

Three Piece Ball Valve

AC-305MF Series
PED Category I, II

AC-305MF User Manual

English Version

Use for company in Europe who will place the product on the market, please amend which necessary.

Document No:

Date: 2021/06/22

Version: 1.0

PREPARED BY _____ DATE _____

REVIEWED BY _____ DATE _____

APPROVED BY _____ DATE _____

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1. General Precautions

a. Material Selection:

The possibility of material deterioration in service and the need for periodic inspections is depended on the contained fluid. Carbide phase conversion to graphite, oxidation of ferrite materials, decrease in ductility of carbon steels at low temperature (even in applications above -29°C) are among those items. Even information about corrosion data is provided in this user manual, the user is requested to take attention or consideration to determine the suitability of material in their application.

b. Pressure-Temperature rating:

The Pressure-Temperature rating is considered for static pressure. Please refer to P & T rating section on page 9 for working precaution. The allowable temperature is between R.T. and 200°C do not exceed the temperature range to avoid danger accident happen.

c. Fluid thermal expansion:

It is possible, when the ball valve is in closed condition, the sealed cavity within the valve body to be filled with liquid. If this liquid is not released, by partially opening the valve or some other means, and it is subject to a temperature increase, excessive pressure sufficient to cause pressure boundary failure can be generated. However our products have pressure self-relief seat to prevent pressure built up, user is recommended to prevent that the pressure in the valve will not exceed that allowed pressure, by means of piping design, installation, or operation procedure.

d. Static electric effect:

The ball valves are provided with anti-static devices for ball-stem-body. When service conditions require electrical continuity to prevent static discharge, the user is responsible for specifying static grounding.

e. Fire safe condition:

Generally, the application of the valve shall comply with the Pressure-Temperature rating range. If the risk of fire is major effect, user is recommended to select our fire-safe products, which with API-607 approval. Contact to the valve distributor or manufacturer for details.

f. Liquids with high fluid velocity:

When ball valves must be operated frequently on liquids with very high velocity, a check shall be made with the valve distributor or manufacturer for appropriate advice to minimize the possibility of seat deformation, especially when they are highly pressurized on high-temperature line.

- g. Throttling service: Ball valves are generally not recommended for throttling service, where both the fluid flow and the leading edge of the ball can damage or deform the resilient ball seats causing leakage. High fluid velocity or the presence of solid particles in suspension will further reduce seat life in throttling applications.
- h. Do not open the bonnet or cap when bearing pressure. Valve is not equipped with pressure access device. User should check it by other method through its piping system.
- i. Do not touch the surface of valve on high temperature.
- j. Not allowed for unstable fluid, otherwise specified with category III in Declaration of conformity or/and in this user manual.
- k. Lock design on the handle to avoid the valve operated by non-related people is optional requested by the user.

2. Product Description

2.1 Feature

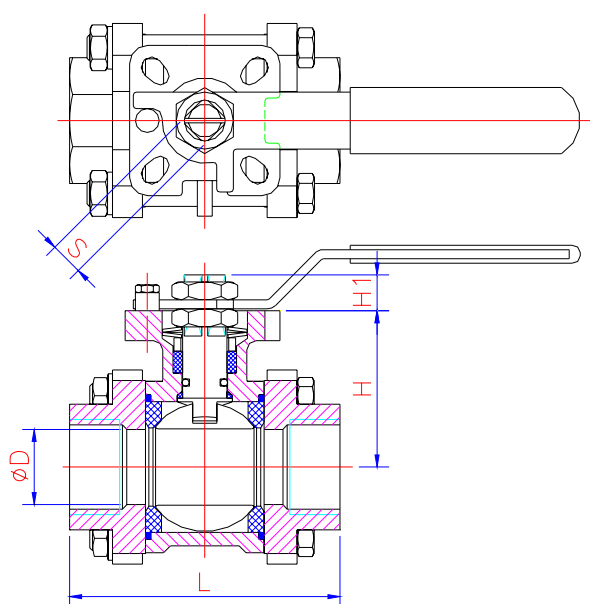
- a. 3-PC Full Port 1000 WOG Ball Valve
- b. Direct Mounting Of Actuators To Valves, No Need Bracket & Adaptor.
- c. Multiple ISO Hole And Well-Machined Mounting Pad in One Valve Simplify Installation of DA & SR Actuator.
- d. Three- Piece Swing-Out In-Line Maintenance Design
- e. Self-Adjusting Stem Packing Assembly With **Belleville Spring** For Temperature Fluctuations, Vibration.
- f. Bottom Entry Blow-Out Proof Stem Provides Maximum Safety.
- g. Heavy-duty body & end cap construction with traceable heat number.
- h. Pressure balance hole in ball slot.
- i. Pressure self-relief seat to prevent pressure built up.
- j. Lock design on the handle is optional requirement.

2.2 Product specification

The scope of product specifications are as following

Item No.	PN	No CE Marking	Category I	Category II
AC-305MF	63	DN 8, 10, 15, 20, 25		DN 32, 40, 50, 65, 80,100

2.3 Common dimension



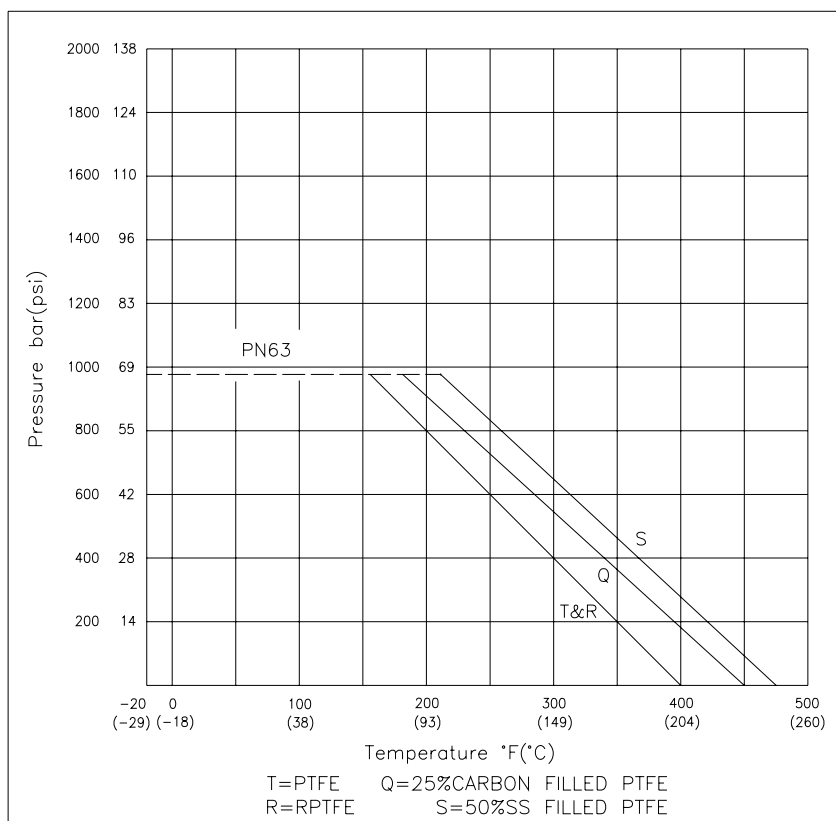
SIZE	ØD	L	ISO-5211	H	H1	S	Torque N-M
1/4"	9	71	F03-F04	43	9	9	4.2
3/8"	12	71	F03-F04	43	9	9	4.2
1/2"	15.0	82	F03-F04	46	9	9	12
3/4"	20.0	73	F03-F04	45.4	9	9	13
1"	25.0	85	F04-F05	55.8	9	9	18
1-1/4"	32.0	96	F04-F05	60.2	11	11	22
1-1/2"	38.0	114	F05-F07	75.5	11	11	42
2"	50.0	134	F05-F07	83.3	14	14	55
2-1/2"	65.0	180	F05-F07	107.9	17	17	78
3"	80.0	200	F05-F07	116.6	17	17	120
4"	100	228	F10-F12	131.7	22	22	150

3. Design Specification

Items	Standards/Codes
Standards of Design (P-T rating)	prEN 12516-1
Testing	prEN 12266-1
Material of Casting (Body, Cap, Ball)	EN 10213-4 for 1.4308 & 1.4408 EN 10213-2 for 1.0619
Bolt and Nut	ASTM A193.A194
Mounting Pad	ISO-5211

4. Pressure Temperature Ratings

The pressure-temperature rating of ball valves are determined, not only by valve shell materials, but also by sealing materials used for ball seats, stem packing, and body seal. Sealing materials may be high molecule, elasticity and hardness, however, the choice is limited by the characteristics of the service fluid, temperature, pressure, velocity of fluid, frequency of valves operation and sizes of ball valves etc, Followings are the general rating charts for non-shock fluid service for floating ball valves distinguished by sizes and seating materials, please refer to section 1, General precaution.



FLOW CHARACTERISTICS

The approximate flow rate through a valve can be calculated as follows:

Where ;

Q = flow rate in gallons (U.S. Std.) per minute

Cv = valve constant

P = pressure drop across the valve in pounds per square inch

G = specific gravity of the media of relative to water

$$Q = C_v \sqrt{\frac{\Delta P}{G}}$$

Note: The values derived from the flow equation are for estimating purposes only. Product variances or systemic factors may alter actual performance.

Valve Size	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
Cv Value	6	7	10	25	35	46	80	110	310	360	820

5. Delivery Condition and Storage

Valves stay in the open condition during the transportation. For incoming QC, it must check:

- a. Packing condition: Is there any damaged during the transportation.
- b. The bolts of cap and yoke: to make sure the bolt does not loose tightness when it arrived.

Valves must store in an indoor warehouse to avoid dusts and other foreign object, do not exposed in an open space without to put a cover over or take off the packing under an unnecessary situation.

6. Installation and Operation

6.1 Handling

During the ball valve installation, it must follow the procedure to handle at the both side of the bodies. If using cable for big size valve, be make sure the cable must be strong enough to ensure the safety during the installation.

6.2 Cleaning

Even the valves was transported under a clean environment, operator must check is there any foreign body or dusts inside the bore. If yes, clean it before installation. Operator clean the valves by water, compression air, or steam (automation valve shall be cleaned only with water or steam, the compression air is not allowed.) For cleaning operation, first step is put the valve bore perpendicular to the ground and

clean, ensure all the dusts can be removed from the bore. The second step is checking and clean all the connecting pipe bore and connection area. No flush, rust and foreign bodies allow to avoid the blocking and leakage.

6.3 Valve Installation (Install to the pipeline system)

a. Direction

Most of the valves do not restrict the flow direction.

b. Position

The body, cap and gasket are in the connection area of ball valve and pipeline. The bearing weight ability and gradient are very important to the pipe installation. Do not make the pressure from the pipeline and stress to concentrate on the connecting area of body and cap. It will cause the deformed and leakage, and the ball, seat, and stem will stick, leaking, and damaged.

c. Fittings

Select the correct specification of pipeline.

Tight the ball valve to the pipeline adequately.

THREADED valves

The following serves as a guideline for those experienced in pipe joint makeup. Otherwise, services of a certified pipe fitter should be utilized for installation.

1. Ensure that both the male pipe and female valve threads are free from dirt, debris and corrosion. Wire brushing of the male pipe threads is recommended to ensure a good metal-to-metal joint.

2. Apply a good quality thread lubricant (pipe dope) on the male threads. Lubricant reduces friction when pulling up the pipe joint. Note, thread lubricant is not intended to seal the joint and will not compensate for poor quality male pipe or fitting threads.

3. Turn the female valve threads onto the male pipe threads by hand. Upon free engagement of the threads, continue to turn the valve as far up as it will go (by hand). With the use of a wrench continue to tighten the valve onto the pipe. The pipe joint seal should occur within 1 to 3 turns.

Care should be taken not to exceed 3 turns in which damage to the threads can occur.

IMPORTANT When installing a threaded valve fully assembled, apply the wrench first to the Pipe Connector being engaged by the male pipe thread; fully make up pipe joint. (See Figure 1). Complete

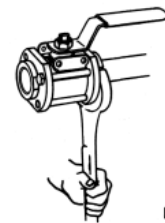


Figure 1

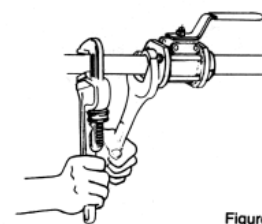


Figure 2

the installation by assembling pipe to the other connector while that connector is securely held against rotation with a second wrench. (Figure 2).

Butt & Socket Weld Valves

To avoid damaging seats and seals by exposure to welding temperature, the Center Section must be removed while the end caps are welded separately into line. Both butt and socket weld valves may be tack welded in place assembled, as long as the Center Section is removed while the welds are completed. (Seal temperature must never exceed 400 °F). Care must be taken when ‘cutting’ a valve into a line that the gap created to accept the valve is the correct, practically in the case of butt-welded valves.

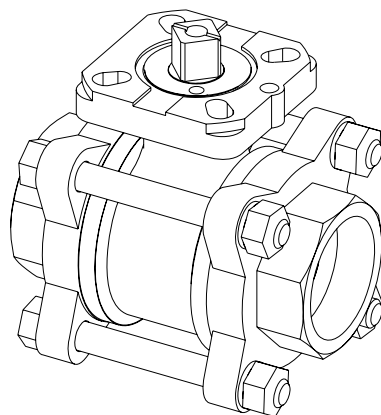
The socket-stop dimension for socket weld valves are listed in the adjacent chart. For socket weld valves it is good practice to provide a gap of approximately 1.6 mm between the end of the pipe and the bottom of the socket, before welding.

d. Systems hydrostatic test

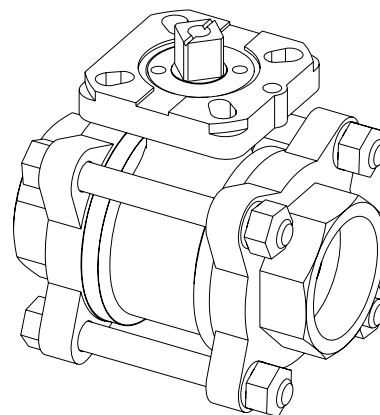
Before delivery, valves are tested 1.5 times the allowable pressure at ambient temperature in open position. After installation, the piping system may subject to system tests, as condition not to exceed the above mentioned pressure.

6.4 Operation

- a. For manual operation, shift the handle in counter clockwise direction for close and clockwise for opening.
- b. If the handle is in parallel position with the flow direction, the valve is open. If the handle is in right angle position with the flow direction, the valve is close.
- c. When installing actuator or the valve is operated with removable handle, the user should ensure the position of the valve whether open or close. There is sign at the top of stem for square type stem. Following with the fig., showing how to access the position of ball valve.



OPEN



CLOSE

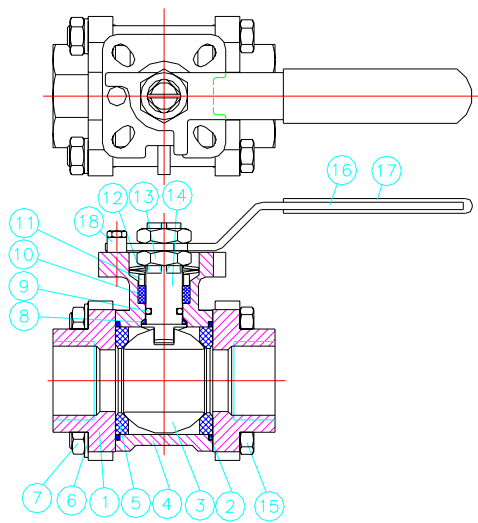
7. Maintenance

7.1 Maintenance frequency

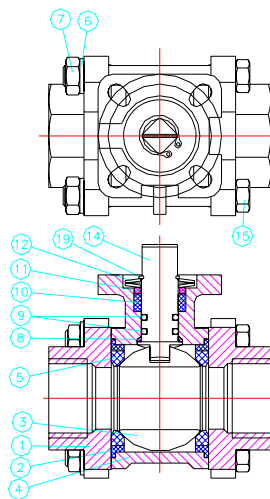
The maintenance frequency is determined upon the application of ball valve. User shall consider the time interval depend on the kinds of fluid, flow velocity, operation frequency, high-pressure effect and high-temperature effect etc.

7.2 Disassembly

- a. The user should check the service kit of AC-305MF, if available in the local market, if not, please do not disassembly the valve, otherwise, please make a order from the original manufactory for the service kit.
- b. To dismantle the valve must follow the procedure and drawings and be take care as mentioned below.
- c. It doesn't matter where is the position of valve located, usually it contained the seal up fluid, so operator must be very carefully when remove the valve on the pipe. It must open the ball a little and let the fluid come out slowly, it also need to watch out the poisonous and inflammability objects if there is any.
- d. It must turn the ball in the close position before dismantle the valve. The ball cannot be taken out from valve body if the ball is in the open or semi-open position.
- e. To dismantle the valve body, release the end cap carefully. It must be take care to dismantle the ball to avoid the seat retainer fall down from end cap.
- f. To lift the ball by hoist, it must make the protection on corner to avoid the ball damaged by metal contacted. The right position for store the valve is put the open end on to the ground. This procedure is protecting the surface of the ball.



Size:3/4"~4"



Size:1/8"~1/2"

NO	PART NAME	MATERIAL
1	CAP	ASTM A351-CF8M
2	BODY SEAT	PTFE
3	BALL	ASTM A351-CF8M
4	BODY	ASTM A351-CF8M
5	BALL SEAT	PTFE
6	WASHER	SS304
7	NUT	SS304
8	STEM SEAL	PTFE
9	O-RING	VITON
10	STEM PACKING	PTFE
11	GLAND	SS304
12	BELLEVILLE WASHER	SS301
13	NUT	SS304
14	STEM	SS316
15	BODY BOLT	SS304
16	HANDLE	SS304
17	GRIP	VINYL
18	STOP PIN	SS304
19	SNAP RING	SS304

7.3 Parts inspection, maintenance and replacement:

- a. Check the surface of ball is it scraped? It may use the PT for inspection if necessary. If there is any damaged on the surface, than found out the root cause such as the dirt fluid...etc. It must avoid the damage factors as far as possible.
- b. The damaged of the ball surface, to gauge is it located on the contacting area of ball and ball seat? If it is the case, than the ball must take a fine milling. If it cause a heavy damaged, than it must welded and re-machined again. If it cannot be repaired than change a new ball.
- c. If the scraped area is not at the location described in the item b above, than it must re-fine milling the damage area again. Otherwise, the ball will damage the soft seat during the open and close operation or it will dig out the ball seat and cause a heavy damage to ball and seat.
- d. Check the wall thickness of valve body and cap. The minimum thickness shall be maintained in according to EN12516-1 table 10.
- e. To inspect the surface of soft seat, has it any scrape mark, concave, dusts (including weld dregs, iron bit, sands...etc.), abrasion, abnormal press scrape, and a tiny scrape. Usually, the scrape mark and damage by dusts will occur the same time as ball damaged. It is the root cause for leakage. If leakage occur before repairing, than suggest to change a new soft seat (PTFE or RTFE). The mark from press or fine scrape is happen in an abnormal operation pressure. It

must reconsider to choice a right valve.

- f. The stem packing may be replaced by the new parts after dismantle the valve. User shall make sure that the your distributor able to serve the same packing of your valve if you do not have a service pack. To tight the gland nut, please see Section 8 for torque data.
- g. To do the final inspection for a valve, it must operate 10 times of open and close to ensure all the parts are assemble correctly. To ensure the torque in a same value during the open/close operation. If the torque is not the same in operation, than it may has some parts in a not corrected position or interference. It must dismantle and re-assembly. Otherwise, it is easy to damage if let this valve works on a pipeline under higher pressure.

7.4 Assembly

For assembly process, it takes the opposite way of dismantle process. The valve must in the close position during assembling the body and end cap, the stopper must be located at the right place, otherwise, the open and close operation will be opposite. When tightening the bolts, it is important to tight them in a cross serial order to prevent a unbalance fitting.

8. Torque Data

Size	DN8	DN10	DN15	DN20	DN25	DN 32	DN 40	DN 50	DN 65	DN 80	DN100
Stem Nut N-M	12	12	12	12	17	17	24	24	35	35	40
Body Bolt N-M	8	8	8	17.5	17.5	34	34	59	113	113	113

9. Troubleshooting

The following table lists the possible malfunctions that might occur after prolonged use.

Symptom	Possible fault	Actions
Leakage through a closed Valve	Damaged ball surface	Replace the ball.
	Damaged seats	Replace seats.
	Ball might not be closed fully	Check ball Open/Close settings.
Irregular ball movement	Impurities between the ball and seats or ball – body cavity and ball Seats.	Flush the ball from inside. Clean the sealing surfaces and seats.
	Damaged seats	Replace the seats.
Valve too hard to operate / valve torque too high	High application pressure / temperature	Confirm the application pressure /temperature rating.
	Foreign particles in Valve	Clean the internals.
Water hammer or noisy operation	Error in valve sizing or flow of fluid with high velocity.	Confirm valve sizing with respect to flow.
Leakage through stem	Gland nut loose	Tighten gland nut.
	Damaged stem, stem sealing surface	Replace the stem.
	Damaged stem seal	Replace the stem seal.
Leakage through body	Damaged 'O' ring or breakage of gasket	Replace 'O' ring/ gasket.
	Relaxation of studs due to gasket creep	Retighten the studs evenly in crisscross manner

10. Corrosion Data

The following corrosion data is just for information only.

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Acetaldehyde	C	C	A	☐	A	A	A	D	C	A	☐	A	A	A	D
Acetamine	B	B	B	☐	☐	☐	A	☐	☐	☐	☐	A	A	A	☐
Acetate Solvents	B	A	A	☐	☐	A	A	D	A	D	☐	A	A	A	☐
Acetic Acid, aerated	D	D	A	☐	☐	A	A	C	☐	D	A	A	A	A	☐
Acetic Acid, Air Free	B	D	A	A	A	A	A	D	☐	D	A	A	A	A	☐

Acetic Acid, crude	C	C	A	A	A	B	A	D	☐	D	A	A	A	A	☐
Acetic Acid, glacial	☐	☐	D	A	☐	☐	A	D	A	D	A	A	A	A	☐
Acetic Acid, pure	C	D	A	A	A	D	A	D	A	B	A	A	A	A	C
Acetic Acid, 10%	C	C	A	A	A	B	A	D	A	☐	A	A	A	A	A
Acetic Acid, 80%	C	C	A	A	A	B	A	D	A	D	A	A	A	A	C

Acetic Acid Vapors	D	☐	D	D	B	C	A	☐	A	☐	☐	A	A	A	☐
Acetic Anhydride	D	D	B	B	B	B	A	D	A	C	A	A	A	A	C
Acetone	A	A	A	A	A	A	A	D	A	A	A	A	A	A	A
Other Ketones	A	A	A	A	A	A	A	D	☐	A	☐	A	A	A	☐
Acetyl Chloride	A	☐	C	☐	☐	B	A	A	A	D	☐	A	A	A	☐

Acetylene	B	A	A	A	A	A	A	A	A	A	☐	A	A	A	☐
Acid Fumes	D	D	B	☐	B	☐	☐	☐	☐	D	A	C	A	A	☐
Acrylonite	A	A	A	☐	B	A	A	C	☐	D	☐	A	A	A	☐
Air	A	A	☐	A	A	A	A	A	☐	A	A	B	A	A	A
Alcohol, Amyl	B	B	A	☐	B	B	B	B	☐	A	☐	A	A	A	☐

Alcohol, Butyl	B	B	A	☐	A	A	A	A	☐	A	☐	A	A	A	☐
Alcohol, Diacetone	A	A	A	☐	A	B	A	D	☐	A	☐	A	A	A	☐
Alcohol, Ethyl	B	B	B	☐	A	B	A	A	☐	A	☐	A	A	A	A
Alcohol, Fatty	B	B	A	☐	A	☐	A	☐	☐	A	☐	A	A	A	☐
Alcohol, Isopropyl	B	B	B	☐	A	B	B	A	☐	A	☐	A	A	A	☐

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory ☐-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Alcohol, Methyl	B	B	A	☐	A	A	A	C	☐	A	☐	A	A	A	☐
Alcohol, Propyl	A	B	A	☐	A	A	A	A	☐	A	☐	A	A	A	☐
Alumina	A	☐	A	☐	☐	C	A	☐	☐	A	☐	A	A	A	☐
Aluminum Acetate	D	☐	A	B	B	B	B	D	A	D	☐	A	A	A	A
Aluminum Chloride dry	B	C	C	☐	D	☐	B	A	A	A	A	A	A	A	A

Aluminum Chloride solution	☐	☐	D	C	B	B	A	A	A	D	A	A	A	A	A
Aluminum Fluoride	☐	D	C	☐	☐	B	A	A	A	C	☐	A	A	A	A
Aluminum Hydroxide	A	D	A	B	B	B	B	A	A	C	☐	A	A	A	A
Aluminum Nitrate	D	☐	C	☐	B	C	B	A	A	D	☐	B	A	A	☐
Aluminum Oxalate	☐	☐	D	☐	A	B	A	☐	A	☐	☐	☐	A	A	A

Alum (Alum. Potassium Sulphate)	D	☐	B	C	B	C	A	D	A	D	☐	A	A	A	A
Aluminum Sulfate	C	D	B	A	B	C	A	A	A	D	☐	A	A	A	A
Amines	B	B	A	A	A	B	B	D	A	C	☐	A	A	A	☐
Ammonia, Alum	☐	☐	A	☐	A	☐	A	☐	☐	C	☐	A	A	A	☐
Ammonia, Anhydrous Liquid	D	A	A	A	A	B	A	D	A	D	A	A	A	D	☐

Ammonia, Aqueous	D	A	A	☐	A	B	B	A	A	D	☐	A	A	A	☐
Ammonia, Gas, hot	D	☐	A	☐	A	B	B	D	A	D	☐	A	A	A	A
Ammonia Liquor	☐	☐	A	☐	A	☐	B	☐	☐	☐	☐	A	A	A	☐
Ammonia Solutions	D	B	A	☐	A	B	B	D	☐	D	☐	A	A	A	☐
Ammonium Acetate	D	☐	B	☐	A	B	B	D	A	D	☐	A	A	A	☐

Ammonium Bicarbonate	B	C	B	☐	B	B	☐	A	A	A	☐	A	A	A	A
Ammonium Bromide 5%	☐	☐	B	☐	B	B	☐	☐	A	A	☐	A	A	A	A
Ammonium Carbonate	B	B	B	☐	B	B	☐	A	A	D	☐	A	A	A	A
Ammonium Chloride	D	D	C	C	B	B	B	A	A	C	☐	A	A	A	A
Ammonium Hydroxide 28%	D	C	B	A	A	D	B	A	A	D	A	A	A	A	A

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory ☐-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Ammonium Hydroxide	D	C	B	A	A	C	B	A	A	D	☐	A	A	A	A
Ammonium Monosulfate	☐	☐	A	☐	B	B	B	☐	☐	D	☐	☐	A	A	A
Ammonium Nitrate	D	D	A	A	B	D	B	A	A	D	☐	B	A	A	A
Ammonium Oxalate 5%	☐	☐	A	☐	A	B	☐	☐	A	A	☐	☐	A	A	A
Ammonium Persulfate	C	☐	A	☐	A	D	☐	B	A	D	A	☐	A	A	A

Ammonium Phosphate	D	D	B	☐	B	C	☐	D	A	C	☐	A	A	A	A
Ammonium Phosphate Di-basic	C	D	B	☐	B	C	B	A	A	A	☐	A	A	A	☐
Ammonium Phosphate Tri-basic	C	D	B	☐	B	C	B	A	A	A	☐	A	A	A	☐
Ammonium Sulfate	C	C	B	B	B	B	B	D	A	B	A	A	A	A	A
Ammonium Sulfide	D	D	B	☐	B	B	☐	D	A	A	☐	A	A	A	A

Ammonium Sulfite	C	C	A	☐	B	D	☐	A	A	A	☐	A	A	A	☐
Amyl Acetate	B	C	B	A	A	B	A	D	A	A	A	A	A	A	A
Amyl Chloride	B	☐	A	☐	A	B	B	A	A	A	☐	A	A	A	D
Aniline	D	C	B	☐	A	B	B	C	A	D	A	A	A	A	A
Aniline Dyes	C	C	A	☐	A	A	☐	B	A	A	☐	A	A	A	☐

Apple Juice	C	D	B	☐	A	A	☐	A	☐	A	☐	A	A	A	☐
Aqua Regia (Strong Acid)	D	D	B	☐	B	☐	☐	D	A	D	A	D	A	C	C
Aromatic Solvents	A	C	A	☐	A	B	☐	☐	A	A	☐	A	A	A	☐
Arsenic Acid	D	D	B	☐	B	D	B	A	A	D	A	A	A	A	A
Asphalt Emulsion	A	B	A	☐	A	A	A	A	☐	A	☐	A	A	A	☐

Asphalt Liquid	A	B	A	☐	A	A	A	A	☐	A	☐	A	A	A	☐
Barium Carbonate	B	B	B	☐	B	B	A	A	A	A	☐	A	A	A	A
Barium Chloride	B	C	B	B	C	B	☐	A	A	A	☐	A	A	A	A
Barium Cyanide	C	☐	B	☐	B	D	☐	B	A	A	☐	A	A	A	☐
Barium Hydrate	D	☐	A	☐	A	B	☐	☐	☐	A	☐	A	A	A	☐

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory ☐-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Barium Hydroxide	C	C	B	A	A	B	☐	A	A	A	☐	A	A	A	A
Barium Nitrate	☐	☐	A	☐	A	☐	☐	☐	A	A	☐	B	A	A	☐
Barium Sulfate	C	C	A	☐	A	B	☐	A	A	A	☐	A	A	A	A
Barium Sulfide	D	C	B	☐	B	C	☐	A	A	A	☐	A	A	A	A
Beer	B	D	A	A	A	A	☐	A	☐	A	☐	A	A	A	A

Beet Sugar Liquors	A	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	☐
Benzaldehyde	A	A	A	☐	A	B	B	D	☐	A	A	A	A	A	D
Benzene (Benzol)	B	B	B	B	A	A	B	A	A	C	A	A	A	A	D
Benzoic Acid	B	D	B	A	B	B	A	A	A	A	A	A	A	A	A
Beryllium Sulfate	B	☐	B	☐	A	B	☐	B	A	A	☐	A	A	A	☐

Bleaching Powder wet	B	☐	C	☐	B	D	A	B	☐	D	A	A	A	A	A
Blood (Meat Juices)	B	☐	A	A	A	B	☐	B	☐	A	☐	A	A	A	☐
Borax (Sodium Borate)	D	C	A	☐	☐	A	A	A	☐	A	☐	A	A	A	A
Bordeaux Mixture	☐	☐	A	☐	A	☐	☐	A	☐	A	☐	A	A	A	☐
Borax Liquors	A	C	B	☐	A	A	B	A	☐	A	☐	A	A	A	☐

Boric Acid	C	D	B	☐	B	B	A	A	A	A	☐	A	A	A	A
Brake Fluid	B	☐	B	A	☐	B	☐	D	☐	B	☐	A	A	A	☐
Brines, saturated	B	D	B	☐	B	B	A	A	A	A	☐	A	A	A	A
Bromine, dry	B	D	D	☐	B	A	A	A	A	D	A	B	A	C	D
Bunker Oils (Fuel)	B	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	D

Butadiene	C	B	A	☐	A	C	B	A	☐	A	☐	A	D	A	D
Butane	A	B	A	☐	A	B	A	A	☐	A	☐	A	A	A	A
Butter	☐	☐	A	☐	A	☐	☐	A	☐	A	☐	A	A	A	A
Buttermilk	D	D	A	☐	A	D	☐	A	☐	A	☐	A	A	A	B
Butyl Acetate	B	☐	B	☐	A	B	B	D	A	B	B	A	A	A	D

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Butylene	A	A	A	EE	A	A	EE	A	EE	A	EE	A	A	A	EE
Butyric Acid	C	C	B	EE	B	B	A	B	C	A	EE	A	A	A	D
Calcium Bisulfite	C	D	B	EE	B	D	B	B	A	D	EE	A	A	A	EE
Calcium Carbonate	C	D	B	EE	B	B	B	A	A	A	EE	A	A	A	A
Calcium Chlorate	D	EE	B	EE	B	B	EE	B	A	D	EE	B	A	A	A
Calcium Chloride	B	C	B	B	B	B	A	A	A	A	A	A	A	A	A
Calcium Hydroxide	C	C	B	EE	B	A	A	A	A	A	EE	A	A	A	A
Calcium Nitrate	EE	EE	B	EE	B	EE	EE	A	A	C	EE	B	A	A	A
Calcium Phosphate	C	EE	B	EE	B	EE	EE	A	A	B	EE	A	A	A	A
Calcium Sillicate	C	EE	B	EE	B	EE	EE	A	EE	A	EE	A	A	A	EE
Calcium Sulfate	C	C	B	B	B	B	B	A	A	A	EE	A	A	A	A
Caliche Liquor	EE	B	A	EE	A	EE	EE	A	EE	A	EE	A	A	A	EE
Camphor	C	EE	B	EE	C	C	EE	B	A	A	EE	A	A	A	D
Cane Sugar Liquors	B	EE	A	EE	A	B	EE	A	EE	A	EE	A	A	A	EE
Carbonated Beverages	B	D	B	B	B	C	EE	B	EE	A	EE	A	A	A	EE
Carbonated Water	B	B	A	B	A	B	EE	A	EE	A	EE	A	A	A	A
Carbon Bisulfide	C	B	B	EE	B	B	EE	A	EE	A	EE	A	A	A	D
Carbon Dioxide, Dry	A	A	A	A	A	A	EE	A	A	A	EE	A	A	A	A
Carbon Acid Phenol	D	D	B	B	A	B	EE	A	A	A	EE	A	A	A	EE
Carbon Monoxide	A	EE	A	A	A	A	A	A	A	A	EE	A	A	A	A
Carbon Tetrachloride, dry	C	B	A	A	A	A	A	B	B	A	D	A	A	A	D
Carbon Tetrachloride, wet	D	D	B	EE	B	B	B	B	B	B	D	A	A	A	D
Casein	C	EE	B	EE	B	C	EE	B	A	A	EE	A	A	A	EE
Castor Oil	A	B	A	EE	A	A	A	A	EE	A	EE	A	A	A	A
Caustic Potash	EE	EE	A	EE	A	B	EE	EE	EE	D	EE	A	A	A	EE

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory EE-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Caustic Soda	☞	B	A	☞	A	A	☞	B	A	D	☞	A	A	A	☞
Cellulose Acetate	B	☞	B	☞	☞	B	B	D	A	C	☞	A	A	A	☞
China Wood Oil (Tung)	C	C	A	☞☞	A	A	A	A	☞	A	☞☞	A	A	A	☞☞
Chlorinated Solvents	C	C	A	☞	A	B	☞	A	☞	A	☞	A	A	A	☞
Chlorinated Water	☞☞	☞☞	C	D	A	D	D	A	☞	D	☞	A	A	D	C

Chlorine Gas, dry	C	B	B	C	A	A	A	B	A	D	A	A	A	A	D
Chlorobenzene, dry	B	B	A	☞☞	A	B	B	A	A	B	D	A	A	A	D
Chloroform, dry	B	B	A	B	A	A	B	A	A	A	D	A	A	A	☞
Chlorophyll, dry	B	☞	B	☞☞	A	B	☞	B	☞	☞	☞	A	A	A	☞
Chlorosulfonic Acid, dry	C	B	B	☞☞	B	B	A	D	A	D	A	☞	A	D	D

Chrome Alum	C	B	A	☞☞	A	B	☞	A	A	B	☞	A	A	A	A
Chromic Acid <50%	D	D	C	C	B	C	B	C	A	D	A	A	A	A	A
Chromic Acid >50%	D	D	C	D	B	D	B	C	A	D	A	A	A	D	☞
Chromium Sulfate	C	☞☞	B	☞☞	C	B	☞☞	B	☞☞	C	☞☞	A	A	A	☞☞
Cider	☞☞	☞☞	A	☞☞	B	A	☞☞	☞☞	☞☞	A	☞☞	A	A	A	A

Citric Acid	C	D	B	C	A	B	A	A	☞	A	☞☞	A	A	A	A
Citrus Juices	B	D	B	☞☞	A	A	☞☞	A	☞☞	A	☞☞	A	A	A	☞
Coca-Cola Syrup	☞☞	☞☞	A	☞☞	A	☞☞	☞☞	B	☞☞	A	☞☞	A	A	A	A
Coconut Oil	B	C	B	☞☞	A	B	☞☞	A	☞☞	A	☞☞	A	A	A	A
Coffee	A	☞☞	A	☞☞	A	B	☞☞	A	☞☞	A	☞☞	A	B	A	A

Coffee Extracts, hot	B	C	A	☞☞	A	A	☞☞	☞☞	☞☞	A	☞☞	A	A	A	☞☞
Coke Oven Gas	C	B	A	☞☞	A	B	☞☞	A	☞☞	D	☞☞	A	A	A	☞☞
Cooking Oil	B	B	A	☞☞☞	A	A	☞☞	A	☞☞	A	☞☞☞	A	A	A	☞☞
Copper Acetate	D	D	A	☞☞	A	C	B	D	A	D	☞☞	A	A	A	☞☞
Copper Carbonate	☞☞	☞☞	A	☞☞	A	☞☞	☞☞	☞☞	A	A	☞☞	A	A	A	☞☞

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Copper Cyanide	D	EE	A	EE	A	C	EE	A	A	A	EE	A	A	A	A
Copper Nitrate	D	D	B	EE	B	D	EE	A	A	A	EE	B	A	A	A
Copper Sulfate	D	D	B	B	B	C	A	A	A	A	EE	A	A	A	A
Corn Oil	B	C	B	EE	B	B	EE	A	EE	A	EE	A	A	A	A
Cottonseed Oil	B	C	B	EE	B	B	EE	A	EE	A	EE	A	A	A	A

Cresol	EE	EE	B	EE	B	EE	EE	B	A	D	A	A	A	A	D
Creosote Oil	B	B	B	B	A	B	B	A	A	D	EE	A	A	A	D
Cresylic Acid	C	C	B	EE	B	B	EE	A	A	D	EE	A	A	A	A
Crude Oil, sour	C	B	A	EE	A	B	EE	A	EE	A	EE	A	A	A	EE
Crude Oil, sweet	B	B	A	EE	A	A	EE	A	EE	A	EE	A	A	A	EE

Coupric Nitrate	EE	EE	A	EE	A	D	EE	EE	EE	D	EE	B	A	A	EE
Cutting Oils, Water Emulsions	A	B	A	EE	A	EE	A	A	EE	A	EE	A	A	A	EE
Cyanide	D	EE	B	EE	B	D	B	B	A	D	EE	EE	A	A	EE
Cyclohexane	A	A	A	EE	A	B	A	A	A	A	EE	A	A	A	C
Cyclohexanone	B	EE	A	EE	A	B	D	D	A	A	A	A	A	A	D

Detergents, synthetic	B	EE	B	EE	A	B	EE	A	EE	A	EE	A	A	A	A
Dextrin	B	EE	B	EE	B	B	EE	B	EE	A	EE	A	A	A	A
Dichloroethane	EE	EE	C	EE	B	B	EE	EE	A	D	A	A	A	A	EE
Dichloroethyl Ether	B	EE	B	EE	B	EE	EE	D	EE	D	EE	EE	A	A	EE
Diesel Oil Fuels	A	A	A	EE	A	A	EE	A	A	A	EE	A	A	A	EE

Diethylamine	B	A	A	EE	A	C	EE	D	EE	A	C	A	A	A	EE
Diethyl Benzene	EE	EE	B	EE	B	EE	EE	EE	A	C	EE	A	A	A	EE
Diethylene Glycol	B	EE	A	EE	A	B	EE	A	A	A	EE	A	A	A	A
Diethyl Sulfate	B	EE	B	EE	B	B	EE	B	EE	A	EE	A	A	A	EE
Dimethyl Formamide	B	EE	A	EE	A	B	EE	D	A	A	A	A	A	A	EE

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Dimethyl phthalate	☐	☐	D	☐	☐	☐	☐	B	A	C	☐	A	A	A	☐
Dioxane	B	☐	B	☐	B	B	☐	D	A	C	A	A	A	A	☐
Dipentane (Pinene)	A	☐	A	☐	A	☐	☐	B	A	A	☐	A	A	A	☐
Disoidum Phosphate	☐	☐	B	☐	B	C	☐	B	☐	A	☐	A	A	A	A
Dowtherm	A	B	A	☐	A	A	☐	A	A	A	☐	A	A	A	☐

Drilling Mud	B	B	A	☐	A	B	☐	A	☐	A	☐	A	A	A	☐
Dry Cleaning Fluids	C	B	A	☐	A	B	☐	A	☐	A	☐	A	A	A	☐
Drying Oil	C	C	B	☐	B	B	☐	☐	☐	A	☐	A	A	A	☐
Enamel	A	☐	A	☐	☐	☐	☐	☐	☐	A	☐	A	A	A	☐
Epsom Salts (MgSo4)	B	C	B	☐	B	B	☐	A	☐	A	☐	A	A	A	☐

Ethane	B	C	B	☐	B	B	☐	A	☐	A	☐	A	A	A	☐
Ethers	B	A	A	B	A	B	☐	C	☐	C	☐	A	A	A	D
Ethyl Acetate	C	B	B	A	B	B	B	D	A	C	C	A	A	A	C
Ethyl Acrylate	B	C	A	☐	A	B	A	D	A	B	☐	A	A	A	☐
Ethyl Benzene	☐	☐	B	☐	A	☐	A	A	A	A	☐	A	A	A	☐

Ethyl Bromide	A	☐	B	☐	C	B	☐	A	A	A	☐	A	A	A	☐
Ethyl Chloride, dry	B	B	A	A	A	B	B	B	A	A	☐	A	B	A	D
Ethyl Chloride, wet	C	D	B	☐	B	B	B	B	A	A	☐	A	A	A	D
Ethylene Chloride	☐	☐	A	☐	A	B	B	B	A	A	A	A	A	A	☐
Ethylene Dichloride	☐	☐	B	☐	A	B	☐	A	A	C	☐	A	A	A	D

Ethylene Glycol	B	B	B	A	A	B	A	A	A	A	A	A	A	A	A
Ethylene Oxide	C	B	B	☐	B	B	A	D	A	A	D	A	A	A	C
Ethyl Ether	B	☐	A	☐	A	A	B	D	☐	A	C	A	A	A	☐
Ethyl Silicate	B	☐	B	☐	B	B	☐	A	☐	A	☐	A	A	A	☐
Ethyl Sulfate	☐	☐	B	☐	B	☐	☐	A	☐	A	☐	A	A	C	☐

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Fatty Acids	C	D	A	☐	A	B	A	A	A	A	☐	A	A	A	A
Ferric Hydroxide	☐	☐	A	☐	A	A	☐	☐	A	A	☐	A	A	A	☐
Ferric Nitrate	D	D	C	B	A	D	B	A	A	A	☐	B	A	A	A
Feric Sulfate	D	D	B	B	A	D	☐	A	A	A	☐	A	A	A	A
Ferrous Ammonium Citrate	☐	☐	B	☐	B	☐	☐	☐	A	A	☐	A	A	A	A

Ferrous Chloride	B	D	D	☐	D	D	D	A	A	A	A	A	A	A	A
Ferrous Sulfate	B	D	B	☐	B	B	B	A	A	A	A	A	A	A	A
Ferrous Sulfate, Saturated	C	C	A	☐	A	B	B	B	☐	A	A	A	A	A	☐
Fertilizer Solutions	C	B	B	☐	B	B	☐	☐	☐	☐	☐	A	A	A	☐
Fish Oil	B	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	☐

Flourine Gas, dry	☐	☐	B	☐	A	A	A	☐	☐	☐	A	☐	A	A	☐
Flue Gases	B	☐	A	☐	A	B	☐	C	☐	C	☐	A	A	A	☐
Fluoboric Acid	☐	☐	B	☐	A	☐	☐	☐	A	D	☐	☐	A	D	A
Fluorosilicic Acid	B	D	B	☐	B	A	B	C	A	C	☐	☐	A	D	A
Formaldehyde, cold	A	A	A	A	A	A	B	D	A	A	☐	A	A	A	A

Formaldehyde, hot	B	D	C	☐	B	B	B	☐	A	A	B	A	A	A	A
Formic Acid, cold	B	D	B	D	B	B	A	B	B	D	A	A	A	A	A
Formic Acid, hot	B	D	B	D	B	B	B	A	B	D	B	A	A	A	A
Freon Gas, dry	B	B	A	A	A	A	B	C	☐	A	☐	A	A	A	☐
Fredn 11, MF, 112, BF	B	☐	A	☐	A	B	B	D	D	A	C	A	A	A	☐

Freon 12, 13, 32, 114, 115	A	☐	A	☐	A	B	B	D	D	A	C	A	A	A	☐
Fredon 21, 31	B	☐	A	☐	A	B	B	D	A	A	C	A	A	A	☐
Freon 22	A	☐	A	☐	A	☐	B	D	C	A	C	A	A	A	☐
Freon 113, TF	B	☐	A	☐	A	B	B	C	D	A	C	A	A	A	☐
Freon, wet	D	☐	C	B	B	B	B	D	☐	A	☐	A	A	A	☐

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	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Fruit Juices	B	D	A	☐	A	B	☐	A	☐	A	☐	☐	A	A	A
Fuel Oil	B	B	A	☐	A	B	☐	A	☐	A	☐	A	A	A	D
Fumaric Acid	☐	☐	☐	☐	A	☐	☐	A	A	A	☐	☐	A	A	☐
Furfural	A	A	A	B	A	B	B	D	☐	A	☐	A	A	A	D
Gallic Acid 5%	C	D	B	☐	B	B	B	A	A	A	A	☐	A	A	A

Gas, Manufactured	B	B	B	☐	B	A	☐	A	☐	A	A	A	A	A	☐
Gas, Natural	B	B	A	☐	B	A	☐	A	☐	A	☐	A	A	A	☐
Gas, Odorizers	A	B	B	☐	A	B	☐	A	☐	A	☐	A	A	A	☐
Gasoline, Aviation	A	A	A	☐	A	A	A	A	A	A	☐	A	A	A	D
Gasoline, Leaded	A	A	A	☐	A	B	A	A	A	A	☐	A	A	A	D

Gasoline, Motor	A	A	A	A	A	A	A	A	A	A	☐	A	A	A	D
Gasoline, Refined	B	B	A	☐	A	B	A	A	A	A	☐	A	A	A	D
Gasoline, Sour	B	B	A	☐	A	C	A	A	☐	A	☐	A	A	A	D
Gasoline Unleaded	A	A	A	☐	A	A	A	A	A	A	☐	A	A	A	D
Gelatin	A	D	A	☐	A	B	☐	A	☐	A	☐	A	A	A	A

Glucose	A	B	A	☐	A	A	A	A	A	A	☐	A	A	A	A
Glue	B	A	B	☐	A	B	A	A	A	A	☐	A	A	A	A
Glycerin (Glycerol)	B	C	A	A	A	A	A	A	A	A	☐	A	A	A	A
Glycol Amine	D	☐	B	A	☐	☐	D	D	☐	C	☐	A	☐	A	☐
Glycol	B	C	B	☐	A	B	☐	A	☐	C	☐	A	A	A	A

Graphite	B	☐	B	☐	A	B	☐	B	☐	A	☐	A	A	A	☐
Grease	C	A	A	☐	A	B	☐	A	A	A	☐	A	A	A	☐
Helium Gas	B	☐	A	☐	A	B	A	A	☐	A	☐	A	A	A	A
Heptane	A	B	A	☐	A	B	A	A	A	A	☐	A	A	A	C
Hexane	B	B	A	☐	A	B	A	A	☐	A	C	A	A	A	D

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory ☐-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Hexanol, Tertiary	A	A	A	☐	A	A	A	B	A	A	☐	A	A	A	A
Hydraulic Oil, Petroleum Base	B	A	A	☐	A	A	☐	A	☐	A	☐	A	A	A	☐
Hydrazine	D	☐	B	☐	B	D	☐	D	A	D	☐	☐	A	A	☐
Hydrocyanic Acid	D	D	A	☐	A	C	B	A	A	D	☐	☐	A	A	A
Hydrofluosilicic Acid	A	D	C	☐	B	B	☐	A	A	A	☐	A	A	D	☐

Hydrogen Gas, cold	B	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	A
Hydrogen Gas, hot	☐	B	B	☐	A	☐	A	A	☐	A	☐	A	A	A	A
Hydrogen Peroxide > 25%	D	D	B	☐	B	D	D	B	A	D	A	D	A	A	C
Hydrogen Peroxide < 25%	C	C	B	☐	B	D	D	A	A	D	A	C	A	A	A
Hydrogen Sulfide, Dry	C	B	A	B	B	B	B	A	A	C	A	A	A	A	A

Hydrogen sulfide, Wet	D	C	B	☐	B	C	D	A	A	C	A	A	A	A	A
Hypo (Sodium Thiosulfate)	C	D	B	☐	B	B	☐	A	☐	A	☐	A	A	A	☐
Illuminating Gas	A	A	A	☐	A	A	☐	A	☐	A	☐	A	A	A	☐
Ink-Newsprint	C	D	A	☐	A	B	☐	A	A	A	☐	A	A	A	A
Iodoform	C	B	A	☐	A	C	☐	A	C	A	☐	☐	A	A	☐

Iso-Butane	☐	☐	B	☐	B	☐	☐	☐	A	A	☐	A	A	A	☐
Iso-Octane	A	A	A	☐	A	A	☐	A	A	A	☐	A	A	A	☐
Isopropyl Acetate	☐	☐	B	☐	A	☐	☐	D	A	A	☐	A	A	A	☐
Isopropyl Ether	A	A	A	☐	A	B	A	D	A	A	A	A	A	A	☐
J P-4 Fuel	A	A	A	☐	A	A	A	A	A	A	☐	A	A	A	☐

J P-5 Fuel	A	A	A	☐	A	A	A	A	A	A	☐	A	A	A	☐
J P-6 Fuel	A	A	A	☐	A	A	A	A	☐	A	☐	A	A	A	☐
Kerosene	A	B	A	☐	A	A	A	A	A	A	☐	A	A	A	C
Ketchup	D	D	A	☐	A	B	☐	A	☐	A	☐	A	A	A	☐
Ketones	A	A	A	☐	A	A	☐	D	☐	A	☐	A	A	A	☐

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory ☐-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Laquer (and Solvent)	A	C	A	☐	A	A	☐	D	A	A	☐	A	A	A	☐
Lactic Acid Concentrated Cold	D	D	A	D	A	D	A	A	A	D	☐	A	A	A	A
Lactic Acid Concentrated Hot	D	D	B	D	A	D	B	B	A	D	☐	A	A	A	A
Lactic Acid Dilute Cold	D	D	A	B	A	C	A	A	A	D	☐	A	A	A	A
Lactic Acid dilute Hot	D	D	A	D	A	D	B	D	A	D	☐	A	A	A	A

Lactose	B	☐	B	☐	B	B	☐	B	☐	A	☐	A	A	A	☐
Lard	B	☐	A	☐	A	☐	☐	A	☐	A	☐	A	A	A	A
Lard Oil	B	C	B	☐	A	B	☐	A	☐	A	☐	A	A	A	A
Lead acetate	C	D	B	☐	B	B	☐	D	A	A	☐	A	A	A	A
Lead Sulfate	C	☐	B	☐	B	B	☐	B	☐	A	☐	A	A	A	☐

Lecithin	C	☐	B	☐	B	B	☐	B	☐	A	☐	☐	A	A	☐
Linoleic acid	B	B	A	☐	A	B	☐	B	☐	A	☐	A	A	A	☐
Linseed Oil	B	A	A	☐	A	B	☐	A	☐	A	☐	A	A	A	A
Lithium Chloride	B	☐	B	☐	A	B	☐	B	A	A	☐	A	A	A	☐
LPG	A	B	B	☐	B	B	☐	A	☐	A	☐	A	A	A	☐

Lubricating Oil Petroleum Base	B	A	A	☐	A	B	☐	A	☐	A	☐	A	A	A	C
Ludox	D	☐	B	☐	B	B	☐	B	☐	B	☐	☐	A	A	☐
Magnesium Bisulfate	B	B	A	☐	A	B	☐	B	☐	A	☐	A	A	A	☐
Magnesium Bisulfide	D	☐	B	☐	B	B	☐	B	☐	A	☐	A	A	A	☐
Magnesium Carbonate	B	☐	A	☐	A	B	☐	B	☐	A	☐	A	A	A	A

Magnesium Chloride	B	C	B	C	B	B	A	A	☐	A	☐	A	A	A	A
Magnesium Hydroxide	B	B	A	A	A	B	B	A	A	A	☐	A	A	A	A
Magnesium Hydroxide Hot	D	B	A	A	A	A	B	A	A	A	☐	A	A	A	A
Magnesium Nitrate	☐	☐	A	☐	A	B	☐	B	☐	A	☐	B	A	A	A
Magnesium Sulfate	B	B	A	A	A	B	A	A	☐	A	☐	A	A	A	A

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Maleic Acid	B	B	B	EE	B	B	A	A	A	A	EE	A	A	A	A
Maleic anhydrde	B	EE	B	EE	B	B	B	A	A	C	EE	A	A	A	EE
Malic acid	B	D	B	EE	B	B	EE	A	A	A	EE	A	A	A	EE
Malt Beverages	EE	EE	A	EE	B	A	EE	A	EE	A	EE	A	A	A	EE
Manganese Carbonate	EE	EE	B	EE	A	EE	EE	EE	A	A	EE	A	A	A	EE
Manganese Sulfate	B	EE	A	EE	A	B	EE	B	A	A	EE	A	A	A	EE
Mayonnaise	D	D	A	EE	A	B	EE	A	EE	A	EE	A	A	A	EE
Meat Juices	D	EE	A	EE	A	EE	EE	EE	EE	A	EE	A	A	A	A
Melamine Resins	EE	EE	C	EE	C	EE	EE	EE	EE	A	EE	A	A	A	EE
Mercuric Chloride	D	D	B	EE	B	D	B	A	A	A	A	A	A	A	A
Mercuric Cyanide	D	D	A	EE	A	C	B	A	A	A	EE	A	A	A	A
Mercurous Nitrate	D	EE	A	EE	A	D	EE	B	A	A	EE	B	A	A	A
Mercury	D	A	A	EE	A	B	B	A	A	A	EE	A	A	A	A
Methane	A	B	A	EE	A	B	A	A	EE	A	EE	A	A	A	EE
Methanol	B	EE	A	EE	A	B	EE	D	A	C	A	A	A	A	EE
Methyl Acetate	A	B	A	EE	A	B	A	D	A	B	A	A	A	A	EE
Methyl Acetone	A	A	A	EE	A	A	EE	D	EE	B	EE	A	A	A	EE
Methylamine	D	B	A	EE	A	C	B	D	A	A	EE	A	A	A	EE
Methyl Bromide 100%	C	EE	B	EE	A	B	EE	A	A	A	EE	A	A	A	D
Methyl Cellosolve	A	B	A	EE	A	B	B	D	EE	A	EE	A	A	A	EE
Methyl Cellulose	EE	EE	A	EE	A	EE	B	D	EE	A	EE	A	A	A	EE
Methyl Chloride	B	B	A	EE	A	B	EE	A	A	A	C	A	A	A	D
Methyl Ethyl Ketone	A	A	A	EE	A	A	B	D	A	A	A	A	A	A	D
Methylene Chloride	A	B	A	EE	A	B	B	B	A	A	EE	A	A	A	D
Methyl Formate	A	C	B	EE	A	B	B	D	EE	A	A	A	A	A	EE

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Methyl Isobutyle Ketone	☐	☐	A	☐	A	☐	☐	D	☐	A	☐	A	A	A	☐
Milk & Milk Products	B	D	A	☐	A	B	☐	A	☐	A	☐	A	A	A	B
Mineral Oils	B	B	A	☐	A	A	☐	A	☐	A	A	A	A	A	D
Mineral Spirits	B	B	B	☐	B	B	☐	A	☐	A	☐	A	A	A	D
Mixed Acids (cold)	D	C	B	☐	B	C	☐	B	☐	D	☐	☐	A	A	☐

Molasses, crude	A	A	A	☐	A	A	☐	A	☐	A	☐	A	A	A	B
Molasses, edible	A	C	A	☐	A	A	☐	A	☐	A	☐	A	A	A	B
Molybdcic Acid	☐	☐	A	☐	A	☐	☐	☐	☐	A	☐	A	A	A	☐
Monochloro Benzene Dry	☐	☐	B	☐	B	B	☐	A	☐	C	☐	A	A	A	☐
Morpholine	B	☐	A	☐	A	B	☐	D	☐	A	☐	A	A	A	☐

Mustard	A	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	☐
Naptha	B	B	B	☐	B	B	A	A	A	A	☐	A	A	A	D
Naphthalene	B	B	B	☐	B	B	B	A	A	A	☐	A	A	A	D
Natural Gas,, Sour	B	B	A	☐	A	D	A	A	A	A	☐	A	A	A	A
Nickel Ammonium Sulfate	D	D	A	☐	A	C	☐	D	A	C	A	A	A	A	☐

Nickel Chloride	D	D	B	☐	A	B	A	A	A	D	☐	A	A	A	A
Nickel Nitrate	D	D	B	☐	A	B	☐	A	A	C	☐	B	A	A	A
Nickel Sulfate	D	D	B	☐	A	B	B	A	A	C	☐	A	A	A	A
Nicotinic Acid	A	B	A	☐	A	A	☐	B	☐	C	☐	A	A	A	A
Nitric Acid 10%	D	D	A	A	A	D	☐	A	A	D	A	A	A	A	A

Nitric Acid 30%	D	D	A	D	A	D	☐	A	A	D	A	B	A	A	A
Nitric Acid 80%	D	D	A	D	A	D	☐	B	A	D	A	C	A	D	D
Nitric Acid 100%	D	D	A	D	A	D	☐	B	A	D	A	D	A	D	D
Nitric Acid Anhydrous	D	D	A	D	A	D	☐	A	☐	D	☐	D	A	D	☐
Nitrobenzene	D	B	A	☐	A	B	B	B	A	B	A	A	A	A	D

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Nitrogen	A	A	A	☐	A	A	☐	A	A	A	☐	A	A	A	A
Nitrous Acid 10%	D	D	B	☐	B	D	☐	A	A	B	☐	A	A	A	☐
Nitrous Gases	D	B	A	☐	A	D	☐	☐	☐	B	☐	A	A	A	☐
Nitrous Oxide	B	B	B	☐	B	D	B	A	☐	A	☐	A	A	A	☐
Oils & Fats	☐	☐	A	☐	A	☐	☐	☐	☐	A	☐	A	A	A	☐

Oils, Animal	A	A	A	☐	A	B	A	B	☐	A	☐	A	A	A	☐
Oils, Petroleum Refined	B	A	A	☐	A	A	A	A	A	A	☐	A	A	A	☐
Oils, Petroleum Sour	C	B	A	☐	A	A	A	A	A	A	☐	A	A	A	☐
Oils, Water Mixture	A	B	A	☐	A	☐	A	A	A	A	☐	A	A	A	☐
Olaic Acid	☐	☐	B	☐	B	A	☐	C	☐	C	☐	A	A	A	☐

Oleic Acid	B	C	B	☐	A	B	B	B	A	C	☐	A	A	A	C
Oleum	C	B	B	☐	B	C	B	A	A	D	☐	☐	A	D	D
Oleum Spirits	D	☐	B	☐	B	D	☐	A	☐	D	☐	☐	A	D	☐
Olive Oil	C	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	A
Oxalic Acid	B	D	B	D	B	B	☐	A	☐	C	A	A	A	A	A

Oxygen	A	B	A	A	A	A	A	A	A	D	☐	D	A	A	A
Ozone, Dry	A	A	A	☐	A	A	A	A	☐	C	A	☐	A	A	C
Ozone, Wet	B	C	A	☐	A	A	A	A	☐	C	A	☐	A	A	C
Paints & Sovents	A	A	A	☐	A	A	☐	B	☐	A	☐	A	A	A	☐
Palmitic Acid	B	C	B	☐	B	B	☐	A	A	A	☐	A	A	A	☐

Palm Oil	B	C	B	☐	A	A	☐	A	☐	A	☐	A	A	A	A
Paper Pulp	B	☐	A	☐	A	B	☐	B	☐	A	☐	A	A	A	☐
Paraffin	A	B	A	☐	A	A	A	A	A	A	☐	A	A	A	C
Paraform-aldehyde	B	B	B	☐	B	B	☐	☐	C	A	☐	A	A	A	☐
Paraldehyde	☐	☐	B	☐	B	☐	☐	☐	☐	A	☐	A	A	A	☐

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Pentane	A	B	A	☐	A	B	☐	A	A	A	☐	A	A	A	☐
Perchlore-thylene, Dry	C	B	A	☐	A	B	B	A	C	B	☐	A	A	A	☐
Petrolatum (Vaseline Pet. Jelly)	B	C	B	☐	A	A	☐	A	☐	A	☐	A	A	A	A
Phenol	B	D	A	B	A	A	A	A	A	C	A	A	A	A	D
Phosphate Ester	D	A	A	☐	A	A	☐	☐	☐	A	☐	A	A	A	☐

Phosphoric Acid 10%	D	D	D	B	B	D	☐	A	A	D	A	A	A	A	A
Phosphoric Acid 50% Cold	D	D	B	B	B	C	☐	A	A	D	A	A	A	A	A
Phosphoric Acid 50% Hot	D	D	D	D	B	C	☐	A	A	D	A	A	A	A	A
Phosphoric Acid 85% Cold	D	B	A	C	B	A	☐	B	A	D	A	A	A	B	A
Phosphoric Acid 85% Hot	D	C	B	D	B	☐	☐	☐	A	D	A	A	A	B	A

Phosphoric Anhydride	☐	☐	A	☐	A	☐	☐	B	☐	B	☐	A	A	A	☐
Phosphorous Trichloride	☐	B	A	☐	A	☐	☐	A	☐	D	☐	A	A	A	A
Phthalic Acid	B	C	B	☐	B	A	B	A	☐	B	☐	A	A	A	☐
Phthalic Anhydride	B	C	B	☐	B	A	A	A	☐	A	☐	A	A	A	A
Picric Acid	C	D	B	C	B	D	B	B	☐	D	☐	☐	A	A	A

Pineapple Juice	C	C	A	☐	A	A	☐	A	☐	A	☐	A	A	A	☐
Pine Oil	B	B	A	☐	A	B	☐	A	☐	A	☐	A	A	A	D
Pitch (Bitumen)	☐	☐	A	☐	A	☐	☐	☐	☐	A	☐	A	A	A	☐
Polysulfide Liquor	D	☐	B	☐	A	B	☐	B	☐	D	☐	A	A	A	☐
Polyvinyl Acetate	B	☐	B	☐	B	B	☐	☐	A	A	☐	A	A	A	☐

Polyvinyl Chloride	B	☐	B	☐	B	B	☐	☐	A	A	☐	A	A	A	☐
Potassium Bicarbonate	☐	☐	A	☐	A	B	☐	☐	A	A	☐	A	A	A	A
Potassium Bichromate	☐	☐	A	☐	A	A	☐	B	A	B	☐	A	A	A	☐
Potassium Bisulfate	☐	☐	A	☐	A	B	☐	A	A	A	☐	A	A	A	☐
Potassium Bisulfite	C	D	B	☐	B	D	☐	A	A	A	☐	A	A	A	☐

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	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Potassium Bromide	C	D	A	C	B	B	☐	A	A	A	☐	A	A	A	A
Potassium Carbonate	B	B	B	A	B	B	☐	A	A	A	☐	A	A	A	A
Potassium Chlorate	B	B	B	B	B	C	☐	A	A	A	☐	C	A	A	A
Potassium Chloride	C	C	B	B	A	B	B	A	A	A	☐	A	A	A	A
Potassium Chromate	B	☐	B	☐	B	B	☐	B	A	A	☐	☐	A	A	A
Potassium Cyanide	D	B	B	☐	B	B	B	A	A	A	☐	A	A	A	A
Potassium Dichromate	D	C	B	☐	A	B	☐	A	A	A	A	☐	A	A	A
Potassium Ferricyanide	D	C	A	B	B	B	☐	A	A	A	☐	A	A	A	A
Potassium Ferrocyanide	B	C	B	☐	B	A	☐	A	A	A	☐	A	A	A	A
Potassium Hydroxide Dilute Cold	D	A	B	B	B	A	☐	D	A	D	A	A	A	A	A
Potassium Hydroxide 70% Cold	D	B	B	C	B	A	☐	D	A	D	A	A	A	A	A
Potassium Hydroxide Dilute Hot	D	B	B	C	B	A	☐	☐	A	D	A	A	A	A	A
Potassium Hydroxide 70% Hot	D	A	B	D	B	A	☐	☐	A	D	A	A	A	A	A
Potassium Iodide	D	C	B	B	B	C	☐	A	A	A	☐	A	A	A	☐
Potassium Nitratte	B	B	B	B	B	B	B	A	A	A	☐	B	A	A	A
Potassium Oxalate	☐	☐	A	☐	A	☐	☐	☐	A	A	☐	A	A	A	☐
Potassium Permanganate	B	B	B	B	B	B	B	A	A	A	A	☐	A	A	A
Potassium Phosphate	C	☐	B	☐	B	B	B	A	A	A	☐	A	A	A	☐
Potassium Phosphate Di-basic	B	A	A	☐	A	B	B	A	A	A	☐	A	A	A	☐
Potassium Phosphate Tri-basic	☐	A	B	☐	B	B	☐	☐	A	☐	☐	A	A	A	☐
Potassium Sulfate	B	B	A	A	A	B	☐	A	A	A	☐	A	A	A	A
Potassium Sulfide	B	B	A	☐	A	C	A	B	A	A	☐	A	A	A	A
Potassium Sulfite	B	B	A	☐	A	C	B	A	A	A	☐	A	A	A	A
Producer Gas	B	B	B	A	B	A	☐	A	☐	A	☐	A	A	A	☐
Propane Gas	A	B	B	A	A	B	A	A	A	A	☐	A	A	A	A

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory ☐-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Propyl Bromide	B	EE	B	EE	A	B	EE	B	EE	A	EE	A	A	A	EE
Propylene Glycol	B	B	B	EE	B	B	EE	A	A	C	EE	A	A	A	A
Pyridine	EE	EE	B	EE	A	EE	EE	D	A	D	A	A	A	A	EE
Pyrogallic Acid	B	B	B	B	A	B	EE	A	A	A	A	EE	A	A	EE
Quench Oil	B	B	A	EE	A	EE	EE	A	EE	A	EE	A	A	A	EE

Quinine, Sulfate, Dry	EE	EE	A	B	A	B	EE	EE	A	A	EE	A	A	A	EE
Resins & Rosins	A	C	A	B	A	A	EE	A	EE	A	EE	A	A	A	EE
Resorcinol	EE	EE	B	EE	B	EE	EE	EE	EE	EE	EE	A	A	A	A
Road Tar	A	A	A	EE	A	A	EE	A	EE	A	EE	A	A	A	EE
Roof Pitch	A	A	A	EE	A	A	EE	A	EE	A	EE	A	A	A	EE

Rosin Emulsion	B	C	A	EE	A	A	EE	B	EE	A	EE	A	A	A	EE
R P-1 Fuel	A	A	A	EE	A	A	EE	A	EE	A	EE	A	A	A	EE
Rubber Latex Emulsions	A	B	A	EE	A	EE	EE	A	EE	A	EE	A	A	A	EE
Rubber Solvents	A	A	A	EE	A	A	EE	D	EE	C	EE	A	A	A	EE
Salad Oil	B	C	B	EE	A	B	EE	A	EE	A	EE	A	A	A	EE

Salicylic Acid	C	D	A	EE	B	B	EE	A	A	A	EE	A	A	A	A
Salt (NaCl)	B	C	B	EE	A	A	EE	A	EE	A	EE	A	A	A	EE
Salt Brine	B	EE	B	EE	B	B	EE	B	EE	A	EE	A	A	A	A
Sauerkraut Arine	EE	EE	B	EE	B	EE	EE	EE	EE	C	EE	A	A	A	EE
Sea Water	C	D	B	EE	B	A	EE	A	A	A	EE	A	A	A	A

Sewage	C	C	B	A	B	B	EE	A	A	B	EE	A	A	A	A
Shellac	A	A	A	EE	A	A	EE	EE	A	A	EE	A	A	A	EE
Silicone Fluids	B	EE	B	EE	B	EE	EE	B	A	A	A	A	A	A	C
Silver Bromide	EE	EE	A	C	A	B	EE	EE	A	D	EE	A	A	A	EE
Silver Cyanide	D	EE	A	EE	A	B	EE	B	A	D	EE	A	A	A	EE

Ratings : A-Satisfactory B-Fair C-poor D-Unsatisfactory EE-No information

Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Silver Nitrate 10%	D	D	A	☐	A	D	☐	A	A	A	☐	B	A	A	A
Silver Plating Sol.	☐	☐	A	☐	A	☐	☐	☐	☐	D	☐	☐	A	A	☐
Soap Solutions (Stearates)	A	A	A	☐	A	A	☐	A	A	A	☐	A	A	A	☐
Sodium Acetate	B	C	B	☐	B	B	B	D	A	A	☐	A	A	A	A
Sodium Aluminate	B	C	A	☐	B	B	B	A	A	A	☐	A	A	A	☐
Sodium Benzoate	☐	☐	B	☐	B	B	☐	☐	A	B	☐	A	A	A	A
Sodium Bicarbonate	B	C	B	☐	A	B	☐	A	A	B	☐	A	A	A	A
Sodium Bichromate	☐	☐	B	☐	B	☐	☐	☐	A	A	☐	☐	A	A	☐
Sodium Bisulfate 10%	B	D	A	☐	A	B	☐	A	A	D	A	A	A	A	A
Sodium Bisulfite 10%	B	D	A	☐	B	B	B	A	A	D	A	A	A	A	A
Sodium Borate	B	C	B	☐	B	B	☐	A	A	A	A	A	A	A	A
Sodium Bromide 10%	B	C	B	☐	B	B	☐	A	A	A	☐	A	A	A	A
Sodium Carbonate (Soda Ash)	B	B	A	☐	A	B	B	A	A	A	A	A	A	A	A
Sodium Chlorate	B	C	B	☐	B	C	B	A	A	A	☐	B	A	A	A
Sodium Chloride	B	C	B	☐	A	A	B	A	A	A	A	A	A	A	A
Sodium Chromate	C	B	A	☐	B	B	☐	A	A	A	☐	☐	A	A	☐
Sodium Citrate	☐	☐	B	☐	B	☐	☐	☐	A	A	☐	A	A	A	☐
Sodium Cyanide	D	B	A	B	A	B	☐	A	A	A	☐	A	A	A	☐
Sodium Ferricyanide	☐	☐	A	☐	A	B	☐	☐	A	A	☐	A	A	A	A
Sodium Fluoride	C	D	B	B	A	B	☐	A	A	A	☐	A	A	A	A
Sodium Hydroxide 20% Cold	A	A	A	A	B	A	☐	B	A	D	A	A	A	A	A
Sodium Hydroxide 20% Hot	A	B	A	C	A	A	☐	C	A	D	A	A	A	A	A
Sodium Hydroxide 50% Cold	A	A	A	B	A	A	☐	C	A	D	A	A	A	A	A
Sodium Hydroxide 50% Hot	A	B	A	C	A	B	☐	C	A	D	A	A	A	A	A
Sodium Hydroxide 70% Cold	A	A	A	B	B	A	☐	C	☐	D	A	A	A	A	A

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Sodium Hydroxide 70% Hot	B	B	A	C	B	B	☐	C	☐	D	A	A	A	A	A
Sodium Hypochlorite (Bleach)	D	D	D	D	C	D	A	A	A	D	☐	A	A	A	A
Sodium Hyposulfite	☐	☐	B	☐	B	B	☐	☐	A	A	☐	A	A	A	☐
Sodium Lactate	☐	☐	A	☐	A	B	☐	☐	A	A	☐	A	A	A	☐
Sodium Meatap-hosphate	C	B	B	B	B	☐	A	A	A	B	☐	A	A	A	☐
Sodium Metasilicate Cold	B	C	A	☐	A	A	☐	B	A	A	☐	A	A	A	☐
Sodium Metasilicate Hot	B	D	A	☐	A	A	A	☐	☐	A	☐	A	A	A	☐
Sodium Nitrate	B	B	A	B	A	B	B	A	A	A	☐	A	A	☐	☐
Sodium Nitrite	☐	☐	B	☐	B	C	B	B	A	B	☐	B	A	A	A
Sodium Perborate	B	B	B	B	B	B	B	A	A	A	☐	A	A	A	☐
Sodium Peroxide	D	C	B	B	B	B	B	A	A	A	☐	A	A	A	☐
Sodium Phosphate	C	C	B	B	B	B	B	A	A	B	A	A	A	A	A
Sodium Phosphate Di-basic	C	C	B	☐	B	B	B	A	A	A	☐	A	A	A	☐
Sodium Phosphate Tri-basic	C	C	B	☐	B	B	B	A	A	A	☐	A	A	A	☐
Sodium Polyphosphate	☐	☐	B	☐	B	B	B	☐	A	☐	☐	A	A	A	☐
Sodium Salicylate	☐	☐	A	☐	A	☐	☐	☐	A	A	☐	A	A	A	☐
Sodium Silicate	B	B	B	☐	B	B	☐	A	A	A	☐	A	A	A	A
Sodium Silicate, Hot	C	C	B	☐	B	B	☐	☐	☐	A	☐	A	A	A	A
Sodium Sulfate	B	B	A	B	A	A	☐	A	A	A	☐	A	A	A	A
Sodium Sulfide	D	B	B	A	B	B	☐	A	A	A	☐	A	A	A	A
Sodium Sulfite	C	☐	A	A	A	B	B	A	A	A	☐	A	A	A	A
Sodium Tetraborate	☐	☐	A	☐	A	☐	☐	☐	A	A	☐	A	A	A	☐
Sodium Thiosulfate	C	B	B	A	B	B	☐	A	A	A	☐	A	A	A	☐
Soybean Oil	B	C	A	☐	A	A	☐	A	☐	B	☐	A	A	A	A
Starch	B	C	B	☐	A	A	☐	A	A	A	☐	A	A	A	A

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	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Steam (212F)	A	A	A	A	A	B	☐	D	A	D	☐	A	A	A	A
Stearic Acid	C	C	B	☐	B	B	A	A	A	A	☐	A	A	A	A
Styrene	A	A	A	☐	A	B	A	B	A	A	☐	A	A	A	☐
Sugar Liquids	A	B	A	☐	A	A	☐	A	☐	A	☐	A	A	A	A
Sugar, Syrups & Jam	B	☐	A	A	A	☐	☐	☐	☐	A	☐	A	A	A	A

Sulfate, Black Liquor	C	C	B	A	B	B	☐	C	A	C	☐	A	A	A	☐
Sulfate, Green Liquor	C	C	B	A	B	B	☐	C	A	A	☐	A	A	A	☐
Sulfate, White Liquor	C	C	B	B	D	C	☐	C	A	D	☐	A	A	A	☐
Sulfur	D	C	B	☐	A	B	☐	A	A	A	☐	A	A	A	A
Sulfur Chlorides	B	D	D	☐	A	B	☐	A	A	A	☐	A	A	A	☐

Sulfur Dioxide, Dry	B	B	A	A	B	B	A	D	A	A	☐	A	A	A	A
Sulfur Dioxide, Wet	D	☐	A	C	B	A	B	D	A	D	☐	A	A	A	A
Sulfur Hexafluoride	B	☐	A	☐	A	☐	☐	☐	C	A	☐	A	A	A	☐
Sulfur, Molten	D	C	B	☐	A	D	B	A	☐	D	☐	A	A	D	☐
Sulfur Trioxide	B	B	B	B	B	☐	B	B	A	D	☐	D	A	A	☐

Sulfur Trioxide, Dry	B	B	B	B	B	B	B	A	A	A	☐	D	A	A	☐
Sulfric Acid 0 to 77%	C	D	C	☐	B	B	☐	A	A	D	A	A	A	A	B
Sulfric Acid 100%	C	C	A	B	A	D	☐	B	A	D	A	D	A	D	D
Sulfurous Acid	D	D	B	☐	B	D	B	A	A	C	☐	A	A	A	A
Tall Oil	B	B	B	☐	B	B	A	A	☐	A	☐	A	A	A	☐

Tanic Acid (Tannin)	B	C	B	B	B	B	B	A	A	A	☐	A	A	A	A
Tanning Liquors	☐	☐	B	☐	B	☐	☐	☐	☐	D	☐	☐	A	A	☐
Tar & Tar Oils	A	A	A	A	A	A	☐	A	A	A	☐	A	A	A	☐
Tartaric Acid	B	D	A	A	A	B	B	A	A	A	☐	A	A	A	A
Tetraethyl Lead	B	C	B	☐	B	A	☐	A	☐	A	☐	A	A	A	☐

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Corrosion Data

	Brass	Carbon Steel	316Stainless Steel	17-4PH	Alloy20	Monel	Hastelloy C	Viton	Heatcom	Delrin	Kel-F (PCTFE)	Grafoil	Teflon&Filled Teflon	Peek	UHMWPE
Tolul (Toluene)	A	A	A	☐	A	A	A	A	A	C	A	A	A	A	D
Tomato Juice	C	C	A	☐	A	B	☐	A	☐	A	☐	A	A	A	☐
Transformer Oil	B	A	A	☐	A	A	☐	A	☐	A	☐	A	A	A	C
Tributyl Phosphate	A	A	A	☐	A	A	☐	D	A	A	☐	A	A	A	☐
Trichlo-rethylene	B	B	B	A	B	B	A	A	B	A	C	A	A	A	D

Trichloroactic Acid	B	☐	D	☐	B	B	A	C	C	D	A	☐	A	A	C
Triethanolamine	☐	☐	B	☐	B	B	A	☐	A	A	☐	A	A	A	C
Triethylamine	B	☐	B	☐	B	☐	A	☐	A	C	☐	☐	A	A	☐
Trisodium Phosphate	☐	☐	B	☐	B	☐	A	B	☐	A	☐	A	A	A	A
Tung Oil	B	B	A	☐	A	C	A	A	☐	A	☐	A	A	A	☐

Turpentine	B	B	B	A	B	B	A	A	A	A	☐	A	A	A	D
Urea	B	C	B	☐	B	B	A	D	A	A	☐	A	A	A	A
Uric Acid	☐	☐	A	☐	A	☐	A	☐	A	B	☐	A	A	A	☐
Varnish	A	C	A	☐	A	A	A	A	A	A	☐	A	A	A	☐
Vegetable Oils	B	B	A	☐	A	B	A	A	☐	A	☐	A	A	A	☐

Vinegar	B	D	A	☐	A	B	A	C	☐	B	☐	A	A	A	A
Vinyl Acetate	B	☐	B	☐	B	B	A	☐	A	D	☐	A	A	A	☐
Water, Distilled	A	D	A	A	A	A	A	B	A	A	☐	A	A	A	A
Water, Fresh	A	C	A	A	A	A	A	B	A	A	☐	A	A	A	A
Water, Acid Mine	D	D	B	B	☐	D	C	D	A	A	☐	A	A	A	A

Waxes	A	A	A	☐	A	A	A	A	☐	A	☐	A	A	A	☐
Whiskey& Wines	B	D	A	☐	A	A	A	A	☐	A	☐	A	A	A	A
Xylene (Xylol) , Dry	A	B	A	☐	A	A	A	A	A	A	A	A	A	A	D
Zinc Bromide	B	☐	B	☐	B	B	A	B	☐	A	☐	A	A	A	☐
Zinc Hydrosulfite	C	A	A	☐	A	B	A	A	A	A	☐	☐	A	A	☐
Zinc Sulfate	B	D	B	☐	A	B	A	A	A	A	☐	A	A	A	A

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