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PEOPLE'S REPUBLIC OF CHINA**

GB/T 18983-2017

**Wire for quenched and tempered springs
(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 18983-2003 Oil-Hardened and Tempered Steel Wire for Mechanical Springs. Compared with GB/T 18983-2003, this Standard has the major changes as follows.

--- Increase "GB/T 4336, GB/T 13298, GB/T 20123, GB/T 20125" to the Normative References;

--- Increase "ultra-high-strength" level to the Classification and Code;

--- Modify the diameter range;

--- Increase the components to the new types of TDSiCr-B, TDSiCr-C and VDSiCrV to the chemical compositions;

--- Modify "maximum surface decarburization allowable depth";

--- Increase the mechanical property indexes of TDSiCr-B, TDSiCr-C to "mechanical properties of steel wires in static grade and medium fatigue grade";

--- Increase the mechanical property indexes of VDSiCrV to "mechanical properties of steel wire in high fatigue grade";

--- Modify "allowable maximum depth of surface defect"; add description of the acid leaching test method.

This Part was prepared by using the redrafted law and referring to ISO 8458-3.2002 Steel Wire for Mechanical Springs - Part 3.Oil-Hardened and Tempered Wire; the degree of consistency with ISO 8458-3.2002 is not equivalent.

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).

Drafting organizations of this Standard. Sinosteel Zhengzhou Research Institute of Steel Wire Products Co., Ltd., Tianjin Metallurgical Group Zhongxing Shengda Steel Co., Ltd., Guangzhou Orsa Wire Science & Technology Co., Ltd., Baosteel Group Nantong Wire Products Co., Ltd., Jiangsu Shenwang Group Cable Co., Ltd., Taibo Steel Co., Ltd., and China Metallurgical Information and Standardization Institute.
Chief drafting staffs of this Standard. Zhang Fengshan, Jiang Ling, Zhang Yongbo, Xing Xianqiang, Lin Xiuyan, Zhou Jianhua, Ren Cuiying, Wang Lingjun, Huang Jianming, Wang Wenxi, Zhang Jun, Meng Zhaoxian, Zhang Honglong, Cui Tongquan, Zhang Weidong, Li Changchun, Li Zhaoming, and Zhang Xiaoguang.

The historical edition replaced by this Standard is as follows.

--- GB/T 18983-2003.

Wire for Quenched and Tempered Springs

1 Scope

This Standard specifies the classification and code, ordering content, diameter, appearance and permissible deviation, manufacturing method, technical requirements, test methods, inspection rules, package, mark and quality certificate of wire for quenched and tempered springs (hereinafter referred to as steel wire).

This Standard is applicable to the carbon and low alloy quenched-tempered circular-section steel wire used for manufacturing various mechanical springs.

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 Method of Sampling Steel for Determination of Chemical Composition and Permissible Variations for Product Analysis

GB/T 223.5 Methods for Chemical Analysis of Iron, Steel and Alloy - The Reduced Molybdosilicate Spectrophotometric Method for the Determination of Acid-Soluble Silicon Content

GB/T 223.11 Iron, Steel and Alloy - Determination of Chromium Content - Visual Titration or Potentiometric Titration Method

GB/T 223.13 Methods for Chemical Analysis of Iron, Steel and Alloy - The Ammonium Ferrous Sulfate Titration Method for the Determination of Vanadium Content

3.1.1 The steel wire can be classified into three types, namely, static-state, medium

fatigue and high fatigue as per the working state.

3.2 Code

The classification, code and diameter range of the steel wire can refer to Table 1.

3.3 Mark example

Grade-VDSiCr steel wire with diameter of 3.0mm is marked as.

VDSiCr-3.0-GB/T 18983.

4 Ordering Contents

The purchasing list or contract that orders products as per this Standard shall include the following contents.

5.2 Appearance

The appearance of the steel wire shall be regular and be free of the bending that may affect the use.

6 Manufacturing Method

The steel wire is made through cold-drawing the wire rod and then quenched and tempered it. The ultra-high-strength VDSiCrV steel wire shall be made through peeling and flaw-detection.

7.1.1 The chemical compositions (smelting analysis) of steel for steel wire shall meet

the requirements of Table 3. The commonly used steel grades in China can refer to Table A.1.

7.2 Surface decarburization

The surface of the steel wire shall be free of full decarburization layer; and the allowable depth of the decarburization layer shall be no greater than 1.0%d; and a maximum of 0.15mm.

7.3 Non-metallic inclusion

Inspect the non-metallic inclusion of the steel wire; its level of conformity shall be negotiated by the purchaser and the supplier; indicated in the contract; if it is not indicated in the contract, the level of conformity shall be confirmed by the supplier.

7.5.1 The tensile strength and reduction of area of the steel wire shall meet the requirements of Table 4, and Table 5.

7.5.2 Steel wire with nominal diameter greater than 1.00mm shall be measured for reduction of area.

7.5.3 Through the agreement, steel wire can also use other control ranges of tensile strength.