CAT 4

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FLANGES

NPT THREADED RAISED FACE
SLIP-ON RAISD FACE
LAP JOINT
SLIP-ON FLAT FACE
FEMALE COUPLER X SHANK
BLINED RAISED FACE
WELD NECK RAISED FACE
TYPE BLN

SEALFAST
THE SIMPLE SOLUTION

INDEX

TERMS OF SALE

TERMS:

1/2% 10 Days, net 30 Days

FREIGHT:

All shipments are made FOB Seal Fast Inc. or Point of Manufacturer. (Applies to shipments from Houston Warehouse Only) Freight prepaid on 1000 net couplings and accessories, $1500 Net Couplings, PVC Tubing, Braided Tubing and Fire Hose. Freight prepaid on $3000 Net Couplings, Rubber Hose, PVC Hose and Sheet Rubber with the exclusion of all PVC Suction including 6" and 8" PVC Suction ONLY orders. If combined with other items freight is prepaid at $3000 Net, otherwise these items will Not be applied toward prepaid freight. **Effective immediately, regardless of invoice value, all uncoupled cut lengths of hoses are shipped FOB Seal Fast Inc.** Seal Fast Inc. reserves the right to determine the most Economical shipping method on all prepaid shipments. **In addition, Seal Fast Inc. reserves the right to refuse any prepaid shipments exceeding 6% freight cost of the order unless items are added or subtracted to keep said freight cost at or below 6%.** Applies to Continental United States, excluding Alaska and Hawaii. **Any evidence of shortage must be reported to Seal Fast Inc. within 10 days. Any Damage to hose/hoses, etc. customer is responsible for filing a claim with the delivery carrier within 10 days. Seal Fast Inc. will not issue credit.**

ALL UPS prepay and add or collect shipments will endure a **$7.50** shipping and handling fee including All backorders.

All drop shipments will endure a $5.00 fee.

WARRANTY:

Products are warranted against defects in workmanship and defects in material. Products having such defects will be replaced or credited as Seal Fast elects. Liability is limited to the invoice value of the defective item. Our responsibility shall not exceed the original purchase price of the defective product. In any event, Seal Fast, Inc. shall not be held responsible for any special or consequential damages.

RETURNED GOODS:

If for any reason you wish to return goods, please contact Seal Fast Inc. for prior authorization number. Goods must be returned within 30 days and must be in new and resaleable condition. Minimum handling charge is 15%.

All discrepancies in shipment / invoice must be reported within 10 days of receipt of goods.

PROMPTPAYMENT:

Orders receive preferred treatment when the account is paid promptly. Orders may be held up if any unpaid invoice exceeds 30 days.

MINIMUM INVOICE:

All invoices are subject to a minimum billing charge of 50.00 net. Returned checks are subject to a $25.00 service charge.

GENERAL:

Orders will be accepted subject to delays caused by accident, strike, fire or other causes beyond the control of the seller including failure of seller's suppliers to deliver. Prices, discounts and other specifications are subject to change without notice. All prices are subject to any applicable taxes imposed. The possessions of this price schedule is not to be construed as an offer to sell at the prices shown. Special price for volume quotes will be accepted in writing only.

PLEASE NOTE:

Extra care is taken in the preparation of this literature but Seal Fast, Inc. is not responsible for any inadvertent typographical errors or omissions.

STOCKING WAREHOUSES

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Houston, TX 77020

(713) 675-6324 or 800-231-0734 | FAX (713) 675-0146 or 800-681-1515 | E-mail sales@sealfast.com

PORTER ASSOCIATES
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(610) 518-2301

ASPEN MARKETING, INC
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Denver, CO 80216
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(303) 477-6504 Fax

THE WAGNER GROUP
125 State St.
P O Box 1683
Elkhart, IN 46516
(574) 294-2769
(574) 522-2083 Fax

DISCLAIMERS

Product Images

- Seal Fast makes every reasonable effort to show accurate product representation, however pictures are for reference only, and do not necessarily reflect the exact product you will receive.
- Seal Fast reserves the right to alter product appearance without notice. Some product features shown in pictures may no longer be available.

Product Specifications

- Seal Fast is continuously working to provide the best quality for the best price.
- We reserve the right to alter product specifications without notice.

Product Usage

- Our Sales Team will do their best to assist in choosing the best product for a particular application. However, it is ultimately the customer's responsibility to determine the correct product for the correct application.
- Seal Fast will not be held liable for the abuse or misuse of our products in a manner in which they are not designed.
- Seal Fast cannot guarantee the integrity of an assembly if other manufacturers parts are used.

Product Availability

- Seal Fast reserves the right to discontinue products at any time without prior notice.

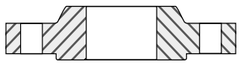
Product Pricing

- Seal Fast is constantly doing our best to maintain pricing levels. However, circumstances change and while many prices go down, others will increase.
- Please contact your sales associate for current pricing.

NPT THREADED RAISED FACE - ANSI B16.5 - FORGED 150#

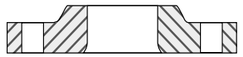
Pipe Size	Carbon Steel		316 SS	
	Part #	List	Part #	List
1”	NPT100		NPT100SS6	
1-1/4”	NPT125		---	
1-1/2”	NPT150		NPT150SS6	
2”	NPT200		NPT200SS6	
2-1/2”	NPT250		---	
3”	NPT300		NPT300SS6	
4”	NPT400		NPT400SS6	
5”	NPT500		---	
6”	NPT600		NPT600SS6	
8”	NPT800		---	
10”	NPT1000		---	
12”	NPT1200		---	

SLIP - ON RAISED FACE - ANSI B16.5 - FORGED 150#



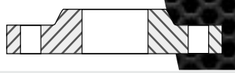
Pipe Size	Carbon Steel		316 SS	
	Part #	List	Part #	List
1”	SOF100		---	
1-1/4”	SOF125		---	
1-1/2”	SOF150		SOF150SS6	
2”	SOF200		SOF200SS6	
2-1/2”	SOF250		---	
3”	SOF300		SOF300SS6	
4”	SOF400		SOF400SS6	
5”	SOF500		---	
6”	SOF600		SOF600SS6	
8”	SOF800		---	
10”	SOF1000		---	
12”	SOF1200		---	

LAP JOINT - ANSI B16.5 - FORGED 150#



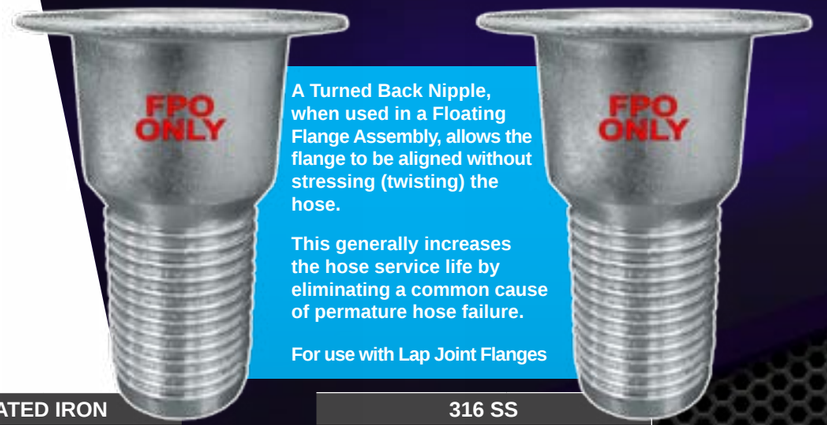
Pipe Size	Carbon Steel		316 SS	
	Part #	List	Part #	List
1”	LPJ100		---	
1-1/4”	LPJ125		---	
1-1/2”	LPJ150		LPJ150SS6	
2”	LPJ200		LPJ200SS6	
2-1/2”	LPJ250		---	
3”	LPJ300		LPJ300SS6	
4”	LPJ400		LPJ400SS6	
5”	LPJ500		---	
6”	LPJ600		LPJ600SS6	
8”	LPJ800		---	
10”	LPJ1000		---	
12”	LPJ1200		---	

SLIP - ON FLAT FACE - ANSI B16.5 - FORGED 150#



Pipe Size	Carbon Steel		316 SS	
	Part #	List	Part #	List
1”	SOFF100		---	
1-1/4”	SOFF125		---	
1-1/2”	SOFF150		SOFFSS150	
2”	SOFF200		SOFFSS200	
2-1/2”	SOFF250		---	
3”	SOFF300		SOFSSF300	
4”	SOFF400		SOFFSS400	
5”	SOFF500		---	
6”	SOFF600		SOFFSS600	
8”	SOFF800		---	
10”	SOFF1000		---	
12”	SOFF1200		---	

FEMALE COUPLER X SHANK – KC TURN BACK



A Turned Back Nipple, when used in a Floating Flange Assembly, allows the flange to be aligned without stressing (twisting) the hose.

This generally increases the hose service life by eliminating a common cause of permature hose failure.

For use with Lap Joint Flanges

- room for drawings and descriptions

Size	WORKING PSI	PLATED IRON		316 SS	
		✶ Part #	List	✶ Part #	List
1”	150	SF100SPTBC		SF100SSTB6C	
1-1/4”	150	SF125SPTBC		SF125SSTB6C	
1-1/2”	150	SF150SPTBC		SF150SSTB6C	
2”	150	SF200SPTBC		SF200SSTB6C	
2-1/2”	150	SF250SPTBC		SF250SSTB6C	
3”	150	SF300SPTBC		SF300SSTB6C	
4”	150	SF400SPTBC		SF400SSTB6C	
6”	150	SF600SPTBC		SF600SSTB6C	
8”	150	SF800SPTBC		SF800SSTB6C	
10”	150	SF1000SPTBC		SF1000SSTB6C	
12”	150	SF1200SPTBC		SF1200SSTB6C	

✶ **WARNING: Working Pressures may vary depending on how the couplings are attached to the hose assembly. Before operation, always check the hose assembly for proper attachment and that couplings are in working order.**

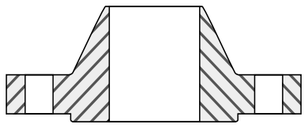
General Uses:

Working pressures may vary with type and clamping system used to install couplings. Combination Nipples are recommended for low pressure discharge and suction service for compatible liquids. NOT for compressible products such as Air, Nitrogen and Steam. * All blank end & grooved combination nipples are made using Schedule 40 pipe. Seal Fast Crimp Combination Nipples are to be used with Seal Fast Ferrules and Crimp Sleeves. They are designed with an Interlock System which allows the Ferrule to be permanently attached to the coupling. **WORKING PRESSURE 200 PSI**

BLIND RAISED FACE - ANSI B16.5 - FORGED 150#

Pipe Size	Carbon Steel	
	Part #	List
1”	BLF100	
1-1/4”	BLF125	
1-1/2”	BLF150	
2”	BLF200	
2-1/2”	BLF250	
3”	BLF300	
4”	BLF400	
5”	BLF500	
6”	BLF600	
8”	BLF800	
10”	BLF1000	
12”	BLF1200	

WELD NECK RAISED FACE - ANSI B16.5 - FORGED 150#

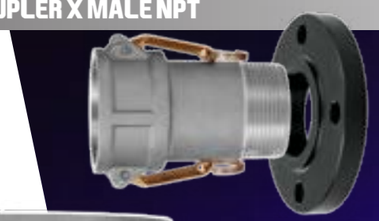


Pipe Size	Carbon Steel	
	Part #	List
1”	WNR100	
1-1/4”	WNR125	
1-1/2”	WNR150	
2”	WNR200	
3”	WNR300	
4”	WNR400	
5”	WNR500	
6”	WNR600	
8”	WNR800	
10”	WNR1000	

GREEN NON-ASBESTOS FLANGE GASKETS

Size	Holes	Hole Diameter	Bolt CIR Diameter	Thickness	NON-ASBESTOS	
					Part #	List
1”	4	5/8	3-1/8	1/16th	FGNA100	
1-1/4”	4	5/8	3-1/2	1/16th	FGNA125	
1-1/2”	4	5/8	3-7/8	1/16th	FGNA150	
2”	4	3/4	4-3/4	1/16th	FGNA200	
2-1/2”	4	3/4	5-1/2	1/16th	FGNA250	
3”	4	3/4	6	1/16th	FGNA300	
4”	8	3/4	7-1/2	1/16th	FGNA400	
5”	8	7/8	8-1/2	1/16th	FGNA500	
6”	8	7/8	9-1/2	1/16th	FGNA600	
8”	8	7/8	11-3/4	1/16th	FGNA800	
10”	12	1	14-1/4	1/16th	FGNA1000	
12”	12	1	17	1/16th	FGNA1200	

REDUCING B - FEMALE COUPLER X MALE NPT



TYPE **BLN**

Brass Longneck BLN

Size	ALUMINUM		316 SS	
	Part #	List	Part #	List
2” X 2”	BLN 2020AL		BLN 2020SS	
3” X 3”	BLN 3030AL		BLN 3030SS	
4” X 4”	BLN 4040AL		BLN 4040SS	
6” X 6”	BLN 6060AL		BLN 6060SS	
8” X 8”	*BLN 8080ALNAE		---	--
8” X 8”	**BLN 8080ALPTK		----	---

CORROSION RESISTANCE OF COUPLING MATERIALS

CAUTION: The following data has been compiled from generally available sources end should not be relied upon without consulting and following the specific recommendations of the manufacturer regarding particular coupling materials.

RATINGS: 1. Excellent 2. Good 3. Fair Conditional x. Not Satisfactory **NOTES:** No rationg indicates no data available

AGENT	Mall. From Steel	Brass	Bronze	Aluminum	Glass	Stainless 410, 416, 430	Stainless 302, 202, 304, 308	Stainless 316	Monel
Acetate, Solvents, Crude		3				2	1	1	2
Acetate, Solvents, Pure		1	1	1		1	1	1	1
Acetic Acid	X	X	X	2	1	X	2	2	2
Acetic Acid Vapor	X	X		3		X	2	2	3
Acetic Anhydride	X	X		2		X	2	2	2
Acetone	1	1	1	1	1	1	1	1	1
Acetylene	1	2		1		1	1	1	2
Alcohols	1	2		1		1	1	1	1
Aluminum Sulfate	X	3	3	3	1	X	3	2	2
Alums	X	3	2	3	1	X	3	2	2
Ammonia Gas	1	X	3	1	3	1	1	1	X
Ammonium Chloride	1	3		1*		3	3	1	1
Ammonium Hydroxide	2	X		2		1	1	1	3
Ammonium Nitrate	1	X		2		1	1	1	3
Ammonium Phosphate (Ammoniacal)		X				1	1	1	2
Ammonium Phosphate (Neutral)		3				1	1	1	2
Ammonium Phosphate (Acid)		3				3	2	1	2
Ammonium Sulfate	1	3				2	1	1	2
Asphalt	1	2				2	1	1	1
Beer	2	2	1	1		X	1	1	1
Beet SugarLiquors	1	2		1		2	1	1	1
Benzene, Benzol	1	1	1	1	1	1	1	1	1
Benzine (petroleum-naphtha)	1	1		1		1	1	1	1
Borax	2	2				1	1	1	1
Boric Acid	X	3		1		3	2	1	1
Butane, Butylene	1	1	1	1		1	1	1	1
Butadiene		1				1	1	1	1
Calcium Bisulfate		X				X	2	1	X
Calcium Hypochlorite	3	3	3	X	3	X	3	2	3
Cane Sugar Liquors	1	2		1		2	1	1	1
Carbon Dioxide (Dry)	1	1		1		1	1	1	1
Carbon Dioxide (Wet & Aqueous Sol)	2	3		2		2	1	1	2
Carbon Disulfide	2	3		2		2	1	1	3
Carbon Tetrachloride	3	1	2	3	1	1	1	1	1
Chlorine (Dry)	2	2	2	1	2	2	2	2	1
Chlorine (Wet)	X	X	3	X	2	X	X	3	3
Chromic Acid		X	X	X	1	3	2	2	3
Citric Acid	X	3		1		3	X	1	2
Coke Oven Gas	1	3		2		1	1	1	2
Copper Sulfate	X	X		X		1	1	1	3
Core Oils		1	1			1	1	1	1
Cottonseed Oil	1	1	1	1		1	1	1	1
Creosote	2	3		1		1	1	1	1
Ethers	2	1		1		1	1	1	1
Ethylene Glycol	2	2				1	1	1	1
Ferric Chloride	X	X	X	X	1	X	X	X	X
Ferric Sulfate	X	X		X		1	1	1	3
Formaldehyde	2	2		2		1	1	1	1

*3 to X at high temperatures. Chemical Chart is reprinted from 1996 RMA Hose Handbook

TECHNICAL DATA

CORROSION RESISTANCE OF COUPLING MATERIALS

CAUTION: The following data has been compiled from generally available sources end should not be relied upon without consulting and following the specific recommendations of the manufacturer regarding particular coupling materials.

RATINGS: 1. Excellent 2. Good 3. Fair Conditional x. Not Satisfactory **NOTES:** No rationg indicates no data available

AGENT	Mall. From Steel	Brass	Bronze	Aluminum	Glass	Stainless 410, 416, 430	Stainless 302, 202, 304, 308	Stainless 316	Monel
Formic Acid	X	2		X		X	2	1	2
Freon	3	1	1	1		1	1	1	1
Furfural	1	2		1		1	1	1	1
Gasoline (Sour)	3	3		3		3	1	1	X
Gasoline (Refined)	1	1	1	1		1	1	1	1
Gelatin	1	3		1		1	1	1	1
Glucose	1	1		1		1	1	1	1
Glue	1	3		1		1	1	1	1
Glycerine or Glycerol	1	2		1		1	1	1	1
Hydrochloric Acid	X	X	X	X	1	X	X	X	X
Hydrocyanic Acid	3	X		1		3	1	1	2
Hydrofluoric Acid	X	3	3	X	X	X	X	X	X
Hydrogen Fluoride		3				X	X	3	1
Hydrogen	1	1		1		1	1	1	1
Hyrogen Peroxide	X	X		1		1	2	1	2
Hydrogen Sulfide (Dry)	3	3		2		3	2	1	3
Hydrogen Sulfide (Wet)	3	3		2		3	2	1	3
Lacquers and Lacquer Solvents	3	2		1		1	1	1	1
Lactic Acid	X			3			3	2	1
Lime-Sulfur	2	X		2		1	1	2	
Linseed Oil	1	1		1			1	1	1
Magnesium Chloride	3	3		X		3	2	1	1
Magnesium Hydroxide	1	2		X		1	1	1	1
Magnesium Sulfate	2	2		3		1	1	1	1
Mercuric Chloride	3	X		X		X	X	3	X
Mercury	1	X		X		1	1	1	2
Milk	3	3		1		2	1	1	3
Molasses	2	X		2		2	1	1	1
Natural Gas	1	2		1		1	1	1	1
Nickel Chloride		X		X		X	3	2	2
Nickel Sulfate		3		X		3	2	1	1
Nitric Acid	X	X	X	3	1	2	2	2	X
Oleic Acid	2	3		1		2	2	1	1
Oxalic Acid	3	3		2		3	2	1	1
Oxygen	1	1	1	1		1	1	1	1
Palmitic Acid	1	3		1		2	2	1	1
Petroleum Oils (Sour)		3				3	1	1	X
Petroleum Oils (Refined)	1	1	1	1		1	1	1	1
Phosphoric Acid 25%	3	X		3	3	X	3	1	2
Phosphoric Acid 25-50%	X	X		X	3	X	X	2	2
Phosphoric Acid 50-85%	X	X		X	X	X	X	2	2
Picric Acid	3	X		3		2	1	1	X
Potassium Chloride	2	3		3		3	2	1	1
Potassium Hydroxide	3	X		X		1	1	1	1
Potassium Sulfate	2	2		1		1	1	1	1
Propane	1	1				1	1	1	1
Rosin (Dark)	1	2			1	1	1	1	1
Rosin (Light)		X		1		1	1	1	2

*3 to X at high temperatures. Chemical Chart is reprinted from 1996 RMA Hose Handbook

CORROSION RESISTANCE OF COUPLING MATERIALS

CAUTION: The following data has been compiled from generally available sources end should not be relied upon without consulting and following the specific recommendations of the manufacturer regarding particular coupling materials.

RATINGS: 1. Excellent 2. Good 3. Fair Conditional x. Not Satisfactory **NOTES:** No rationg indicates no data available

AGENT	Mall. From Steel	Brass	Bronze	Aluminum	Glass	Stainless 410, 416, 430	Stainless 302, 202, 304, 308	Stainless 316	Monel
Shellac		2		2		1	1	1	1
Sludge Acid		X				X	X	3	2
Soda Ash (Sodium Carbonate)	1	2		X		1	1	1	1
Sodium Bicarbonate	3	1		X		1	1	1	1
Sodium Bisulfate	X	3		3		X	1	1	1
Sodium Chloride	2	3	2	X	1	3	2	1	1
Sodium Cyanide	2	X		X		1	1	1	2
Sodium Hydroxide	3	X	3	X	X	2	2	2	1
Sodium Hypochlorite	X	X		X		X	3	2	3
Sodium Metaphosphate	X	3		1		2	1	1	1
Sodium Nitrate	1	3		1		1	1	1	1
Sodium Perborate	3	3		1		1	1	1	1
Sodium Peroxide	3	3		1		1	1	1	1
Sodium Phosphate (Alkaline)		3				1	1	1	1
Sodium Phosphate (Neutral)		2				1	1	1	1
Sodium Phosphate (Acid)		2				X	2	1	1
Sodium Silicate	1	3		X		1	1	1	1
Sodium Sulfate	1	2		3		1	1	1	1
Sodium Sulfide	1	X				1	1	1	2
Sodium Thiosulfate (Hypo)	3	X		X		1	1	1	2
Stearic Acid	3	3		3		2	2	1	1
Sulfate Liquors		X				1	1	1	2
Sulfur	2	X		2		2	2	1	3
Sulfur Chloride	X	X				X	3	2	2
Sulfur Dioxide (Dry)	2	1		1		1	1	1	1
Sulfur Dioxide (Wet)		X				X	2	1	X
Sulfuric Acid 10%	X	X	3	3		X	X	2	2
Sulfuric Acid 10-75%	X	X	X	X		X	X	X	2
Sulfuric Acid 75-95%	3	X	X	X		3	3	2	3
Sulfuric Acid 95%	2	X	X			2	2	2	X
Surlfurous Acid	X	X		X		X	3	2	X
Tannic Acid	3	3	1	X			1	1	1
Tar	1	2		1		2	1	1	1
Toluene, Toluol	1	1		1		1	1	1	1
Trichlorethylene	3	1		3		1	1	1	1
Turpentine		3		1		3	1	1	1
Varnish	2	2				1	1	1	1
Vegetable Oils	1	2		1		1	1	1	1
Vinegar	3	3		3		3	2	1	2
Water (Acid Mine Water)	3	X		3		2	1	1	3
Water (Fresh)	3	1		1		1	1	1	1
Water (Salt)	3	3	2	X		3	2	2	1
Whiskey	X	2				3	1	1	2
Wines	X	2				3	1	1	2
Xylene, Xylol	2	1		1		1	1	1	1
Zinc Chloride	X	X		X		3	2	1	1
Zinc Sulfate	3	3		3		3	2	1	1

*3 to X at high temperatures.

Chemical Chart is reprinted from 1996 RMA Hose Handbook

OIL & GASOLINE RESISTANCE

Rubber hose is used to convey petroleum products both in the crude and refined stages. The aromatic content of refined gasoline is often adjusted to control the octane rating. The presence of aromatic hydrocarbons in this fuel generally has a greater effect on rubber components than do aliphatic hydrocarbons. Aromatic materials in contact with rubber tend to soften it and reduce its physical properties. For long lasting service, the buyer of gasoline hose should inform the hose manufacturer of the aromatic content of the fuel to be handled so that the proper tube compound can be recommended for the specific application.

The effects of oil on rubber depend on a number of factors that include the type of rubber compound, the composition of the oil, the temperature and time of exposure. Rubber compounds can be classified as to their degree of oil resistance based on their physical properties after exposure to a standard test fluid. In this RMA classification, the rubber samples are immersed in IRM 903 oil at 100°C for 70 hours. (See ASTM Method D-471 for a detailed description of the oil and the testing procedure.) As a guide to the user of hose in contact with oil, the oil resistance classes and a corresponding description are listed.

PHYSICAL PROPERTIES AFTER EXPOSURE TO OIL:

		VOLUME CHANGE MAXIMUM	TENSILE STRENGTH RETAINED
CLASS A	(HIGH OIL RESISTANCE)……....	**+25%**	**80%**
CLASS B	(MEDIUM/HIGH OIL RESISTANCE)……....	**+65%**	**50%**
CLASS C	(MEDIUM OIL RESISTANCE)……....	**+100%**	**40%**

CHEMICAL RECOMMENDATIONS

The materials being handled by flexible rubber hose are constantly increasing in number and diversity. T o assist in the selection of the proper elastomer for the service conditions encountered, the following table has been prepared. The reader is cautioned that it is only a guide and should be used as such, as the degree of resistance of an elastomer with a particular fluid depends upon such variables as temperature, concentration, pressure, velocity of flow, duration of exposure, aeration, stability of the fluid, etc. Also variations in elastomer types and special compounding of stocks to meet specific service conditions have considerable influence on the results obtained. When in doubt, it is always advisable to test the tube compound under actual service conditions. If this is not practical, tests should be devised that simulate service condtions or the hose manufacturer contacted for Recommendations.

The following table lists the more commonly used materials, chemicals, solvents, oils, etc. The recommendation are based on room temperature and pressure conditions normally recommended for the particular type of hose being used. Where conditions beyond this can be met readily, they have been so indicated; where conditions are not normal and cannot be readily met, the hose manufacturer should always be consulted. The table does not imply conformance to the Food & Drug Administration requirements of Federal or State Laws when handling food products.

TABLE OF CHEMICAL, OIL & SOLVENT RESISTANCE OF HOSE:

WARNING: The following data has been compiled from generally available sources and should not be relied upon without consulting and following the hose manufacturer's specific chemical recommendations. Neglecting to do so might result in failure of the hose to fulfill its intended purpose, and may result in possible damage to property and serious bodily injury.

RESISTANCE RATING

A - Good Resistance, usually suitable for service.

F - Fair Resistance, the chemical has some deteriorative effects, but the elastomer is still adequate for moderate service.

C- Depends on Condition, moderate service may be possible if chemical exposure is limited or infrequent.

X- Not recommended, unsuitable for service.

I - Insufficient Information, not enough data available at the time of publication to determine rating.

RELASTOMERS/PLASTICS

NR- Natural Rubber
IR - Isoprene, synthetic
SBR - Styrene-butadiene
CR- Chloroprene
NBR - Nitrile-butadiene
IIR- Isobutene-isoprene
CSM - Chloro-sulfonyl-polyethylene
EPDM - Ethylene-propylene-diene-terpolymer
MQ - Dimethyl-polysiloxane
FKM- Fluoracarbon rubber
CM - Chloro-polyethylene
ECO/CO- Ephichlorohydrin
EXLPE- Chloro-sulfonyl-polyethylene

ELASTOMERS

Commonly used Elastomers: **Special Elastomers:**

MATERIAL	NR lor IR	SBR	CR	NBR	IIR	CSM	EPDM	MQ	FKM	CM	ECO CO	XLPE
	(Maximum Temperature 100° F (38°C) Unless Otherwise Specified											
Acetic Acid, Dilute, 10%	F	C	C	C	A	C	A	A	X	A	F	A
Glacial	C	X	X	X	F	C	F	F	X	A	X	A
Anhydride	C	C	F	F	F	A	I	C	X	A	X	A
Acetone	A	A	F	X	A	F	A	A	X	A	X	A
Acetylene	A	A	F	A	A	F	A	C	A	I	I	I
Air 150°F (65°C)	A	A	A	A	A	A	A	A		A	A	A
Aluminum Chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A
Aluminum Fluoride 150°F (65°C)	A	A	A	A	A	A	A	F			A	A
Aluminum Sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	I	A
Alums 150°F (65°C)	A	A	A	A	A	A	A	A		A	I	A
Ammonia Gas	A	A	A	A	A	A	A	A	X	A	I	A
Ammonium Chloride	A	A	A	A	A	A	A	C	A	A	A	A
Ammonium Hydroxide	C	F	F	F	A	A	A	A	A	A	I	A
Ammonium Nitrate	A	A	A	A	A	A	A	A		I	A	A
Ammonium Phosphate, monobasic	A	A	A	A	A	A	A	A		A	I	A
dibasic	A	A	A	A	A	A	A	A		I	I	A
tribasic	A	A	A	A	A	A	A	A		I	I	A
Ammonium Sulfate	A	A	A	A	A	A	A	A	A	A	I	A
Amyl Acetate	F	X	X	X	F	X	A	A	X	C	X	A
Amyl Alcohol	A	A	A	A	A	A	A	A	A	A	A	A
Aniline, Aniline Oil	X	X	C	X	A	X	C	C	A	C	X	A
Aniline Dyes	F	F	F	F	A	F	C	C			I	I
Asphalt	X	X	F	F	X	F	X		A		A	X
Barium Chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A
Barium Hydroxide 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A
Barium Sulfide 150°F (65°C)	A	A	A	A	A	A	A	A	A	I	A	A
Beer	A	A	A	A	A	A	A	A	A	I	A	A
Beet Sugar Liquors	A	A	A	A	A	A	A	A	A	I	I	A
Benzene, Benzol	X	X	X	C	X	X	X	C	A	C	X	A
Benzine, petroleum ether and												
Benzine, petroleum naphtha	X	X	C	F	X	F	X	C	A		I	A
Black Sulfate Liquor	A	A	A	A	A	A	A	A		I	I	A
Blast Furnace Gas	C	C	A	C	C	C	C	C	A	I	I	A
Borax	A	A	A	A	A	A	A	A	A	I	I	A
Boric Acid	A	A	A	A	A	A	A	A	A	I	A	A
Bromine	X	X	X	X	X	C	X	F	A	C		F
Butane	X	X	F	A	X	A	X	A	A	A	A	A
Butyl Acetate	C	X	X	X	F	X	F	A	X	F	X	A
Butyl alcohol, butanol	A	A	A	A	A	A	A	A	A	F	I	A
Calcium bisulfate	C	C	A	A	F	A	F	C	A	A	I	A
Calcium chloride	A	A	A	A	A	A	A	A	A	A	A	A
Calcium hydroxide	A	A	A	A	A	A	A	A	A	A	A	A
Calcium hypochlorite	X	X	X	X	A	F	A	C	A	A	F	F
Caliche liquors	A	A	A	A	A	A	A				I	A
Cane sugar liquors	A	A	A	A	A	A	A	A	A	A	A	A
Carbolic acid, phenol	C	C	C	C	C	C	A	A	A	A		A

Chart is reprinted from 1996 RMA Hose Handbook

TECHNICAL DATA

ELASTOMERS

Commonly used Elastomers: **Special Elastomers:**

MATERIAL	NR lor IR	SBR	CR	NBR	IIR	CSM	EPDM	MQ	FKM	CM	ECO CO	XLPE
	(Maximum Temperature 100° F (38°C) Unless Otherwise Specified											
Carbon dioxide, dry/wet	A	A	A	A	A	A	A	A	A	A	A	A
Carbon disulfide	X	X	X	X	X	X	X	C	A	C		C
Carbon monoxide 150°C (65°C)	C	C	C	C	C	F	C	A	A	I		A
Carbon tetrachloride	X	X	X	C	X	X	X	C	A	C	F	A
Castor oil	A	A	A	A	A	A	A	A	A	A	A	A
Cellosolve acetate	F	F	X	X	A		A	C	C			A
CFC-12	X	X	A	A	F		F	X	A		A	I
China wood oil, tung oil	X	X	F	A	A	F	A	A	C		I	A
Chlorine, dry/wet	X	X	X	X	X	X	X	X	C	X	X	F
Chlorinated solvents	X	X	X	X	X	X	X	C	C	C		A
Chloroacetic acid	X	C	C	C	X	A	I	C	X			A
Chlorosulfonic acid	X	X	C	C	X	X	X	C	X			F
Chromic acid	X	X	X	X	C	A	I	C	C	A		F
Citric acid	A	A	A	F	A	A	A	A	A	A	A	A
Coke oven gas	C	C	C	C	C	A		A	X	A	X	C
Copper chloride 150°F (65°C)	C	A	F	A	A	F	A	A	A	A	I	A
Copper sulfate 150°F (65°C)	C	A	A	A	F	A	A	A	A	A	A	A
Corn oil	X	C	F	A	A	F	C	A	A	A	A	A
Cottonseed oil	X	C	F	A	A	F	C	A	A	A	I	A
Creosote, coal tar	X	X	F	A	X	F	X	C	F		X	A
Wood	X	X	F	A	X		X	C	A			A
Creosols, cresylic acid	C	X	X	C	C	F	X	C		F		A
Ethers	C	C	C	C	C	F	X	C	X	A		A
Ethyl acetate	F	X	X	X	F	X	F	F	X	F	X	A
Ethyl alcohol	A	A	A	A	A	A	A	A	A	A	A	A
Ethyl cellulose	F	F	F	F	F		F	C	X	F		A
Ethyl chloride	A	F	F	X	A	F	A	C	F	F	F	F
Ethylene glycol	A	A	A	A	A	A	A	A	A	A	A	A
Ferric chloride 150°F (65°C)	A	A	A	A	A	A	A	A	I	A	A	A
Ferric Sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A
Formaldehyde	A	A	C	A	A	A	A	A	A	A	F	A
Formic acid	A	A	C	F	A	A	A	A	X	A	F	F
Fuel oil	X	X	A	A	X	F	X	C	A	F	A	A
Furfural	X	C	C	X	A	F	C	C	X	A	X	A
Gasoline, Non Leaded	X	X	X	A	X	X	X		A	C	A	A
Gasoline, + MTBE	X	X	X	A	X	X	X	C	A	C	A	A
Hi-test-+ MTBE	X	X	X	A	X	X	X	C	A	C	A	A
Gelatin	A	A	A	A	A	A	A	A	A		A	A
Glucose	A	A	A	A	A	A	A	A	A		A	A
Glue	F	F	A	A	F	A	A	A	C		A	A
Glycerine, glycerol	A	A	A	A	A	A	A	A	A	A	A	A
Green sulfate liquor	A	A	A	A	A	A	A	A	A	A	A	A
HFC-134A	F	X	A	A	A	F	A		X	F		A

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ELASTOMERS

Commonly used Elastomers: **Special Elastomers:**

MATERIAL	NR lor IR	SBR	CR	NBR	IIR	CSM	EPDM	MQ	FKM	CM	ECO CO	XLPE
	(Maximum Temperature 100° F (38°C) Unless Otherwise Specified											
Hydraulic fluids												
Petroleum	X	X	A	A	X	F	X			A	A	
Phosphate ester alkyl	X	X	C	X	A	X	A			A	X	
Phosphate ester arly	X	X	X	X	C	X	C			C	X	
Phosphate ester blends		X	X	X	X	X	X	C			C	X
Silicate ester	X	X	C	C	X	C	X			C	C	
Water-Glycol	A	A	A	A	A	A	A		A	A	A	
Hydrobromic acid	C	X	C	C	A	A	A	C	A	A		I
Hydrochloric acid	A	X	X	X	C	C	C	C	A	A	X	A
Hydrocyanic acid	F	F	C	F	C	A	C	A	A			A
Hydrofluoric acid	X	X	X	X	C	A	C	X	A	A		A
Hydrofluosilicic acid	A	F	F	F	A		A	A	A	A		I
Hydrogen Gas	F	F	A	A	A		A	A	A		A	A
Hydrogen peroxide	X	X	C	C	C	C	C	A	A	A		I
Hydrogen sulfide, dry	C	C	F	C	A	A	A	C	F			A
wet	C	C	F	C	A	A	A	C	C		F	A
Kerosene	X	X	F	A	X	C	X	C	A	A	A	A
Lacquers	X	X	X	X	C	X	X		X		X	F
Lacquers solvents	X	X	X	X	C	X	X		X		X	F
Lactic acid	C	C	C	C	C	A	C	A	A			A
Linseed oil	C	X	F	A	A	A	A	A	A	A	A	A
Lubricating oil, crude	X	X	F	A	X	C	X	C	A		A	A
refined	X	X	F	A	X	C	X	C		A	A	A
Magnesium chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A
Magnesium hydroxide 150°F (65°C)	A	F	F	F	A	A	A	F	A	A	A	A
Magnesium sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	A	A
Mercuric chloride	F	F	C	F	A	A	A	A	A		A	A
Mercury	A	A	A	A	A	A	A	A	A		A	A
Methyl alcohol, methanol	A	A	A	A	A	A	A	A	C	A	F	A
Methyl chloride	C	C	C	C	C	X	C	X	A			F
Methyl ethly ketone	X	X	X	X	F	C	A	C	X	C	X	A
Methyl isopropyl ketone	X	X	X	X	F	C	C	C	X	F	X	A
MTBE												A
Milk	C	C	F	F	A	A	A	A	A	A	A	A
Mineral oils	X	C	F	A	X	F	X	A	A	A	A	A
Natural gas	C	C	A	A	C	A	X	C	A	A	A	A
Nickel chloride 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	I	A
Nickel sulfate 150°F (65°C)	A	A	A	A	A	A	A	A	A	A	I	A
Nitric acid, crude	X	X	X	X	C	C	X	X	C	A	X	F
Diluted 10%	X	X	C	X	C	C	X	X	C	A	X	F
Concentrated 70%	X	X	X	X	C	C	X	X	C	X	X	F
Nitrobenzene	X	X	X	X	X	X	X	C	F	C	X	A
Oleic acid	X	F	C	F	F	F	F	A	C	A		A
Oleum spirits	X	C	C	C			I		C			I

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TECHNICAL DATA

ELASTOMERS

Commonly used Elastomers: **Special Elastomers:**

MATERIAL	NR lor IR	SBR	CR	NBR	IIR	CSM	EPDM	MQ	FKM	CM	ECO CO	XLPE
	(Maximum Temperature 100° F (38°C) Unless Otherwise Specified											
Oxalic acid	F	C	F	F	A	A	A	A	A	A	F	A
Oxygen	F	C	A	C	A		A	A	A	A	F	A
Palmitic acid	X	F	A	A	F	F	F	C	A	A	F	A
Perchlorethylene	X	X	X	C	X	X	X	C	A	C	F	A
Petroleum oils and crude 200°F (95°C)	X	X	F	A	X	C	X	C	A	C	F	A
Phosphoric acid, crude	A	C	C	C	C	A	C	C	A	A		A
pure 45%	A	C	C	C	C	A	C	C	A	A		I
Picric acid, molten	C	C	C	C	C		I					I
water solution	A	C	F	F	A	A	I	A	A			I
Potassium chloride	A	A	A	A	A	A	A	A	A	A	A	A
Potassium cyanide	A	A	A	A	A	A	A	A	A	A	A	A
Potassium hydroxide	F	F	C	C	A	A	A	A	C	A	A	A
Potassium sulfate	A	A	A	A	A	A	A	A	A	A	A	A
Propane	X	X	F	A	X	F	X	A	A	A	A	A
Sewage	C	C	F	A	C	A	C	C	A		I	A
Soap solutions	A	A	F	A	A	A	A	A	A	A	A	A
Soda ash, sodium carbonate	A	A	A	A	A	A	A	A	A	A	A	A
Sodium bicarbonate, baking soda	A	A	A	A	A	A	A	A	A	A	A	A
Sodium bisulfate	A	A	A	A	A	A	A	A	A	A	A	A
Sodium chloride	A	A	A	A	A	A	A	A	A	A	A	A
Sodium cyanide	A	A	A	A	A	A	A	A	A	A	A	A
Sodium hydroxide	F	F	C	C	A	C	A	A	C	A	F	A
Sodium hypochlorite	X	X	X	X	A	F	A	C	A	A	F	F
Sodium metaphosphate	A	A	C	A	A	F	A	A	A	A	I	A
Sodium nitrate	C	C	C	C	A	A	A	C		A	A	A
Sodium perborate	C	C	C	C	A	A	A	A	A			A
Sodium peroxide	C	C	C	C	A	A	A	C	A			A
Sodium phosphate.monobasic	A	F	C	F	A	A	A	A	A	A		A
dibasic	A	F	C	F	A	A	A	A				A
tribasic	A	F	C	F	A	A	A	A				A
Sodium silicate	A	A	A	A	A	A	A	A	A	A	I	A
Sodium sulfate	A	A	A	A	A	A	A	A	A	A	A	A
Sodium sulfide	A	A	A	A	A	A	A	A	A	A	I	A
Sodium thiosulfate, “hypo”	A	A	A	A	A	A	A	A	A	A	I	A
Soybean oil	X	C	F	A	A	A	A	A	A	A	A	A
Stannic chloride	A	A	A	A	F	A	F	A	A	A	I	A
Steam 450°F (230°C)	C	C	C	C	A	A	F	C	X		X	X
Stearic acid	X	X	C	F	F	C	F	A	I		F	A
Sulfur	F	F	A	F	A	A	A	F	A		F	C
Sulfur chloride	X	X	C	C	X	A	X	C	A			A
Sulfur dioxide , dry	C	C	C	C	C	A	C	A	A		I	I
Sulfur trioxide, dry	X	C	C	C	C	F	C	A	A			I
Sulfuric acid, 10%	A	A	A	A	A	A	A	A	A	A	A	A

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TECHNICAL DATA

ELASTOMERS

Commonly used Elastomers: **Special Elastomers:**

MATERIAL	NR lor IR	SBR	CR	NBR	IIR	CSM	EPDM	MQ	FKM	CM	ECO CO	XLPE
	(Maximum Temperature 100° F (38°C) Unless Otherwise Specified											
11%-75%	C	C	C	C	F	A	C	C	A	A	F	A
76%-95%	X	X	X	X	C	A	X	X	A	X	X	A
fuming	X	X	X	X	X	X	X	X	X	X	X	X
Sulfurous acid	C	C	C	C	C	A	C	C	A	A	C	A
Tannic acid	A	C	A	C	A	A	A	A	A	A	I	A
Tar	X	X	C	C	X	C	X	C	F		F	X
Tartaric acid	A	C	C	C	F	A	F	A	A	A	F	A
Toluene, toluol	X	X	X	C	X	X	X	C	A	C	X	A
Trichloroethylene	X	X	X	X	X	X	X	C	A	C	X	A
Turpentine	X	X	X	F	X	X	X	C	A	F	A	A
Vinegar	C	C	C	C	A	A	A	A	A	A		A
Water, acid mine	A	A	C	A	A	A	A	A	A	A	I	A
Water, fresh	A	A	C	A	A	A	A	A	A	A	A	A
distilled	A	A	C	A	A	A	A	A	A	A	A	A
Whiskey and wines	A	A	A	C	A	A	A	A	A	A	I	A
Xylene.xylol	X	X	X	C	X	X	X	C	A	X	X	A
Zinc chloride	C	C	C	C	A	A	A	A	A	A	I	A
Zinc sulfate	A	A	A	A	A	A	A	A	A	A	I	A

NOZZLES - SPECS

Nozzle Style & Size	Inlet PSI	Pressure KPA	Straight GPM	Stream IPM	30 GPM	30 IPM	60 GPM	60 IPM	90 GPM	90 IPM
	50	345	18	68	21	79	24	91	27	102
10464	75	517	22	83	25	95	28	106	32	121
1”	100	690	24	91	28	106	32	121	36	136
	50	345	45	170	50	189	55	208	60	227
10464	75	517	50	189	55	208	65	246	75	284
1-1/2”	100	690	55	208	60	227	75	284	85	322
	50	345	90	341	120	454	130	492	145	549
10464	75	517	100	379	140	530	150	568	180	681
2-1/2”	100	690	110	416	165	625	180	681	205	776

Threads Per Inch				
1-1/2” Size	2.100 (NYFD)	1.990 (NST)	2.093 (NYCORP)	1.878 (NPSH)

Threads Per Inch				
	6”	7”	7-1/2”	8”
	3.058	3.13	2.990 (CHICAGO)	3.062
	3.093		3.062 (NST)	3.093
	3.125		3.125 (DETROIT)	3.140
	3.156			3.156
2-1/2”	3.187			3.312
	3.234			3.031 (NYFD)
	3.250			3.00 (NY CORP)
	3.312			2.841 (NPSH)
	3.062 (PITTSBURGH)			3.78 (CLEVELAND)

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