

CHEMICAL COMPATIBILITY TABLE - PISTON SEALS FOR WELLCHROM AND SMARTLINE PUMPS

standard piston seals are composed of graphite-fiber-filled PTFE

Data taken from BAL SEAL Engineering Co., Inc.
"Chemical Compatibility Guide - Technical Report, 2003"
all data is at ambient temperatures

A --> acceptable
Q --> questionable
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CHEMICAL	rating
acetaldehyde	A
acetate solvents	NA
acetic anhydride	A
acetone, dry	A
acetone, wet	A
acetonitrile	A
acetylene gas	A
acid, acetic (ethanoic acid)	A
acid, acetic and propionic	A
acid, arsenic, ortho-	A
acid, benzoic	NA
acid, boric	NA
acid, butyric (butanoic acid)	NA
acid, carbonic (phenol)	A
acid, carbonic, aqueous	NA
acid, chloroacetic	A
acid, chlorosulphonic	NR
acid, chromic, aqueous	NR
acid, citric, aqueous	A
acid, coconut, fatty	NA
acid, cresylic	NA
acid, cresylic (alkyl phenols)	A
acid, fatty, oleic	NA
acid, formic (methanoic acid)	A
acid, fruit	NA
acid, hydrobromic	NA
acid, hydrochloric	A
acid, hydrocyanic (Prussic)	NA
acid, hydrofluoric, aqueous	Q
acid, hydrofluosilicic	NA
acid, hypochlorous	NA
acid, lactic	A
acid, maleic	NA
acid, mine water	A
acid, mixed, sulphuric and nitric	NR
acid, monochloro acetic	NA
acid, muriatic	A
acid, naphthenic	NA
acid, nitric (65%)	A
acid, nitric (100%)	Q
acid, nitric (fuming)	Q
acid, ortho-phosphoric	NA
acid, oxalic (ethanedioic acid)	NA
acid, palmitic (hexadecanoic acid)	NA
acid, phosphoric	A
acid, picric, aqueous	NR
acid, picric, molten	NR
acid, pyroligneous	NA
acid, stearic and oleic	NA
acid, stearic (octadecanoic acid)	NA
acid, sulfonic	A
acid, sulfuric	Q
acid, sulfuric, fuming (oleum)	Q
acid, sulfurous, wet	NA
acid, tannic	NA
acid, tartaric, aqueous	NA
acid, terephthalic	NA
acrylonitrile	NA
aldehyde	NA
alkanes	NA
alkali metals	Q
alkali metals (molten temp.)	NR
alkyl benzene	NA
alkyl chloride	A
alkylate, light	A
alkyl-arylsulphonics	NA
allyl acetone	NA
allyl alcohol	NA
allyl amine	NA
alpha picoline	NA
alum solution	NA
aluminum chloride	A
aluminum sulphate, aqueous	A
aluminum hydroxide (boehmite)	NA
amine, fat condensate	NA
ammonia, anhydrous	A
ammonia, aqua	A
ammonium bicarbonate	NA
ammonium bifluoride	A
ammonium carbonate	NA
ammonium chloride (sal ammoniac)	A
ammonium hydroxide	A
ammonium nitrate	A
ammonium phosphate (di-basic)	NA
ammonium phosphate (mono-basic)	NA
ammonium phosphate (tri-basic)	NA

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ammonium sulphate (aqueous)	A
ammonium thiocyanate	A
amyl acetate	A
amyl alcohol	A
amyl nitrate	NA
aniline hydrochloride	NA
aniline (aminobenzene)	A
anti-freeze (water, alcohol or glycol)	A
aqua regia	NR
argon gas	NA
Arochlor 1248	NA
aromatic fuels	NA
asphalt	A
barium chloride, aqueous	A
barium nitrate, aqueous	NA
beer	NA
beer wort	NA
beet juice	NA
beet pulp	NA
beet sugar solution	NA
benzene (coal tar product)	A
benzine (petroleum product)	A
benzol	NA
bichloride of mercury	NA
bittern	NA
black liquor	NA
bleach solutions	NA
bleaching liquor	A
blood	Q
boiler feed water	NA
bonderite solution	NA
boron trichloride	NA
brine, calcium PH8	A
brine, calcium an magnesium chloride	A
brine, sea water	A
brine, sodium chloride	A
bromine fumes	NR
bromine liquid	NR
bromine, wet	A
bromo methane	NA
bunker c fuel oil	A
butadiene	A
butane (lpg)	A
butanol-1	A
butanol-2	A
butyl acetat	A
butyl alcohol (butanol)	A
butylamine	Q
butyl phthalate	A
butylene (butene) (ethylethylene)	A
calcium bisulphite	NA
calcium carbonate (aragonite)	NA
calcium chlorate (aqueous)	NA
calcium chloride (wet)	A
calcium hydroxide (aqueous)(lime water)	A
calcium hypochlorite	A
calcium magnesium chloride	A
calcium phosphate	NA
cane juice	NA
carbon bisulphide	NA
carbon dioxide (dry)	A
carbon dioxide (wet)	A
carbon disulphide	A
carbon monoxide gas	NA
carbon tetrachloride (anhydrous)	A
carbonate of soda (aqueous)	A
catsup	NA
caustic cyanogen	NA
caustic manganese	NA
caustic potash (aqueous)	NA
caustic soda (aqueous)	NA
chloride of lime	NA
chlorinated solvents (wet)	NA
chlorine (dry)	Q
chlorine (wet)	Q
chlorine trifluoride	Q
chlorine trifluoride (elevated temp.)	NR
chloroacetone	NA
chlorobenzene	A
chloroform	A
chloronaphthalene	A
chloropicrin	NA
chrome alum	NA
chromic oxide (aqueous)	NA
chromium potassium sulphate (aqueous)	NA
cocoa butter	NA

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coconut oil	NA
cod liver oil	NA
condensate (water)	A
copper acetate (blue verdigris)	NA
copper ammonium acetate (aqueous)	NA
copper chloride	NA
copper cyanide	NA
copper nitrate	NA
copper sulphate (blue vitriol) (aqueous)	A
copperas (green)	NA
corn oil	NA
cottonseed oil	A
creosote (coal tar)	NA
creosol, meta	A
crude oil	A
cupric sulphate (aqueous)	NA
cupros ammonia acetate (aqueous)	NA
cutting oil	NA
cyanogen in water	NA
cyclohexane (hexahydrobenzene)	A
cyclohexene (tetrahydrobenzene)	NA
cyclohexanone	A
ddt solution (kerosene solv.)	NA
ddt solution (toluene solv.)	NA
de-ethanizer charge	NA
de-propanizer reflux	NA
diacetone alcohol	NA
dibromoethyl benzene	NA
dibutyl amine	NA
dibutyl cellulosolve adipate	NA
dibutyl phthalate	NA
dibutyl ether	NA
dichlorobenzene	NA
dichloroethane	NA
dichloroethylene	NA
diesel fuel	A
diethanolamine (dea)	NA
diethyl carbonate (ethyl carbonate)	NA
diethyl ether	NA
diethylene glycol	NA
diethylenetriamine	NA
dimethyl formaldehyd	NA
dimethyl formamide (dmf)	A
dimethyl hydrazine	NA
dimethyl phthalate	A
dimethyl sulfoxide	A
dimethyl terephthalate	NA
dinitrochloro benzene and styrene	NA
dinitrochloro benzene (dncb)	NA
dinitrotoluene	NA
dioctyl-amine	NA
dioctyl phthalate	A
dioxane	A
diphenyl sulfone	NA
dish water	A
di-isobutyl ketone	NA
di-isopropyl ketone	NA
dow corning silicone fluid	NA
dowtherm "a" (dry)	A
dowtherm "e" (dry)	A
ethane	NA
ethanol amine	A
ethanol (ethyl alcohol)	A
ether	A
ethyl acetate	A
ethyl benzene	NA
ethyl benzoate	NA
ethyl cellosolve	NA
ethyl chloride (dry) (chloroethane)	A
ethyl chlorocarbonate	NA
ethyl chloroformate	NA
ethyl chlorohydrin	NA
ethyl ether (ethyl oxide)	NA
ethyl formate	NA
ethyl hexanol	NA
ethyl pyridine	NA
ethylene (ethene)	NA
ethylene chloride (ethylene dichloride)	A
ethylene glycol	NA
ethylene oxide	NA
ethylene trichloride	NA
ferric chloride (aqueous)	Q
ferric sulphate (aqueous)	NA
flourine	Q
flourine (elevated temperature)	NR
fluorolube	NA

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formaldehyde (methanal)	A
formalin	NA
freon 11 and refrig. Oil	A
freon 12	A
freon 22	A
freon 113	A
freon 114	A
freon 121	A
freons, liquid	A
fruit juices	NA
fuel oil	A
fuel oil, #6	NA
fuel oil, acidic	NA
furfural	A
gas oil	NA
gasoline 100 , and 130 oct.	A
gasoline, aromatic*	A
gasoline, high test w/mercaptan, h ₂ s	A
glaubers salt (aqueous) (sodium sulfate)	NA
glucose	NA
glue	NA
glue sizing	NA
glycerine (glycerol)	NA
glycols	NA
glyme	NA
grape juice	NA
grease	NA
green sulphate liquor	NA
helium	NA
heptane	A
Hexachloroacetone	NA
hexane	A
hexene (butylethylene)	NA
hexone	NA
hexyl alcohol (hexanol)	NA
hydrazine	NA
hydrochoto peroxide (hclo ₄)	A
hydrogen fluoride (hf acid) anhydrous	A
hydrogen peroxide	Q
hydrogen sulphide (dry)	A
hydrogen sulphide (wet)	A
ink	A
insecticides (aromatic)	NA
insecticides (nonaromatic)	NA
iodine (wet)	NA
iodoform	NA
isobutane	NA
isobutyl alcohol	NA
isobutyl methyl ketone	NA
isobutylene	NA
isooctane	NA
isododecane	NA
isopentane	NA
isopropanol	NA
isopropylacetate	NA
isopropylacetone	NA
isopropyl alcohol	NA
isopropylamine	NA
isopropylchloride	NA
isohexanes	A
jet fuel jp-3	A
jet fuel jp-4	A
jet fuel jp-5	A
jet fuel jp-6	A
jet fuel jp-x	A
kerosene	A
ketones	A
lacquer (mek solv.)	NA
lard (animal fat)	NA
latex	NA
lavender oil	A
lead acetate	NA
lead sulphamate	A
lead nitrate	NA
lime bleach	NA
lime water (calcium hydroxide)	NA
lindol	NA
linseed oil	NA
liquid osygen	NA
liquid petroleum gas (lpg)	A
liquor, pulpmill	NA
lithium	Q
lithium (elevated temp.)	NR
lithium bromine brine	NA
lithium chloride (aqueous)	NA

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magnesium chloride (bischofite)	A
magnesium hydroxide (brucite)	A
magnesium nitrate	NA
magnesium sulphate (epsom salt) (aqueous)	A
magnesium sulphate (aqueous)	NA
maleic anhydride	NA
maleic hydrazide	NA
manganese chloride (aqueous)	NA
manganese sulphate (aqueous)	NA
marsh, anto-biotic, fermentation, no solv.	A
mayonnaise	NA
mea (mono-exhanol-amine)	NA
melamine resins	NA
mercaptan	NA
mercuric chloride	NA
mercury	NA
mercury salts	NA
mercury vapors	NA
mesityl oxide	NA
methane (marsh gas)	NA
methanol (methyl alcohol)	A
methyl acetate	NA
methyl acrylate	NA
methyl bromide (bromomethane)	NA
methyl butyl ketone	NA
methyl cellosolve	NA
methyl chloride (chloromethane) (anhydrous)	NA
methyl chlorosilanes	NA
methyl cyclopentane	NA
methyl dichloride	NA
methyl ether	NA
methyl ethyl ketone (mek)	A
methyl formate	NA
methyl isobutyl ketone	A
methyl isopropyl ketone	NA
methyl n-propyl ketone	NA
methyl t-butyl ether	A
methyl pyrrolidone	A
methylbenzene	A
methylcyclohexane	A
methylene chloride (dichlormethane)	NA
milk	NA
milk of lime	NA
mil O-8515	NA
mil O-8200 (hydr)	NA
mil F-25558 (rj-1)	NA
mil H-5606 (hfa)	NA
mil H-5606 (j43)	NA
mil L-7808	NA
mineral spirits	NA
miscella (20% soya oil)	NA
molasses	NA
mono ethanolamine	NA
monochlorobenzene	NA
mustard	NA
naphtha	A
naphtha, crude	A
naphthalene	A
natural gas liquid	NA
neatsfoot oil	NA
nickel acetate	NA
nickel chloride	NA
nickel cobalt sulphate, 5% h ₂ so ₄	NA
nickel salt	NA
nickel sulphate	NA
nitrobenzene	A
nitrobenzine	NA
nitrochloroform	NA
nitroethane	NA
nitrogen gas	NA
nitromethane	Q
nitropropane	NA
oakite	NA
oil and ammonia	A
oil, animal, bone	A
oil, animal, cod	A
oil, animal, lard	A
oil, animal, menhadden	A
oil, animal, neatsfoot	A
oil, animal, whale	A
oil, bunker "c"	A
oil, coal tar	A
oil, creosote, sweet	A
oil, crude, sweet	A
oil, diesel, #2d	NA

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oil, diesel, #3d	NA
oil, diesel, #4d	NA
oil, diesel, #5d	NA
oil, essential	NA
oil, fed. spec. #20	A
oil, fed. spec. #30	A
oil, fed. spec. #9170	A
oil, fed. spec. #9250	A
oil, fed. spec. #9370	A
oil, fed. spec. #9500	A
oil, fed. spec. sae 140	A
oil, fed. spec. sae 20	A
oil, fed. spec. sae 250	A
oil, fed. spec. sae 30	A
oil, fed. spec. sae 40	NA
oil, fed. spec. sae 50	NA
oil, fed. spec. sae 60	NA
oil, fed. spec. sae 70	NA
oil, fed. spec. sae 90	NA
oil, fuel #1	A
oil, fuel #2	A
oil, fuel #3	A
oil, fuel #5a	A
oil, fuel #5b	A
oil, fuel #6	A
oil, insulating	NA
oil, kerosene	A
oil, lean	NA
oil, linseed	NA
oil, lubricating diesel #9110	NA
oil, lubricating #8	A
oil, mineral lard cutting, fed. spec. #1	A
oil, mineral lard cutting, fed. Spec. #2	A
oil, mineral sae 10	A
oil, navy spec., navy II	NA
oil, quenching	NA
oil, rich	NA
oil, turbine lube	NA
oil, vegetable, castor	A
oil, vegetable, chinawood	NA
oil, vegetable, coconut	NA
oil, vegetable, corn	NA
oil, vegetable, cottonseed	A
oil, vegetable, linseed	NA
oil, vegetable, palm	NA
oil, vegetable, peanut	NA
oil, vegetable, rape seed	NA
oil, vegetable, rosin	NA
oil, vegetable, sesame	NA
oil, vegetable, soya bean	NA
olefin, crude	NA
oleums	Q
ortho-dichlorobenzene	NA
ortho-xylene	NA
os 45 type IV	NA
oxygen, liquid	NA
paracymene	NA
paraffin, liquid	NA
pectin, liquor	NA
penicillin, liquid	NA
pentachlorophenol	NA
pentane	NA
pentasol	NA
perchloroethylene	A
petrolatum	NA
petroleum ether	NA
phenol (carbolic acid)	A
phenol, formaldehyde mix	A
phosphorous trichloride (dry)	Q
phorographic developers	NA
phthalic anhydride	NA
phthalic esters	NA
plasticizer	NA
plating solutions, chrome	Q
plating solutions, others	Q
poly glycols	NA
poly vinyl acetate	NA
polyester resins	A
potash alum (aqueous)	NA
potash sulphide	NA
potash (plant liquor)	A
potassium	Q
potassium (elevated temp.)	NR
potassium, bichromate (aqueous)	NA
potassium bromide	NA
potassium carbonate (aqueous)	NA

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potassium chlorate	NR
potassium chloride (aqueous) (sylvite)	A
potassium cyanides (aqueous)	NA
potassium dichromate	Q
potassium hydroxide (aqueous)	A
potassium nitrate (aqueous) (saltpeter)	NA
potassium perfluoro acetate	NA
potassium permanganate	A
potassium phosphate	NA
potassium sulphate (aqueous) (arconite)	NA
propane	NA
propanol-1	NA
propanol-2	NA
propiolactone, beta	A
propionaldehyde (propanal)	NA
propylene carbonate	NA
propylene dichloride	A
propylene glycol	NA
propylene oxide	NA
propylene (propene)	NA
pseudocumene	A
pyridine	A
raffinate	NA
rosin	NA
sal ammoniac (ammonium chloride)	NA
salt cake	NA
salt cake (aqueous)	NA
salt water	A
sea water	A
sewage	NA
silicone oils and greases	A
silver nitride	NA
skydrol 500	NA
skydrol 7000	NA
soap, liquors	NA
soap, solutions	A
soda ash	NA
sodium (elevated temp.)	NR
sodium acetate (anhydrous)	A
sodium aluminat	NA
sodium bicarbonate (aqueous)	A
sodium bisulfate	NA
sodium bisulfite	NA
sodium borate	NA
sodium carbonate (aqueous)	A
sodium chloride sol. (common salt)	A
sodium cyanamide	NA
sodium cyanide (aqueous)	NA
sodium hydrosulfite	NA
sodium hydroxide solution	A
sodium hydroxide (aqueous)	A
sodium hypochlorite	Q
sodium metaphosphate	NA
sodium metasilicate	NA
sodium nitrate (aqueous) (soda niter)	Q
sodium perborate	NA
sodium peroxide (aqueous)	NA
sodium phosphate (aqueous)	NA
sodium plumbite (aqueous)	NA
sodium silicate (aqueous) (water glass)	A
sodium sulfide	A
sodium sulfite (aqueous)	A
sodium sulphate (aqueous) (glaubers salt)	A
sodium tetraborate	NA
sodium thiosulfate	A
solvasol 1, 2 and 3	NA
solvasol 73, 74	NA
sorbitol	NA
stain removers	A
starch	NA
steam	A
stoddard solvent	A
styrene (monomer) (vinylbenzene)	NA
sugar (aqueous)	NA
sulfur chloride (aqueous)	NA
sulfur dioxide and water	A
sulfur dioxide (dry)	A
sulfur trioxide (dry)	NA
sulfur trioxide (wet)	NR
sulfur, molten	NA
sulfonated fatty alcohol	NA
sulfonated vegetable oils	NA
sulfuric chlorohydrin	NA
sulfuric ether	A
sulfuryl chloride	A
syrup (sucrose soln.)	NA

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tall oil	NA
tallow	NA
tanning liquors	NA
tar and ammonia with water	NA
tar, bituminous	NA
tar, pine	NA
tetra ethyl lead	NA
tetrabromoethane	NA
tetrachloro ethane	NA
tetrachloro ethylene	NA
tetrafluoroborate	A
tetrahydrofuran (thf)	A
tetraphenyl	NA
therminol #1,2 and 3	NA
thionyl chloride	NA
thiophene	NA
titanium tetrachloride	NA
toluene	NA
tomato pulp	A
toxaphene	NA
trichlorobenzene	NA
trichloroethane (dry)	NA
trichloroethane (wet)	NA
trichloronitromethane	NA
trichloroethylene (dry)	Q
trichloroethylene (wet)	Q
trichlorotrifluoroethane	NA
trimesyl phosphate (tcp)	NA
triethyl amine	NA
trisodium phosphate	A
tri-fluoro-vinyl-chloride	NA
urea and phenolic resins	NA
urea, anhydrous (carbamide)	NA
urine	NA
varnish, aromatic	NA
varnish, nonaromatic	NA
vaseline	A
vegetable juices	NA
vetrocoke solution (wet)	NA
vinegar	A
vinyl chloride (chloroethene)	NA
vinyl pyridine	NA
vinylidene chloride	NA
vitriole, white	A
water food service	NA
water, boiler feed	A
water, brackish	A
water, clean untreated	A
water, condensate	A
water, cooling tower	A
water, distilled	A
water, fresh	A
water, heavy	NA
water, hot	A
water, mine	A
water, river	A
water, salt and sea, solution	A
water, soapy	A
water, with soluble oil	NA
wax alcohols	A
whiskey	NA
white liquor	NA
white spirit	NA
white water, paper mill	NA
wine	NA
wood pulp (stock)	NA
wood vinegar	NA
wort (beer wort)	NA
xylene (dimethylbenzene)	A
yeast	NA
zeolite treated water	NA
zinc chloride (dry)	A
zinc cyanide	NA
zinc nitrate	NA
zinc phosphate	NA
zinc sulfate	NA