Specification for Bonded Flexible Pipe

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

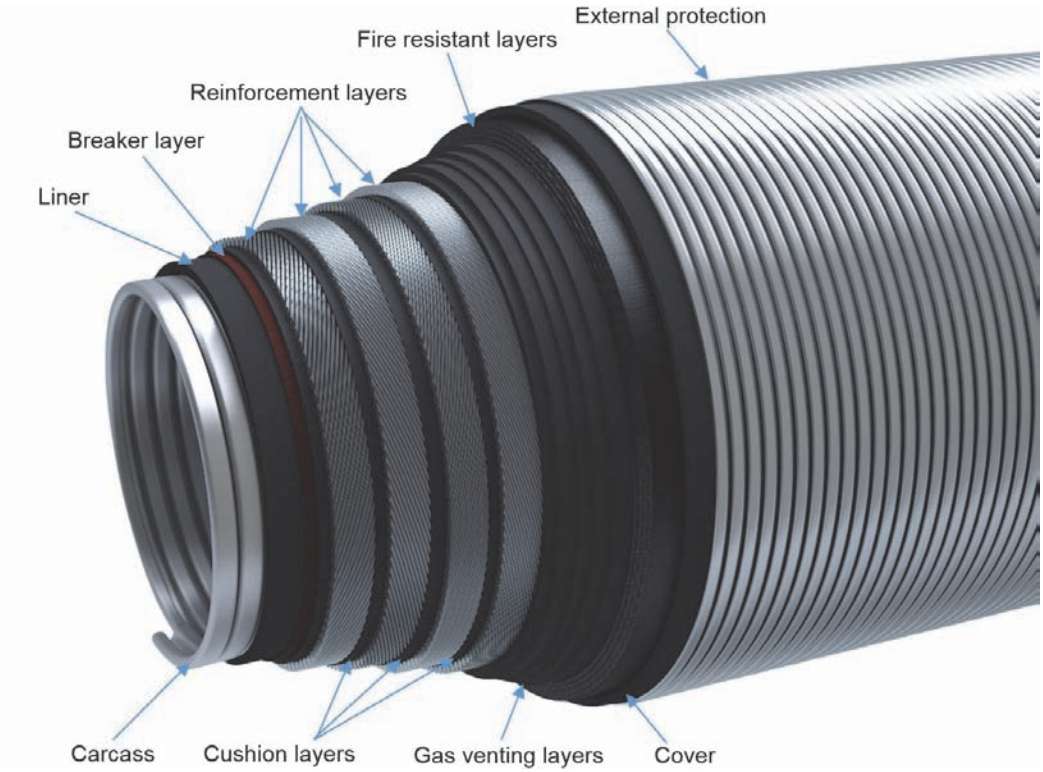
Contents

Contents

Introduction

Users of this specification should be aware that further or differing requirements might be needed for individual applications. This specification is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this specification and provide details.

Figures 1a, 1b, and 1c provide examples of typical bonded flexible pipe covered by this specification.



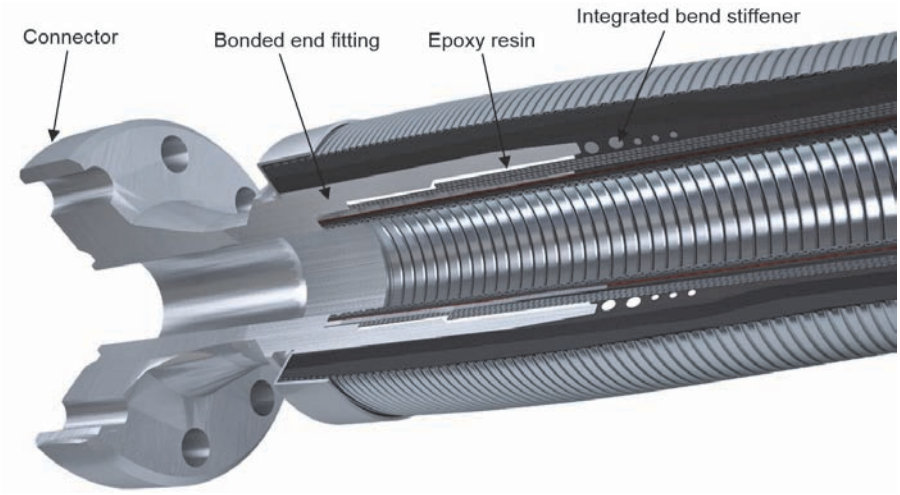


Figure 1a—Typical Bonded Flexible Pipe—Flowline and Riser

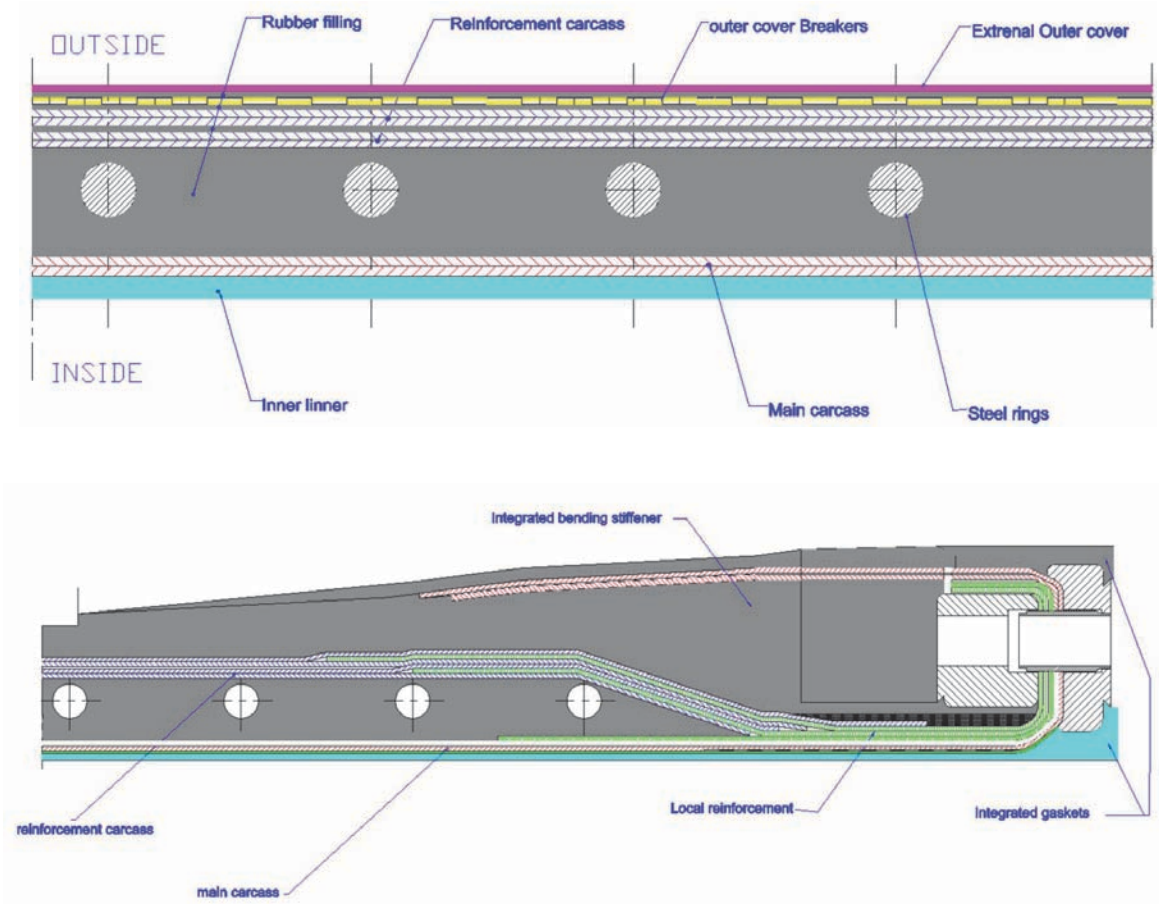


Figure 1b—Typical Bonded Flexible Pipe—Loading and Discharge Hose

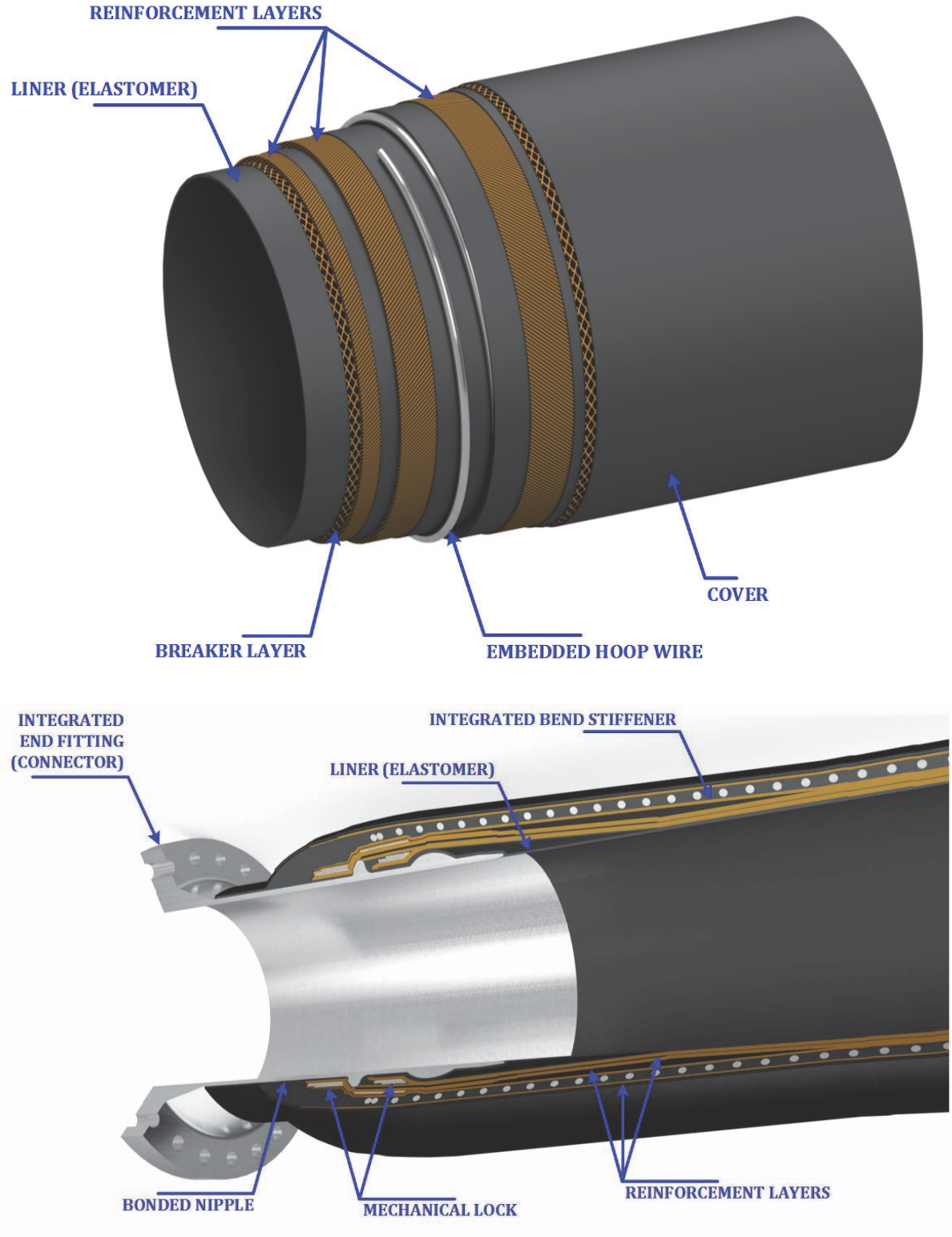


Figure 1c—Typical Bonded Hose—Body and End

Specification for Bonded Flexible Pipe

1 Scope

This specification defines the technical requirements for safe, dimensionally and functionally interchangeable bonded flexible pipes that are designed and manufactured to uniform standards and criteria. See Figure 1 for an explanatory figure on typical bonded flexible pipe.

Minimum requirements are specified for the design, material selection, manufacture, testing, marking, and packaging of bonded flexible pipes, with reference to existing codes and standards where applicable. See API 17B for guidelines on the use of flexible pipes. Refer to API 17L1 and API 17L2 for the specification and recommended practice for ancillary equipment including buoyancy, bend limiters, bell mouths, and non-integral stand-alone bend stiffeners.

This specification applies to bonded flexible pipe assemblies, consisting of segments of flexible pipe body with end fittings or integrated flanges attached to both ends. API 17K does not cover flexible pipes of unbonded structure. See API 17J for guidance on unbonded flexible pipes.

This specification can be applied to flexible pipes that include nonmetallic reinforcing layers. This specification can be applied to a bonded construction pipe that includes a material or layer construction that is covered in API 17J.

Supplementary requirements for loading and discharge hoses can be found in GMPHOM provided they do not contradict those of API 17K.

The applications addressed by API 17K are for sweet and sour service production, including export and injection and seawater intake applications. Production products include oil, gas, water, and injection chemicals. This specification applies to both static and dynamic flexible pipes used as flowlines, risers, jumpers, and offshore loading and discharge hoses.

This specification does not apply to flexible pipe ancillary components. Guidelines for ancillary components are given in API 17L1 and API 17L2. This specification does not apply to flexible pipes for use in choke and kill-line applications. See API 16C for guidance on choke and kill-line applications. This specification can be applied to flexible pipes for pile hammer, gas flare, water supply, and jetting applications, though no effort was made to address the specific and unique technological aspects relating to each of these requirements.

If product is supplied bearing the API Monogram and manufactured at a facility licensed by API, the requirements of Annex A apply.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Specification 6A, *Specification for Wellhead and Christmas Tree Equipment*

API Recommended Practice 17B, *Recommended Practice for Flexible Pipe*

API Specification 17D, *Specification for Subsea Wellhead and Christmas Tree Equipment*

API Standard 1104, *Welding of Pipelines and Related Facilities*

ASME [1] Section IX, Boiler & Pressure Vessel Code, *Welding and Brazing Qualifications*

ASTM [2] A29/A29M:2005, *Standard Specification for Steel Bars, Carbon and Alloy, Hot-Wrought — General Requirements*

ASTM A105, *Standard Specification for Forgings, Carbon Steel, for Piping Applications*

ASTM A182/A182M:2005, *Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service*

ASTM A668/A668M:2004, *Standard Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use*

ASTM A751, *Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products*

ASTM C177, *Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus*

ASTM D395, *Standard Test Methods for Rubber Property—Compression Set*

ASTM D412, *Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension*

ASTM D413, *Standard Test Methods for Rubber Property—Adhesion to Flexible Substrate*

ASTM D570, *Standard Test Method for Water Absorption of Plastics*

ASTM D695, *Standard Test Method for Compressive Properties of Rigid Plastics*

ASTM D746, *Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact*

ASTM D1418, *Standard Practice for Rubber and Rubber Lattices—Nomenclature*

ASTM D2084, *Standard Test Method for Rubber Property—Vulcanization Using Oscillating Disk Cure Meter*

ASTM D2240, *Standard Test Method for Rubber Property—Durometer Hardness*

ASTM D5028, *Standard Test Method for Curing Properties of Pultrusion Resins by Thermal Analysis*

ASTM E92, *Standard Test Method for Vickers Hardness of Metallic Materials*

ASTM E165, *Standard Test Method for Liquid Penetrant Examination*

ASTM E328, *Standard Test Methods for Stress Relaxation Tests for Materials and Structures*

ASTM E1356, *Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry*

ASTM G48, *Standard Test Method for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution*

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[1] American Society of Mechanical Engineers, 2 Park Avenue, New York, New York 10016-5990, www.asme.org.

[2] American Society for Testing and Materials. 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.