

AWES Recommended Practice For the Qualification of Tubing Encased Fiber (TEF) Cable

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Abstract

This Recommended Practice (RP) has been developed by users and suppliers of Tubing Encased Fiber (TEF). TEF is generally intended for use downhole by the petroleum and natural gas industries. Outlined within this document are the qualification tests and acceptance testing regimes for each of the individual TEF components from the core to encapsulation. The tests are divided into type tests (qualification) and routine tests/factory acceptance tests (FAT) (production).

The RP should be used as a guide and has been organised so that the recommended individual tests for each component are outlined in a coherent way. The supplier and customer must agree beforehand on what the acceptance criteria for given tests should be. This enables suppliers and customers alike to be able to easily understand the testing regime that will be undertaken.

Users of this RP should be aware that requirements outlined in this RP may be needed for individual applications. This RP is not intended to inhibit a supplier/manufacture from offering, or the user/purchaser from accepting, alternative equipment or engineering solutions. This may be particularly applicable where there is innovative or developing technology.

There are 6 sections covering test regimes for components:

Sections 4, 5, and 6 cover the tests required for the individual components that make up the TEF cable. Section 4 details the optical and fiber in metal tube (FIMT) tests on the core. Section 5 explains the five tests applied to the tube. Section 6 explains the testing of encapsulation that may be placed over the armour layer. Additional quality and testing requirements are specified when required.

Section 7 states the range of qualification tests that should be conducted on a completed cable.

Section 8 recommends the packaging and preservation required.

Section 9 outlines the recommended minimum requirements for FAT of the final product.

Annex A provides guidance on application of the AWES RP AWESTEF_01 and AWESTEC_01 RP to TEC/TEF Hybrid cables having optical fibers and electrical conductors within the same armor tube.

- 1. Scope
- 2. Normative References
- 2.1 Applicable Standards
- 2.2 Fiber Measurement Standards.....
- 2.2.1 Optical
- 2.2.2 Geometry.....**Error! Bookmark not defined.**
- 2.2.3 Mechanical
- 2.2.4 Aging
- 3. Terms, Definitions and Abbreviated Terms
- 3.1 Terms and Definitions
- 3.2 Abbreviated Terms
- 4. Core Qualification Tests.....
- 4.1 Optical Fibers
- 4.1.1 Fiber Tests
- 4.2 FIMT
- 4.2.1 FIMT Metal Type and Chemical Composition.....
- 4.2.2 FIMT Geometrical and Construction Properties.....
- 4.2.3 FIMT Mechanical Tests on FIMT
- 4.2.4 Gel Tests
- 4.2.5 Optical Tests on FIMT
- 4.3 Belt
- 4.3.1 Dimensions.....
- 4.3.2 Marking on Belt
- 4.3.3 Material Properties
- 4.3.4 Mechanical Requirements.....
- 4.3.5 Optical Tests After Belt Operation (optional)
- 5. Armored Tube Tests
- 5.1 Chemical Composition
- 5.2 Dimensional Tests.....
- 5.2.1 Armor Tube Diameter.....
- 5.2.2 Armor Tube In Process Diameter Measurement
- 5.2.3 Armor Tube Wall Thickness
- 5.3 Mechanical Testing
- 5.4 Tube Weld Integrity Tests
- 5.4.1 Weld Mechanical Tests
- 5.4.2 Weld Non-Destructive Testing
- 5.5 External Hydrostatic Pressure Test
- 5.5.1 Sample
- 5.5.2 Test Procedure.....

- 5.6 Core Slip Test (Optional).....
- 6. Encapsulation Qualification Tests.....
 - 6.1 Encapsulation Dimensions.....
 - 6.2 Un-aged physical properties
 - 6.2.1 Sample.....
 - 6.2.2 General Procedure.....
 - 6.2.3 Requirements.....
 - 6.3 Material Penetration.....
 - 6.3.1 Object.....
 - 6.3.2 Sample.....
 - 6.3.3 Procedure.....
 - 6.3.4 Requirements.....
 - 6.4 Abrasion Test.....
 - 6.5 Chemical Compatibility at Temperature.....
 - 6.5.1 Object.....
 - 6.5.2 Sample.....
 - 6.5.3 Procedure.....
 - 6.5.4 Requirements.....
 - 6.6 Encapsulation Color.....
 - 6.7 Cable Markings.....
 - 6.7.1 Cable Marking Verification.....
 - 6.7.2 Cable Marking Durability.....
- 7. Completed Cable Qualifications.....
 - 7.1 Optical Tests on the Final Cable.....
 - 7.1.1 Optical Fiber Attenuation.....
 - 7.1.2 Optical Fiber Attenuation Uniformity.....
 - 7.1.3 Optical Fiber Attenuation Point Discontinuities.....
 - 7.1.4 Optical Fiber length.....
 - 7.1.5 Excess Optical Fiber length.....
 - 7.2 Cable Tensile Test.....
 - 7.2.1 Object.....
 - 7.2.2 Sample.....
 - 7.2.3 Procedure.....
 - 7.2.4 Requirements.....
 - 7.3 Cable Break Test.....
 - 7.3.1 Sample.....
 - 7.3.2 Procedure.....
 - 7.3.3 Requirements.....
 - 7.4 Cable Torsion Test.....
 - 7.4.1 Object.....
 - 7.4.2 Sample.....
 - 7.4.3 Procedure.....

- 7.4.4 Requirements.....
- 7.5 Cyclic Cable Bend Test.....
 - 7.5.1 Object.....
 - 7.5.2 Sample.....
 - 7.5.3 Procedure.....
 - 7.5.4 Requirements.....
- 7.6 Static Bend Test.....
 - 7.6.1 Object.....
 - 7.6.2 Test Equipment.....
 - 7.6.3 Sample.....
 - 7.6.4 Procedure.....
 - 7.6.5 Requirement.....
- 7.7 Crush Test.....
 - 7.7.1 Crush (Deformation) Test.....
 - 7.7.2 Crush (Optical Performance) Test.....
- 7.8 Impact Test.....
 - 7.8.1 Object.....
 - 7.8.2 Sample.....
 - 7.8.3 Procedure.....
 - 7.8.4 Requirements.....
- 7.9 Core Slip.....
 - 7.9.1 Object.....
 - 7.9.2 Sample.....
 - 7.9.3 Procedure.....
 - 7.9.4 Requirements.....
- 7.10 Encapsulation Slip/ Adherence.....
 - 7.10.1 Object.....
 - 7.10.2 Sample.....
 - 7.10.3 Procedure.....
 - 7.10.4 Requirement.....
- 7.11 Temperature Testing.....
 - 7.11.1 Object.....
 - 7.11.2 Sample.....
 - 7.11.3 Apparatus.....
 - 7.11.4 Procedure.....
- 7.12 Compound (Filling Gel) Flow (Drip) Test.....
 - 7.12.1 Object.....
 - 7.12.2 Sample.....
 - 7.12.3 Procedure.....
 - 7.12.4 Requirements.....
- 7.13 Cable Length.....
- 8. Packaging and Preservation.....

- 9. Recommended Factory Acceptance Testing.....
 - 9.1 Object.....
 - 9.2 Sample
 - 9.3 Apparatus
 - 9.4 Procedure.....
 - 9.4.1 Visual.....
 - 9.4.2 Dimensional.....
 - 9.4.3 Materials (via traceability)
 - 9.4.4 Optical Fiber
 - 9.4.5 Packaging and Preservation
 - 9.5 Documentation
 - 9.6 Requirements.....
 - 9.6.1 Conformance to customer purchase order or specification
 - 9.6.2 Conformance to supplier product specification
- A. Appendix A: TEC/TEF Hybrid Cables
- A.1. Scope
- A.2. Standards
- A.3. Terms, Definitions and Abbreviated Terms.....
- A.4. Core Qualification Tests.....
- A.5. Armored Tube Tests
- A.6. Encapsulation Qualification Tests.....
- A.7. Completed Cable Qualifications.....
- A.8. Recommended Factory Acceptance Testing