



UTILITY SOLUTIONS



MADE IN THE
★ USA ★

Champion Duct® Advantages

Champion Duct Conduit offers the following benefits:



Enhanced Performance Over Other Conduit Systems

Champion Fiberglass features a weight that's up to 1/10 that of comparably sized steel conduit.

- Light weight contributes to installation ease, savings and safety
- Corrosion resistance to many chemicals
- No burn-through on elbows
- One of the lowest coefficients of friction of any in-market product
- Ability to retain its shape after impact or compression
- Withstands extreme conditions and temperatures
- Cable fault resistance: under fault conditions, fiberglass ducting prevents the cable from melting or fusing to the conduit wall.
- Extended UL Listed support spacing distances rival rigid steel conduit support spans



Lower Installation Costs

- The lowest man-hour installation rates for most diameters of electrical duct according to the National Electrical Contractors Association (NECA) Manual of Labor Units
- Lower total installation costs (labor plus material costs) for most diameters

Champion Duct® Engineering

Champion Duct Conduit meets the following specifications and requirements:

UL and Other Listings

- Standard Wall, Medium Wall (UL designates Champion Fiberglass MW for 5" and 6" as SW), and Heavy Wall conduits are UL Listed for newly expanded support spacing distances
- UL 2515 Listed for above and below ground installations
- UL 2420 Listed for below-ground installations
- CSA listed per CSA-22.2 No 211.3-96 standards
- CEC (Canadian Electrical Code), Article 12-200, Rigid RTRC Conduit
- NEC (National Electrical Code), Article 355 as Reinforced Thermosetting Resin Conduit
- ISO 9001 – Certified in quality management systems for over a decade
- ISO 14001 – World's premier environmental management certification
- ISO 45001 – Certified occupational health and safety management systems

Get No Burn-Through Elbows

12

RADIUS

2" IPS x 90

24

RADIUS

2/3/4" IPS x 90

**36/48/
60**

RADIUS

2/3/4/5/6" IPS x 90

* Additional radii in lengths available upon request

Champion Fiberglass® Elbows promote successful outcomes with:

- Lighter weight than GRC and PVC-coated steel
- Lower material and installation cost
- Low coefficient of friction that leads to no burn-through
- High dielectric strength
- Streamlined installation

Champion Fiberglass manufactures the most dependable conduit, strut and hangers in our class. We go further, exceed quality standards and create installations that are built to last. Champion Fiberglass helps you Do More® on every project.

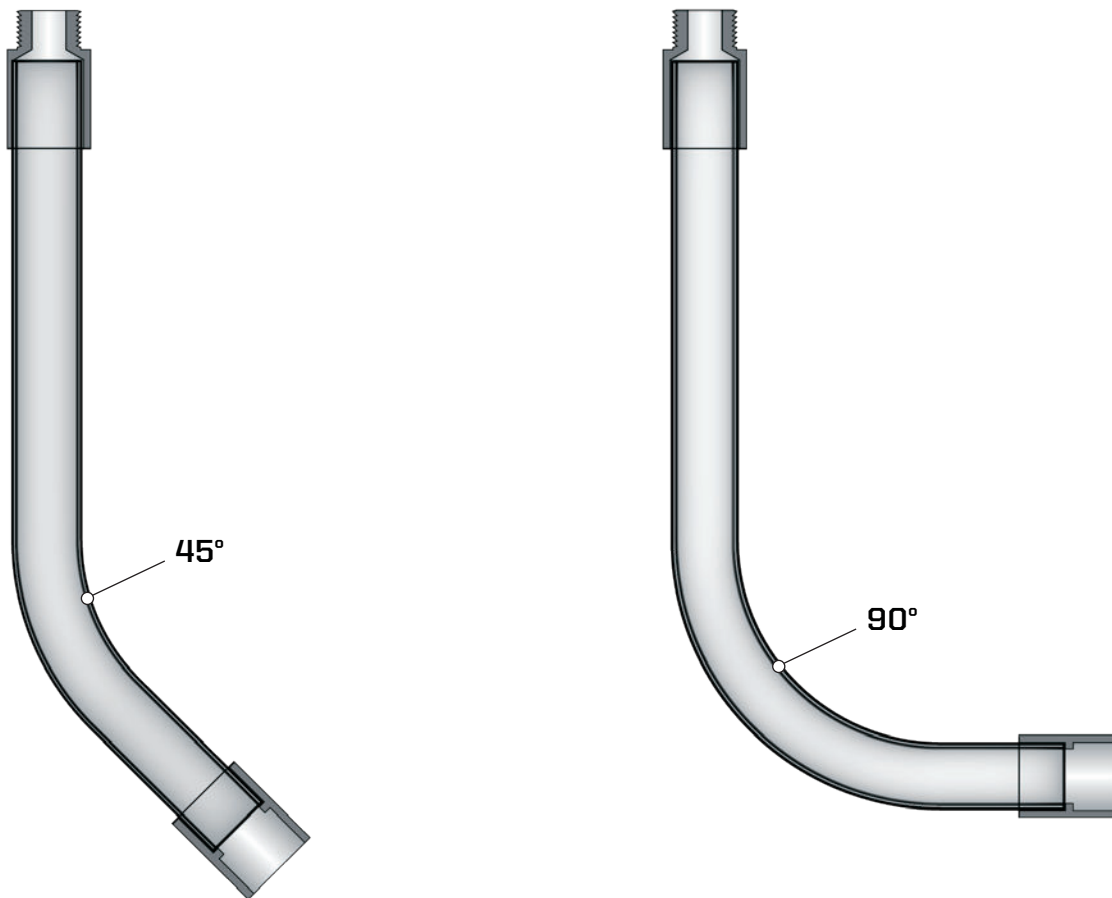


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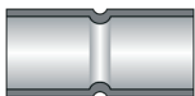
Utility Risers

Champion provides sizes 2" - 6" for Utility Risers

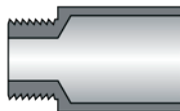
Champion now offers Utility Risers! These Utility Risers provide corrosion-resistant protection for underground utility services cabling where they emerge from the ground. Fiberglass Utility Risers eliminate the labor & material costs commonly associated with wrapping GRC risers with costly non-corrosive tape. The lightweight, inexpensive cost as well as the labor installation savings make Champion Fiberglass Utility Risers the right choice! Our Utility Risers can be provided with a standard PVC sleeve coupling and PVC male adapter transitions.



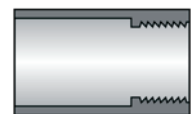
Alternate transitions (as shown below) and lengths are available but may alter the lead times.



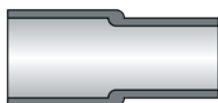
PVC Deep
Socket Coupling



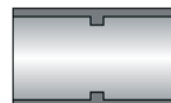
Male Adapters
(PVC or Fiberglass)



Female Adapters
(PVC or Fiberglass)



PVC Stubs



PVC Coupling

Expandable Utility Risers

(patent pending)

Champion now offers Expandable Utility Risers! These Expandable Utility Risers provide corrosion-resistant protection for underground utility services cabling where they emerge from the ground to a meter. The expandable quality makes this a cost-effective solution by eliminating the need for field cutting. The lightweight, inexpensive cost as well as the labor installation savings make Champion Fiberglass Expandable Utility Risers the right choice!



Height-adjustable



Can operate in temperatures of -40 to +230 °F



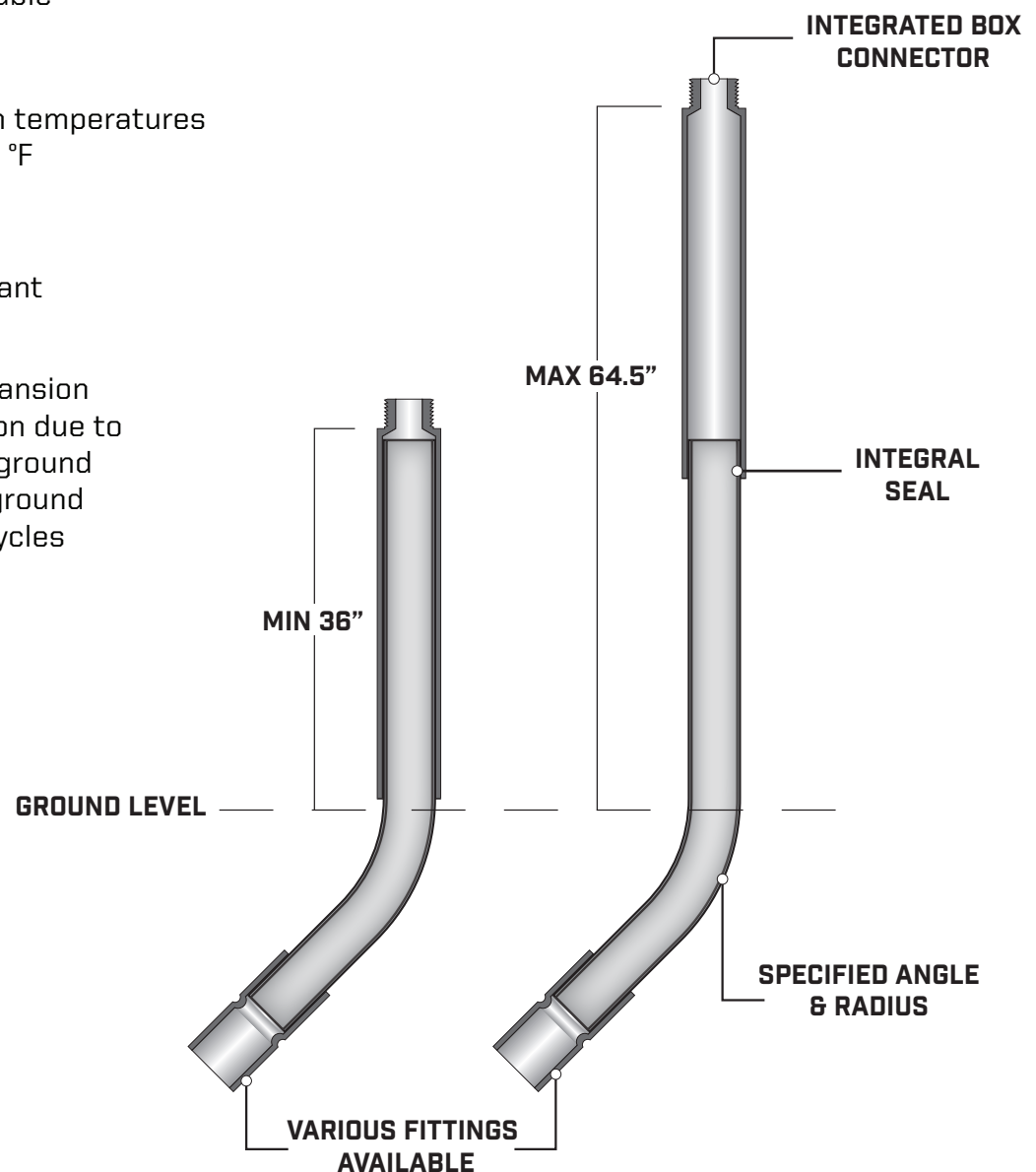
Impact-resistant



Allows for expansion and contraction due to temperature, ground settling, and ground freeze/thaw cycles



UV-resistant



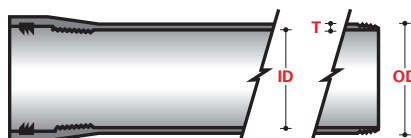
Interference Gasketed Conduit

Our gasketed interference joint combines the strength of the interference joint with a gasket that doubles the pull-out strength of the joint and makes the joint watertight – this is all possible without the use of epoxy adhesive. The epoxy-free joining system allows for quick installation of duct banks and other underground systems, not only for straight lengths, but for elbows, fittings and other adapters.

This innovative system allows the end user to conceivably make an entire underground duct system without ever having to use epoxy adhesive. Gasketed joints can be adhered to the elbows from the factory, so no field gluing is necessary. Even our end bells, male, and female adapters can all be gasketed.

Interference Gasket Conduit

	TYPE SW (STANDARD WALL) INCHES (METRIC)										
	NOMINAL SIZE	IPS ITEM NO BELOW GROUND	UL/CSA LISTED	OUTSIDE DIAMETER		MIN. INSIDE DIAMETER	NOMINAL WALL THICKNESS* (T)	LENGTH (L)	WEIGHT		
				AVERAGE	TOLERANCE				LBS/FT	KG/M	
☐	2" (51)	20A-SW-20-G	Yes	2.375" (60)	+0.028" (0.7) -0.018" (0.4)	2.235" (57)	.070" (2)	20 ft (6.1 m)	0.38 (0.57)		
☐	3" (76)	30A-SW-20-G	Yes	3.500" (89)	+0.028" (0.7) -0.018" (0.4)	3.360" (85)	.070" (2)	20 ft (6.1 m)	0.60 (0.90)		
☐	4" (102)	40A-SW-20-G	Yes	4.460" (113)	+0.028" (0.7) -0.018" (0.4)	4.320" (110)	.070" (2)	20 ft (6.1 m)	0.72 (1.07)		
☐	5" (127)	50A-SW-20-G	—	5.520" (140)	+0.028" (0.7) -0.018" (0.4)	5.380" (137)	.070" (2)	20 ft (6.1 m)	0.90 (1.34)		
☐	6" (152)	60A-SW-20-G	—	6.575" (167)	+0.028" (0.7) -0.018" (0.4)	6.435" (163)	.070" (2)	20 ft (6.1 m)	1.00 (1.49)		
☐	8" (203)	80A-SW-20-G	—	8.592" (218)	+0.028" (0.7) -0.018" (0.4)	8.400" (213)	.096" (2)	20 ft (6.1 m)	2.02 (3.01)		
TYPE MW (MEDIUM WALL) INCHES (METRIC)***											
☐	5" (127)	50A-MW-20-G	Yes	5.572" (142)	+0.034" (0.9) -0.028" (0.7)	5.380" (137)	.096" (2)	20 ft (6.1 m)	1.20 (1.79)		
☐	6" (152)	60A-MW-20-G	Yes	6.627" (168)	+0.034" (0.9) -0.028" (0.7)	6.435" (163)	.096" (2)	20 ft (6.1 m)	1.42 (2.11)		
☐	8" (203)	80A-MW-20-G	—	8.620" (219)	+0.028" (0.7) -0.018" (0.4)	8.400" (213)	.110" (3)	20 ft (6.1 m)	2.14 (3.20)		
TYPE HW (HEAVY WALL) INCHES (METRIC)											
☐	4" (102)	40A-HW-20-G	Yes	4.512" (115)	+0.028" (0.7) -0.022" (0.6)	4.320" (110)	.096" (2)	20 ft (6.1 m)	0.97 (1.44)		
☐	5" (127)	50A-HW-20-G	Yes	5.600" (142)	+0.034" (0.9) -0.028" (0.7)	5.380" (137)	.110" (3)	20 ft (6.1 m)	1.32 (1.96)		
☐	6" (152)	60A-HW-20-G	Yes	6.655" (169)	+0.034" (0.9) -0.028" (0.7)	6.435" (163)	.110" (3)	20 ft (6.1 m)	1.63 (2.43)		
☐	8" (203)	80A-HW-20-G	—	8.650" (220)	+0.028" (0.7) -0.018" (0.4)	8.400" (213)	.125" (3)	20 ft (6.1 m)	2.43 (3.62)		



* Actual wall thickness that is required to meet the performance requirements for specifications. Other wall thicknesses are available by special request.

** When ordering 10 ft (3.05 m) lengths, half of the order will be supplied with interference joint and half with straight socket joint.

***UL designates Champion Fiberglass MW for 5" and 6" as SW.

Weight Comparison: Fiberglass vs SCH 40 vs HDPE (SW IPS - lbs/per 100 ft)

Fiberglass conduit offers the lowest weight and is still very rigid.

		SCH 40	HDPE	FIBERGLASS
☐	2"	73	62.845	38*
☐	3"	164	136.360	60*
☐	4"	234	225.483	72*
☐	5"	318	344.761	120**
☐	6"	412	488.619	142**



Installation Instructions

INSTRUCTIONS

CHAMPION DUCT FIBERGLASS REPAIR KIT™

Preparation Procedures for "Damaged" Conduit Repair(s)

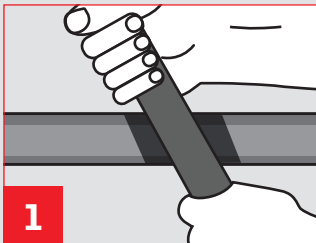
Reduced performance to be expected if directions are not explicitly followed!

Follow instructions below specific to the size of conduit/pipe being prepared.

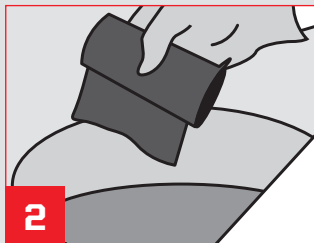


Reinforced Thermosetting Resin Conduit (RTRC) Fiberglass

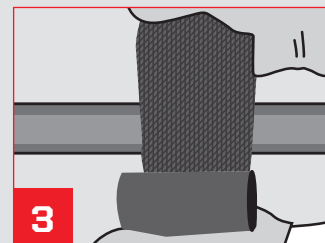
1. Sand pipe surface with 60-grit emery cloth to remove the gloss finish.
2. Remove dust by blowing compressed air or rinsing with water.
3. For best results, prepare an area around the entire conduit/pipe circumference, with a width equal to that of the intended repair.
4. Put on gloves and make sure gloves are always wet while rubbing & polishing. Follow procedures pictured below.
5. Allow at least 30 minutes to let Champion Duct Repair Kit™ to cure—for optimal results allow 2 hours.



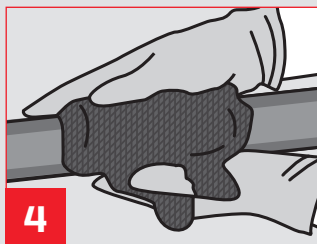
1 Prepare surface (see above)



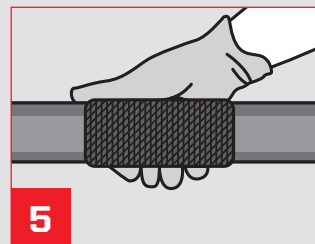
2 Dip roll for 5 seconds while squeezing 3 times



3 Wrap Champion Duct Repair Kit™ tightly



4 Wet gloves in water and immediately compress the wet expanding resins back into the fiberglass wrap by rapidly and firmly stroking the surface, always in the same direction you wrapped.



5 Rub and polish thoroughly. KEEP HANDS MOVING QUICKLY. WET GLOVES FREQUENTLY TO AVOID STICKING. Finished application.

Tips for Multiple Rolls and Large Diameter Pipe

- Read the conduit/pipe preparation instructions first!
- Fully prepare the conduit/pipe surface(s) before opening the first foil pouch.
- Determine the number of kits required before beginning. Contact Champion Fiberglass for assistance if needed.
- Preparedness is the key to a successful installation. Ensure all materials needed are present before you begin.
- When the **Product Selection Guide** (at right) dictates multiple rolls, it is important to apply the rolls in succession one immediately after another. Apply the first roll as per direction but DO NOT POLISH. Immediately apply the second and subsequent rolls directly on top of the previous roll.

DO NOT OPEN FOIL POUCHES UNTIL READY TO APPLY EACH INDIVIDUAL ROLL

- When the **Product Selection Guide** (at right) indicates a repair width greater than the tape width (2" or 4"), the product should be applied by spiraling the tape to achieve the desired width. Apply multiple rolls as described above.
- For large diameter pipes or longer lengths requiring multiple roll – more than one installer may be required. Two installers one on each side of the pipe to wrap, one installer for prepping rolls and one installer wetting out the repair would be an example of how to accomplish a large repair.
- Spray large repair areas with a spray bottle while applying Champion Duct Fiberglass Repair Kit™ to keep it wet.
- Resin pouches may be chilled to 50°F before opening to increase working time.

Instructions: Champion Duct Fiberglass Repair Kit™ Selection Guide

NOMINAL PIPE DIAMETER	2" REPAIR WIDTH*	4" REPAIR WIDTH*	6" REPAIR WIDTH*	8" REPAIR WIDTH*
3/4"	1 (2"x4')	1 (2"x4')	2 (2"x4')	1 (2"x12')
1"	1 (2"x4')	2 (2"x4')	2 (2"x4')	1 (2"x12')
1-1/4"	1 (2"x4')	2 (2"x4')	1 (2"x12')	1 (2"x12')
1-1/2"	1 (2"x4')	2 (2"x4')	1 (2"x12')	1 (2"x12')
2"	1 (2"x4')	1 (2"x12')	1 (2"x12')	1 (4"x12')
2-1/2"	2 (2"x4')	1 (2"x12')	1 (4"x12')	1 (4"x12')
3"	1 (2"x12')	1 (2"x12')	1 (4"x12')	1 (4"x12')
3-1/2"	1 (2"x12')	1 (4"x12')	1 (4"x12')	1 (4"x25')
4"	1 (2"x12')	1 (4"x12')	1 (4"x12')	1 (4"x25')
5"	1 (2"x12')	1 (4"x12')	1 (4"x25')	1 (4"x25')
6"	1 (2"x12')	1 (4"x12')	1 (4"x25')	1 (4"x25')
8"	1 (4"x12')	1 (4"x25')	1 (4"x25')	2 (4"x25')

Note: These are suggestions only. This is a hand-applied product and results may vary depending on the expertise of the applicator. Always apply the entire roll. This information is presented in nominal sizes and actual diameters may vary with the type of pipe and thickness of fittings.

Champion Engineering Specifications

ELBOW SPECIFICATIONS

I. Scope

This standard covers the requirements for IPS (iron pipe size) and ID (inside diameter), fiberglass elbows.

In addition to identifying products that are approved for purchase and installed by (utility name) personnel, this standard identifies products that may be purchased and installed by contractors working under (utility name) direction.

This material standard applies to the following (utility name) stock numbers:

- List elbow part numbers with prefix/suffix

II. Application

Fiberglass elbows (specify size if necessary) are appropriate for pole riser, above ground, and below ground (direct burial or concrete encased) applications.

The intended application for large radius fiberglass elbows is to lower cable pulling coefficient of frictions and to ease cable pulling around bends. The fiberglass elbows are to be factory bent by the conduit manufacturer and provided with factory applied transitions as called out per utility standard. Any PVC couplings being used should be designed to enable a smooth transition between the fiberglass elbow and any PVC straight conduit that may be installed. Elbows are to be provided in one of the following wall thicknesses; standard wall (SW - .070"), medium wall (MW - .096"), heavy wall (HW - .110") or Xtra heavy wall (XW - .250").

III. Listing

Fiberglass elbows shall be listed by UL, Underwriters Laboratories, to the UL 2515 Above Ground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings standard. All elbows shipped shall contain UL labels.

IV. Manufacturing

The elbows shall be constructed from fiberglass conduit, also known as Reinforced Thermosetting Resin Conduit (RTRC), manufactured using the single-circuit filament winding process. Multi-circuit windings are not allowed. The elbows shall have a winding angle as close as possible to 54.75°. Winding mandrels shall be straight and true so as to produce a non-tapered elbow. The resin system shall be epoxy based, with no fillers, using an anhydride curing agent. The fiberglass shall consist of continuous E-glass Grade "A" roving. All additives for increasing flame spread and lowering smoke density shall be halogen free, i.e. not contain chlorine or bromine. Carbon black shall be used as ultraviolet inhibitor to protect the elbow during storage and exposure to the outdoors. Elbows shall be black in color unless a custom color has been sourced by special request. Elbow curing shall be done using an oven and shall take place in two steps. The first curing zone shall bring the elbow slowly to the gel temperature. The second zone shall post-cure the elbow at no less than 350°F. The elbow blank must be properly cured so that when measuring the glass transition temperature with a differential calorimeter, the difference between the first measurement and the second shall not exceed 5°F. Elbows will be bent utilizing a steam bending process and internal springs utilized to prevent "out of round" elbow walls. The internal elbow walls shall be smooth, and all fibers embedded in the epoxy. All elbows shall meet the nominal radius plus or minus 3 degrees. The wall thickness shall be as listed ; .070" (SW), .096" (MW), .110" (HW) & .250" (XW). All elbows shall have either straight ends or fiberglass transitions as specified by the utility.

All elbows shall be durably and legibly marked in accordance to NEMA TC 14.

In addition, the following information shall be included:

- NEMA TC 14
- UL 2515 (Above Ground)
- Manufacturer
- Date of manufacturing of conduit and elbows
- Elbows shall be marked with the angle and radius
- Special customer markings (per request)
- All elbows shall be **manufactured in the U.S.A. and marked as such.**

V. Dimensions

Elbows shall be manufactured having non-tapered sections.

Elbows shall be manufactured with following nominal dimensions:

SIZE	TYPE	OUTSIDE DIAMETER	INSIDE DIAMETER	WALL THICKNESS
		INCH	INCH	INCH
3/4"	SW	1.050"	0.910"	.070"
1"	SW	1.315"	1.175"	.070"
1-1/4"	SW	1.660"	1.520"	.070"
1-1/2"	SW	1.900"	1.760"	.070"
2"	SW	2.375"	2.235"	.070"
2-1/2"	SW	2.880"	2.740"	.070"
3"	SW	3.500"	3.360"	.070"
4"	SW	4.460"	4.320"	.070"
4"	HW	4.512"	4.320"	.096"
5"	MW	5.572"	5.380"	.096"
5"	HW	5.600"	5.380"	.110"
6"	MW	6.627"	6.435"	.096"
6"	HW	6.655"	6.435"	.110"

SIZE	TYPE	OUTSIDE DIAMETER	INSIDE DIAMETER	WALL THICKNESS
		INCH	INCH	INCH
3/4"	XW	1.410"	0.910"	.250"
1"	XW	1.675"	1.175"	.250"
1-1/4"	XW	2.020"	1.520"	.250"
1-1/2"	XW	2.260"	1.760"	.250"
2"	XW	2.500"	2.000"	.250"
2-1/2"	XW	3.000"	2.500"	.250"
3"	XW	3.500"	3.000"	.250"
3-1/2"	XW	4.000"	3.500"	.250"
4"	XW	4.500"	4.000"	.250"
5"	XW	5.500"	5.000"	.250"
6"	XW	6.500"	6.000"	.250"

VI. Electrical Characteristics

Volume Resistivity	3.8 x 10 ¹⁴ ohm-cm	ASTM D257
Surface Resistivity	1.1 x 10 ¹⁴ ohms	ASTM D257
Dielectric Constant	3.5 (at 10 ³ cps)	ASTM D150
Dissipation Factor	0.005 (at 10 ³ cps)	ASTM D150
Dielectric Strength	500 volts/mil (19.7 kv/mm)	ASTM D149

VII. Mechanical Characteristics

The elbows shall have following mechanical strength when tested in accordance with referenced test method:

Tensile Strength, Axial	11,000 psi (76 MPa)	ASTM D2105
Compressive Strength	12,000 psi (83 MPa)	ASTM D695
Ultimate Elongation	2% psi (9.6 GPa)	ASTM D2105
Modulus of Elasticity (4" conduit)	1.4 x 10 ⁻⁶ psi (9.6 GPa)	ASTM D2105
Thermal Conductivity	2.0 Btu.in/ft ² .hr.°F (0.30 W/m.K)	ASTM D5930-1
Specific Gravity	1.9	ASTM D792
Glass Content	65–75%	API 15LR
Water Absorption	1% max	ASTM D570
Barcol Hardness	52–56	ASTM D2583
Coefficient of Thermal Expansion	1.2 x 10 ⁻⁵ in/in/°F (2.2 x 10 ⁻⁵ m/m/°C)	ASTM D696

VIII. Fire Resistance and Flame Spread

Elbows shall meet UL specifications of UL 2420 (below ground) and UL 2515 (above ground), i.e. the flame shall extinguish within 30 seconds each time after four consecutive applications of 15 seconds and shall extinguish within 60 seconds after the fifth flame application also being 15 seconds in duration.

IX. Toxicity

The elbows shall not contain any compounds that can release halogens, i.e. chlorine, bromine, fluorine and iodine, in more than trace amounts when burning.

Following shall be the maximum values when tested in accordance to ASTM E-800:

GASES	VALUES (MAX PPM)
Hydrogen Chloride	0
Hydrogen Bromide	0
Hydrogen Cyanide	<1
Hydrogen Sulfide	0
Ammonia	0
Aldehydes as HCHO	<10
Oxides of Nitrogen	<50
Carbon Dioxide	<12,500
Carbon Monoxide	<250

X. Quality Assurance Program

Manufacturer shall have a current Certificate, issued by an independent and accredited company, of compliance with an **ISO 9001:2015 Quality Management System**.

XI. Environmental

Manufacturer shall have a current Certificate, issued by an independent and accredited company, of compliance with an **ISO 14001:2015 Environmental Management Systems and Performance**.

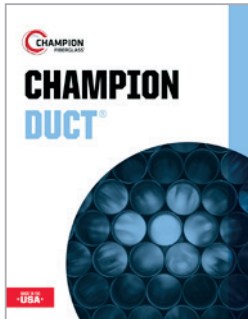
XII. Approved Manufacturers & Products Approved for Purchase and Installation by (Utility Name) or Utility Approved Contractor.

- Champion Fiberglass



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championfiberglass.com

Champion Fiberglass is also a manufacturer of the following products:



Learn more:

ELBOWS



UTILITY RISERS



INTERFERENCE GASKETED CONDUIT



EXPANDABLE UTILITY RISERS



DO MORE.®

CERTIFIED
ISO 9001 • ISO 14001 • ISO 45001

