

ICS 21.060.10
CCS J 13



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

GB/T 3098.3-2016

**Mechanical properties of fasteners -- Set screws
(English Translation)**

Issued on: February 24, 2016

Implemented on: June 1, 2016

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Foreword...	3
1 Scope...	7
2 Normative References...	7
3 Terms and Definitions...	8
4 Codes...	9
5 Marking System...	10
6 Materials...	10
7 Mechanical and Physical Properties...	11
8 Applicability of Test Method...	12
9 Test Methods...	12
10 Mark...	21

Foreword

GB/T 3098 Mechanical Properties of Fasteners include the following parts.

- GB/T 3098.1 Mechanical Properties of Fasteners - Bolts, Screws and Studs;
- GB/T 3098.2 Mechanical Properties of Fasteners - Nuts;
- GB/T 3098.3 Mechanical Properties of Fasteners - Set Screws;
- GB/T 3098.4 Mechanical Properties of Fasteners - Nuts - Fine Pitch Thread;
- GB/T 3098.5 Mechanical Properties of Fasteners - Tapping Screws;
- GB/T 3098.6 Mechanical Properties of Fasteners - Stainless Steel Bolts, Screws and Studs;
- GB/T 3098.7 Mechanical Properties of Fasteners - Thread Rolling Screws;
- GB/T 3098.8 Mechanical Properties of Fasteners - Components for Bolted Connections Made Mainly from Materials with a High Temperature Strength;
- GB/T 3098.9 Mechanical Properties of Fasteners - Prevailing Torque Type Steel Hexagon Nuts;
- GB/T 3098.10 Mechanical Properties of Fasteners - Bolts, Screws, Studs and Nuts Made of Non-Ferrous Metals;

--- GB/T 3098.11 Mechanical Properties of Fasteners - Drilling Screws with Taping Screw Thread;

--- GB/T 3098.12 Mechanical Properties of Fasteners - Cone Proof Load Test on Nuts;

--- GB/T 3098.13 Mechanical Properties of Fasteners - Torsional Test and Minimum Torques for Bolts and Screws with Nominal Diameters 1mm to 10mm;

--- GB/T 3098.14 Mechanical Properties of Fasteners - Widening Test on Nuts;

--- GB/T 3098.15 Mechanical Properties of Fasteners - Nuts Made of Stainless-Steel;

--- GB/T 3098.16 Mechanical Properties of Fasteners - Stainless Steel Set Screws;

--- GB/T 3098.17 Mechanical Properties of Fasteners - Preloading Test for the Detection of Hydrogen Embrittlement - Parallel Bearing Surface Method;

--- GB/T 3098.18 Mechanical Properties of Fasteners - Blind Rivets Testing;

--- GB/T 3098.19 Mechanical Properties of Fasteners - Blind Rivets with Break Pull Mandrel;

--- GB/T 3098.20 Mechanical Properties of Fasteners - Wing Nuts with Specified Proof Torque;

--- GB/T 3098.21 Mechanical Properties of Fasteners - Stainless Steel Tapping Screws;

--- GB/T 3098.22 Mechanical Properties of Fasteners - Made of the Fine Grain Non-Heat Treatment Steel - Bolts, Screws and Studs.

This Part belongs to Part 3 of GB/T 3098.

This Part was drafted as per the rules specified in GB/T 1.1-2009.

This Part replaced GB/T 3098.3-2000 Mechanical Properties of Fasteners - Set Screws; compared with GB/T 3098.3-2000, the major technical changes are as follows.

--- Expand the thread specification from $d=24\text{mm}$ to $d=30\text{mm}$, and specified the fine pitch thread of M8x1~M30x2(Chapter 1);

--- Replace "property class" by "hardness grade"; add "only applicable to the

compressive stress" (Chapter 1);

--- Add "the usage temperature of fastener produced as per this Part is - 50°C~+150°C. when the usage temperature exceeds the range of - 50°C~+150°C, or as higher as +300°C, the users shall consult the relative parties" (Chapter 1);

--- Add terms and definitions, as well as codes (Chapter 3, Chapter 4);

--- Add "if the mechanical and physical properties specified in Table 2 and Table 3 are conformed to, then the marking system of hardness grade specified in this Part can also use the specification exceeding the standard scope ($d > 30\text{mm}$)" (Chapter 5);

--- For 45H-grade alloy steel, add "if these alloy steel shall contain at least one of the following elements, thereof the minimum content is 0.30% chromium, 0.30% nickel, 0.20% molybdenum, 0.10% vanadium. When containing two, three or four composite alloy compositions, the alloying element content shall be no less than 70% total content sum of single alloying element" (Table 2).

--- For Class 22H~45H mechanical and physical properties and the table note, increase "no carburization HV0.3" and "when adopting the measuring surface hardness and core hardness of HV0.3, the surface hardness of fastener shall be no 30HV higher than the core hardness (see Figure 3)" (Table 3);

Mechanical Properties of Fasteners - Set Screws

1 Scope

This Part of GB/T 3098 specifies the mechanical and physical properties of set screws and similar threaded fasteners with specified hardness classes, which are manufactured by carbon steel or alloy steel, and tested at the environmental temperature of 10°C~35°C. At such environmental temperature range, assess the fasteners (including set screws and similar threaded fasteners with specified hardness classes, the same below) as per the requirements of this Part. The fasteners meeting the requirements of this Part shall be classified as per the specified hardness class,

and are only applicable to the compressive stress.

NOTE: The applicable usage temperature of fasteners produced as per this Part is -50°C~+150°C. When the usage temperature exceeds the range of -50°C~+150°C, even as higher as +300°C, the users shall consult to the relative parties.

This Part applicable set screws and similar threaded fasteners.

- Manufactured by carbon steel or alloy steel;
- Conform to the ordinary thread specified in GB/T 192;
- Coarse pitch thread M1.6~M30; fine pitch thread M8x1~M30x2;
- Conform to the diameter and pitch combination specified in in GB/T 193 and GB/T 9144;
- Conform to the thread tolerance specified in GB/T 197 and GB/T 9145.

This Part didn't specify the following property requirements.

- Tensile strength;
- Shear strength;
- Weldability;
- Corrosion resistance;
- Property requirement with working temperature higher than +150°C or lower than -50°C.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 90.3 Fasteners-Quality Assurance System (GB/T 90.3-2010, ISO 16426.2002, IDT)

GB/T 192 General Purpose Metric Screw Threads-Basic Profile (GB/T 192.2003, ISO 68-1. 1998, MOD)

GB/T 193 General Purpose Screw Threads--Diameters and Pitches (GB/T 193-