

Australian Standard[®]

Electrodes and fluxes for submerged-arc welding

Part 2: Low and intermediate alloy steels

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- Australian Gas Association
- Bureau of Steel Manufacturers of Australia
- Confederation of Australian Industry
- Department of Defence
- Department of Industrial Relations and Employment, N.S.W.
- Lloyd's Register of Shipping
- Metal Trades Industry Association of Australia
- Railways of Australia Committee
- Welding Technology Institute of Australia

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**Electrodes and fluxes for
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PREFACE

This Standard was prepared by Standards Australia's Committee on Welding Consumables. It is based on ANSI/AWS A5.23, *Specification for low alloy steel electrodes and fluxes for submerged-arc welding*.

Although the system for the identification of electrodes is based on the ANSI/AWS Standard, some grades not in the ANSI/AWS system have been added. Flux classification is based on the major application of the flux, as specified by the manufacturer, combined with its contribution to the weld metal chemistry. Classification of the weld metal has been derived from the ANSI/AWS Standard, modified to agree with the ship classification societies' unified rules.

The principle behind the classification system is that each of the three factors involved, viz electrodes, flux, and weld metal, should be capable of individual selection and identification. In particular, the concept of the classification of weld metal as a separate entity is regarded as being of great significance. The weld metal classification is in two parts, one part denoting the mechanical properties and heat treatment condition, and the other denoting the chemical composition and whether controlled hydrogen conditions apply.

Because of the large number of electrode/flux combinations available, guidance is frequently needed on the suitability of the process for a specific weldment. The intent here is that the designer should need to specify on the drawing the weld metal classification only, thereby nominating the mechanical properties required for the satisfactory functioning of the welded joint. The fabricator, taking into account recommendations by the manufacturer of the consumables, can select the electrode/flux combination appropriate to the materials of construction and the conditions pertaining at the time; however, the term 'Australian Standard' will be restricted to the actual sizes, types, and strengths given in the tables in this Standard.

If procedure qualification is called up in the relevant application Standard, it may be necessary for the chosen electrode/flux combination to be qualified by procedure testing.

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STANDARDS AUSTRALIA

Australian Standard

Electrodes and fluxes for submerged-arc welding

Part 2: Low and intermediate alloy steels

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Standard specifies requirements for solid and composite electrodes and fluxes for the submerged-arc welding of low and intermediate alloy steels. It defines classification systems for electrodes, fluxes, and weld metal, and specifies their chemical and physical properties. It also specifies, where appropriate, requirements for testing, packaging, marking, and storage.

NOTE: The low and intermediate alloy steels covered by this Standard have alloy contents ranging up to 10.5 percent for the principal alloying metal. Higher alloy steels such as stainless steels are not included.

1.2 REFERENCED DOCUMENTS. A list with titles of documents referred to in this Standard is given in Appendix D.

1.3 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 2812, and those below apply.

1.3.1 Shall—indicates that a statement is mandatory.

1.3.2 Should—indicates a recommendation.

1.3.3 Electrode—unless otherwise specified, where the term ‘electrode’ is used, it shall be taken to mean either of the following:

- (a) Solid electrode—bare filler metal, generally copper coated.
- (b) Composite electrode.

1.3.4 Lot or batch number—a number from which the manufacturer is able to identify the manufacturing history of the electrode or flux.

1.3.5 Coil without support—a continuous length of electrode in coil form without a core, frame or other support.

1.3.6 Coil with support—continuous length of electrode in coil form on an internal core or liner or reel.

1.3.7 Basket—a type of package consisting of a continuous length of electrode wound on a rigid open wire framework forming a cylinder, flanged at both ends.

1.4 GENERAL DESCRIPTION OF THE CLASSIFICATION SYSTEM. The classification system of the electrodes, flux, and weld metal shall consist of alphanumeric groups as described in Sections 2, 3, and 4 respectively. Where combinations of electrodes, flux, and weld metal classifications are

to be written down, they should be set out in the order shown in Figure 1.1 and separated by hyphen(s). A dot shall be used to separate the heat treatment condition and weld metal chemistry (see Figure 1.1).

NOTES:

1. In Figure 1.1 the letter ‘X’ indicates a variable.
2. See Appendix B for examples on classification system.

1.5 TESTING.

1.5.1 Qualification tests. Electrodes, fluxes, and weld metals shall be qualified by compliance with the requirements of this Standard appropriate to their classification, when tested in accordance with the schedule given in Table 1.1 by the methods described in Appendix A.

TABLE 1.1
TESTS REQUIRED

Type of test	Applicability	
	Qualification	Conformance
Chemical (electrode)	✓	✓
Chemical (flux)	✓	—
Chemical (all-weld-metal)	✓	✓
Radiography (all-weld-metal)	✓	—
Tensile (all-weld-metal)	✓	✓
Impact (all-weld-metal)	✓	✓
Hydrogen (all-weld-metal)	✓	✓

LEGEND:

✓ indicates applicability

1.5.2 Conformance tests. Tests in accordance with Table 1.1 shall be carried out at intervals not exceeding 1 year to ensure that electrodes and weld metals continue to comply with the requirements of this Standard. However, this requirement does not preclude the adoption of shorter intervals between successive tests.

NOTE: Lot or batch testing, where carried out, need not include all the tests specified in Table 1.1.

1.5.3 Reporting. Results of tests shall be recorded and reported on the relevant qualification certificate or conformance certificate, and shall be available on request.

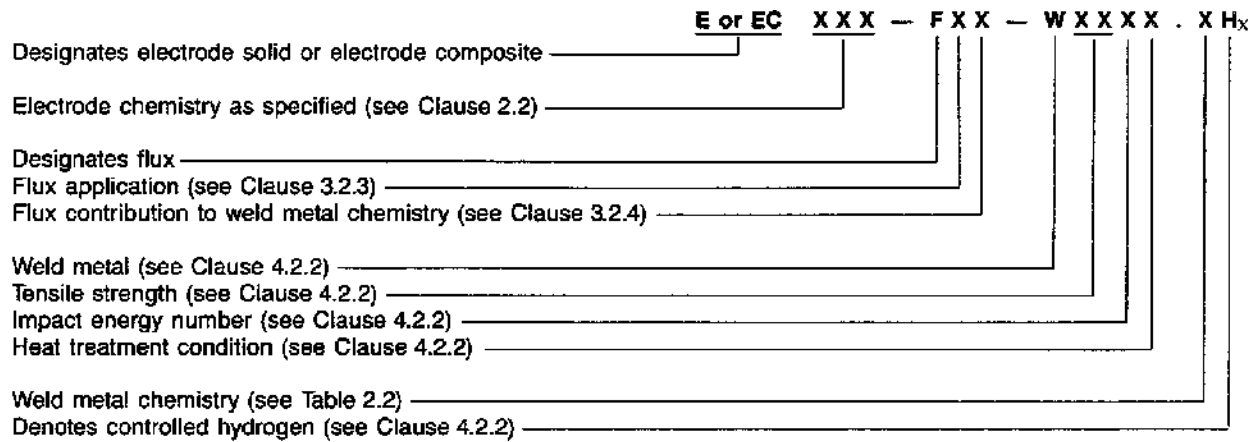


FIGURE 1.1 COMBINED CLASSIFICATIONS

SECTION 2. ELECTRODES

2.1 SCOPE OF SECTION. This Section specifies requirements for electrodes for the submerged-arc welding of low and intermediate alloy steels.

2.2 CLASSIFICATION.

2.2.1 Solid electrodes.

2.2.1.1 Basis of classification. Solid electrodes shall be classified on the basis of their chemical composition as manufactured (see Table 2.1).

2.2.1.2 Description of the classification system. The designation of the chemical composition of the solid electrode shall be by the letter prefix E (denoting electrode), followed by letter(s) and number(s) indicating the electrode composition (see Table 2.1).

2.2.2 Composite electrodes.

2.2.2.1 Basis of classification. Composite electrodes shall be classified on the basis of chemical composition of deposited weld metal (see Table 2.2 and Paragraph A4.5, Appendix A).

2.2.2.2 Description of the classification system. The designation of the composite electrode shall be by letter prefixes EC (denoting electrode composite) followed by letter(s) and number(s) indicating weld metal composition (see Table 2.2).

2.3 MANUFACTURE. The electrodes may be made by any method that will yield a product complying with the requirements of this Standard.

TABLE 2.1
CHEMICAL COMPOSITION OF SOLID ELECTRODES

Classifi- cation	Chemical composition, percent by mass*												
	C	Mn	Si	S	P	Cr	Ni	Mo	Cu †	V	Al	Ti	Zr
Carbon steel ‡													
EL12	0.05 to 0.15	0.25 to 0.60	0.07	0.030	0.030	—	—	—	0.35	—	—	—	—
EM12K	0.05 to 0.15	0.80 to 1.25	0.10 to 0.35	0.030	0.030	—	—	—	0.35	—	—	—	—
EMH12K	0.07 to 0.15	1.25 to 1.75	0.15 to 0.35	0.030	0.030	—	—	—	0.35	—	—	—	—
Carbon-molybdenum steel													
EA1	0.07 to 0.17	0.65 to 1.00	0.20	0.035	0.025	—	—	0.45 to 0.65	0.35	—	—	—	—
EA2	0.07 to 0.17	0.95 to 1.35	0.20	0.035	0.025	—	—	0.45 to 0.65	0.35	—	—	—	—
EA3§	0.10 to 0.18	1.25 to 1.65	0.20	0.035	0.025	—	—	0.45 to 0.65	0.35	—	—	—	—
EA4§	0.10 to 0.18	1.65 to 2.15	0.20	0.035	0.025	—	—	0.45 to 0.65	0.35	—	—	—	—
Chromium-molybdenum steel													
EB2	0.07 to 0.15	0.40 to 1.20	0.05 to 0.30	0.030	0.025	1.00 to 1.75	—	0.45 to 0.65	0.35	0.20 to 0.30	—	—	—
EB2C	0.28 to 0.33	0.40 to 1.20	0.55 to 0.75	0.015	0.015	1.00 to 1.50	—	0.40 to 0.65	0.30		—	—	—
EB3	0.07 to 0.15	0.40 to 1.20	0.05 to 0.30	0.030	0.025	2.25 to 3.00	—	0.90 to 1.10	0.35		—	—	—
EB5	0.18 to 0.23	0.40 to 1.20	0.40 to 0.60	0.025	0.025	0.45 to 0.65	—	0.90 to 1.10	0.30		—	—	—
EB6C	0.25 to 0.40	1.20	0.25 to 0.50	0.030	0.025	4.80 to 6.00	—	0.45 to 0.65	0.35		—	—	—
E5Cr	0.10	1.20	0.20 to 0.50	0.025	0.025	4.50 to 6.00	—	0.45 to 0.65	0.35		—	—	—
E7Cr	0.10	1.20	0.20 to 0.50	0.025	0.025	6.00 to 8.00	—	0.45 to 0.65	0.35	—	—	—	—
E9Cr	0.10	1.20	0.20 to 0.50	0.025	0.025	8.00 to 10.50	—	0.85 to 1.20	0.35	—	—	—	—
Nickel steel													
ENi1	0.10	0.75 to 1.25	0.05 to 0.25	0.010	0.010	0.15	0.80 to 1.20	0.30	0.35	—	—	—	—
ENi2	0.10	0.75 to 1.25	0.05 to 0.25	0.010	0.010	—	2.10 to 2.90	—	0.35	—	—	—	—
ENi3	0.13	0.60 to 1.20	0.05 to 0.25	0.012	0.012	0.15	3.10 to 3.80	—	0.35	—	—	—	—
ENi4	0.12 to 0.19	0.60 to 1.00	0.10 to 0.30	0.020	0.015	—	1.60 to 2.10	0.10 to 0.30	0.35	—	—	—	—
Other low alloy steel													
EF1	0.07 to 0.15	0.90 to 1.70	0.15 to 0.35	0.025	0.025	—	0.95 to 1.60	0.25 to 0.55	0.35	—	—	—	—
EF2	0.10 to 0.18	1.70 to 2.40	0.20	0.025	0.025	—	0.40 to 0.80	0.40 to 0.65	0.35	—	—	—	—
EF3	0.10 to 0.18	1.70 to 2.40	0.20	0.025	0.025	—	0.70 to 1.10	0.45 to 0.65	0.35	—	—	—	—
EF4	0.16 to 0.23	0.60 to 0.90	0.15 to 0.35	0.035	0.025	0.40 to 0.60	0.40 to 0.80	0.15 to 0.30	0.35	—	—	—	—
EF5	0.10 to 0.17	1.70 to 2.20	0.20	0.010	0.010	0.25 to 0.50	2.30 to 2.80	0.45 to 0.65	0.50	—	—	—	—
EF6	0.07 to 0.15	1.45 to 1.90	0.10 to 0.30	0.015	0.015	0.20 to 0.55	1.75 to 2.25	0.40 to 0.65	0.35	—	—	—	—
EM2	0.10	1.25 to 1.80	0.20 to 0.60	0.010	0.010	0.30	1.40 to 2.10	0.25 to 0.55	0.25	0.05	0.10	0.10	0.10
EM3	0.10	1.40 to 1.80	0.20 to 0.60	0.010	0.010	0.55	1.90 to 2.60	0.25 to 0.65	0.25	0.04	0.10	0.10	0.10
EM4	0.10	1.40 to 1.80	0.20 to 0.60	0.010	0.010	0.60	2.00 to 2.80	0.30 to 0.65	0.25	0.03	0.10	0.10	0.10
EW	0.12	0.35 to 0.65	0.20 to 0.35	0.040	0.030	0.50 to 0.80	0.40 to 0.80	—	0.30 to 0.80	—	—	—	—
EG	No requirements specified												

* Single values shown are maxima.

† The percentage of copper by mass due to any coating plus the residual copper content in the steel except for classification EW which has intentional copper addition (see Clause 2.7).

‡ The EL12, EM12K, and EMH12K classifications are identical with those same classifications in AS 1858.1. They are specifically included in this Standard because they are sometimes used with an alloy-reinforced flux to deposit some of the weld metals classified in Table 2.2. This list is not intended to be exhaustive. Other electrodes covered by AS 1858.1 may be used and their classifications included accordingly.

§ Classifications EA3 and EA4 have been adopted because of the logical progression of the Mn level. It is noted that in ANSI/AWS A5.23 these classifications are designated EA4 and EA3 respectively.

|| Classification E5Cr is identical in composition with classification EB6 of ANSI/AWS A5.23.

2.4 CHEMICAL COMPOSITION OF SOLID ELECTRODES (See also Clause 2.10.1(f)).

2.4.1. Specified elements. When determined in accordance with the method in Paragraph A2, Appendix A, the chemical composition of solid electrodes shall comply with the limits given in Table 2.1.

2.4.2. Analysis for other elements. Elements other than those shown in Table 2.1 which are intentionally added (except iron) shall be reported. The total of these elements and other elements not intentionally added shall not exceed 0.5 percent.

2.5 SIZES. Diameters and tolerances of electrodes shall be in accordance with the values given in Table 2.3.

NOTE: Other sizes, forms (including strips) and tolerances may be supplied as agreed between the purchaser and the supplier.

2.6 VOIDS IN CORE OF COMPOSITE ELECTRODES. Composite electrodes shall have the core ingredients distributed throughout their length with sufficient uniformity to ensure that the performance of

the electrodes and the properties of the weld metal deposited thereby are not adversely affected.

TABLE 2.3
ELECTRODE DIAMETERS AND TOLERANCES
millimetres

Diameter	Tolerance on diameter	
	Solid electrodes	Composite electrodes
1.2 1.3 1.6	± 0.04	± 0.13
2.0 2.4 2.8 3.2	± 0.05	± 0.15
4.0 4.8 5.0 5.6 6.0 6.3	± 0.1	± 0.20

TABLE 2.2
CHEMICAL COMPOSITION OF WELD METAL (BOTH SOLID AND COMPOSITE ELECTRODES)

Weld metal classification† (Chemistry)	Chemical composition, percent by mass*									
	C	Mn	Si	S	P	Cr	Ni	Mo	Cu‡	V, Ti, Zr §
Carbon-molybdenum steel										
A1	0.12	1.00	0.80	0.040	0.030	—	—	0.40 to 0.65	0.35	—
A2	0.12	1.40	0.80	0.040	0.030	—	—	0.40 to 0.65	0.35	—
A3	0.15	1.60	0.80	0.040	0.030	—	—	0.40 to 0.65	0.35	—
A4	0.15	2.10	0.80	0.040	0.030	—	—	0.40 to 0.65	0.35	—
Chromium-molybdenum steel										
B2	0.15	1.20	0.80	0.040	0.030	1.00 to 1.50	—	0.40 to 0.65	0.35	0.30V
B2C	0.25	1.20	0.80	0.040	0.030	1.00 to 1.50	—	0.40 to 0.65	0.35	0.30V
B3	0.15	1.20	0.80	0.040	0.030	2.00 to 2.50	—	0.90 to 1.20	0.35	—
B4	0.12	1.20	0.80	0.040	0.030	1.75 to 2.25	—	0.40 to 0.65	0.35	—
B5	0.18	1.20	0.80	0.040	0.030	0.40 to 0.65	—	0.90 to 1.20	0.35	—
B6C	0.25	1.20	0.80	0.040	0.030	4.50 to 6.00	—	0.40 to 0.65	0.35	—
5Cr	0.12	1.20	0.80	0.040	0.030	4.50 to 6.00	—	0.40 to 0.65	0.35	—
7Cr	0.12	1.20	0.80	0.040	0.030	6.0 to 8.0	—	0.40 to 0.65	0.35	—
9Cr	0.12	1.20	0.80	0.040	0.030	8.0 to 10.5	—	0.80 to 1.20	0.35	—
Nickel steel										
Ni1	0.12	1.60	0.80	0.030	0.030	0.15	0.80 to 1.10	0.35	0.35	0.05
Ni2	0.12	1.60	0.80	0.030	0.030	—	2.00 to 2.90	—	0.35	—
Ni3	1.12	1.60	0.80	0.030	0.030	0.15	2.80 to 3.75	—	0.35	—
Ni4	1.14	1.60	0.80	0.030	0.030	—	1.40 to 2.10	0.35	0.35	—
Other low alloy steel										
F1	0.12	0.70 to 1.50	0.80	0.040	0.030	0.15	0.90 to 1.70	0.55	0.35	—
F2	0.17	1.25 to 2.25	0.80	0.040	0.030	—	0.40 to 0.80	0.40 to 0.65	0.35	—
F3	0.17	1.25 to 2.25	0.80	0.040	0.030	—	0.70 to 1.10	0.40 to 0.65	0.35	—
F4	0.17	1.60	0.80	0.040	0.030	0.60	0.40 to 0.80	0.25	0.35	0.03
F5	0.17	1.20 to 1.80	0.80	0.030	0.030	0.65	2.00 to 2.80	0.30 to 0.80	0.50	—
F6	0.14	0.80 to 1.85	0.80	0.030	0.030	0.65	1.50 to 2.25	0.60	0.40	—
M1	0.10	0.60 to 1.60	0.80	0.040	0.030	0.15	1.25 to 2.00	0.35	0.30	0.03
M2	0.10	0.90 to 1.80	0.80	0.040	0.030	0.35	1.40 to 2.10	0.25 to 0.65	0.30	0.03
M3	0.10	0.90 to 1.80	0.80	0.030	0.030	0.65	1.80 to 2.60	0.20 to 0.70	0.30	0.03
M4	0.10	1.30 to 2.25	0.80	0.030	0.030	0.80	2.00 to 2.80	0.30 to 0.80	0.30	0.03
W	0.12	0.50 to 1.60	0.80	0.040	0.030	0.45 to 0.70	0.40 to 0.80	—	0.30 to 0.75	—
G	No requirements specified									

* Single values shown are maxima.

† The designation for composite electrodes is obtained by placing an EC before the appropriate weld metal chemical classification.

‡ The copper limit includes any copper in the coating on the electrode with which the weld was deposited.

§ Single values in the column 'Vanadium, titanium, zirconium' are for the total of these elements, unless otherwise noted. A 'V' after the value in the column is the limit for vanadium only. In that case, titanium and zirconium are not included in the requirements, except as noted in Clause 2.4.2.

|| Manganese in Ni2 may be 1.80 percent max. when carbon is 0.10 percent max.

2.7 FINISH AND TEMPER.

2.7.1 Finish. Electrodes shall have a smooth finish, free from slivers, depressions, seams (except composite electrodes), laps (except composite electrodes), scratches, scale, rust, or any other defect, and from other foreign matter including drawing lubricant that would adversely affect the weld metal properties or the operation of the welding equipment. Copper or other suitable coatings may be used.

2.7.2 Temper. Electrodes shall be suitable for uniform uninterrupted feeding on automatic or semi-automatic welding equipment.

2.8 COILING OF ELECTRODES.

2.8.1 General. Electrodes shall be coiled in accordance with Clauses 2.8.2 to 2.8.9.

2.8.2 Coil with support. Coils with support shall conform to the dimensions and nominal net mass given in Table 2.4. Liners shall be of such material and design as will provide adequate protection against damage or distortion due to normal handling and use. Liners shall be sufficiently clean and dry to maintain the cleanness of the electrodes.

NOTE: Dimensions and net mass of coils without support should be determined by negotiation between the purchaser and the supplier.

2.8.3 Baskets (See Figure 2.1.) Small baskets may require an adaptor to fit machines equipped for arbor type spools. Larger baskets may be placed direct on coil or rim type machine spiders.

TABLE 2.4
ELECTRODE COILS WITH SUPPORT

Electrode diameter	Dimensions and mass of coils			
	Nominal net mass	ID of liner	Max. width wound coil	Max. OD wound coil
mm	kg	mm	mm	mm
1.2 to 6.3	≤ 30	300 + 15, -0	120	430
2.4 to 6.3	≤ 100	610 + 20, -0	130	800

2.8.4 Spools and reels. Spools and reels shall be of such material and design as will provide adequate protection against damage or distortion of themselves or of the electrode due to normal handling or use. Spool and reels shall be sufficiently clean and dry to maintain the cleanness of the electrode.

NOTE: Spools and reels should conform to the dimensions shown in Figure 2.2

2.8.5 Drum. Drums shall be of such material and design as will provide adequate protection against damage or distortion of the electrode in normal handling, transportation, and use. The drums shall be sufficiently clean and dry to maintain the cleanness of the electrode.

NOTE: Outside diameters of drums should be 400 mm, 500 mm, or 580 mm.

2.8.6 Length. Each coil without support, coil with support, or drum shall contain one continuous length of electrode.

2.8.7 Butt welds. Butt welds in the electrode shall be made so as not to interfere with the uniform uninterrupted feeding of the electrode on automatic and semi-automatic welding equipment.

2.8.8 Winding. The electrode shall be wound evenly so as to prevent the formation of kinks, waves, sharp bends, or out-of-balance conditions which would interfere with the feeding of the electrode, and so that it is free to unwind without restriction. The starting end of the electrode shall be secured and be readily identifiable.

2.8.9 Cast and helix. The cast and helix of the electrode shall be such as not to interfere with the uniform, uninterrupted feeding and accurate placement of the electrode on automatic or semiautomatic welding equipment.

2.9 PACKAGING. The coil of electrode shall be packaged to guard against damage during normal transportation, handling, and storage, in such a manner as will ensure that the electrode is capable of complying with the test requirements of this Standard after being stored in accordance with the manufacturer's recommendations for a period of at least 6 months from date of despatch by the manufacturer or distributor.

2.10 MARKING.

2.10.1 Information to be displayed. Each electrode coil, irrespective of the manner of packaging, shall display the following information in a manner that prevents easy or accidental removal:

- The words 'Classification to AS 1858.2' followed by the electrode classification marking, e.g. 'Classification to AS 1858.2—EB3'.
- Manufacturer's name.
- Manufacturer's trade designation of electrode.
- Electrode diameter (in millimetres).
- Net mass (in kilograms) of electrode.
- Lot, batch or heat number. (The manufacturer shall ensure that the heat number and product chemistry for a solid electrode, or manufacturing history for a composite electrode, can be identified from a lot or batch number.)
- Safety warning (see Clause 2.10.2).

NOTE: Manufacturers making a statement of compliance with this Australian Standard on a product, or on packaging or promotional material related to that product, are advised to ensure that such compliance is capable of being verified.

Independent certification is available from Standards Australia under the StandardsMark Product Certification Scheme. The StandardsMark, shown below, is a (registered) certification trade mark owned by Standards Australia and granted under licence to manufacturers whose products comply with the requirements of suitable Australian Standards and who operate sound quality assurance programs to ensure consistent product quality.

Further information on product certification and the suitability of this Standard for certification is available from Standards Australia's Quality Assurance Services, 1 The Crescent, Homebush, NSW 2140.



2.10.2 General safety warning. A label shall be attached or a statement prominently displayed with at least the following warning:

WARNING: Protect yourself and others. Read and understand this label.

FUMES AND GASES—can be dangerous to your health.

ARC RADIATION—can injure eyes and burn skin.

ELECTRIC SHOCK—can kill.

- * Read and understand the manufacturer's instructions and your employer's safety practices.
- * Keep your head out of the fumes.
- * Use enough natural ventilation, exhaust ventilation at the fume source, or both, to keep fumes and gases from the breathing zone and the general area.
- * Wear correct eye, ear and body protection.
- * Do not touch live electrical parts.
- * See AS 1674 and AWRA/AWI Technical Note 7 or your consumable supplier's recommendations for further information.

DO NOT REMOVE OR COVER THIS WARNING

Where the size or construction of the unit product is such as to prevent legible presentation of the complete warning as above, the following abbreviated warning may be used provided that the complete warning as above is displayed on the packaging:

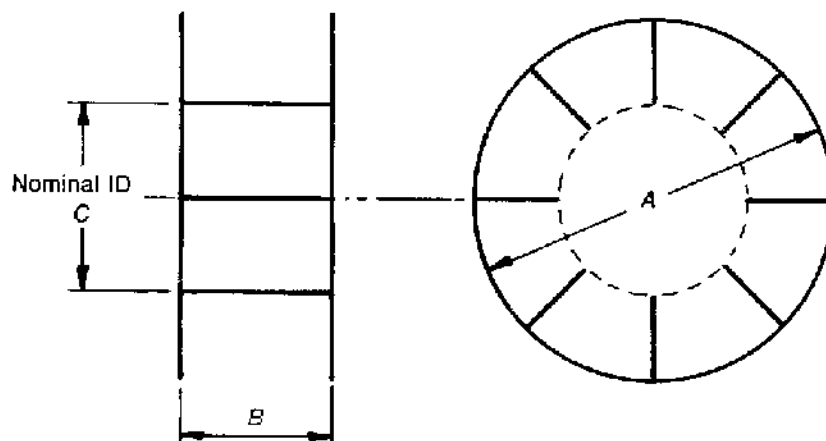
WARNING: PROTECT YOURSELF AND OTHERS. READ AND UNDERSTAND THE WARNING ON THE PACKAGING.

2.10.3 Additional marking of coils without support.

In addition to the information specified in Clause 2.10.1, each coil without support shall have a tag, or similar device, attached to the inside end of the coil, in a manner that prevents easy or accidental removal, bearing the information specified in Clause 2.10.1(a), (c), (d), (f), and (g).

2.11 STORAGE. Where electrodes are stored by the manufacturer or distributor, the conditions of storage shall be such as will ensure that the electrodes comply with the requirements of Clause 2.7.1 at the time of delivery to the purchaser.

NOTE: The purchaser should also store the electrode in a dry store or as prescribed by the manufacturer.



Net mass kg	millimetres					
	A		B		C	
	Diameter	Tolerance	Width	Tolerance	Diameter	Tolerance
≤ 20	300	±5	98	+ 0, -3	188	
≤ 40	435		100		308	+ 2.5,-0

NOTE: Dimensions A and B relate to wire-feeding equipment and should be adhered to. Dimension C for small baskets may vary to suit the adaptor.

FIGURE 2.1 BASKETS