

Fre-Thane® Polyurethane

Specifications

Temperature Range
-40° F to +165° F

Vacuum Rating
85A-95A: To 28" Hg.
70: To 20" Hg.

Diameter Tolerances
1/8" - 9/16": ±.005"
3/4": ±.007"
Metric: ±.127 mm

Tube Markings
None

Working Pressure
3:1 Safety Factor

UV Stabilized
95A & 85A

Resin Compliance
95A: NSF61
Meets UL94HB
90A: NSF61, FDA,
USPVI
85A: NSF61
Meets UL94HB
USPVI
70A: Meets UL94HB

Suggested Fittings
95A: Barb, Push-In, FX
90A: Barb
85A: Barb
70A: Barb



Polyurethane was invented in 1937 by German chemist Friedrich Bayer. His first fibers, named Perlon U, gained popularity during World War II as a replacement for rubber. Its first commercial application was as a thread to make a lightweight, stretchable fabric, called spandex.* Polyurethane is comprised of two basic materials, isocyanate and polyol.

There are two general classes of polyurethane and both are commonly found in the market: Ether-base and Ester-base. Chemically, these are made from two different polyol alcohols that cause similar, but different reactions in the isocyanate. From the user's standpoint, the Ester-base polymer is less expensive. However, it degrades when exposed to moisture. Because of this, we manufacture our Fre-Thane® polyurethane tubing using the Ether-base material.

Freelin-Wade's Fre-Thane® has a high resistance to abrasion while being highly flexible and kink resistant. Its most notable quality though is its "memory." Fre-Thane® will stretch and flex but always return to its original shape.

Freelin-Wade began manufacturing polyurethane tubing in 1980. It remains our flagship product today. It is available in 23 standard colors and a virtually infinite number of color variations. Fre-Thane® is Freelin-Wade's most versatile product, with more options and variations available than with any other tubing.

* Source: www.madehow.com



Fre-Thane Polyurethane Colors

Any of our polyurethane tubing products listed on pages 9 and 10 are available in the colors shown below. If not shown as a standard item, please allow 3 weeks to fulfill your order.



Fre-Thane® 95A Polyurethane

Part Number & Color Code	Packaging Unit Size	OD	ID	Wall	Standard Colors	Working Pressure		lbs./100'	Bend Radius	Fitting
						75°F/25°C	150°F/65°C			
1J-157- ___ 50' Bag	250' Box	1/8"	.066"	.030"	01 04 05 06 07 08 10 11 12 14 25 26 27 28 29	255 PSI	100 PSI	.44	1/4"	B, PI
1L-157- ___ 500' Reel	1000' Reel									
1C-157- ___ 1000' Reel	2500' Reel									
1B-157- ___ 1000' Reel										
1A-157- ___ 2500' Reel										
1J-156- ___ 100' Bag	500' Reel	5/32"	3/32"	.031"	01 02 04 05 06 07 08 09 10 11 12 25 26 27 28 29 37	210 PSI	85 PSI	.62	3/8"	B, PI
1C-156- ___ 1000' Reel	2500' Reel									
1B-156- ___ 1000' Reel										
1A-156- ___ 2500' Reel										
1J-107- ___ 100' Bag	1000' Reel	3/16"	.107"	.040"	07 08 10	220 PSI	90 PSI	.92	3/8"	B, PI
1B-107- ___ 1000' Reel	2000' Reel									
1A-107- ___ 2000' Reel										
1J-169- ___ 100' Bag	500' Reel	1/4"	1/8"	.062"	01 04 05 06 07 08 09 10 11 25 26 27 28 29	265 PSI	105 PSI	1.83	1/2"	B, PI
1B-169- ___ 1000' Reel										
1A-169- ___ 1000' Reel										
1J-151- ___ 100' Bag	500' Reel	1/4"	.160"	.045"	01 04 05 06 07 08 09 10 11 12 25 26 27 28 46	175 PSI	70 PSI	1.44	1/2"	B, PI, FX
1B-151- ___ 1000' Reel										
1A-151- ___ 1000' Reel										
1J-152- ___ 100' Bag	250' Reel	3/8"	.245"	.065"	01 04 05 06 07 08 10 11 25 26 27 28 37 46	170 PSI	70 PSI	3.15	7/8"	B, PI, FX
1B-152- ___ 500' Reel										
1A-152- ___ 500' Reel										
1J-161- ___ 50' Bag	250' Reel	15/32"	5/16"	.079"	01 05 07 08 10 27	155 PSI	60 PSI	4.83	1-1/8"	B, PI
1A-161- ___ 250' Reel										
1J-166- ___ 50' Bag	250' Reel	1/2"	.320"	.090"	01 05 06 07 08 10 11 27	175 PSI	70 PSI	5.77	1-1/8"	B, PI
1A-166- ___ 250' Reel										
1J-163- ___ 50' Bag	200' Reel	9/16"	3/8"	.094"	01 07 08 10 27	155 PSI	60 PSI	6.85	1-3/8"	B, FX
1A-163- ___ 200' Reel										
1A-176- ___ 150' Reel	Cut Length	3/4"	.467"	.142"	01 10	175 PSI	70 PSI	13.47	1-1/2"	B, FX
1E-176- ___										

Our Ether-based Fre-Thane® is our most versatile tubing. Highly flexible with excellent memory, it has the most variation possibilities of any of our tubing and is available in a rainbow of colors.

Metric Sizes

Part Number & Color Code	Packaging Unit Size	OD mm	ID mm	Wall mm	Standard Colors	Working Pressure		lbs./100'	Bend Radius	Fitting
						75°F/25°C	150°F/65°C			
1J-171- ___ 100' Bag	500' Reel	3	1.8	.6	01 10	230 PSI	90 PSI	.35	6.4 mm	B, PI
1C-171- ___ 1000' Reel	2500' Reel									
1B-171- ___ 1000' Reel										
1A-171- ___ 2500' Reel										
1J-156- ___ 100' Bag	500' Reel	4	2.4	.8	01 02 04 05 06 07 08 09 10 11 12 25 26 27 28 29 37	210 PSI	85 PSI	.62	9.5 mm	B, PI
1C-156- ___ 1000' Reel	2500' Reel									
1B-156- ___ 1000' Reel										
1A-156- ___ 2500' Reel										
1J-158- ___ 100' Bag	500' Reel	6	4	1	01 04 05 06 07 08 09 10 11 25 26 27 28 37	160 PSI	65 PSI	1.21	12.7 mm	B, PI
1B-158- ___ 1000' Reel										
1A-158- ___ 1000' Reel										
1J-159- ___ 100' Bag	500' Reel	8	5	1.5	01 05 07 06 08 10 11 25 27 37	190 PSI	75 PSI	2.36	19 mm	B, PI
1A-159- ___ 500' Reel										
1J-160- ___ 50' Bag	500' Reel	10	6.5	1.75	01 05 06 07 08 10 27	170 PSI	70 PSI	3.51	22.2 mm	B, PI
1A-160- ___ 500' Reel										
1J-161- ___ 50' Bag	250' Reel	12	8	2	01 05 07 08 10 27	155 PSI	60 PSI	4.83	28.6 mm	B, PI
1A-161- ___ 250' Reel										
1J-162- ___ 50' Bag	200' Reel	16	11	2.5	01	150 PSI	60 PSI	4.85	76.2 mm	B, PI
1A-162- ___ 200' Reel										

Variations Available:

Coiling • Colors • Cutting • Bonding • Printing • Packaging • Sizes

USA & International: 503-434-5561

US Toll Free: 888-373-9233



Fre-Thane® 90A Polyurethane

Part Number & Color Code	Packaging Unit Size	OD	ID	Wall	Standard Colors	Working Pressure		lbs./100'	Bend Radius	Fitting
						75°F/25°C	150°F/65°C			
1J-132- ___	100' Bag									
1B-132- ___	500' Reel	1/4"	.159"	.046"	01 07 08 10 14 25 27	135 PSI	55 PSI	1.43	5/8"	B
1A-132- ___	1000' Reel									
1J-045- ___	100' Bag									
1B-045- ___	500' Reel	1/4"	.170"	.040"	01 05 10	115 PSI	45 PSI	1.29	3/4"	B Low Pressure Only
1A-045- ___	1000' Reel									
1J-153- ___	100' Bag	1/4"	3/16"	.031"	10	90 PSI	35 PSI	1.06	1-1/8"	B Low Pressure Only
1A-153- ___	1000' Reel									
1J-005- ___	100' Bag									
1B-005- ___	250' Reel	3/8"	.245"	.065"	01 05 07 10 11 25 27	125 PSI	50 PSI	3.1	3/4"	B
1A-005- ___	500' Reel									
1J-111- ___	50' Bag	1/2"	3/8"	.062"	01 05 10	90 PSI	35 PSI	4.2	2"	B Low Pressure Only
1A-111- ___	250' Reel									

Variations Available:

Coiling • Colors • Cutting • Bonding • Printing • Packaging • Sizes

Fre-Thane® 85A Polyurethane

Part Number & Color Code	Packaging Unit Size	OD	ID	Wall	Standard Colors	Working Pressure		lbs./100'	Bend Radius	Fitting
						75°F/25°C	150°F/65°C			
1J-013- ___	50' Bag									
1L-013- ___	250' Box									
1C-013- ___	500' Reel	1/8"	.066"	.030"	01 02 04 05 06 07 08 09 10 11 12 14 25 26 27 28 29 32 45 46	135 PSI	55 PSI	.43	3/16"	B
1B-013- ___	1000' Reel									
1A-013- ___	2500' Reel									
1J-134- ___	100' Bag									
1C-134- ___	500' Reel	5/32"	3/32"	.031"	01 10	115 PSI	45 PSI	.60	3/8"	B
1A-134- ___	2500' Reel									
1J-030- ___	100' Bag									
1C-030- ___	500' Reel	5/32"	5/64"	.039"	01 05 06 07 08 09 10 11 12 27	155 PSI	60 PSI	.70	3/8"	B
1B-030- ___	1000' Reel									
1A-030- ___	2500' Reel									
1J-194- ___	100' Bag									
1B-194- ___	500' Reel	3/16"	1/8"	.031"	01 10	85 PSI	35 PSI	.74	1/2"	B Low Pressure Only
1A-194- ___	2000' Reel									
1J-025- ___	50' Bag									
1D-025- ___	100' Box	1/4"	1/8"	.062"	01 02 04 05 06 07 08 09 10 11 12 25 26 27 28 29 32 46	145 PSI	60 PSI	1.8	1/2"	B
1B-025- ___	500' Reel									
1A-025- ___	1000' Reel									
1J-149- ___	100' Bag	5/16"	3/16"	.062"	01 07 10 27	110 PSI	45 PSI	2.4	5/8"	B Low Pressure Only
1A-149- ___	500' Reel									
1J-015- ___	100' Bag	3/8"	1/4"	.062"	01 10 25 26 27	90 PSI	35 PSI	3.0	3/4"	B
1A-015- ___	500' Reel									

Variations Available:

Coiling • Colors • Cutting • Bonding • Printing • Packaging • Sizes

Fre-Thane® 70A Polyurethane

Part Number & Color Code	Packaging Unit Size	OD	ID	Wall	Standard Colors	Working Pressure		lbs./100'	Bend Radius	Fitting
						75°F/25°C	150°F/65°C			
1J-133- ___	100' Bag									
1B-133- ___	500' Reel	1/4"	1/8"	.062"	01 10 14 25 26 27 29	60 PSI	30 PSI	1.69	1/2"	B
1A-133- ___	1000' Reel									
1J-170- ___	100' Bag	3/8"	1/4"	.062"	07 10	50 PSI	25 PSI	2.82	3/4"	B
1A-170- ___	500' Reel									

Variations Available:

Coiling • Colors • Cutting • Bonding • Printing • Packaging • Sizes

Resource Guide—Chemical Resistance Chart

This information was provided to Freelin-Wade by our suppliers and other sources. It is to be used only as a general reference guide to aid in the selection of products in which chemical and material compatibility issues are a factor. This guide is not intended as a complete nor conclusive database. Freelin-Wade does not guarantee these ratings since the resistance of a material can be greatly affected by the temperature, consistency, and presence of other chemicals. Ultimately, the consumer must determine the chemical compatibility of an item based on the conditions in which the product is being used.

Rating Scale

- 1= Little or no impact
- 2= Minor effect
- 3= Moderate effect
- 4= Severe effect

	PUR	PE	PVC	Nylon	Kynar
Acetic Acid, Glacial	4	2	4	-	1
Acetic Acid, 30%	4	1	4	2	1
Acetone	4	2	4	1	4
Acetylene	1	4	1	1	1
Alkazene	4	-	-	-	-
Aluminum Chloride (aq)	3	2	1	-	1
Aluminum Nitrate (aq)	3	-	2	-	1
Ammonia Anhydrous	4	2	1	-	4
Ammonia Gas (cold)	3	-	3	1	4
Ammonia Gas (hot)	4	-	-	1	4
Ammonium Chloride (aq) 40%	2	1	1	-	1
Ammonium Sulfate (aq)	1	1	1	1	1
Amyl Alcohol	4	2	1	-	1
Amyl Naphthalene	4	-	-	-	-
Animal Fats	1	2	-	-	-
Aqua Regia	4	2	3	-	-
Arsenic Acid	3	2	1	-	1
Asphalt	2	1	1	-	1
ASTM Fuel A	2	-	-	-	-
ASTM Fuel B	3	-	-	-	-
ASTM Fuel C	3	1	4	-	-
Barium Chloride (aq)	1	2	1	1	1
Beer	2	2	1	1	1
Beet Sugar Liquors	4	1	1	-	1
Benzene	3	4	3	1	1
Benzine	2	-	-	-	-
Blast Furnace Gas	4	-	-	-	-
Bleach Solutions	4	1	1	-	1
Borax	1	1	1	-	1
Boric Acid	1	1	1	-	1
Brake Fluid	4	-	-	-	1
Brine	2	-	3	-	1
Bromine Water	4	-	3	4	1
Bunker Oil	2	-	-	-	-
Butane	1	3	3	1	1
Butter	1	-	-	-	-
Butyl Alcohol (Butanol)	3	1	3	1	1
Butylene	4	1	1	-	1
Calcium Chloride (aq)	1	1	3	1	1
Calcium Hydroxide (aq)	2	1	2	-	1
Calcium Nitrate (aq)	1	-	1	1	1
Calcium Sulfide (aq)	1	-	-	-	-
Cane Sugar Liquors	4	-	1	-	1
Carbolic Acid	3	4	3	-	-
Carbon Dioxide	1	2	1	-	1
Carbonic Acid	4	2	1	-	1
Carbon Monoxide	1	2	1	-	1
Carbon Tetrachloride	4	4	4	3	1
Castor Oil	1	1	1	-	1
Chlorine (dry)	4	3	4	4	1
Chlorine (wet)	4	3	-	4	1
Chloroform	4	4	4	3	1
Chlorox	4	-	-	-	-
Chromic Acid 50%	4	1	4	4	1
Citric Acid	1	1	2	1	1
Coal Tar (Creosote)	3	-	-	-	-
Coconut Oil	2	1	1	-	1
Cod Liver Oil	1	1	1	-	-
Coke Oven Gas	4	-	-	-	-
Copper Chloride (aq)	1	2	1	-	1
Copper Cyanide (aq)	1	2	1	-	1
Corn Oil	1	1	2	-	1
Cotton Seed Oil	1	1	2	-	1
Cresol (Methyl Phenol)	4	4	4	4	1
Cyclohexane	1	4	4	1	1
Denatured Alcohol	4	-	-	-	-
Detergent Solution	3	1	1	-	-
Diesel Oil	2	3	1	-	-
Dioxane	4	3	-	-	4
Dowtherm Oil	3	-	-	-	-
Dry Cleaning Fluids	4	-	-	-	-
Ethane	1	-	1	-	-
Ethyl Acrylate	4	-	-	-	1
Ethyl Alcohol (Ethanol)	4	2	3	3	1
Ethyl Benzene	4	-	-	-	-
Ethyl Cellulose	2	-	-	-	-
Ethyl Chloride	4	4	4	-	1
Ethyl Ether	3	4	4	-	1
Ethylene Chloride	4	4	4	-	-
Ethylene Glycol ² (Anti-Freeze)	2	1	1	1	1
Ethylene Oxide	4	3	3	1	1
Ethylene Trichloride	4	4	-	-	-
Ferric Chloride (aq)	1	2	1	-	1
Ferric Nitrate (aq)	1	2	1	-	1
Ferric Sulfate (aq)	2	1	1	-	1
Fluorine (Liquid)	4	3	4	4	1
Formaldehyde (RT)	4	2	1	1	1
Formic Acid	4	2	1	4	1
Freon 11	4	3	1	-	-
Freon 12	1	1	1	1	-
Freon 22	4	-	1	1	-
Fuel Oil (Bunker 'C')	2	3	1	-	1
Gasoline (100 Octane, High Test)	3	4	3	1	1
Glue	1	1	3	-	1
Glycerin (Glycerol)	1	1	1	1	1
Glycols	4	-	-	1	-
Green Sulfate Liquor	1	-	-	-	-
Hexane	2	4 ¹	2 ²	-	1
Hydraulic Oil	1	1-3	1	-	-
Hydrochloric Acid (cold) 37%	4	2	2	4	1
Hydrochloric Acid (hot) 37%	4	-	-	4	1
Hydrofluoric Acid (Conc.) (cold)	4	2	-	-	1
Hydrofluoric Acid (Conc.) (hot)	4	-	-	-	1
Hydrogen Gas	1	1	1	1	1
Isobutyl Alcohol	3	1	-	-	1
Isooctane	2	3	1	-	1
Isopropyl Acetate	4	3	4	-	-
Isopropyl Alcohol (Isopropanol)	3	1	-	1	1
Isopropyl Ether	2	1	2	-	1
Kerosene	1	4	2	1	1

	PUR	PE	PVC	Nylon	Kynar
Lacquers	4	1	4	-	-
Lacquer Solvents	4	1	3	-	-
Lard	1	1	1	-	1
Lavender Oil	4	-	-	-	-
Lead Acetate (aq)	4	1	1	-	1
Linseed Oil	2	3	1	1	1
Lubricated Petroleum Gas	1	-	-	1	-
Lubricating Oils	1-2 ³	4	2	1	1
Lye	4	1-4 ⁴	1-2	-	-
Magnesium Chloride (aq)	1	2	1	1	1
Magnesium Hydroxide (aq)	4	2	1	-	1
Mercury	1	1	1	1	1
Methane	3	-	2	1	1
Methyl Acetate	4	2	4	1	1
Methyl Acrylate	4	-	-	-	1
Methyl Alcohol (Methanol)	4	1	1	1	1
Methyl Butyl Ketone	4	-	1	-	-
Methyl Chloride	4	4	4	1	1
Methylene Chloride	4	4	4	-	1
Methyl Ethyl Ketone	4	2	4	1	4
Methyl Isobutyl Ketone	4	3	4	1	4
Milk	4	1	1	1	1
Mineral Oil	1	3	1	1	1
Motor Oil 20W, 10W40	2	3	2	1	1
Naphtha (Lighter Fluid)	2	4	1	1	1
Naphthalene (Moth Repellent)	2	2	4	1	1
Natural Gas	2	-	1	-	1
Neatsfoot Oil	1	-	-	-	-
Nitric Acid 70%	4	2	-	4	1
Nitric Acid (Dilute) 10%	3	2	1	4	1
Nitroethane	4	-	-	-	1
N-Octane	4	1	-	-	1
Oleic Acid	2	1	3	1	1
Oleum Spirits	3	4	4	-	4
Olive Oil	1	1	-	-	1
Oxygen (cold)	1	-	-	1	1
Oxygen (200-400F)	4	-	-	-	-
Paint Thinner, Duco	4	-	-	-	-
Perchloric Acid	4	1	3	-	1
Perchloroethylene	4	4	3	3	1
Petroleum - Below 250F	2	3	-	-	1
Petroleum - Above 250F	4	-	-	4	-
Phenol (Carbolic Acid)	3	2	3-4	4	1
Phenyl Ethyl Ether	4	-	-	-	-
Phosphoric Acid - 45%	4	1	2	2	1
Pickling Solution	4	-	-	-	-
Picric Acid	2	1	4	3	1
Potassium Acetate (aq)	4	-	-	-	1
Potassium Chloride (aq)	1	2	1	-	1
Potassium Cyanide (aq)	1	2	1	-	1
Potassium Hydroxide (aq)	4	1	1	3	4
Producer Gas	1	1	1	-	-
Propane	1	4	1	1	1
Propyl Alcohol (Propanol)	4	1	1	-	1
Propylene	4	-	2	-	-
Propylene Glycol (Anti-Freeze)	3	1	3	2	1
Propylene Oxide	4	2	-	-	4
Pydraul, 10E, 29 ELT	4	-	-	-	-
Pydraul 30E, 50E, 65E	4	-	-	-	-
Pydraul, 115E	4	-	-	-	-
Pydraul 230E, 312C, 540C	4	-	-	-	-
Rapeseed Oil	2	4	-	-	-
RJ-1 (MIL-F-23338 B)	1	-	-	-	-
RE-1 (MIL-F-25576 C)	1	-	-	-	-
Salt Water	2	1	1	1	1
Sewage	1	-	-	-	1
Silicate Esters	1	-	-	-	1
Silicone Oils	1	1	1	-	1
Silver Nitrate	1	1	1	-	1
Skydrol 500	4	-	-	-	-
Skydrol 700	4	-	-	-	-
Soap Solutions	3	4	1	1	-
Sodium Chloride (aq)	1	1	1	1	-
Sodium Hydroxide (aq)	4	1	1	2	4
Sodium Peroxide (aq)	4	1	2	-	1
Sodium Phosphate (aq)	1	-	-	-	1
Sodium Sulfate (aq)	1	1	1	-	1
Soy Bean Oil	2	1	1	-	1
Stoddard Solvent	1	3	3	-	-
Styrene (Monomer)	4	-	4	1	1
Sucrose Solution	4	2	-	-	-
Sulfuric Acid (Dilute Battery Acid)	3	1	1	-	1
Sulfuric Acid (Conc)	4	2	4	-	1
Sulfuric Acid (20% Oleum)	4	-	4	-	4
Sulfurous Acid	4	2	1	-	-
Tannic Acid	4	1	1	-	1
Tetrachloroethylene	4	2	4	-	-
Toluene (Toluol)	4	3	4	1	1
Transformer Oil	2	-	2	-	-
Transmission Fluid Type A	2	-	-	-	-
Trichloroethane	4	4	3	3	1
Trichloroethylene	4	4	4	3	1
Turbine Oil	1	3	1	1	-
Turpentine	4	4	4	1	1
Varnish	3	3	4	-	1
Vinegar	2	1	1	1	1
Vinyl Chloride	4	4	4	-	1
Water	1	1	1	1	1
Whiskey, Wines	2	1	1	1	1
White Oil	1	-	-	-	-
Wood Oil	3	-	-	-	-
Xylene	4	4	4	1	1
Zinc Acetate (aq)	4	-	-	-	1
Zinc Chloride (aq)	2	1	1	1	1

1 Petroleum Base 2 Synthetic Base = 1, Petroleum Base = 3
 3 SAE 10, 20, 30, 40, 50 = 1, Petroleum = 2
 4 Calcium Hydroxide & Potassium (Hydroxide=1, Sodium Hydroxide=4) 5 See Propylene Glycol 6 See Ethylene Glycol