

JIS

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INDUSTRIAL
STANDARD

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JIS B 1041 : 1993

(ISO 6157-1 : 1988)

(Reaffirmed in 1998)

**Fasteners—
Surface discontinuities—
Part 1 : Bolts, screws and studs
for general requirements**

ICS 21.060.10

Descriptors : threads, bolts, studs (fasteners), surface defects

Reference number : JIS B 1041 : 1993 (E)

B 1041 : 1993 (ISO 6157-1 : 1988)

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Fasteners—Surface discontinuities— Part 1 : Bolts, screws and studs for general requirements

Foreword for Japanese Industrial Standard

This Japanese Industrial Standard has been prepared based on ISO 6157-1 (*Fasteners—Surface discontinuities—Part 1 : Bolts, screws and studs for general requirements*) issued in 1988 as the first edition without changing the technical contents.

The “Informative references” underlined with dots in this Standard show the matters not specified in the original International Standard.

1 Scope

1.1 This Standard establishes limits for various types of surface discontinuities on bolts, screws and studs for general requirements.

It applies to bolts, screws and studs with

- nominal thread diameters 5 mm and larger;
- product grades A and B;
- property classes up to and including 10.9, unless otherwise specified in product standards or agreed between supplier and purchaser.

1.2 Limits for surface discontinuities on bolts, screws and studs for special requirements (e.g. automatic assembly) are laid down in JIS B 1043. When the engineering requirements of the application necessitate that surface discontinuities on bolts, screws and studs be more closely controlled, it should be specified in the respective product standard, or the purchaser shall specify the applicable limits in the inquiry and purchase order.

1.3 Where the permissible limits for surface discontinuities indicated in clause 3 occur, the minimum values for the mechanical and functional properties specified in ISO 898-1 should still be met.

Informative reference : ISO 898-1 is equivalent to JIS B 1051 *Mechanical properties of steel bolts and screws.*

- Notes
- 1 The figures in clause 3 are examples only. They apply correspondingly also to other types of bolts, screws and studs.
 - 2 The individual figures show the surface discontinuities exaggerated in some cases for clarity.

2 References

- ISO 468 *Surface roughness—Parameters, their values and general rules for specifying requirements*
- ISO 898-1 *Mechanical properties of fasteners—Part 1 : Bolts, screws and studs*

ISO 3269 *Fasteners—Acceptance inspection*

Remarks : **JIS B 1091** *Fasteners—Acceptance inspection* is identical with the said International Standard.

ISO 6157-3 *Fasteners—Surface discontinuities—Part 3 : Bolts, screws and studs for special requirements*

Remarks : **JIS B 1043** *Fasteners—Surface discontinuities Part 3 : Bolts, screws and studs for special requirements* is identical with the said International Standard.

3 Types, causes, appearance and limits of surface discontinuities

3.1 Cracks A crack is a clean (crystalline) fracture passing through or across the grain boundaries and may possibly follow inclusions of foreign elements. Cracks are normally caused by overstressing the metal during forging or other forming operations, or during heat treatment. Where parts are subjected to significant reheating, cracks usually are discoloured by scale.

3.1.1 Quench cracks

Cause	Quench cracks may occur during hardening due to excessively high thermal and transformation stresses. Quench cracks usually follow an irregular and erratic course on the surface of the fastener.
Appearance	Quench crack circumferential and adjacent to fillet Quench crack at corner of head Quench crack at root Quench crack across top of head. Usually an extension of crack in shank or side of head Transverse quench crack Quench crack, section at crest of thread missing Longitudinal quench crack Quench crack across washer face and to depth of washer face thickness Quench crack extending radially into fillet A-A Quench crack, at root Quench crack
Limits	Quench cracks of any depth, any length, or in any location are not permitted.