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**National Standard of the People's Republic of China**

GB/T 5223-2002  
Replace GB/T 5223-1995

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**Steel wires for the prestressing of concrete**

**预应力混凝土用钢丝**

**(ISO 6934-2: 1991, Steel for prestressing of concrete**

**— Part 2: Cold-drawn wire, NEQ)**

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## Preface

This standard is a revision of GB/T 5223-1995 and corresponds to ISO 6934-2: 1991 Steels for Prestressed Concrete — Part 2 Cold Drawing Steel wires. Conformity of this standard to ISO 6934 Part 2 is at non-equivalent level, major differences between them are described below:

- Helical rib wire is added;
- Strength levels are added;
- Index requirements for replacement of total elongation under maximum stress with post-break elongation for daily inspection are added;
- Yield strength ratio of low relaxation wire is increased;
- Wit reference to ASTM A648 standard, property requirements of cold drawn wire for pressure pipeline are added;

This standard replaces GB/T 5223-1995, comparing to GB/T 5223-1995, major changes are as follows:

- Variety and specifications are added;
- Strength levels are added;
- Coil weight requirement is increased;
- Wire strength homogeneity requirement is added;
- Post-break elongation uses  $L_0=200$  mm long gauge length;
- 2-sides indented wire has been cancelled;
- Yield Strength ratio of low relaxation wire is increased;
- Property requirements of cold drawn wire for pressure pipeline are added;
- Annex for fatigue property test is added.

Annex A to this standard is a normative supplement.

This standard was presented by former State Metallurgical Industry Bureau.

This standard is centrally managed by National Steel Standardization Technology Committee.

This standard is drafted by Tianjin No.1 Prepressed Steel Wire Co., Ltd, Tianjin Yinlong Prepressed Steel Wire Co., Ltd, Metallurgical Building Research Establishment, Railroad Specialty Design Establishment of Railroad Ministry and Metallurgical Industry Information Standard Research Establishment.

This standard is mainly drafted by Zhang Xiufeng, Mao Aiju, Yu Jingqi, Xie Tieqiao, Feng Wenhua, Zhang Nairong and Pan Jie.

This standard was initially issued in 1985 and first revised in 1995.

# Steel wires for Prestressed Concrete

## 1 Scope

This standard specifies classification, dimension, quality, and allowable tolerance, technical requirements, test methods, inspection rules, packing, marking and certificate for quality of steel wires used for prestressed concrete.

This standard applies to polish round, helical rib and indented cold-drawn or stress-relieved steel wires. Stress-relieved steel wire includes low relaxed and normal relaxed wires. Normal relaxed wire is not recommended by this standard, if necessary, it shall be indicated in orders or ordered according to agreement between supplier and buyer.

## 2 Normative References

Clauses in the following documents, if referenced by this standard, shall become the clauses of this standard. Any reference documents dated and their subsequent modification sheets (excluding error correction contents) or revisions do not apply to this standard, however, it is encouraged that all parties that enter into an agreement according to this standard study whether or not the latest editions of the same documents are applicable. The latest editions of any referenced documents undated apply to this standard.

GB/T 228 Metal Tensile Test Method

GB/T 238 Repeated bending test Method for Metal Wires

GB/T 239 Torsional Test Method for Metal Wires

GB/T 2103 General regulations for Acceptance, Packing, Marking and Certificate for Quality of Steel Wires

GB/T 10120-1996 Metal Stress Relaxation Test Method

GB/T 17505 General Technical Requirements for Steel and Steel Product Delivery

YB/T146 Hot Milled Wire Rods for Prestressed Steel wires and Steel Twisted Wires

YB/T 170 Non-Alloy Steel Wire Rods for Wire Making

## 3 Terms and Definitions

The following terms and definitions apply to this standard.

### a) Cold Drawn Wire

Wires cold processed from wire rods through wire-drawing die or roll and supplied in coils.

### b) Stress-Relieved Wires

Wires produced with one of the following single continuous processes.

(1) With wire under plastic deformation (Axial Strain) undertaking heat treatment for short time, low relaxed wire shall be obtained.

(2) With wire withstanding heat treatment for short-time under proper temperature after straightened, normal relaxed wire shall be obtained.

### c) Relaxation

Phenomenon that stress decreases over time with wire under constant length.

### d) Helical Rib Wire

There are regularly spaced ribs along longitudinal direction on wire surface (Fig.1).

### e) Indented Wire

There are regularly spaced dents along longitudinal direction on wire surface (Fig.2).



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