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Covered electrodes for cast iron

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently **JIS Z 3252 : 1992** is replaced with **JIS Z 3252 : 2001**.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

This revision is made for conformity with **ISO 1071 : 1983** *Covered electrodes for manual arc welding of cast iron—Symbolization*. Further, **JIS Z 3200** specifying “*Welding consumables—Technical delivery conditions for welding filler metals—Type of product, dimensions, tolerances and marking*” is used as the normative reference.

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Covered electrodes for cast iron

Introduction This Japanese Industrial Standard specifies covered electrodes for cast iron to be used for welding of cast iron, and was established in 1961, and revised thereafter several times.

In **JIS Z 3252 : 1992**, the materials are classified by the chemical composition of the deposited metal. On the other hand, in **ISO 1071** incorporated in the Annex in this revision, the materials are classified by the chemical composition of core wire or deposited metal. In conformity of **JIS** with the International Standard, it was expected that manufacturers and users might be seriously inconvenienced if the conventional standard is basically changed, and thus, it was decided that this Standard should be conformed with the International Standard step by step. In this Standard, a method of symbolization of "Covered electrodes for manual arc welding of cast iron" specified in **ISO 1071** was employed and incorporated in the Annex of the Standard. As a result, two kinds of methods of symbolization are specified in this Standard. Which of these methods is to be applied depends on the agreement between the parties concerned with delivery, but in future, this Standard will be in conformity with the requirements of the International Standard. In principle, one kind of symbolization shall be specified for one item of the material; however, regarding the material to which this Standard is applicable, the material is temporarily classified into two kinds, i.e., the kind specified in the text of this Standard and the kind to which the Annex of this Standard is applicable.

1 Scope This Standard specifies covered electrodes for cast iron (hereafter referred to as "electrodes"), employed for welding cast iron.

Remarks : The International Standard corresponding to this Standard is listed as follows:

ISO 1071 : 1983 *Covered electrodes for manual arc welding of cast iron—Symbolization*

2 Normative references The standards listed in Attached Table 1 contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) shall be applied.

3 Classification Electrodes are classified according to the chemical composition of the deposited metal, as shown in Table 1.

Regarding classification, the Annex may also be applied by the agreement between the parties concerned with delivery.

Table 1 Classification of electrodes

Classification of electrodes
DFC Ni
DFC Ni Fe
DFC Ni Cu
DFCCI
DFCF e

Remarks : The symbols for classification shall be given as shown in the following example:

Example: D FC Ni

Division of chemical composition of deposited metal

For cast iron

Covered electrode

4 Quality Quality shall be as follows.

Regarding quality, the Annex may be applied by the agreement between the parties concerned with delivery.

4.1 Covering Covering shall conform to the requirements of 3 of JIS Z 3200.

4.2 Chemical composition Chemical composition of deposited metal shall conform to the requirements of Table 2 when tested by the method specified in 6.

Table 2 Chemical composition of deposited metal

Unit : %

Class	Chemical composition							
	C	Si	Mn	P	S	Ni	Fe	Cu
DFC Ni	1.8 max.	2.5 max.	1.0 max.	0.04 max.	0.04 max.	92 min.	—	—
DFC Ni Fe	2.0 max.	2.5 max.	2.5 max.	0.04 max.	0.04 max.	40 to 60	Remainder	—
DFC Ni Cu	1.7 max.	1.0 max.	2.0 max.	0.04 max.	0.04 max.	60 min.	2.5 max.	25 to 35
DFCCI	1.0 to 5.0	2.5 to 9.5	1.0 max.	0.20 max.	0.04 max.	—	Remainder	—
DFCF e	0.15 max.	1.0 max.	0.8 max.	0.03 max.	0.04 max.	—	Remainder	—

5 Dimensions and their tolerances Dimensions and their tolerances of electrodes shall conform to the requirements of 2 of JIS Z 3200. The tolerance on the diameter of core wires shall be ± 0.6 mm. The dimensions of the typical electrodes are shown in Table 3.

Table 3 Dimensions of typical electrodes

Unit : mm

Drawn core wire				Cast core wire	
Core diameter	Length			Core diameter	Length
2.6	250,	300,	350	2.6	250 to 500
3.2		300,	350, 400	3.2	
4.0			350, 400, 450, 500	4.0	
5.0			350, 400, 450, 500	5.0	
6.0			350 400, 450 500	6.0	

6 Testing Testing shall be as follows:

6.1 Electrodes to be tested Electrodes to be tested shall be 3.2 mm or 4.0 mm in core diameter representing all core diameters. When not manufacturing the electrodes of these diameters, the electrodes of the diameters close thereto shall be used as representatives.

6.2 Manufacturing method of samples for chemical analysis of deposited metal The manufacturing method of samples for chemical analysis of deposited metal shall conform to the requirements of **JIS Z 3184**.

In sampling the deposited metal, the post weld heat treatment is allowed for softening it.

6.3 Analysis method Analysis method shall be selected any of the following methods. If it is impossible, it shall be in accordance with the agreement between the parties concerned with delivery.

**JIS G 1201, JIS G 1204, JIS G 1211, JIS G 1212, JIS G 1213,
JIS G 1214, JIS G 1215, JIS G 1216, JIS G 1219, JIS G 1253,
JIS G 1256, JIS G 1257, JIS G 1258, JIS G 1326, JIS H 1151,
JIS H 1413, JIS Z 2611, JIS Z 2615**

7 Inspection Inspection shall be as follows:

- a) The covering and dimensions of electrodes shall conform to the requirements of 4.1 and 5.
- b) If the results of chemical analysis of the deposited metal do not conform to the requirements, the test may be carried out again only once, and the results of the retest shall conform to the requirements.

8 Packaging Packaging shall conform to the requirements of 5 in **JIS Z 3200**.