**Atkore - FRE® Composites**

This product specification is written according to the Construction Specifications Institute

*MasterFormat,* 2018 Update.

**SECTION 26 05 33.13**

**CONDUIT FOR ELECTRICAL SYSTEMS – Phenolic BreathSaver® Reinforced Thermosetting Resin Conduit (“RTRC”)**

# PART 1 - GENERAL

* 1. RELATED DOCUMENTS
		1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

# DEFINITIONS

* + 1. RTRC: Reinforced Thermosetting Resin Conduit-Phenolic

# SUMMARY

* + 1. This Section includes the following:
		2. Reinforced Thermosetting Resin Conduit (“RTRC”)
		3. Related Sections
			1. Section 26 05 26 “Grounding and Bonding for Electrical Systems”
			2. Section 26 05 29 “Hangers and Supports for Electrical Systems”
			3. Section 26 05 33.16 “Boxes for Electrical Systems”
			4. Section 27 05 33 “Conduits and Backboxes for Communications Systems”
			5. Section 25 05 28.33 “Conduits and Backboxes for Integrated Automation”

# REFERENCES

* + 1. UL 2515A Safety Standard - Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings- For Type BreathSaver® XW Only
		2. NFPA 70 NEC 501.10(B) Class 1 Division 2(1)(6)
		3. NFPA 130 - Standard for Fixed Guideway Transit and Passenger Rail Systems- For type BreathSaver® XW Only.
		4. NFPA 502 – Standard for Road Tunnels, Bridges, and Other Limited Access Highways.
		5. CSA: C22.2 No. 2515.1-13 Supplemental requirements for extra heavy wall (XW) BreathSaver® Reinforced Thermosetting Resin Conduit (RTRC) and Fittings- For Type BreathSaver® XW Only
		6. UL 2196 Safety Standard - Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables- For type XW Only
		7. NEMA TC-14. XW Standards for Reinforced Thermosetting Resin Conduit (“RTRC”). Note: This NEMA Adoptive Standards: NEMA TC-14. XW (UL 2515A).
		8. CSA C22.1:21 Canadian Electrical Code, Part I, Safety Standard for Electrical Installations
		9. NECA National Electrical Installation Standard (NEIS) 111, Standard for InstallingNonmetallic Raceways.

# SUBMITTALS

* + 1. Manufacturer’s Product Data
		2. Certifications to applicable standards
		3. Domestic certifications where required to applicable standards.

# QUALITY ASSURANCE

* + 1. Reinforced Thermosetting Resin Conduit and Fittings – Phenolic Type BreathSaver® XW complies with UL2515A and is manufactured in accordance with NEMA TC-14.XW.
		2. Reinforced Thermosetting Resin Conduit and Fittings – Phenolic Type BreathSaver® XW is CSA listed and manufactured in accordance with CSA: C22.2 No.2515.1-13.
		3. Reinforced Thermosetting Resin Conduit – Type BreathSaver® XW complies with NFPA 130 for 1 Hour Fire Rating requirements including Wet Locations for Fire Resistive Cables and NFPA 70 (NEC*®* 2020 Article 355).
		4. Reinforced Thermosetting Resin Conduit – Type BreathSaver® XW complies with NFPA 502 for 2-hour fire rating requirements including wet locations for Fire Resistive Cables and NFPA 70 (NEC*®* 2020 Article 355).
		5. Reinforced Thermosetting Resin Conduit complies with the Canadian Electrical Code (CEC Article 12-200).
		6. Electrical equipment and materials shall be new complying with the latest codes and standards. No used, re-built, refurbished and/or re- manufactured electrical equipment and materials shall be furnished on this project.
		7. Testing Agency Qualifications: A testing of listing agency shall be one of the following Nationally Recognized Testing Laboratories:
			1. Underwriters Laboratories (UL)
			2. Canadian Standards Association (CSA)

# STORAGE AND HANDLING

* + 1. Storage: Whenever possible, store the conduit indoors to prevent possible discoloration, the accumulation of dirt and to extend the life of the product. If conduit is stored outdoors, it should be in a shaded area to avoid as much UV exposure as possible. It shall be stored in such a way as to allow air circulation and water drainage and shall not be directly covered with plastic.
		2. Conduits are shipped in self-supporting crates designed to be unloaded by forklift. Crates should not be dropped from the truck trailer flat beds. Each crate shall be legibly marked with the following information:
1. Manufacturer's identification
2. Product description
3. Stock number
	* 1. All Type XW BreathSaver® Conduits, elbows and fittings shall be durably and legibly marked in accordance with the standard UL Listing. In addition, the following information shall be included in the marking:
4. Manufacturer
5. The Application and Applicable UL 2515A (for type XW only) and UL 2420
6. The CSA Logo
7. The wording “Reinforced Thermosetting Resin Conduit and Fittings”
8. Part Number, Description and Trade Size
9. Operating Temperature
10. Wall Thickness
11. Elbows are Marked with the Angle and Radius
12. Date of Manufacturing of Conduit, Elbows, and Fittings
13. Country of Origin
	* 1. Conduit crates should be stored on a level surface in an environment free from excessive dirt, dust, or other airborne contaminants. The vertical support of the wooden frames should line up so the load will be transferred to the wood frames rather than the conduit. The height of stacked conduit should be limited to twelve feet.
		2. Packing system for conduits and fittings shall be provided with adequate amount of interval support spacing during shipping and subsequent storage by the customer to mitigate any deflection or deformity.
		3. Elbows and accessories, when stored outdoors it should be in a shaded area to avoid as much as possible UV exposure amongst other elements.
		4. A two-part adhesive kit will have a minimum shelf life of 12 months from delivery date when stored per the manufacturer's recommendations. The manufacturing date should be printed on the cartridge's label. Storage and handling should comply with Manufacturer’s storage and handling guidelines.

# PART 2 – PRODUCTS

* 1. MANUFACTURERS
		1. Atkore - FRE® Composites (BAA / BABA)

60 Greenhorn Drive

Pueblo, CO 81004

* + 1. Atkore - FRE® Composites

75 Wales

Saint-Andre’-d’Argenteuil QC JOV1X0

Canada

* 1. REINFORCED THERMOSETTING RESIN CONDUIT-PHENOLIC:
		1. Basis-of-Design Product: Subject to compliance with requirements, provide Atkore FRE® BreathSaver® Composites (RTRC) fiberglass conduit.
		2. RTRC Phenolic Conduit Type BreathSaver® XW is available in trade sizes ¾ up to 8” IPS and 2” up to 6” ID trade sizes.
		3. RTRC Phenolic Conduit minimum wall thickness as basis-of-design
		4. RTRC Conduit Type BreathSaver® XW Wall Thickness: ¾” - 8” (IPS - 0.250” - 0.250”), 2” - 6” (ID -0.250” - 0.250”)
		5. RTRC Conduit Glass Type BreathSaver® XW Content minimum (71% ± 3%) per API 15LR
		6. RTRC Conduit is listed to UL2515A.
		7. RTRC Conduit is listed to CSA and manufactured in accordance with CSA: C22.2 No. 2515.1-13.
	2. REINFORCED THERMOSETTING RESIGN FITTINGS - PHENOLIC - RTRC TYPE XW
		1. Basis-of-Design Product: Subject to compliance with requirements, provide Atkore FRE® BreathSaver® Composites (RTRC) fiberglass fittings.
		2. Fiberglass conduit fittings, elbows, and accessories shall be manufactured using the same filament winding process, methods, chemicals, and materials as the conduits and have a minimum socket depth and an inside bell design consistent with the conduit.
		3. Manufacturing process.
			1. Fittings shall use the same filament winding process, methods, and components as used to manufacture the fiberglass conduit.
		4. All elbows conform to the nominal radius within plus or minus 3 degrees. Wall thicknesses complies with tolerances as indicated in the applicable standards below.
		5. All type BreathSaver® XW conduits, elbows and fittings are durably and legibly marked in accordance with UL Standards in addition the following information shall be included in the marking:
			1. UL 2515A (For Type BreathSaver® XW Only)
			2. CSA: C22.2 No. 2515.1-13 (For Type BreathSaver® XW only)
			3. Manufacturer and reseller (if elbows were modified or bent other than by manufacturer).
			4. Date of manufacturing of conduit, elbows, and fittings.
		6. Fittings, General: Listed and labeled for type of conduit, location, and use.
		7. Fittings for RTRC comply with UL 2515A.
		8. Fittings for RTRC complies with CSA and manufactured in accordance with CSA: C22.2 No. 2515.1-13
		9. Adhesives by Atkore FRE® Composites: As recommended by conduit manufacturer.

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* 1. 2-HOUR FIRE RATED CONDUIT SYSTEM – RTRC TYPE XW

The conduit product listed below, shall be used.

* + 1. Basis-or-Design Product; BreathSaver® XW Fiberglass Phenolic Conduit by Atkore FRE® Composites (RTRC) for both vertical and horizontal installations.
1. Conduit Type BreathSaver® XW is certified for 2 Hour Fire rating installations as per (UL FHIT System No. 25C (UL FHIT No.25D 1-Hour Fire Rated).
2. Conduit Type BreathSaver® XW is certified for 1-hour fire rating installations (UL FHIT7 No.25D for Canada).
3. Conduit Type BreathSaver® XW conforms to the requirements of NFPA 130 for Noncombustible Material and Limited-Combustible Material for 1-hour fire rating including wet locations for Fire Resistive Cables.
4. Conduit Type BreathSaver® XW complies with the applicable requirements for Noncombustible Material in NFPA 502 for 2 Hour Fire rating including wet locations for Fire Resistive Cables.
5. Provide a rigid non-metallic low smoke, zero halogen, phenolic RTRC conduit, couplings, expansion joints, elbows, split stop rings and box connectors as indicated on the Contract Drawings. Conduit shall be fire resistant and low smoke producing.
6. Conduit and Fittings shall utilize a straight socket joint with a dual cartridge adhesive kit by Atkore FRE® Composites or approved equal per manufacturer's recommendations.
7. Conduit shall have a flame spread index and a smoke developed index below 50 (i.e., a 25/50 rating) when tested per applicable standards.

# PART 3 – EXECUTION

# INSTALLATION

* + 1. Reinforced Thermosetting Resin Conduit - Phenolic, elbows and fittings shall be installed in compliance with the latest version of the National Electrical Code® (NEC®) and other applicable codes and standards as indicated elsewhere in these specifications.
		2. Reinforced Thermosetting Resin Conduit - Phenolic, elbows and fittings shall be installed in compliance with the latest version of the CSA C22.1:21 Canadian Electrical Code (CEC), Part I, Safety Standard for Electrical Installations.
		3. Reinforced Thermosetting Resin Conduit - Phenolic, elbows and fittings shall be installed in accordance with NECA National Electrical Installation Standard (NEIS) 111, *Standard for Installing Nonmetallic Raceways.*
		4. The Reinforced Thermosetting Resin Conduit manufacturer will provide field certified installation training onsite. The manufacturer will provide training ensuring installation in accordance with the manufacturer’s specifications and warranties.
		5. Upon completion of certified installation training, contractors will receive a certificate of completion and provide it as requested by the owner.
		6. RTRC – Phenolic Type BreathSaver® XW conduit shall be acceptable in areas subject to physical damage Class 1 Division 2 Locations per NFPA 70 NEC Section 501.10(B) Class 1 Division 2(1)(6). Also listed to UL 2515A/ CSA: C22.2 No. 2515.1-13.

 END OF SECTION