

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 2879 (1998): Mild steel for metal arc welding electrodes
[MTD 4: Wrought Steel Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



भारतीय मानक

धातु आर्क वेल्डिंग इलेक्ट्रोडों के लिए मृदु इस्पात — विशिष्टि
(तीसरा पुनरीक्षण)

Indian Standard

**MILD STEEL FOR METAL ARC WELDING
ELECTRODES — SPECIFICATION**

(Third Revision)

First Reprint MAY 2001

ICS 77.140.99 ; 25.160.20

© BIS 1998

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1964, and subsequently revised in 1967 and 1975, in order to assist both the electrode and steel manufacturers, keeping in view the difficulties experienced by the electrode manufacturers to obtain the right type of steel for electrode core wire and the prevalent diverse views regarding the quality of steel required for the purpose. With the advent of continuous casting of steel and due to the revision of IS 814 'Covered electrodes for manual metal arc welding of carbon and carbon manganese steel (*fifth revision*)', it has become necessary to provide a scope for the use of non-rimming steel for metal arc welding electrodes through continuous cast route. The committee, therefore, decided to revise this standard to bring it in line with the present practices being followed by the Indian Industry. This will improve the availability of electrode grade steel to cater the growing demand of electrode manufacturing industry.

An informative Annex A has been given for the benefit of the purchaser giving particulars to be specified by the purchaser while placing the order for the steel covered in this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

**AMENDMENT NO. 1 NOVEMBER 2002
TO
IS 2879 : 1998 MILD STEEL FOR METAL ARC
WELDING ELECTRODES — SPECIFICATION
(*Third Revision*)**

(*Foreword*) — Insert the following before last para:

'For all the tests specified in this standard (chemical/physical/others), the method as specified in relevant ISO standard may also be followed as an alternate method.'

(MTD 4)

Reprography Unit, BIS, New Delhi, India

*Indian Standard***MILD STEEL FOR METAL ARC WELDING
ELECTRODES — SPECIFICATION***(Third Revision)***1 SCOPE**

This standard covers the requirements of mild steel billets, blooms, cast billet ingots and wire rods for metal arc welding electrode core wire.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
228	Method for chemical analysis of steel
812 : 1957	Glossary of terms relating to welding and cutting of metals
814 : 1991	Covered electrodes for manual metal arc welding of carbon and carbon manganese steel (<i>fifth revision</i>)
1387 : 1993	General requirements for metallurgical materials (<i>second revision</i>)
1956	Glossary of terms relating to iron and steel
7739 (Part 5) : 1976	Code of practice for preparation of metallurgical specimens : Part 5 Iron and steel and their examination

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 812 and relevant parts of IS 1956 shall apply.

4 SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of material shall conform to IS 1387.

4.2 Steel for electrode core wire shall be supplied in the form of billets, blooms, cast billet ingots or wire rods in sizes as specified by the purchaser.

4.3 The manufacturer shall furnish with each supply, all the check analysis of the cast.

5 MANUFACTURE

5.1 The processes used in making the steel and in manufacturing the finished product are left to the discretion of the manufacturer.

5.2 Steel shall be of rimming or non-rimming quality.

5.2.1 Macro examination [*see* IS 7739 (Part 5)] may be used to distinguish rimming steel from non-rimming steel.

5.3 Sufficient reduction and discard shall be made from each ingot to ensure freedom from piping, segregation and other harmful defects.

6 CHEMICAL COMPOSITION

The product analysis of the material when carried out either by the method specified in the relevant part of IS 228 or any other established instrumental/chemical method, shall be as given in Table 1. In case of dispute, the procedure given in the relevant part of IS 228 shall be the referee method. However, where the method is not given in IS 228 or its relevant parts, the referee method shall be as agreed to between the purchaser and the manufacturer.

7 FREEDOM FROM DEFECTS

The material shall be reasonably free from all harmful defects.

8 DIMENSIONS

8.1 The size of billets, blooms and cast billet ingots shall be subject to mutual agreement between the purchaser and the manufacturer.

8.2 Length of billets and blooms (including continuously cast) shall be supplied in lengths between 3 and 13 metres as specified by the purchaser.

9 TOLERANCES

9.1 In case of cast billet ingots, a tolerance of ± 5 mm shall be permitted on the specified width across flat.

Table 1 Chemical Composition
(Clause 6)

Designation	Constituent (Product Analysis), Percent								
	C	Si	Mn	P	S	Cu	V	Ti	Al (Total Al)
	Max (2)	Max (3)	(4)	Max (5)	Max (6)	Max (7)	Max (8)	Max (9)	Max (10)
EWR	0.10	0.03	0.38-0.62	0.030	0.030	0.15	0.005	0.003	0.012
EWNR	0.10	0.03	0.38-0.62	0.025	0.025	0.15	0.005	0.003	0.012

NOTES

1 Cr+Ni+Mo = 0.15 percent, *Max.* No individual element shall be more than 0.10 percent.

2 All suitable arrangements are to be made to prevent such elements being added from scrap or other materials used during manufacture which impair the mechanical properties and utilizability.

9.2 In case of billets and blooms (including continuously cast) and wire rods, the following tolerances shall apply:

a) Billets and Blooms:

Product	Width Across Flat	Tolerance
mm	mm	
Billet	Up to and including 75	± 1.5
	Over 75	± 3
Bloom	Up to and including 150	+ 4 - 3
	Over 150	+6 -3

b) Wire Rods:

Product	Diameters	Tolerance	Maximum Difference Between Two Readings Taken on Any Two Diameters on the Cross Section
	mm	mm	mm
Wire	Up to and including 15	± 0.50	0.60
Rods	Over 15 up to and including 25	± 0.50	0.75

9.3 Unless otherwise specified, electrode core wire shall conform to the dimensions and tolerances specified in IS 814.

10 SELECTION OF TEST SAMPLES

Samples for chemical analysis shall be taken at the rate of one sample for every 25 tonnes or part thereof. For heat size above 100 tonnes, four samples shall be taken and the lot size shall increase proportionally. The shavings or turnings for the purpose of chemical analysis shall be taken across the face of the whole section of the billets, blooms, cast billet ingots or wire rods. In the case of wire, clippings should be used for chemical analysis.

NOTE — A lot shall comprise a part of the material from the same cast.

11 RETEST

Should any one of the test samples, first selected, fail to comply the requirements specified in 6, two further

samples shall be selected from the lot represented by the sample which failed. Should both the test samples comply with the requirements, the lot shall be deemed to have passed. Should either of the retest samples fail, the lot represented shall be rejected. In cases where it is not possible to identify the particular lot, the material from the entire cast shall be deemed as one lot for retest purposes and in case of failure, the entire cast shall be rejected.

12 MARKING

12.1 Unless otherwise agreed, the material shall be marked with:

- indication of the source of manufacturing, and
- the cast number.

12.1.1 In the case of billets, blooms and cast billet ingots, the marking shall be made at one end either on

the face or on the side. In the case of wire rods, duplicate metal tags bearing the marking shall be securely tied to each coil.

12.1.2 BIS Certification Marking

The material may also be marked with Standard Mark.

12.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Foreword)

INFORMATION TO BE GIVEN BY THE PURCHASER

A-1 BASIS OF ORDER

While placing the order for mild steel metal arc welding electrode core wire, covered by this standard, the purchaser should specify the following:

- a) Steel grade;
- b) Size of billets, blooms, cast billet ingots

(including continuously cast), wire rods;

- c) Size and dimensions of end product;
- d) End use;
- e) Test and test report required; and
- f) Special requirement, if any.

**AMENDMENT NO. 2 MAY 2007
TO
IS 2879 : 1998 MILD STEEL FOR METAL ARC
WELDING ELECTRODES —
SPECIFICATION**

(Third Revision)

(Page 2, clause 9.3) — Delete.

(Page 2, clause 10) — Substitute the following for the existing:

'Samples for chemical analysis shall be taken at the rate of one sample for every 25 tonnes or part thereof. For heat size above 100 tonnes, four samples shall be taken and the lot size shall increase proportionally. The shavings or turnings for the purpose of chemical analysis shall be taken across the face of the whole section of the billets, blooms, cast billet ingots or wire rods.

NOTE - A lot shall comprise a part of the material from the same cast.'

(MTD 4)

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publication), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'.

This Indian Standard has been developed from Doc: No. MTD 4 (4173).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 323 01 31, 323 33 75, 323 94 02

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:

Telephone

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

323 76 17, 323 38 41

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola
CALCUTTA 700054

{ 337 84 99, 337 85 61
337 86 26, 337 91 20

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43
60 20 25

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400093

{ 832 92 95, 832 78 58
832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR.
COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI.
HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR.
PATNA. PUNE. THIRUVANANTHAPURAM.