

API Specification

20E

1st Edition, August 2012

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

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1.0 PRODUCT

Specification 20E includes the following requirements for product ordered and may be applicable in addition to any product-specific requirements listed in other sections identified herein:

1.1 PRODUCT DESCRIPTION

1.1.1

API Specification 20E – 1 Scope

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

1.1.2

API Specification 20E – 1.2

This standard applies when referenced by an applicable API equipment standard or otherwise specified as a requirement for compliance. An annex for supplemental requirements that may be invoked by the purchaser is included.

1.1.3

API Specification 20E – 1.3

This standard establishes requirements for three bolting specification levels (BSL). 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 severity in order to reflect increasing technical, quality and qualification criteria.

1.1.4

API Specification 20E – 1.4

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 (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;

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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.

1.2 BOLTING

1.2.1

API Specification 20E – 3.1.1

All-thread studs, tap-end studs, double-ended studs, headed bolts, cap screws, screws, and nuts.

1.3 COLD FORMED BOLTS, SCREWS AND NUTS

1.3.1

API Specification 20E – 3.1.2

Parts formed through the mechanical cold (at a temperature below the recrystallization temperature) upsetting of wire, rod, or bar in order to generate the bolt or screw head (cold heading) or the configuration of the nut.

1.4 HOT FORMED BOLTS SCREWS AND NUTS

1.4.1

API Specification 20E – 3.1.5

Parts formed through the mechanical hot (at a temperature above the recrystallization temperature) up-setting of wire, rod, or bar in order to generate the bolt or screw head (hot heading) or the configuration of the nut.

1.5 MACHINED BOLTS, SCREWS AND NUTS

1.5.1

API Specification 20E – 3.1.6

Parts manufactured by machining from raw material to generate the bolt, screw head, or the configuration of the nut.

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2.0 MARKING REQUIREMENTS

2.1 BOLTING SPECIFICATION LEVEL

2.1.1

API Specification 20E – 8.2

Bolting shall be marked with unique heat lot identification and the following:

- a) "API 20E-1" for BSL-1;
- b) "API 20E-2" for BSL-2;
- c) "API 20E-3" for BSL-3.

Each piece 1 in. nominal diameter and larger shall be marked.

2.2 CONTAINERS

2.2.1

API Specification 20E – 8.2

For bolting less than 1 in. nominal diameter, the bolting shall be securely containerized to maintain heat lot identification and traceability. Multiple heat lots shall not be mixed in a single container. Containers used in the processing, storing, and shipping of bolting not individually marked shall be clearly labeled with all marking information required by the relevant ASTM specifications and this standard.

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3.0 DOCUMENTATION REQUIREMENTS

3.1 RECORD RETENTION

3.1.1

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The bolting manufacturer shall establish and maintain documented procedures to control all documents and data required by this standard. Records required by this standard shall be maintained for 10 years. Documents and data may be in any type of media (hard copy or electronic) and shall be:

- a) maintained to demonstrate conformance to specified requirements;
- b) legible;
- c) retained and readily retrievable;
- d) stored in an environment to prevent loss;
- e) available and auditable by user/purchaser.

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4.0 STORAGE AND SHIPPING REQUIREMENTS

4.1 STORAGE AND SHIPPING

4.1.1

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Bolting shall be packaged for storage and shipping in accordance with the written specifications of the bolting manufacturer.

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5.0 PLATING AND COATING

5.1 SUPPLEMENTARY REQUIREMENTS

5.1.1

API Specification 20E – 5.3.7

Plating and coating shall be provided only when the supplementary requirement in Annex A (SR1) is specified in the purchase agreement.

5.1.1

API Specification 20E – Annex A.1

This annex describes supplementary requirements that may be specified by the purchaser or agreed upon between the purchaser and bolting manufacturer. These requirements apply only when stated in the purchasing agreement.

5.1.1

API Specification 20E – Annex A.2

Plating and coating shall be applied only when specifically stated in the purchasing documents.

Instructions for plating or coating shall consider the effect of build-up on threads.

For plating and coating, low temperature bake shall be specified for prevention of embrittlement in accordance with ASTM B633 and ASTM B850, as applicable.