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

GB/T 6478-2015

Steels for cold heading and cold extruding

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(English Translation)

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Foreword

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

This Standard replaced GB/T 6478-2001 Steels for Cold Heading and Cold Extruding.

Compared with GB/T 6478-2001, this Standard has the major technical changes as follows.

- Expand the upper limit of applicable wire rod diameter from 40mm to 60mm;
- Add non-quenched/tempered steel for cold heading and cold extruding in the "classification";
- Confirm the allowable deviation of hot-rolled wire rod dimension conforms to the provisions of Grade-B accuracy stipulated in GB/T 14981-2009;
- Add 14 grades and relevant technical requirements, such as ML06Al, ML10, ML12Al, ML12, ML15Cr, ML30Cr, ML45Cr, ML20CrMo, ML25CrMo, ML45CrMo, ML25B, ML25MnB, ML30MnB, ML40MnB;
- Add MFT8, MFT9 and MFT10 non-quenched/tempered steel for cold heading and cold extruding, and relevant requirements;
- Increase the manganese content in Grade ML30~ML45 from 0.30%~0.60% to 0.60%~0.90%; delete the relevant requirements of two Grades ML30Mn and ML35Mn;

--- Adjust ML22Mn into ML20Mn; ML37Cr into ML35Cr; ML42CrMo into ML40CrMo; ML28B into ML30B;

--- Straighten the phosphorus content and sulfur content in the quenched/tempered steel for cold heading and cold extruding from " $\leq 0.035\%$ " to " $\leq 0.025\%$ ";

--- Add the refining requirements outside of the furnace;

--- Modify the decarburization requirements;

--- Modify the macrostructure requirements;

--- Modify the surface quality requirements;

--- Add the relevant provisions of digit rounding off;

--- Modify the re-inspection and judgment rules;

--- Add Appendix B "Grade Comparison List between this Standard and ISO 4954.1993, etc.";

--- Add Appendix C "Clause No. Comparison List between this Standard and Parts of ISO 4954.1993"

--- Add Appendix D "Technical Difference and Causes between this Standard and ISO 4954.1993".

This Standard adopts the re-drafting method to modify and use ISO 4954.1993 Steels for Cold Heading and Cold Extruding.

Compared with ISO 4954.1993, this Standard has more adjustments in the structure; Appendix C gives the Clause No. Change Comparison List between this Standard and ISO 4954.1993.

Considering China's national conditions, this Standard modifies ISO 4954.1993 when adopting it; the relevant technical differences have been compiled into the text; the involved clauses of which have been marked with vertical single line in the blank margin of the clauses. Appendix D gives the technical differences and causes list for reference.

This Standard has also made the following editorial changes.

--- Replace "this international standard" with "this Standard";

--- Replace "comma that represents decimal point" with "decimal point";

--- Delete the foreword of the international standard.

This Standard was proposed by China Iron and Steel Industry Association.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Steel (SAC/TC 183).

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The historical editions replaced by this Standard are as follows.

--- GB/T 6478-1986, GB/T 6478-2001.

Steels for Cold Heading and Cold Extruding

1 Scope

This Standard specifies the classification, grade, ordering contents, dimension, appearance, weight and allowable deviation, technical requirements, test methods, inspection rules, package, mark, and quality certificate, etc. for the non-alloyed steels and alloyed structural steels for cold heading and cold extruding.

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 document.

GB/T 222 Permissible Tolerance for Chemical Composition of Steel Products

GB/T 223.3 Methods for Chemical Analysis of Iron, Steel and Alloy - the

Diantipyrilmethane Phosphomolybdate Gravimetric Method for the Determination
of Phosphorus Content

3 Booking Contents

According to this Standard, the booking contract shall include the following contents.

4 Classification and Grade Expression method

The steels can be divided into four types according to the using state in this Standard.
not heat-treated steel, case-hardened steel, quenched and tempered steel (including
boron-contained steel) and non-quenched and tempered steel for cold heading and
cold extruding.

5.1 The dimension, appearance, weight and allowable deviation of hot-rolled round

steel shall conform to the provisions of GB/T 702.

5.3 According to the negotiation between the supplier and the purchaser, other
specification and accuracy of round steel and wire rod can be supplied.

6 Technical Requirements

The quenched and tempered steel (including the boron-contained steel) or non-
quenched and tempered steel shall conduct the decarbonization layer test. The depth
of decarbonization layer shall conform to the provisions of Table 9.

According to the demand of the purchaser, the steel shall be conducted macrostructure
acid leaching inspection.

7.1 The inspection items, sampling quantity, sampling method and inspection method

of each batch of steels shall conform to the provisions of Table 11.