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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 21412.10-2019

**Petroleum and natural gas industries -- Design and operation of
subsea production systems -- Part 10: Specification for bonded
flexible pipe**

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Foreword

GB/T 21412 "Design and Operation of Underwater Production System for Oil and Gas Industry" is divided into 15 parts.

- Part 1. General requirements and recommended practices;
- Part 2. Flexible pipe systems for subsea and offshore;
- Part 3. Over-the-out pipe (TFL) system;
- Part 4. Underwater wellhead installations and tree equipment;
- Part 5. Underwater umbilical cable;
- Part 6. Underwater production control system;
- Part 7. Completion or workover riser system;
- Part 8. Underwater robot (ROV) interface for underwater production systems;
- Part 9. Remote operation tool (ROT) maintenance system;
- Part 10. Adhesive flexible pipe specifications;
- Part 11. Recommended practices for flexible pipe systems;
- Part 12. Dynamic production riser;
- Part 13. Remote operation tools and interfaces for underwater production systems;
- Part 14. Underwater high integrity pressure protection system;
- Part 15. Underwater structures and manifolds.

This part is the 10th part of GB/T 21412.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the redrafting method to modify the design and operation of the ISO 13628-10:2005 "oil and gas industry underwater production system."

Part 10. Adhesive flexible pipe specifications.

The technical differences between this part and ISO 13628-10:2005 are as follows.

--- Revised the "scope" representation, consistent with the requirements of GB/T 1.1.

---About the normative reference documents, this part has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory Citations", and the specific adjustments are as follows.

- * Replace ISO 6892 with GB/T 228.1.1 modified to international standards.
- * Replace ISO 6508-1 with GB/T 230.1 modified to international standards.
- * Replace ISO 6506-1 with GB/T 231.1 modified to international standards.
- * Replace ISO 37 with GB/T 528 equivalent to the international standard.
- * Replace ISO 36 with GB/T 532 equivalent to international standards.
- * Replaced ISO 2781 with GB/T 533, which is equivalent to the international standard.
- * Replace ISO 75 (all parts) with GB/T 1634 (all parts) equivalent to international standards, two standard departments

The degree of consistency between the points is as follows.

GB/T 1634.1-2004 Determination of deformation temperature of plastics - Part 1. General test methods

(ISO 75-1:2003, IDT);

GB/T 1634.2-2004 Determination of deformation temperature of plastics - Part 2. Plastics, hard rubber and long fibres

Dimensional reinforced composites (ISO 75-2:2003, IDT);

Plastics -- Determination of deformation temperature of plastics - Part 3. High-strength thermosetting laminates

Material (ISO 75-3:2003, IDT).

- * Replace ISO 1817 with GB/T 1690 modified to international standards.
- * Replaced ISO 4647.1982 with GB/T 2942 modified to international standards.
- * Replace ISO 868 with GB/T 2411, which is not equivalent to the international standard.
- * Replace ISO 1431-1:2004 with GB/T 7762, which is equivalent to the international standard.
- * Replace ISO 4649 with GB/T 9867, which is equivalent to the international standard.
- * Replace ISO 34-2 with GB/T 12829, which is equivalent to the international standard.

- * Replace ISO 812 with GB/T 15256, which is equivalent to the international standard.
- * Replace ISO 10474 with GB/T 18253, which is not equivalent to the international standard.
- * Replace ISO 15156 (all parts) with GB/T 20972 (all parts) modified to international standards, two standards

The degree of consistency between the parts is as follows.

- * GB/T 20972.1-2007 Oil and gas industry oil and gas mining for materials containing hydrogen sulfide environment

Part 1. General principles for the selection of crack-resistant materials (ISO 15156-1.2001, IDT);

- * GB/T 20972.2-2008 Oil and gas industry oil and gas mining for materials containing hydrogen sulfide environment

Part 2. anti-cracking carbon steel, low alloy steel and cast iron (ISO 15156-2.2003, MOD);

- * GB/T 20972.3-2008 Oil and gas industry oil and gas mining for materials containing hydrogen sulfide environment

Part 3. Anti-cracking corrosion resistant alloys and other alloys (ISO 15156-3.2003, MOD).

- * Replace ISO 13628-4 with GB/T 21412.4 equivalent to the international standard.
- * Replace ISO 10423 with GB/T 22513 modified to international standards.
- * Replaced ISO 16120-1 with GB/T 24242.1 modified to international standards.

For ease of use, the following editorial changes have been made to this section.

--- Removed Appendix C of ISO 13628-10.2005.

--- Use our legal measurement unit instead of the English unit of measurement.

This part is proposed and managed by the National Oil and Gas Standardization Technical Committee (SAC/TC355).

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Introduction

According to the specific situation of our country, we use our data and quantitative calculation methods.

The measurement unit is mainly based on the legal measurement unit in China, that is, the

value of the legal measurement unit in China is in the front, and the corresponding value of the English unit is included in the subsequent

Within the number. In order to not change the original standard formula, the shape characteristics, constants and coefficients of the curve, the original units are still in English, and the English units are still used.

Oil and gas industry

Design and operation of underwater production systems

Part 10. Adhesive flexible pipe specifications

1 Scope

This part of GB/T 21412 specifies the technical requirements for the design and manufacture of adhesive flexible tubes in terms of safety, size and function. typical

See Figure 1 for an illustration of the adhesive flexible tube. Minimum requirements for design, material selection, manufacturing, testing, marking and packaging of adhesive flexible tubes

See the specifications and standards that have been used. Guidelines for flexible tubes and accessory parts can be found in APIRP17B.

Description.

1---overwound layer; 5---strength layer;

2---cladding layer; 6---breaking layer;

3---breaking layer; 7---liner layer;

4---buffer layer; 8---skeleton layer.

Figure 1 Typical adhesive flexible tube

This section applies to the assembly of adhesive flexible tubing, including flexible tubing and end fitting assembly at both ends.

This section applies to flexible pipes of non-metallic reinforcing layers, although it cannot be completely solved in its specific and unique technical problems.

This section applies to bonded flexible tubes containing materials and layered structures covered by ISO 13628-2.

This section applies to both sweet and acidic media, including external delivery and infusion applications. The medium being transported includes oil, gas, water and chemical injection.

This section applies to static and dynamic flexible pipes used in oil pipes, risers, jumpers and offshore loading and unloading hoses. This section applies to design pressure