

# Alloy and Carbon Steel Bolting for Use in the Petroleum and Natural Gas Industries

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## **Addendum 2**

*Section 2: The following normative reference shall be added to the list:*

ANSI/ASME B1.1, *Unified Inch Screw Threads, (UN and UNR Thread Form)*

*Section 2: The following normative reference shall be added to the list:*

ISO 17020, *Conformity assessment – Requirements for the operation of various types of bodies performing inspection*

*Section 4.2.2: The following shall be added after the first sentence:*

For subcontracted ultrasonic examination, magnetic particle inspection, and liquid penetrant inspection, qualification to ISO 17020 is an acceptable alternative to ISO 17025.

For outsourced NDE services of ultrasonic examination, magnetic particle inspection, and liquid penetrant inspection, qualification to a quality management system in accordance with 5.2.2.1.1 is acceptable.

*Section 5.2.2.1.1 shall be replaced with the following:*

A quality management system evaluation in accordance with ISO 9001, API Q1, ISO 17020 (for subcontracted NDE only), or ISO 17025 for all BSLs.

*Section 5.2.3 a) shall be replaced with the following:*

a) BSL-1 Requirements

A quality management system evaluation in accordance with ISO 9001, API Q1, ISO 17020 (for subcontracted NDE only) or ISO 17025.

*Section 5.2.3 b) shall be replaced with the following:*

b) BSL-2 Requirements

1) Requirements specified for BSL-1 are required for BSL-2.

2) On-site process audit performed by a technical authority at an interval no greater than 3 years, or independent or third-party evidence of conformance to the following industry quality standards, as applicable:

- i. For subcontracted NDE only, ISO 17020 or similar industry recognized quality management system standard (see 5.2.2.1.1) is acceptable.
- ii. For laboratory services, ISO 17025 is the only acceptable substitute for an onsite process audit or technical evaluation.

*Section 5.4.4 g) shall be replaced with:*

g) furnace load diagrams or representative photos.

*Section 5.4.5.3 shall be replaced with:*

Manufacturing processes shall be performed so as to avoid the introduction of stress risers that can occur from sharp angles and tool marks. Threads may be cut or rolled. Unified National Threads shall be "R" (UNR controlled radius series) for external threads and UN for internal threads (ANSI/ASME B1.1).

*Section 5.4.6.4 shall be replaced with:*

When threads are rolled, parts shall subsequently be stress relieved at a temperature within 50 °F (8 °C) of, but not exceeding, the actual final tempering temperature which is intended to establish mechanical properties. This stress relief requirement is also met if the final temper heat treatment is done after any type of thread forming.

*Section 5.4.6.6 shall be replaced with:*

Furnace loading diagram or photo shall be prepared for each load configuration.

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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](mailto:standards@api.org).

## Contents

	Page
1 Scope .....	1
2 Normative References .....	1
3 Terms, Definitions, and Abbreviations .....	3
3.1 Terms and Definitions .....	3
3.2 Abbreviations .....	4
4 Qualification Bolting .....	4
4.1 General .....	4
4.2 Qualification Testing .....	5
4.3 Materials and Dimensions .....	5
4.4 Acceptance of Qualification Bolting .....	6
4.5 Records of Qualification .....	6
4.6 Limits of Bolting Qualification .....	7
5 Production of Qualified Bolting .....	7
5.1 Qualification of Procurement Sources for Raw Material .....	7
5.2 Qualification of Suppliers for Subcontracted Operations .....	8
5.3 Material Specifications .....	9
5.4 Manufacturing Process Specification .....	9
5.5 Raw Material .....	12
5.6 Chemical Analysis .....	13
5.7 Mechanical Properties .....	13
5.8 Metallurgical Requirements .....	13
5.9 Examination and Test Requirements .....	15
5.10 Nondestructive Examination Requirements .....	16
5.11 Dimensional and Visual Inspection .....	16
6 Calibration Systems .....	17
7 Test Report .....	17
8 Marking .....	18
8.1 ASTM Product Marking .....	18
8.2 Marking Required by This Specification .....	18
9 Record Retention .....	18
10 Storage and Shipping .....	18
Annex A (informative) API Monogram Program .....	19
Bibliography .....	23
<b>Tables</b>	
1 Bolting Test Requirements .....	5
2 Microstructure and Macrostructure Requirements for BSL-2 and BSL-3 .....	14
3 Sampling for Dimensional and Visual Inspection .....	17

# Alloy and Carbon Steel Bolting for Use in the Petroleum and Natural Gas Industries

## 1 Scope

### 1.1 Purpose

This standard specifies requirements for the qualification, production, and documentation of alloy and carbon steel bolting used in the petroleum and natural gas industries.

### 1.2 Applicability

This standard applies when referenced by an applicable API equipment standard or otherwise specified as a requirement for compliance.

### 1.3 Bolting Specification Levels

This standard establishes requirements for three bolting specification levels (BSLs). These three BSL designations define different levels of technical, quality, and qualification requirements, BSL-1, BSL-2, and BSL-3. The BSLs are numbered in increasing levels of requirements in order to reflect increasing technical, quality, and qualification criteria.

### 1.4 Bolting Types

This standard covers the following finished product forms, processes, and sizes:

- a) machined studs;
- b) machined bolts, screws, and nuts;
- c) cold formed bolts, screws, and nuts with cold formed threads (BSL-1 only);
- d) hot formed bolts and screws <1.5 in. (38.1 mm) nominal diameter;
- e) hot formed bolts and screws ≥1.5 in. (38.1 mm) nominal diameter;
- f) roll threaded studs, bolts, and screws <1.5 in. (38.1 mm) diameter;
- g) roll threaded studs, bolts, and screws ≥1.5 in. (38.1 mm) diameter;
- h) hot formed nuts <1.5 in. (38.1 mm) nominal diameter;
- i) hot formed nuts ≥1.5 in. (38.1 mm) nominal diameter.

NOTE: Alternative geometry components made in accordance with this specification may be specified by the purchaser.

### 1.5 Application of the API Monogram

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

## 2 Normative References

The following documents contain provisions that, through reference in this text, constitute provisions of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the