BS 4190:2014

BSI Standards Publication

ISO metric black hexagon bolts, screws and nuts – Specification

bsi.

...making excellence a habit.™

Publishing and copyright information

Published by BSI Standards Limited 2014

ISBN 978 0 580 83040 2

ICS 21.060.10; 21.060.20

The following BSI references relate to the work on this document:
Committee reference FME/9
Draft for comment 14/30283394 DC

Publication history
First edition October 1967
Second edition February 2001
Third edition October 2014

Amendments issued since publication

Date	Text affected

Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 28, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2014. It was prepared by Technical Committee FME/9, *Nuts and accessories*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standards supersedes BS 4190:2001, which is withdrawn.

Relationship with other publications

This British Standard should be read in conjunction with BS EN ISO 898-1 as it contains tables that reflect up-to-date best practice for mechanical properties of bolts.

Information about this document

The mechanical properties of the nuts in this British Standard do not conform to BS EN ISO 898-2. Higher proof load values have been allocated to the revised property classes in BS EN ISO 898-2 in order to ensure that fracture of the bolt generally occurs in the case of overloading.

CAUTION. Nuts in accordance with this standard cannot be fully loaded with sufficient assurance up to the yield point of the appropriate bolt, or beyond this, without the possibility of the nut thread being stripped, and for this reason it is essential that new designs of nuts for use with BS 4190 bolts and studs conforming to this standard conform to BS EN ISO 898-2.

In order to differentiate nuts that conform to this British standard from that those that conform to BS EN ISO 898-2 vertical bars have been added to the symbols for strength grade designations e.g. |8| instead of 8.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause **J.1.1**, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This page deliberately left blank

1 Scope

This standard gives the general dimensions and tolerances of black hexagon bolts, screws and nuts with ISO metric threads in diameters from 5 mm to 68 mm inclusive; basic dimensions for sizes greater than M68 are also included.

This standard specifies mechanical properties of black hexagon bolts, screws and nuts made of carbon steel and alloy steel when tested at an ambient temperature range of 10 °C to 35 °C. Dimensional requirements are included for bolts, screws and nuts finished black all over and for those which have partially machined finishes.

NOTE 1 Fasteners (the term used when bolts, screws and nuts are considered all together) that conform to the requirements of this standard are evaluated at this ambient temperature range. They might not retain the specified mechanical and physical properties at elevated temperatures and/or lower temperatures.

This standard is not applicable to fasteners used in applications outside of the range -50 °C to +150 °C.

NOTE 2 Fasteners conforming to the requirements of this standard are used in applications ranging from -50 °C to +150 °C. The use of fasteners in applications outside of this range, and up to a maximum temperature of +300 °C, might need to be based on the advice of an experienced fastener metallurgist for determining appropriate choices for a given application.

NOTE 3 Nuts in accordance with this standard cannot be fully loaded with sufficient assurance up to the yield point of the appropriate bolt, or beyond this, without the possibility of the nut thread being stripped, and for this reason it is essential that new designs of nuts for use with BS 4190 bolts and studs conforming to this standard conform to BS EN ISO 898-2.

NOTE 4 Nuts with an effective height of less than 0.6d and/or with a width across flats or outside diameter of less than 1.4d are excluded from the mechanical requirements specified.

The dimensional requirements of this British Standard are also applicable to non-ferrous and stainless steel bolts, screws and nuts.

Information on strength grade designation system for steel bolts and screws can be found in Annex D.

NOTE 5 The term "black" does not necessarily relate to the appearance of the products as these can be of bright appearance or black in the finished state. The term implies the comparatively wider tolerances to which these products are usually made.

*NOTE 6 In addition to the definitive requirements, this standard also requires the items detailed in Clause **3** to be documented. For compliance with this standard, both the definitive requirements and the documented items have to be met.*

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 1916-1, *Limits and fits for engineering – Part 1: Guide to limits and tolerances*

BS 3643-1, *ISO metric screw threads – Part 1: Principles and basic data*

BS 3643-2, *ISO metric screw threads – Part 2: Specification for selected limits of size*

BS 7371-6, *Coatings on metal fasteners – Part 6: Specification for hot dipped galvanized coatings*