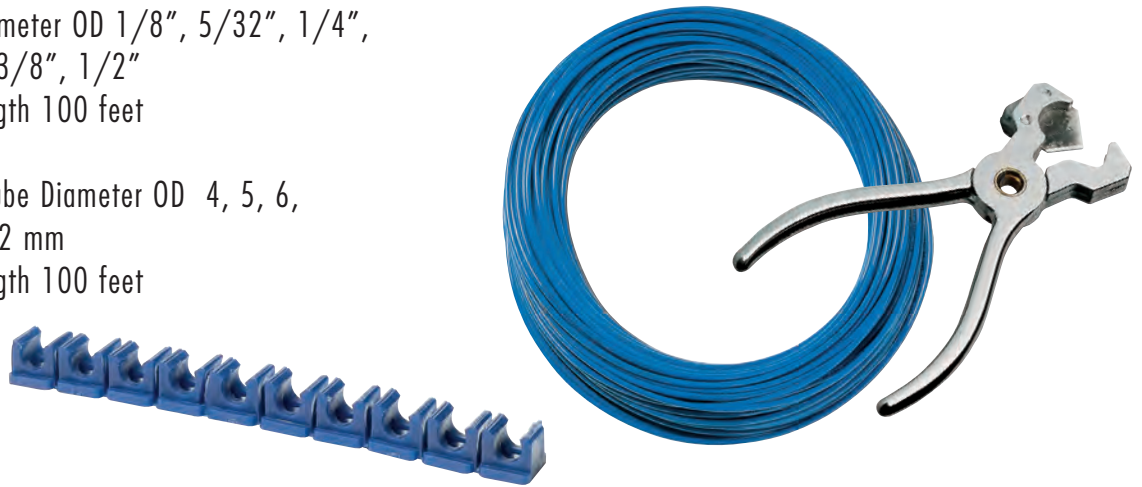


Tubing and Accessories

Nylon 11 Tubing (Inch and Metric O.D.)

Tube Diameter OD 1/8", 5/32", 1/4",
5/16", 3/8", 1/2"
Reel Length 100 feet

Metric Tube Diameter OD 4, 5, 6,
8, 10, 12 mm
Reel Length 100 feet



TECHNICAL SPECIFICATIONS (INCH)

Material	Nylon 11 (Polyamide)
Melting point	354° ± 4° (flame retardant rating UL-94 HB)
Water absorption (ASTM D-50)	1.1%
Operating pressure	From 0 - 250 psi (See Working Pressure Table)
Bursting pressure	1000 psi
Hardness	78 Rockwell R
Tensile strength at break (D-638)	9500 psi
Elongation at break (D-638)	360 psi
Flexural modulus (D-790)	47,000 psi
Tube diameter	1/8", 5/32", 1/4", 5/16", 3/8", 1/2"
Fluid	Compressed air [for other types of fluid please contact our engineers]
Operating temperature	-60°F - 180°F * (See Working Pressure Table)

TECHNICAL SPECIFICATIONS (METRIC)

Material	Nylon 11 (Polyamide)
Melting point	354° ± 4° (flame retardant rating UL-94 HB)
Water absorption (ASTM D-570)	1.1%
Operating pressure	From 0 - 250 psi (See working pressure table)
Bursting pressure	1000 psi
Hardness	78 Rockwell R
Tensile strength at break (D-638)	9500 psi
Elongation at break (D-638)	360 psi
Flexural modulus (D-790)	47,000 psi
Tube diameter OD	4, 5, 6, 8, 10, 12 mm
Fluid	Compressed air [for other types of fluid please contact our engineers]
Operating temperature	-60°F - 180°F

TUBE CODING

1411 - 04 - BL

TYPE
1411 = Nylon 11

TUBE DIAMETER OD

- 02 = 1/8"
- 04 = 1/4"**
- 05 = 5/16"
- 06 = 3/8"
- 08 = 1/2"
- 53 = 5/32"
- 4mm = 4mm
- 5mm = 5mm
- 6mm = 6mm
- 8mm = 8mm
- 10mm = 10mm
- 12mm = 12mm

COLOR
BL = Blue
BK = Black
NT = Natural
OR = Orange
YL = Yellow
RD = Red
GR = Green

WORKING PRESSURE

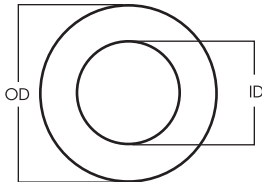
INCH

OD/ID (IN)	Tolerances for OD (IN)	Minimum Bend Radius (IN)	Working Pressure (PSI)			
			@75°F	@100°F	@125°F	@150°F
1/8 x .093	+.002 - .003	.375	225	171	148	125
5/32 x .106	+.002 - .003	.500	275	209	181	160
1/4 x .180	+.002 - .004	.875	250	190	165	137
5/16 x .232	+.002 - .004	1.250	220	170	145	121
3/8 x .275	+.002 - .004	1.500	220	170	145	128
1/2 x .375	+.002 - .004	2.000	200	152	133	125

METRIC

OD/ID (MM)	Tolerances for OD (MM)	Minimum Bend Radius (IN)	Working Pressure (PSI)			
			@75°F	@100°F	@125°F	@150°F
4 x 2.7	+.05, -.1	.75	275	209	181	151
5 x 3	+.05, -.1	1.00	375	285	248	206
6 x 4	+.05, -.1	1.50	280	213	185	154
8 x 6	+.05, -.1	2.25	210	160	139	115
10 x 8	+.05, -.1	3.00	180	137	119	99
12 x 10	+.05, -.1	3.50	165	125	109	91

CHEMICAL RESISTANCE



CHEMICAL RESISTANCE

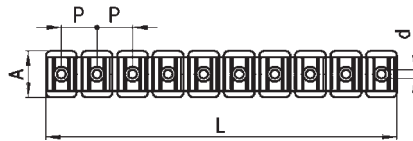
Acids	Good to ph-5
Alkalies	Good to ph-11
Hydrocarbons - aromatic	Excellent
Hydrocarbons - aliphatic	Excellent
Ketones	Excellent
Ethers	Excellent
Esters	Excellent
Alcohols	Good
Salts, neutral	Excellent
Freons	Excellent
Continuous sunlight	Fair
Zinc chloride	Good

Nylon 11 Tubing



DIMENSIONS — INCH				DIMENSIONS — METRIC			
Mod.	OD	ID	Reel Length Feet	Mod.	OD	ID	Reel Length Feet
1411-02	1/8	.093	100	1411-4mm	4	2.7	100
1411-53	5/32	.106	100	1411-5mm	5	3	100
1411-04	1/4	.180	100	1411-6mm	6	4	100
1411-05	5/16	.232	100	1411-8mm	8	6	100
1411-06	3/8	.275	100	1411-10mm	10	8	100
1411-08	1/2	.375	100	1411-12mm	12	10	100

Tube Clamp



DIMENSIONS					
Mod.	Tube ϕ	L	A	d	P
MPL-4 4mm or	5/32	115	19	2.5	11.5
MPL-6 6mm or	1/4	115	19	2.5	11.5
MPL-8 8mm or	5/16	144	19	3.5	14.5
MPL-10 10mm or	3/8	172	19	4.5	17.5

Plastic Tube Cutter

How To Use: Insert plastic tube to desired length, allow tube cutter to close, then apply pressure until tube snaps off.



DIMENSIONS	
Mod.	
PNZ-12	Cutter
PNZ-12 Blades	Replacement Blades
PNZ-25	Large Cutter (1/2" and up)
PNZ-25 Blades	Replacement Blades

Tubing and Accessories

Polyurethane Tubing (Inch and Metric O.D.)

Tube Diameter OD 1/8", 5/32", 1/4", 5/16", 3/8", 1/2"

Reel Length 100 feet

Metric Tube Diameter OD 4, 5, 6,

8, 10, 12 mm

Reel Length 100 feet



TECHNICAL SPECIFICATIONS - INCH

Material	Polyurethane (Ether Based), PUR 95A
Vacuum rating	to 28" Hg
Operating pressure	From 0 - 230 psi (See Working Pressure Table)
Bursting pressure	690 psi
Hardness	95 Shore A
Tube diameter	1/8", 5/32", 1/4", 5/16", 3/8", 1/2"
Fluid	Compressed air [for other types of fluid please contact our engineers]
Operating temperature	-40°F - 165°F

TECHNICAL SPECIFICATIONS - METRIC

Material	Polyurethane (Ether Based), PUR 95A
Vacuum rating	to 28" Hg
Operating pressure	From 0 - 180 psi (See Working Pressure Table)
Bursting pressure	540 psi
Hardness	95 Shore A
Tube diameter	4, 6, 8, 10, 12 mm
Fluid	Compressed air [for other types of fluid please contact our engineers]
Operating temperature	-40°F - 165°F

TUBE CODING

1422 - 04 - BL

TYPE

1422 = Polyurethane (95A)

TUBE DIAMETER OD

- 02 = 1/8"
- 04 = 1/4"**
- 05 = 5/16"
- 06 = 3/8"
- 08 = 1/2"
- 53 = 5/32"
- 4mm = 4mm
- 6mm = 6mm
- 8mm = 8mm
- 10mm = 10mm
- 12mm = 12mm

THREADS

COLOR

- BL** = Blue
- BK = Black
- NT = Natural
- OR = Orange
- YL = Yellow
- RD = Red
- GR = Green

WORKING PRESSURE

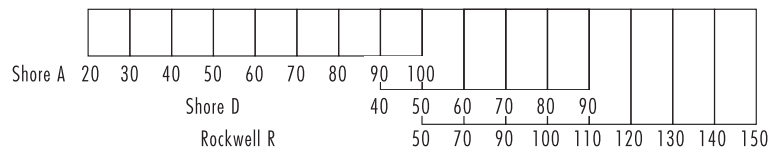
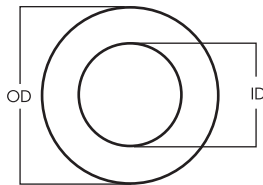
INCH

OD/ID (IN)	Tolerances for OD (IN)	Minimum Bend Radius (IN)	Working Pressure (PSI)			
			@75°F	@100°F	@125°F	@150°F
1/8 x .066	±.005	1/4	233	172	140	116
5/32 x 3/32	±.005	3/8	176	130	106	88
1/4 x .160	±.005	1/2	148	110	89	74
5/16 x .216	±.005	3/4	150	111	90	75
3/8 x .245	±.005	7/8	147	109	88	74
1/2 x .320	±.005	1 1/8	140	104	84	70

METRIC

OD/ID (MM)	Tolerances for OD (MM)	Minimum Bend Radius (IN)	Working Pressure (PSI)			
			@75°F	@100°F	@125°F	@150°F
4 x 2.4	±.127	3/8	176	130	106	88
6 x 4	±.127	1/2	145	107	87	73
8 x 5	±.127	3/4	155	115	93	78
10 x 6.5	±.127	7/8	149	110	89	75
12 x 8	±.127	1 1/8	133	133	80	67

HARDNESS COMPARISON



Polyurethane Tubing



DIMENSIONS — INCH				DIMENSIONS — METRIC			
Mod.	OD	ID	Reel Length Feet	Mod.	OD	ID	Reel Length Feet
1422-02	1/8	.066	100	1422-4mm	4	2.4	100
1422-04	1/4	.160	100	1422-6mm	6	4	100
1422-05	5/16	.216	100	1422-8mm	8	5	100
1422-06	3/8	.245	100	1422-10mm	10	6.5	100
1422-08	1/2	.320	100	1422-12mm	12	8	100
1422-53	5/32	3/32	100				

TUBING CHEMICAL RESISTANCE DATA

The following ratings are very general guidelines, designed ONLY to be used as an initial screening tool. Bear in mind that dynamic vs. static application, temperature, chemical mixtures, and the specific tubing compound selected can significantly affect or change these ratings either positively or negatively. Careful testing under actual conditions is essential. Accuracy for these ratings is not given or implied.

- N = Nylon
- PUR = Polyurethane
- PE = Polyethylene
- PVC = Polyvinylchloride (vinyl)

- RATINGS:**
SOLVENT/CHEMICAL
 1 = little or no effect
 2 = minor effect
 3 = moderate effect
 4 = severe effect
 - = no tested data available

SOLVENT/CHEMICAL	N	U	P	P	V	SOLVENT/CHEMICAL	N	U	P	P	V	SOLVENT/CHEMICAL	N	U	P	P	V
Butter	-	1	-	-	-	Green Sulfate Liquor	-	1	-	-	-	Potassium Acetate (aq)	-	4	-	-	-
Butyl Alcohol	3	4	1	2	-	Hexane	-	2	3	2	-	Potassium Chloride (aq)	-	1	1	1	-
Butylene	-	4	1	1	-	Hydraulic Oil	-	1	1	1	-	Potassium Cyanide (aq)	-	1	1	1	-
Calcium Chloride (aq)	1	1	2	1	-	Hydrochloric Acid (cold) 37%	-	4	2	2	-	Potassium Hydroxide (aq)	3	4	1	1	-
Calcium Hydroxide (aq)	-	1	2	1	-	Hydrochloric Acid (hot) 37%	-	4	-	-	-	Producer Gas	-	1	1	1	-
Calcium Nitrate (aq)	1	1	-	-	-	Hydrochloric Acid (cold)	-	3	-	-	-	Propane	1	3	3	1	-
Calcium Sulfide (aq)	-	1	-	-	-	Hydrochloric Acid (hot)	-	4	-	-	-	Propyl Alcohol	-	4	-	-	-
Cane Sugar Liquors	-	4	-	1	-	Hydrogen Gas	1	1	1	1	-	Propylene	-	4	-	-	-
Carbolic Acid	-	3	2	3	-	Isobutyl Alcohol	-	4	-	-	-	Propylene Oxide	-	4	-	-	-
Carbon Dioxide	-	1	3	1	-	Isooctane	-	2	-	-	-	"Pydraul, 10E, 29 ELT"	-	4	-	-	-
Carbonic Monoxide	-	1	2	1	-	Isopropyl Acetate	-	4	2	4	-	"Pydraul, 30E, 50E, 65E"	-	4	-	-	-
Carbon Tetrachloride	3	4	2	2	-	Isopropyl Alcohol	1	3	-	-	-	"Pydraul, 115E"	-	4	-	-	-
Castor Oil	-	1	-	1	-	Isopropyl Ether	-	2	1	2	-	"Pydraul, 23DE, 312C, 540C"	-	4	-	-	-
Chlorine (dry)	4	4	2	1	-	Kerosene	1	1	3	4	-	Rapeseed Oil	-	2	-	-	-
Chlorine (wet)	4	4	-	-	-	Lacquers	-	4	2	3	-	Red Oil (MIL-H-5808)	-	1	-	-	-
Chloroform	3	4	3	4	-	Lacquer Solvents	-	4	2	3	-	RI-1 (MIL-F-23338 O)	-	1	-	-	-
Chlorox	-	4	-	-	-	Lard	-	1	2	1	-	RP-1 (MIL-F-25578 C)	-	1	-	-	-
Chromic Acid	4	4	1	1	-	Lavender Oil	-	4	-	-	-	Salt Water	1	2	1	1	-
Citric Acid	1	1	1	2	-	Lead Acetate (aq)	-	4	1	1	-	Sewage	-	4	-	-	-
Coal Tar	-	3	-	-	-	Linseed Oil	1	2	3	1	-	Silicate Esters	-	1	-	-	-
Coconut Oil	-	2	-	1	-	Liquefied Petroleum Gas	-	-	-	-	-	Silicone Oils	-	1	1	1	-
Cod Liver Oil	-	1	-	1	-	Lubricating Oils	-	2	4	2	-	Silver Nitrate	-	1	2	1	-
Coke Oven Gas	-	4	-	-	-	Lye	-	4	-	-	-	Skydrol 500	-	4	-	-	-
Copper Chloride (aq)	-	1	2	1	-	Magnesium Chloride (aq)	1	1	1	1	-	Skydrol 700	-	4	-	-	-
Copper Cyanide (aq)	-	1	2	1	-	Magnesium Hydroxide (aq)	-	4	1	1	-	Soap Solutions	1	3	3	1	-
Acetic Acid	-	4	1	4	-	Mercury	1	1	1	2	-	Sodium Chloride (aq)	1	1	1	1	-
Acetic Acid 30%	-	4	1	4	-	Methane	1	3	-	-	-	Sodium Hydroxide (aq)	2	4	2	1	-
Acetone	-	4	2	4	-	Cotton Seed Oil	-	1	2	2	-	Sodium Peroxide (aq)	-	4	1	2	-
Acetylene	-	4	1	1	-	Creosol	4	4	3	4	-	Sodium Phosphate (aq)	-	1	-	-	-
Alkazene	-	4	-	-	-	Cyclohexane	1	1	2	4	-	Sodium Sulfate (aq)	-	1	1	1	-
Aluminum Chloride (aq)	-	3	2	1	-	Denatured Alcohol	-	4	-	-	-	Soy Bean Oil	-	2	1	1	-
Aluminum Nitrate (aq)	-	3	-	-	-	Detergent Solution	-	4	1	1	-	Steam (Below 300°F)	4	4	-	-	-
Ammonia Anhydrous	-	4	2	1	-	Diesel Oil	-	3	3	1	-	Steam (Above 300°F)	4	4	-	-	-
Ammonia Gas (cold)	-	3	-	-	-	Dioxane	-	4	-	3	4	Tetrahydroethylene	-	4	2	4	-
Ammonia Gas (hot)	-	4	-	-	-	Dowtherm Oil	-	3	-	-	-	Toluene	1	4	3	4	-
Ammonium Chloride (aq)	-	1	1	1	-	Dry Cleaning Fluids	-	4	-	-	-	Styrene	-	3	-	4	-
Ammonium Sulfate (aq)	-	1	1	1	-	Ethane	-	3	-	4	-	Sucrose Solution	-	4	-	-	-
Amyl Alcohol	-	4	2	1	-	Ethyl Acrylate	-	4	-	-	-	Sulfuric Acid (concentrate)	-	4	3	4	-
Amyl Naphthalene	-	4	-	-	-	Ethyl Alcohol	3	4	-	-	-	Sulfuric Acid (dilute)	-	3	1	1	-
Animal Fats	-	1	-	-	-	Ethyl Benzene	-	4	-	-	-	Sulfuric Acid (20% oleum)	-	4	-	-	-
Aqua Regia	-	4	2	3	-	Ethyl Cellulose	-	2	-	-	-	Sulfurous Acid	-	3	2	1	-
Arsenic Acid	-	3	2	1	-	Ethyl Chloride	-	2	-	-	-	Tannic Acid	-	1	2	1	-
Asphalt	-	2	1	1	-	Ethyl Ether	-	3	-	1	-	Tetrachloroethylene	-	4	2	4	-
ASTM Fuel A	-	2	-	-	-	Ethyl Chloride	-	4	3	4	-	Nitroethane	-	4	-	-	-
ASTM Fuel B	-	3	-	-	-	Ethyl Glycol	2	4	1	1	-	Nitrogen	-	1	-	-	-
ASTM Fuel C	-	3	1	1	-	Ethylene Oxide	1	4	3	3	-	N-Octane	-	4	-	-	-
Barium Chloride (aq)	-	1	1	1	-	Ethylene Trichloride	-	4	-	-	-	Oleic Acid	1	2	3	3	-
Beer	1	2	1	1	-	Ferric Chloride (aq)	-	1	1	1	-	Oleum Spirits	-	3	4	4	-
Beet Sugar Liquors	-	4	1	1	-	Ferric Nitrate (aq)	-	1	2	1	-	Olive Oil	-	1	1	1	-
Benzene	1	3	3	3	-	Ferric Sulfate (aq)	-	1	1	1	-	Oxygen (cold)	1	1	-	-	-
Benzine	-	2	-	-	-	Flourine (liquid)	4	4	3	4	-	Oxygen (200°-400°F)	-	4	-	-	-
Blast Furnace Gas	-	4	-	-	-	Formaldehyde (RT)	-	4	3	1	-	Paint Thinner, "Duco"	-	4	-	-	-
Bleach Solutions	-	4	-	1	-	Formic Acid	3	3	2	1	-	Perchloric Acid	-	4	-	-	-
Borax	-	1	1	2	-	Freon 11	-	4	3	1	-	Perchloroethylene	3	4	4	3	-
Boric Acid	-	1	1	1	-	Freon 12	1	1	3	1	-	Petroleum (Below 250°F)	-	2	-	-	-
Brake Fluid	-	4	-	-	-	Freon 22	1	4	-	2	-	Petroleum (Above 250°F)	4	4	-	-	-
Brine	-	2	4	3	-	Fuel Oil	-	2	3	1	-	Phenol	4	3	2	3	-
Bromine Water	4	4	-	-	-	Furlural Glucose	-	4	1	1	-	Phenyl Ethyl Ether	-	4	-	-	-
Bunker Oil	-	2	-	-	-	Glue	-	1	1	3	-	Phosphoric Acid 45%	2	1	2	2	-
Butane	1	1	3	3	-	Glycerin	1	1	1	1	-	Pickling Solution	-	4	-	-	-
						Glycols	1	4	-	-	-	Ploic Acid	3	2	-	4	-