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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 \$1500 Net Couplings and accessories, \$2500 PVC Tubing, Braided Tubing, Fire & Mill 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.

SEAL FAST, INC.

5603 Harvey Wilson Dr.
Houston, TX 77020

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

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.

Custom Made Products

- All custom made product sales are final and Non-Refundable.

HYDRAULIC

R1

SINGLE BRAID 100R1AT / MEDIUM PRESSURE



- Temp Range: -20° F to +212° F
- Cover: Oil & Weather Resistant Synthetic Rubber
- Tube: Oil Resistant Synthetic Rubber
- Reinforcement: 1 Steel Wire Braid
- Safety Factor: 4:1

SPECS

ASSEMBLIES p.000

FEATURES

- Excellent for hydraulic based liquids
- Meets and exceeds SAE J517 100R1AT

R1

On Reels

- Branding: Size SAE 100R1AT 1000PSI W.P. fxs 2015.05

ID	OD	Length	Oil Resistant Synthetic Rubber					
			1000 - 2750 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
1/4"	0.53"	328' +/-	2750	11000	4.0"	14.8	R1AT-04	
3/8"	0.69"	328' +/-	2250	9000	5.0"	20.2	R1AT-06	
1/2"	0.82"	328' +/-	2000	8000	7.0"	26.2	R1AT-08	
5/8"	0.94"	196' +/-	1500	6000	8.0"	33.6	R1AT-10	
3/4"	1.10"	196' +/-	1250	5000	9.5"	43.0	R1AT-12	
1"	1.35"	196' +/-	1000	4000	12.0"	55.8	R1AT-16	



R1

Bulk Coils

- Branding: Size SAE 100R1AT 1000PSI W.P. fxs 2015.05

ID	OD	Length	Oil Resistant Synthetic Rubber					
			1000 - 2750 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
1/4"	0.53"	328' +/-	2750	11000	4.0"	14.8	R1AT-04BC	
3/8"	0.69"	328' +/-	2250	9000	5.0"	20.2	R1AT-06BC	
1/2"	0.82"	328' +/-	2000	8000	7.0"	26.2	R1AT-08BC	
5/8"	0.94"	328' +/-	1500	6000	8.0"	33.6	R1AT-10BC	
3/4"	1.10"	100' +/-	1250	5000	9.5"	43.0	R1AT-12BC	
1"	1.35"	100' +/-	1000	4000	12.0"	55.8	R1AT-16BC	
1-1/4"	1.69"	65' +/-	625	2500	16.5"	80.6	R1AT-20BC	
1-1/2"	2.05"	65' +/-	493	1972	20.0"	94.9	R1AT-24BC	
2"	2.59"	65' +/-	327	1308	25.0"	111	R1AT-32BC	

*OD and Length can vary from end-to-end.

* 10% CUTTING CHARGE FOR ANY LENGTH HOSE NOT LISTED

R2

HYDRAULIC

DOUBLE BRAID 100R2AT / HIGH PRESSURE



- Cover: Oil & Weather Resistant Synthetic Rubber
- Tube: Oil Resistant Synthetic Rubber
- Reinforcement: 2 Steel Wire Braid
- Safety Factor: 4:1

SPECS

ASSEMBLIES p.000

FEATURES

- Excellent for hydraulic based liquids.
- Meets and exceeds SAE J517 100R2AT

R2

On Reels

- Branding: Size SAE 100R2AT 2000PSI W.P. fxs 2015.05

ID	OD	Length	Oil Resistant Synthetic Rubber					
			2000 - 5000 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
1/4"	0.61"	328' +/-	5000	20000	4.0"	23.5	R2AT-04	
3/8"	0.75"	328' +/-	4000	16000	5.0"	30.9	R2AT-06	
1/2"	0.88"	328' +/-	3500	14000	7.0"	42.3	R2AT-08	
5/8"	1.00"	328' +/-	2750	11000	8.0"	51.1	R2AT-10	
3/4"	1.16"	328' +/-	2250	9000	9.5"	63.2	R2AT-12	
1"	1.42"	328' +/-	2000	8000	12.0"	80.6	R2AT-16	



R2

Bulk Coils

- Branding: Size SAE 100R2AT 2000PSI W.P. fxs 2015.05

ID	OD	Length	Oil Resistant Synthetic Rubber					
			135 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
1/4"	0.61"	328' +/-	5000	20000	4.0"	23.5	R2AT-04BC	
3/8"	0.75"	328' +/-	4000	16000	5.0"	30.9	R2AT-06BC	
1/2"	0.88"	328' +/-	3500	14000	7.0"	42.3	R2AT-08BC	
5/8"	1.00"	328' +/-	2750	11000	8.0"	51.1	R2AT-10BC	
3/4"	1.16"	328' +/-	2250	9000	9.5"	63.2	R2AT-12BC	
1"	1.42"	328' +/-	2000	8000	12.0"	80.6	R2AT-16BC	
1-1/4"	1.92"	328' +/-	1625	6500	16.5"	114.0	R2AT-20BC	
1-1/2"	2.20"	328' +/-	1246	4984	20.0"	147.0	R2AT-24BC	
2"	2.70"	328' +/-	1130	4520	25.0"	190.0	R2AT-32BC	

*OD and Length can vary from end-to-end.

* 10% CUTTING CHARGE FOR ANY LENGTH HOSE NOT LISTED

HYDRAULIC

R12 & R13

FOUR SPIRAL STEEL WIRE REINFORCED 100R12 / HEAVY DUTY - HIGH IMPULSE



- Temp Range: -20° F to +212° F
- Cover: Oil & Weather Resistant Synthetic Rubber
- Tube: Oil Resistant Synthetic Rubber
- Reinforcement: 4 spiral plies of Steel Wire
- Safety Factor: 4:1

SPECS

ASSEMBLIES p.000

FEATURES

- This is an excellent hydraulic hose for use with petroleum base hydraulic fluids within the temperature ranges agreed upon by us and the manufacture of the fluid. Meets and exceeds SAE J517 100R12.

R12

- Branding: Size SAE 100R12AT 4000PSI W.P. fxs

ID	OD	Length	Oil Resistant Synthetic Rubber					
			2500 - 4000 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
3/8"	0.83"	100' +/-	4000	16000	4.9"	47	R12-06	
1/2"	0.97"	100' +/-	4000	16000	7.1"	50	R12-08	
5/8"	1.11"	100' +/-	4000	16000	7.9"	59	R12-10	
3/4"	1.25"	100' +/-	4000	16000	9.4"	71	R12-12	
1"	1.55"	100' +/-	4000	16000	11.8"	107	R12-16	
1-1/4"	1.91"	100' +/-	3000	12000	16.5"	159	R12-20	
1-1/2"	2.17"	100' +/-	2500	1000	19.7"	181	R12-24	
2"	2.69"	100' +/-	2500	1000	25.2"	226	R12-32	

4SH & R4

HYDRAULIC

FOUR SPIRAL STEEL WIRE REINFORCED 4SH / HEAVY DUTY - HIGH IMPULSE



- Temp Range: -20° F to +212° F
- Cover: Oil & Weather Resistant Synthetic Rubber
- Tube: Oil Resistant Synthetic Rubber
- Reinforcement: 4 spiral plies of Steel Wire wrapping in alternating directions.
- Safety Factor: 4:1

SPECS

ASSEMBLIES p.000

FEATURES

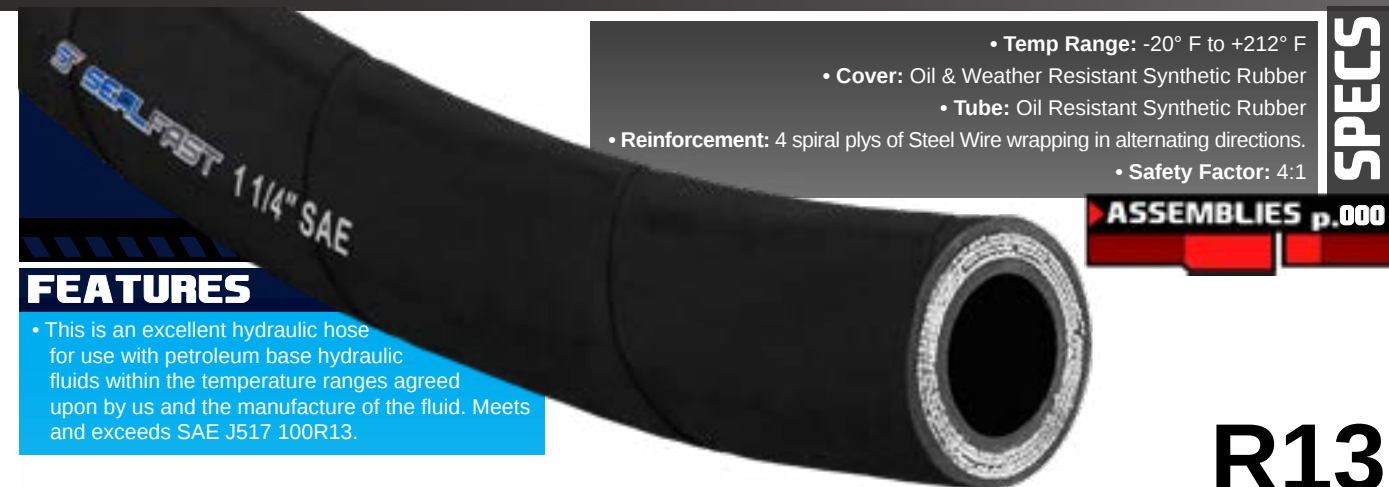
- The hose is suitable for use with: Hydraulic fluids in accordance with ISO 6743-A64 with the exception of HFD R, HFD S & HFD T at temperatures ranging from -20°F to 212° F
- The hoses are not suitable for use with castor oil based on ester based fluids. Meets or exceeds EN856-4SH

4SH

- Branding: Size 4SH DIN EN 856 4700PSI W.P. fxs

ID	OD	Length	Oil Resistant Synthetic Rubber					
			3600 - 6000 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
3/4"	1.30"	100' +/-	6000	24000	114	11.20"	4SH-12	
1"	1.57"	100' +/-	5500	22000	148	13.39"	4SH-16	
1-1/4"	1.85"	100' +/-	4700	18000	171	18.11"	4SH-20	
1-1/2"	2.17"	100' +/-	4200	16000	229	22.05"	4SH-24	
2"	2.74"	100' +/-	3600	14000	311	27.56"	4SH-32	

MULTIPLE SPIRAL STEEL WIRE REINFORCED 100R13 / HEAVY DUTY - HIGH IMPULSE



- Temp Range: -20° F to +212° F
- Cover: Oil & Weather Resistant Synthetic Rubber
- Tube: Oil Resistant Synthetic Rubber
- Reinforcement: 4 spiral plies of Steel Wire wrapping in alternating directions.
- Safety Factor: 4:1

SPECS

ASSEMBLIES p.000

FEATURES

- This is an excellent hydraulic hose for use with petroleum base hydraulic fluids within the temperature ranges agreed upon by us and the manufacture of the fluid. Meets and exceeds SAE J517 100R13.

R13

- Branding: Size SAE 100R12AT 4000PSI W.P. fxs

ID	OD	Length	Oil Resistant Synthetic Rubber					
			5000 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
3/4"	1.3"	100' +/-	5000	20000	4.9"	117	R13-12	
1"	1.6"	100' +/-	5000	20000	11.8"	155	R13-16	
1-1/4"	2"	100' +/-	5000	20000	16.5"	249	R13-20	
1-1/2"	2.3"	100' +/-	5000	20000	19.7"	313	R13-24	
2"	2.9"	100' +/-	5000	20000	25.2"	464	R13-32	

SAE 100 R4 OIL RETURN HOSE



- Temp Range: -20° F to +212° F
- Cover: Neoprene rubber oil, ozone & abrasion resistant
- Tube: Black smooth Nitrile rubber for 50% aromatics
- Reinforcement: Spiraled high tensile textile cords & 4 highly flexible steel helix wire
- Safety Factor: 3:1

SPECS

ASSEMBLIES p.000

FEATURES

- A hydraulic suction and return hose for oil field, construction & farm equipment.

R4

- Branding: Size SAE 100R4AT 200PSI W.P. fxs

ID	OD	Length	Oil Resistant Synthetic Rubber					
			150 - 300 PSI					
			Working PSI	Burst PSI	Bend Radius	lbs per ft	Part #	List ft.
3/4"	1.25"	100'	300	1200	4.0"	0.41	R4-12	
1"	1.50"	100'	250	1000	5.0"	0.52	R4-16	
1-1/4"	1.73"	100'	200	800	6.0"	0.62	R4-20	
1-1/2"	2.00"	100'	150	600	7.0"	0.73	R4-24	
2"	2.50"	100'	150	600	10"	0.91	R4-32	

*OD and Length can vary from end-to-end.

* 10% CUTTING CHARGE FOR ANY LENGTH HOSE NOT LISTED

*OD and Length can vary from end-to-end.

* 10% CUTTING CHARGE FOR ANY LENGTH HOSE NOT LISTED

TECHNICAL DATA

CORROSION RESISTANCE OF COUPLING MATERIALS

CAUTION: The following data has been compiled from generally available sources and 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 rating 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 Sugar Liquors	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 and 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 rating 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
Hydrogen 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	1
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 and 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 rating 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
Sulfurous 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. To 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 conditions 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** - Fluorocarbon rubber
- CM** - Chloro-polyethylene
- ECO/CO** - Epichlorohydrin
- EXLPE** - Chloro-sulfonyl-polyethylene

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)														
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		

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)														
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		
Perchloroethylene	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	A	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
10464 1"	50	345	18	68	21	79	24	91	27	102
	75	517	22	83	25	95	28	106	32	121
	100	690	24	91	28	106	32	121	36	136
10464 1-1/2"	50	345	45	170	50	189	55	208	60	227
	75	517	50	189	55	208	65	246	75	284
	100	690	55	208	60	227	75	284	85	322
10464 2-1/2"	50	345	90	341	120	454	130	492	145	549
	75	517	100	379	140	530	150	568	180	681
	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)
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Threads Per Inch

	6"	7"	7-1/2"	8"
2-1/2"	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
	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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