

ICS 75.180.10

CCS E 92



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

GB/T 23512-2025

Replacing GB/T 23512-2015

**Petroleum and natural gas industries - Evaluation and testing of
thread compounds for use with casing, tubing, line pipe and
drill stem elements**

石油天然气工业 套管、油管、管线管和钻柱构件用螺纹脂的评价与试验
(English Translation)

Issued on: October 5, 2025

Implemented on: May 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Preface
1 Scope
2 Normative References
3 Terms and Definitions
4 Thread grease performance
4.1 Product Performance
4.2 Physical and chemical properties of threadlocker grease for casing, tubing, and line pipe
5 Performance of threadlocker grease
5.1 Friction Properties
5.2 Anti-hooking performance
5.3 Fluid sealing performance
6 Quality Assurance and Control 7.
7 Marking Requirements
7.1 Mark
7.2 Tag
Appendix A (Informative) API Improved Thread Grease
A.1 Overview
A.2 Threadlock Grease
A.3 Solid Component Composition
A.4 Base Lipid
A.5 Performance Tests and Requirements
A.6 Component Material Requirements
Appendix B (Informative) API Modified Standard Grease Formulations for Casing, Tubing and Line Pipes
Appendix C (Normative) Cone Penetration Test
C.1 Overview
C.2 Equipment
C.3 Step
Appendix D (Normative) Evaporation Test
D.1 Overview
D.2 Equipment
D.3 Step

Appendix E (Normative) Density Test

E.1 Overview

E.2 Equipment

E.3 Step

Appendix F (Normative) Coating and Adhesion Tests

F.1 Overview

F.2 Equipment

F.3 Step

Appendix G (Normative) Escape Volume Test

G.1 Overview

G.2 Equipment

G.3 Step

G.4 Sample Test Data

G.5 Calculation

Appendix H (Normative) Water filtration test

H.1 Overview

H.2 Equipment

H.3 Step

Appendix I (Normative) Test for Friction Performance of Thread Grease

I.1 Overview

I.2 Equipment

I.3 Step

I.4 Data Processing

I.5 Application of Friction Coefficient

Appendix J (Normative) Test for Ultimate Surface Contact Pressure (Hook & Loop) Performance

J.1 Overview

J.2 Equipment

J.3 Step

Appendix K (Informative) Fluid sealing test of threadlock grease for casing, tubing and line pipe

K.1 Overview

K.2 Full-size test method

K.3 Step-type leakage resistance test procedure and typical test results

Appendix L (Informative) Corrosion Resistance Test

L.1 Overview

L.2 Full-scale test procedures for casing, tubing, and drill string components

L.3 Corrosion Test of Specimens---GB/T 10125 Salt Spray Specimen Test

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document supersedes GB/T 23512-2015 "Evaluation of Thread Grease for Casing, Tubing, Line Pipeline and Drill String Components in the Petroleum and Natural Gas Industry".

Compared with GB/T 23512-2015, the main technical changes in "Pricing and Testing" are as follows, apart from structural adjustments and editorial modifications.

a) The phrase "not applicable to other formulations of threadlocker grease" has been removed (see Chapter 1 of the 2015 edition);

(b) The terms "API modified standard grease formulation" and "connection system with threadlocker grease" have been changed (see 3.2, 3.8, and 4.9 of the 2015 edition).

4.15);

c) The term "friction coefficient" has been added (see 3.3);

d) Some terms, such as "API connection," have been removed (see sections 4.1, 4.3-4.8, 4.10, and 4.16 of the 2015 edition);

e) The physical and chemical properties testing for threadlocker grease has been modified (see Tables 1 and 2, Table 1 in the 2015 edition);

f) Increased corrosion resistance of the storage grease (see Table 2);

g) The small-size test has been removed (see 6.1 in the 2015 edition);

h) The tribological test has been modified (see 5.1, 6.2 in the 2015 edition);

i) The anti-hooking performance test has been modified (see 5.2, 6.3 in the 2015 version);

j) The oil separation test has been removed (see Appendix E of the 2015 edition);

k) An additional density test method has been added (see Appendix E).

This document modifies and adopts ISO 13678:2010 "Evaluation of threadlocker grease for casing, tubing, line pipe and drill string components in the oil and gas industry".

Price and Test.

Compared with ISO 13678:2010, this document has undergone the following structural adjustments.

---Chapter 2 of ISO 13678:2010 has been deleted; Chapters 2 and 3 correspond to Chapters 3 and 4 of ISO 13678:2010.

---Chapter 4 corresponds to Chapter 5 of ISO 13678:2010, where 4.2.3 corresponds to 5.2.6, 4.2.4 corresponds to 5.2.3, and 4.2.6 corresponds to...

5.2.7 and 4.2.7 correspond to 5.2.9, 4.2.8 corresponds to 5.2.4, and 4.2.9 corresponds to 5.2.8;

---Chapter 5 corresponds to Chapter 6 of ISO 13678:2010, where 5.1 corresponds to 6.2, 5.2 corresponds to 6.3, and 5.3 corresponds to 6.4.

The technical differences between this document and ISO 13678:2010, and the reasons therefor, are as follows.

---The consistency requirement has been removed (see Chapter 2), and data uses a unified International System of Units (SI), so no further specification is needed;

---The terms and definitions of "API modified standard grease formulation" (see 3.2) and "connection system with threadlocker grease" (see 3.8) have been changed in order to...

Easy to understand;

---The term "friction coefficient" (see 3.3) has been added to ensure the consistency and accuracy of the friction coefficient test results for thread grease;

---The following terms have been removed. "API connection", "internal threaded connector", "casing, tubing and line pipe", "drill string components", "external threaded connector", and "special threaded connector".

"Connection", "Proprietary Connection", "Reference Standard Formulation (Thread Grease for Rotary Shoulder Connections)", "Tool Fittings" (see ISO 13678:2010) Terms and definitions in sections 4.1, 4.3, 4.4-4.8, 4.10, and 4.16 are general terms;

---The normative reference GB/T 3498 (see 4.2.1) has been added to facilitate the determination of dropping points over a wide temperature range;

---The normative references GB/T 10125 and NB/SH/T 0324 (see 4.2.1) have been added to facilitate salt spray testing and classification.

Oil quantity test;

---ISO 2137, ISO 2176, and ASTM have been replaced with the normatively referenced GB/T 269, GB/T 4929, and GB/T 7326.

D4048 (see Appendix C) is designed to adapt to my country's technical conditions and increase operability;