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**General technical requirements of corrosion-resistant  
alloy strips and wires for welding**

耐蚀合金焊带和焊丝通用技术条件

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# General technical requirements of corrosion-resistant alloy strips and wires for welding

## 1 Scope

This Standard specifies terms and definitions, classification and designation, order content, size, shape, weight, technical requirements, surface quality, test methods, inspection rules, packaging, marks and quality certificate for nickel base, iron nickel base corrosion-resistant alloy strips and wires for welding.

This Standard is applicable to general requirements for nickel base, iron nickel base corrosion-resistant alloy strip electrode for welding that are used for submerged arc surfacing with band-electrode and electro-slag surfacing with band-electrode (hereinafter referred to as strip electrode), nickel base, iron nickel base corrosion-resistant alloy solid wire electrode that are used for molten inert gas shielded arc welding, tungsten inert gas shielded arc welding, plasma arc welding and submerged arc welding (hereinafter referred to as wire electrode).

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 228.1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature*

GB/T 2975-2018, *Steel and steel products - Location and preparation of samples and test pieces for mechanical testing*

GB/T 8170, *Rules of rounding off for numerical values & expression and judgement of limiting values*

GB/T 15007, *Designations of corrosion-resistant alloy*

GB/T 20066, *Steel and Iron-Sampling and Preparation of Samples for the Determination of Chemical Composition*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1 strip electrode

A shape of welded filler metal. It has rectangular cross section. Its width is much larger than thickness. When welding, it is used as electrode conduction current and filler metal. It is usually used for submerged arc welding and electro-slag welding.

### 3.2 wire/wire electrode

A shape of welded filler metal. It has circular section. When welding, it is used as pure filler metal but not electrode conduction current. It is used for tungsten inert gas shielded welding, plasma arc welding and laser beam welding. It can be used as electrode conduction current and filler metal for MIG gas arc welding and submerged arc welding.

### 3.3 cast

Cut a sample from wire electrode of winding bobbin, of which its length is long enough to form a circle. Place it on a smooth plane to bounce off freely. The degree of bouncing off when it ejects to form a ring state unconstrainedly is called cast. Cast is usually represented by diameter measured after it bounces off and is relaxed.

### 3.4 helix rise

Cut a sample from wire electrode of winding bobbin, of which its length is long enough to form a circle. Place it on a smooth plane. When it relaxes naturally and appears ring state, the vertical distance from any point on wire electrode to plane is called helix rise.

## 4 Classification and designation

Classification and designation of strip electrode and wire electrode shall comply with provisions of GB/T 15007.

## 5 Order content

Contract for ordering based on this Standard shall contain following information:

- a) reference to this Standard;

**6.2.2.5** According to purchaser's requirements and indicated in contract, straight-strip wire electrode may be supplied.

### **6.3 Weight**

Strip electrode and wire electrode are delivered in actual weight. Weight of individual coil (disc, bundle) shall comply with provisions of product standard or be indicated in contract.

## **7 Technical requirements**

### **7.1 Designation and chemical composition**

**7.1.1** Designation and chemical composition of strip electrode and wire electrode shall be specified in product standard. Stricter control requirements for chemical composition range, trace elements and residual elements are allowed in contract.

**7.1.2** Supplier shall perform finished product analysis on chemical composition of strip electrode and wire electrode. Results shall comply with provisions of product standard or contract.

### **7.2 Smelting method**

Unless otherwise specified in product standard or contract, smelting method shall be selected by supplier.

### **7.3 Delivery state**

**7.3.1** Strip electrode is usually delivered in cold-rolled state.

**7.3.2** Wire electrode is usually delivered in cold-pulled or quench annealing state after cold-pulling.

**7.3.3** Delivery states of strip electrode and wire electrode shall be indicated in product standard and contract.

## **8 Surface quality**

### **8.1 Strip electrode**

**8.1.1** Surface of strip electrode shall have uniform metallic luster, clean and grease-free, without dirt that is harmful to welding operation. There shall be no defects such as cracks, heavy skin, scale, folding, delamination and foreign matter inclusions on surface of strip electrode. But small heavy skin, creases, dents and scratches and partial imperfections that do not exceed thickness

to measure maximum and minimum diameters.

#### **9.3.2.4 Helix rise**

Cut a sample that is long enough to form a circle on wire electrode of winding bobbin. Place on smooth plane. When it relaxes naturally and appears ring state, use general measuring tools such as ruler, steel tape to measure maximum value from any point on wire electrode to vertical distance between planes.

## **10 Inspection rules**

### **10.1 Inspection and acceptance**

Inspection and acceptance of strip electrode and wire electrode are performed by supplier's technical quality supervision department. Supplier shall ensure delivered strip electrode or wire electrode complies with provisions of contract and product standard. Purchaser has right to accept according to provisions of contract and product standard.

### **10.2 Batching rules**

Strip electrode or wire electrode shall be submitted in batches for inspection and acceptance. Each batch shall consist of strip electrodes or wire electrodes that are of same designation, of same melting furnace number (or sub-furnace number), of same specification, of same delivery state.

### **10.3 Sampling parts and sampling quantity**

Sampling quantity, sampling parts shall comply with provisions of Table 4.

### **10.4 Re-inspection and determination rules**

**10.4.1** When analysis results of finished product's chemical composition fail, it shall re-sample from original sampling part to re-inspect rejected element. If re-inspection results still fail, this furnace of strip electrodes or wire electrodes shall be rejected.

**10.4.2** When tensile test results at room temperature fail, it shall take any sample double quantity from same batch of strip electrodes or wire electrodes (including rejected strip electrodes or wire electrodes) to re-inspect. If re-inspection results still fail, this batch of strip electrodes or wire electrodes shall be rejected.

**10.4.3** When size, shape, surface quality fail, this coil (disc, bundle) shall be rejected.

### **10.5 Rounding-off of test results**

sealed. Package in boxes. One or several discs of wire electrodes are allowed to form a bundle for packaging. If there are special requirements for packaging size, shape of wire electrode, they can be agreed by supplier and purchaser through negotiation and indicated in contract.

#### **11.1.2.2 Marks**

Marking of wire electrode shall be performed through hanging signs, sticking labels. Stick labels or hang signs on outer ring top (starting end of welding) of each disc or coil of wire electrode, indicating alloy designation, furnace number, specification, weight. On sign (label) of outer packaging of each disc or coil (bundle), it shall indicate manufacturer's name (trademark), designation, furnace number, specification, weight and date of production. Mark writing shall be clear, firm and reliable. For finished disc of wire electrode of which nominal diameter is not greater than 4mm, ends shall be bent into disc or marked. For finished disc of wire electrode of which nominal diameter is greater than 4mm, ends shall have clear marks.

#### **11.2 Quality certificate**

**11.2.1** Each batch of delivered strip electrodes or wire electrodes shall be attached with quality certificate that proves that this batch of products comply with standard and contract requirements.

**11.2.2** Quality certificate writing shall be clear. Certificate shall indicate following information:

- a) supplier's name;
- b) purchaser's name;
- c) reference to product standard;
- d) designation;
- e) furnace (batch) number;
- f) specification;
- g) delivery state;
- h) weight;
- i) number of pieces;
- j) contract number;
- k) results of each test of product;

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