC	69	G10PH	161
221	158	B36	120	C38-42	122	CP17-44	119	G0008XH	68	G10PW	161
224	158	B37	120	C38-42B	122	CP17-45	119	G0009	126	G1200	101
235	158	BR	159	C38-44	122	CP17-46	119	G0012	101	G12PT	161
240	158	BRASS INDEX	82	C38-44B	122	CP18	119	G0012S	101	G1400	98
2500L	29	C..D	150	C38B	122	CP18-23	119	G0012SL	101	G1408	98
30PF	125	C-001	52	C400C	133	CP18-26	119	G0014	97	G1412	101
30PH	125	C1	116	C401	132	CP1B	117	G0014F	97	G1414	98
30PM	125	C10	116,118	C401P	132	CP2	117	G0014L	97	G1416	99
30SF	124	C101	128	C402	132	CP20	119	G0202	101	G1446	99
30SH	124	C101B	128	C402P	132	CP20-21	119	G0208	102	G1494	99
30SM	124	C101BL	128	C403	132	CP20-23	119	G0216	102	G1496	99
344R	156	C101L	128	C404	132	CP20B	119	G0246	102	G1498	100
344R90	156	C101SS	128	C404P	132	CP21	119	G0296	102	G14744	100
344U	156	C102	129	C405	132,133	CP21-01	119	G0298	103	G14T46	100
366R	156	C10-23	116,118	C405P	132	CP21-03	119	G02T00	103	G14T64	100
3404	154	C10-26	116,118	C406	132	CP21-42	119	G02T06	103	G14X44	100
3406	154	C102B	129	C406MR	133	CP21-42B	119	G0400	97	G15BL	15
3408	154	C102SS	129	C408R	133	CP21-43	119	G0404	97	G15L	15
40PF	125	C1-03	116	C409R	133	CP21-44	119	G0404SW	97	G16	15
40PH	125	C10-44	116,118	C5	116	CP21-44B	119	G0414	97	G1600B	91
40PM	125	C10-45	116,118	C501	134	CP21B	119	G0416	98	G1600G	66
40R	154	C10-46	116,118	C501H	135	CP2-21	117	G0700B	89	G1600HB	91
40SF	124	C108	129	C502	134	CP2-23	117	G0707BSW	89	G1600M	66
40SH	124	C109	129	C502H	135	CP25	119	G0708B	90	G1600N	81
40SM	124	C111B	129	C5-04	116	CP25-02	119	G0708BSW	90	G1600SB	91
41R	154	C112B	129	C508	134	CP25-04	119	G0716B	90	G1600SLB	91
400PF	125	C1B	116	C508H	135	CP25-42	119	G0716BS	90	G1600VB	91
400PH	125	C2	116	C509	134	CP25-44	119	G07Y77B	89,152	G1601TV	156
400PM	125	C20	118	C509H	135	CP25-45	119	G07Y77BV	89,152	G1601TVL	156
400SF	124	C201	130	C6	116	CP26	119	G07Y77PV	89,152	G1608B	93
400SH	124	C202	130	C60	121	CP26-22	119	G07Y77PVG	89,152	G1608XA	29
400SM	124	C20-23	118	C60-23	121	CP26-24	119	G07Y77Z	89,152	G1608XAU	29
444S	155	C20-23B	118	C601	135	CP27	120	G07Y77ZV	89,152	G1608XB	156
446S	155	C20-42	118	C602	135	CP28	120	G0800B	91	G1616	57
500AV	29	C20-42B	118	C61	121	CP2B	117	G0800G	66	G1616B	93
525AV	29	C20-44	118	C61-03	121	CP35	122	G0800M	66	G1616BC	93
528	152	C20-44B	118	C6-24	116	CP35-44	122	G0800B	92,96	G1616BL	93
571L	152	C208	130	C6-44	116	CP36	122	G0808BBH	92	G1616G	58
571TFRL	152	C209	130	C6-45	116	CP37	122	G0808BBHS	92	G1616PC	59
572TFRL	152	C20B	118	C65	121	CP37-03	122	G0808BH	92	G1616S80	59
600PF	125	C21	118	C66	121	CP37-42	122	G0808BHL	92	G1616SW	59
600PH	125	C21-03	118	C7	116	CP37-44	122	G0808G	60	G1619AB	108
600PM	125	C21-03B	118	C701	136	CP38	122	G0808GU	65	G1648B	94,96

NUMERICAL INDEX

Part #	Page	Part #	Page	Part #	Page	Part #	Page	Part #	Page	Part #	Page
G1648G	62	G24LM	85	G38W	41	G65BRD	21	G7070	110	G98MC	38
G1648M	62	G25	13,14	G39	46	G65BRDC	22	G7090	111	G98MCA	37
G1696B	94	G25B	13	G3A	53	G65BRDP	22	G7096	110	G98NK	38
G1698B	94,96	G26	13	G3S	54	G65BRE	22	G7098	110	G98NKA	37
G1698G	62	G26B	13	G3SS	54	G65BRF	22	G70T00	111	G98NKC	38
G1698M	62	G27	13,14	G4	44	G65C	17	G70T06	111	G98NSTA	37
G1698XA	156	G27B	13	G4-019	86	G65CA	19	G70T60	111	G98SZ	38
G1698XB	156	G28	13,14	G4-025	86	G65D	17	G7103	109	G98SZA	37
G16B	15	G28L	13	G40L	86	G65DC	18	G72	39	G98SZC	38
G16L	15	G28P	13	G40R	86	G65DCL	19	G72B	39	G99	160
G16T66B	95	G28SC	13	G41L	86	G65DD	19	G72M	39	G99B	160
G16T88B	95	G28SP	13	G41R	86	G65DIA	25	G75	39	GBIN	160
G17	15	G28Y	13	G42	86	G65DIC	25	G75B	39	HB	159
G1708B	90	G29C	11,43	G4300	108	G65DID	25	G77	39	ID101	160
G1716B	9	G29DS	10	G4316	107	G65DIDC	26	G77B	39	J	51
G1717B	89	G29F	10	G4316G	107	G65DIDP	26	G78	39	J-001	52
G17B	15	G29M	10	G4330	108	G65DIE	26	G79	40	L..L	150
G17L	15	G29N	10	G4331	108	G65DIF	26	G79G	40	L-30	154
G18	15	G29R	159	G4331G	108	G65DIP	18	G79M	40	P..B	150
G18SL	15	G29S	10	G4332	108	G65E	18	G7ET	45	P-1	50
G18V	15	G3	53	G4333	108	G65F	18	G7ETM	45	P-1000	50
G19DS	12	G30G	7	G4334	108	G65LC	19	G7M	43	P-38	50
G19F	12	G30NK	7	G43L	86	G65LD	19	G7-PR	42	PC	50
G19N	12	G31	6	G43R	86	G65LDC	19	G7-WR	42	PCO	51
G19S	12	G31B	6,35	G45F	16	G65LY	20	G8	43	PG	146
G1SS	49	G31BLS	6	G45M	16	G65NA	23	G80	30	PGD	146
G2	49	G31BNST	35	G46F	16	G65NB	23	G80B	30	PGP	147
G2000	87	G32	6	G46M	16	G65NC	23	G80BF	30	PGSS	147
G2001	87	G32B	6,35	G47F	16	G65ND	23	G80BM	30	PL	151
G2002	87	G32BLS	6	G47M	16	G65NDC	24	G80F	30	QCQP GUIDE	138
G2004	88	G32BNST	35	G48	16	G65NDP	24	G80M	30	QKF02	150
G2005	88	G32NK	7	G4G	44	G65NE	24	G80W	30	R..R	149
G2006	88	G33	4	G4M	44	G65NF	24	G81A	33	S-150	152
G2008	88	G33B	5	G4MSS	44	G65PA	23	G81B	33	S-151	152
G2012	88	G33G	4	G5	45	G65PB	23	G84	32	SB	52
G2014	88	G33N	5,82	G5M	45	G65PC	23	G84A	32	SC	52
G2015	88	G33SS	5	G6	55	G65PD	23	G84C	32	TPG	159
G2016	87	G33V	5	G6000	104	G65PDC	24	G84E	32	TSG	159
G20B	3,83	G34	7	G6001	104	G65PDP	24	G84SZ	32	V10	75
G20B90	83	G34FV	8	G6008	105	G65PE	24	G85	31	V12	75,76
G20BT	83	G34FVL	8	G6016	105	G65PF	24	G85B	31	V14	77
G20M	4	G34FVS	8	G6016N	81	G65R	20	G86	31	V16	77
G20N	3,79	G34L	7	G6016P	112	G65SC	20	G87	31	V201	70
G20N90	79	G34P	8	G6046	106	G65SSA	25	G87S	31	V201PVC	78
G20NT	80	G35FH	9	G6060	105	G65SSB	25	G88	31	V202	70
G20NTM	80	G35FP	9	G6060P	112	G65SSC	25	G88C	31	V202L	71
G20S	3	G35G	9	G6090	105	G65SSD	25	G88R	31	V203	72
G20SM	4,12	G35MH	9	G6090N	81	G65SSDC	26	G88W	31	V205	72
G21B	83	G35MP	9	G6090P	112	G65SSDP	26	G89	46	V207	73
G21B45	83	G35SC	9	G6096	106	G65SSE	26	G8L	45	V302	70
G21B90	83	G36BFH	85	G6096N	81	G65SSF	26	G8M	43	V302L	71
G21BL	84	G36BLF	85	G6096P	113	G65SSY	20	G9	160	V302LB	71
G21BLM	84	G36BLM	85	G6098	106	G65SSZ	20	G91JM	35	V302W	70
G21BRI	84	G36BM	85	G60T00	106	G65ST	20	G91MC	34	V303	72
G21BRS	84	G36NF	81	G60T00P	113	G65VS	20	G92	47	V305	72
G21C	27	G36NM	81	G60T06	107	G65VX	20	G92JM	35	V306	73
G21CRLM	27	G36RG	85,89	G60T06P	113	G65X	20	G92MC	34	V307	73
G21N	79	G36SG	85,89	G60T60	107	G65Y	20	G92-RACK	48	V308	73
G21N90	80	G36VG	85,89	G60T60P	113	G66LC	19	G94	48	V401	74
G21SAE	84	G37	32	G61	28	G66LD	19	G95NK	34	V402	74
G21SS	27	G37-GHT	32,152	G6100	104	G66LDC	19	G95SZ	35	V432	74
G21TVB	156	G37JM	37	G6100P	113	G67	29	G97	32	V601	74
G21XS	156	G37MC	37	G6103	104	G67BS	29	G97B	32	V605	74
G21Z	27	G37NK	37	G62	28	G68	29	G97G	32	V610	74
G22B	84	G37NST	37	G63	28	G6HD	56	G97-GHT	32,152	V611	74
G22BFS	84	G37P	32	G65A	17	G6N	55	G97JM	36	V611M	74
G22N	80	G37SZ	37	G65AA	19	G7	43	G97MC	36	V803	78
G22SAE	85	G37T	37	G65AW	19	G7000	109	G97NK	36	V825	78
G22TVB	156	G37TMC	36	G65B	17	G7001	109	G97SZ	36	XP100	158
G23S	11	G37TNK	36	G65BRA	21	G7008	109	G98JM	38		
G23SSX	152	G37TNST	36	G65BRB	21	G7016	109	G98JMA	37		
G23T	40	G38	41	G65BRC	21	G7046	110	G98JMC	38		