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

GB/T 11379-2008

**Metallic coatings -- Electroplated coatings of chromium for
engineering purposes
(English Translation)**

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Foreword

This standard is identical to ISO 6158.2004 Metallic coatings - Electrodeposited coatings of chromium for engineering purposes (English version).

This standard was drafted based on the translation of ISO 6158.2004.

For ease of use, this standard has made the following editorial changes.

- The foreword of the international standard is deleted and the foreword of the Chinese standard is added;
- The term "this International Standard" is replaced by "this Standard";
- The Chinese national standards corresponding to international standards are cited.

This standard replaces GB/T 11379-1989 Metallic coatings - Electroplated coatings of chromium for engineering purposes. The main changes compared with GB/T 11379-

1989 are as follows.

- The "Introduction" and "Designation" are added;
- The requirements for chromium electroplating coatings are modified;
- The characteristics, application examples and related instructions of chromium electroplated coatings for engineering purposes are deleted;
- The typical thicknesses of chromium electroplated coatings for engineering use

are added;

-- The measuring method of shot peening intensity is deleted.

Appendix C of this standard is a normative appendix, and Appendix A and Appendix B are both informative appendices.

This standard was proposed by China Machinery Industry Federation.

This standard is under the jurisdiction of the National Technical Committee on Metallic and Non-metallic Coatings of Standardization Administration of China (SAC/TC57).

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Metallic coatings - Electroplated coatings of chromium for engineering purposes

1 Scope

This Standard specifies requirements for electroplated coatings of chromium, with or without undercoats, on ferrous and non-ferrous metals for engineering purposes. The coating designation provides a means of specifying the thickness of chromium appropriate for typical engineering applications.

2 Normative references

The provisions in the following documents become the provisions of this standard through reference in this standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this standard, however, parties who reach an agreement based on this standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest editions of the referenced documents apply to this standard.

GB/T 3138 Terminology for metallic coating, chemical treatment and related process (GB/T 3138-1995, neq ISO 2079:1981)

GB/T4955 Metallic coatings - Measurement of coating thickness - Coulometric method by anodic dissolution (GB/T 4955-2005, ISO 2177.2003, IDT)

GB/T 4956 Non-magnetic coatings on magnetic substrates - Measurement of coating thickness - Magnetic method (GB/T 4956-2003, ISO 2178.1982, IDT)

GB/T 5270 Metallic coatings on metallic substrates - Electrodeposited and chemically deposited coatings - Review of methods available for testing adhesion (GB/T 5270-2005, ISO 2819.1980, IDT)

GB/T 6462 Metallic and oxide coatings - Measurement of coating thickness - Microscopical method (GB/T 6462-2005, ISO 1463.2003, IDT)

GB/T 6463 Metallic and other inorganic coatings - Review of methods of measurement of thickness (GB/T 6463-2005, ISO 3882.2003, IDT)

GB/T 9790 Metallic and related coatings - Vickers and Knoop microhardness tests (GB/T 9790-1988, neq ISO 4516.1980)

6.7 Porosity

Electroplated ferrous articles (or special test specimens) shall be subjected to the ferroxyl test described in GB/T 17721, or to an alternate porosity test designated by the purchaser. The part fails if more than the number of pores per part or per unit area exceeds that agreed between the purchaser and the electroplater.

When porous, cracked or other types of discontinuous chromium coatings are specified, the determination of the number of pores and cracks in the chromium shall be carried out by visual examination using an optical microscope of suitable magnification, or by the method given in Appendix C, when applicable [see 4.1 h)].

NOTE: The method given in Appendix C may not be applicable to thick chromium coatings where cracks

or pores do not extend to the basis metal or to a nickel undercoat.

6.8 Stress relief heat treatment prior to coating

When specified by the purchaser, steel parts that have an ultimate tensile strength equal to or greater than 1000 MPa (31 HRC) and that contain tensile stresses caused by

machining, grinding, straightening or cold-forming operations shall be given a stress relief heat treatment prior to cleaning and metal deposition. The procedures and classes for stress relief heat treatment shall be as specified by the purchaser or the purchaser may specify appropriate procedures and classes from GB/T 19349 [see 4.1 i)].

Steels with oxide or scale shall be cleaned before the application of the coatings. For high-strength steels, non-electrolytic alkaline and anodic alkaline cleaners, as well as mechanical cleaning procedures, are preferred to avoid the risk of producing hydrogen embrittlement during cleaning operations. The possibility of overheating shall be considered in the case of mechanical cleaning of high-strength steels (tensile strength >

6.9 Hydrogen embrittlement relief heat treatment

Steel parts having an ultimate tensile strength ≥ 1000 MPa (31 HRC), as well as surface hardened parts, shall receive hydrogen embrittlement relief heat treatment according to the procedures and classes of GB/T 19350 or as specified by the purchaser [see 4.1 j)].

The effectiveness of the embrittlement relief treatment may be determined by a test method specified by the purchaser or by test methods described in standards, e.g., GB/T

6.10 Peening of metal parts

If peening prior to or after electroplating is specified by the purchaser, it shall be performed in accordance with GB/T 20015. The method of measuring shot peening intensity is also described in that Standard [see 4.2 d)].

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