

Recommended Practice for Care and Use of Fiberglass Tubulars

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Recommended Practice for Care and Use of Fiberglass Tubulars

1 Scope

The purpose of this recommended practice is to provide information on packing, transporting, handling, storing, inspecting, and installing fiberglass tubulars in oilfield usage.

Trouble-free service and maximum safety should result if this recommended practice is followed. Fiberglass tubulars differ in properties from metallic tubular goods, and different installation techniques are required.

NOTE The recommendations listed in this document are applicable to normal situations. Exceptional conditions may require different practices. It is not intended that these practices conflict with any regulatory code.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies.

API Specification 5B, *A Specification for Threading, Gauging and Thread Inspection of Casing, Tubing and Line Pipe Threads*

API Recommended Practice 5B1, *Gauging and Inspection of Casing, Tubing and Line Pipe Threads*

API Specification 15HR, *A Specification for High Pressure Fiberglass Line Pipe*

ASTM D1599¹, *A Test Method for Short-Time, Hydraulic Failure Pressure of Plastic Pipe, Tubing and Fittings*

ASTM D2584, *A Test Method for Ignition Loss of Cured Reinforced Resins*

ASTM D3839, *A Standard Practice for Underground Installation of Flexible Reinforced Thermosetting Resin Pipe and Reinforced Plastic Mortar Pipe*

AWWA C-950,² *AWWA Standard for Fiberglass Pressure Pipe*

AWWA M-45, *Fiberglass Pipe Design*

3 Terms, Definitions, Abbreviations, and Symbols

3.1 Terms and Definitions

3.1.1

breakout

The process of unscrewing threaded connections.

3.1.2

casing

A tubular that is cemented to the wellbore and used to maintain wellbore integrity.

3.1.3

casing and tubing application

An application where the tubular is installed vertically inside a well.

¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.

² American Water Works Association, 6666 W. Quincy Avenue, Denver, Colorado 80235, www.awwa.org.

**3.1.4
doubles**

Two joined lengths of tubulars.

**3.1.5
derrick**

The structure used to support the drill string of a drilling rig.

**3.1.6
fiberglass**

A generic term for glass-fiber-reinforced thermosetting resins.

**3.1.7
fishing**

The process of removing debris from the wellbore.

**3.1.8
line pipe application**

An application where the tubular is installed horizontally.

**3.1.9
makeup**

The process of tightening threaded connections.

**3.1.10
manufacturer**

An organization that produces fiberglass tubulars.

**3.1.11
pulling**

The process of breaking out threaded connections and taking out tubulars from the well.

**3.1.12
running**

The process of installing tubulars in the well.

**3.1.13
stripping**

The process of installing strips underneath or between tubulars.

**3.1.14
triples**

Three joined lengths of tubulars.

**3.1.15
tubing**

A tubular that is installed inside the casing string and used to transport oil and gas from the well to the outer surface or from the outer surface to the well.

**3.1.16
tubular**

A pipe that is used for either a casing and tubing or a line pipe application.

**3.1.17
visual inspection**

The examination of parts and equipment for visible defects in material and workmanship.

4 Units of Measure

A U.S. customary (USC) units system is the standard for the dimensions shown in this document. Nominal sizes will continue to be shown as fractions. For the purposes of this recommended practice, the fractions and their decimal equivalents are equal and interchangeable. Metric conversions are described in Annex F.

5 Packing

Fiberglass tubulars shall be packed so that the body and connections are protected during shipping, unloading, storing, and handling. The manufacturer shall apply external and internal protectors of such design, material, and mechanical strength to protect the threads and/or ends of the tubular and coupling from damage under normal handling and transportation. External protectors shall cover, at a minimum, the effective length of the external thread or bonding area. Internal protectors may cover the first 2 in. to 3 in. of the thread length of the internal thread and/or bonding surface. Protectors shall exclude foreign matter such as dirt from the threads and from the interior of the tubular. The protectors shall contain no compounds capable of damaging the threads or promoting adherence of the protectors to the threads or bonding surfaces.

Tubulars should be bundled in crate frames with stripping between each layer to prevent damage to the tubulars, as well as to keep them from shifting. Stripping material should not be placed on the transition or upset areas of the tubulars. For nominal 30-foot lengths, a minimum of four stripping material supports are recommended. Stripping material should be wood and free of protruding nails. Stripping should be placed as close as possible to the end of the tubular and still maintain vertical alignment. Tubulars should be secured with wooden blocks at both ends of spacing strips.

Tubulars should be packed in an alternating manner (pin the end of one tubular next to the box end of the adjacent tubular) to prevent the ends from touching each other and chafing during transportation. Alternatively, tubulars can be packed in an alternating manner per layer (pin ends in one layer and box ends in the next layer), where adjoining tubulars in the layer can be staggered an amount approximately the length of the coupling or the box upset.

For land freight, stripping under the bottom layer should be no more than six feet apart, oriented perpendicular to the tubular body, and aligned vertically.

For sea freight, a strong wooden base should be made under the bottom layer and the crated tubular bundle should be put inside a container.

6 Transportation, Handling, and Storage

6.1 General

Fiberglass tubulars in general, and threads in particular, are made with precision and require careful handling. Whether new or used, they should always be handled with thread protectors in place.

6.2 Transportation

The following precautions should be taken for land freights to assure that product doesn't get damaged:

- a) Trucks that haul tubulars should be the flatbed type and not pole trailers. Bed length of the trailer should be sufficient so that no overhang occurs.
- b) Load crated tubular bundles onto the truck slowly and with extreme care to avoid chafing.
- c) Suitable tie-downs, such as woven cloth straps, should be used to secure the load. Caution should be used to prevent damaging the tubulars when securing the load. The manufacturer should locate the tie-downs such that bending of the tubulars is minimized.

For shipments other than by land, packing, loading, and protection procedures shall be agreed upon between the purchaser and the manufacturer.

6.3 Handling

The following precautions shall be observed in handling fiberglass tubulars:

- a) Prior to unloading, make sure that the protectors are tightly in place. Inspect the body for delaminations (bruises), crazing, indentations, contaminations, embedments, or tears. Upon request, the manufacturer shall furnish descriptive criteria pertaining to visual inspection.
- b) Avoid rough handling that may damage the tubular's body or threads. When tubular bundles are being loaded or unloaded, each bundle should be handled individually. Never unload fiberglass tubulars by breaking the crate frame, pulling out the side stakes or sideboards, or allowing the tubulars to roll off the trailer. Do not use hooks for lifting because the ends of the tubular can be damaged. Chains or steel cables shall not be used directly on tubulars while unloading. Woven cloth, nylon, or canvas hoisting slings with spreader bars are acceptable for unloading.
- c) If a forklift is used, the forklift arms shall be rubber-padded to avoid direct contact between steel and fiberglass tubulars. Additionally, the forklift arms should be spread wide enough to avoid exceeding the maximum allowed deflection of tubulars defined by the manufacturer.
- d) All fiberglass tubulars, whether new or used, should always be handled with thread protectors in place. Tubulars should always be kept on wooden strips free of rocks, sand, or dirt. Do not keep tubulars directly on the ground or metal racks. If tubulars are dragged in sand or dirt, the threads should be cleaned, inspected, and serviced again as outlined in [Section 8](#), items b) and c).
- e) Do not remove the thread protector from the pin end of the tubular until ready to makeup.

NOTE Caution should be exercised that fiberglass tubulars are not unduly flexed during any handling operation. Undue flexing occurs when the bend radius is smaller than the manufacturer's recommended minimum bend radius.

6.4 Storage

The following precautions are recommended for storage of fiberglass tubulars:

- a) Tubulars should be kept bundled in the crate frame until they need to be used.
- b) When tubulars are taken out of the crate, do not pile them directly on the ground, rails, steel, or concrete floors. Racks normally used for steel pipe and tubulars are not suitable for fiberglass tubulars.
- c) The use of stripping under the bottom layer and between each layer is recommended to prevent damage to the tubulars, as well as to keep them from shifting. For nominal 30-foot lengths, a minimum of four stripping material supports are recommended between each layer. Stripping material should not be placed on the transition or upset areas of the tubular. Stripping material should be no more than six feet apart under the bottom layer, oriented perpendicular to the tubular body and aligned vertically, of uniform thickness within each layer. Stripping material should be wood and free of protruding nails. Stripping should be placed as close to the end of the product as possible and still maintain vertical alignment.
- d) Stagger adjoining lengths of tubulars in the tiers an amount approximating the length of the coupling or the box upset.
- e) Block tubulars by nailing wooden blocks at both ends of spacing strips.
- f) Tubulars should not be stacked higher than 60 in. for safety, ease of inspections, loading, and unloading.
- g) Tubular bundles should be stored separately accordingly to their class and diameter.

7 Inspection Before Use

The following should be considered before using any tubular:

- a) Inspection criteria for fiberglass tubulars differs from the criteria used for steel tubulars. In preparation for visual examination of fiberglass tubulars, inspectors should understand the inspection practices defined by the manufacturer and summarized in Annex E, along with the definition of defects contained in [Table E.1](#).
- b) Immediately before use, remove the thread protectors from both ends and carefully inspect the threads. Those found to be damaged within the engaged length should be assessed with respect to the allowable limits specified in [Table E.1](#). Tubulars found with damaged threads exceeding the allowable limits or affecting the integrity, as confirmed by the manufacturer, should be replaced and sent for thread reforming. Repairing damaged thread is not advised.

8 Makeup of a Threaded Joint

In assembling a threaded joint, it is extremely important that the threads are clean and dry before applying thread compound. Sand or other foreign material may cut the threads, resulting in improper makeup or failure of the threaded joint. The following procedure is recommended:

- a) Remove the thread protector from the pin end of tubulars immediately before makeup.
- b) Brush dirty threads with a clean industrial moustache brush. This is extremely important on tubular that has been in prior service. A wire brush shall not be used because it may damage the threads.
- c) Wash dirty threads and then dry them with clean tissues or rags. Any liquid remaining in the root of the threads may prevent good thread lubrication.

CAUTION — The manufacturer's directions, precautions, and material safety data sheets for cleaning fluids should be read and observed. Observe appropriate regulations relative to the disposal of used cleaning fluids.

- d) Cover pin and box threads with thread compound.
- e) Apply sufficient thread compound, as recommended by the manufacturer, to coat the thread surface on both the pin and the box. Thread compound has a significant impact on the performance of the connection, especially under combined loading conditions. It is used to lubricate the thread surfaces to facilitate joint makeup and breakout without galling and to seal voids between mating thread surfaces and effectively prevent leakage. Use a thread compound recommended by the manufacturer. The brush, or utensil, used in applying thread compound should be kept free of foreign matter and the compound should never be thinned. Contaminated thread compound shall not be used. The material safety data sheet for thread compound should be read and observed. Store and dispose of containers and unused compound in accordance with appropriate regulations.

NOTE PTFE tape is not required to seal API 8-round threads. Its use may increase in leak tightness when connections are made up without torque control. Use only as specified by the manufacturer.

- f) Fiberglass threads may be damaged by over-tightening. Start the threads by hand, making sure the thread is straight. Make up to hand-tight, then tighten with a strap wrench or manufacturer-supplied wrench. Use powered wrenches with caution. Apply torque slowly to make up the connection to the recommended torque or standoff values established by the manufacturer. Makeup practices should be in accordance with the manufacturer's recommendations.

NOTE The torque values for makeup of fiberglass pipe are significantly lower than torque values required for steel tubulars.

NOTE Proprietary connections should be joined according to manufacturer recommendations.