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Australian Standard 2576—1982

WELDING CONSUMABLES FOR BUILD-UP AND WEAR RESISTANCE—CLASSIFICATION SYSTEM

STANDARDS ASSOCIATION OF AUSTRALIA
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The following interests were represented on the committee responsible for the preparation of this standard:

Australian Gas Association

Australian Institute of Petroleum Limited

Australian Welding Institute

Australian Welding Research Association

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Defence

Department of Industrial Relations, N.S.W.

Department of Industry and Commerce

Department of Labour and Industry, Vic.

Lloyds Register of Shipping

Metal Trades Industry Association of Australia

Metropolitan Water Sewerage and Drainage Board, N.S.W.

Railways of Australia Committee

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AUSTRALIAN STANDARD

WELDING CONSUMABLES FOR BUILD-UP AND WEAR RESISTANCE—CLASSIFICATION SYSTEM

AS 2576—1982

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PREFACE

This standard was prepared by the Association's Committee on Electrodes and Filler Rods. It is one of a series of standards being developed to suit Australian conditions. The standard is largely based on Australian Welding Research Association Technical Note 4 and acknowledgement is made to that Association for its assistance in the preparation of this standard. Acknowledgement is also made to Commonwealth Industrial Gases Limited for the photomicrographs reproduced as Appendix B.

Australian standards dealing with electrodes are as follows:

AS 1167 Alloy Filler Rods for Brazing
AS 1552 Classification of Covered Electrodes
AS 1553 Low Carbon Steel Covered Electrodes for Manual Metal-arc Welding
AS 1586 Low Alloy Steel Covered Electrodes for Manual Metal-arc Welding
AS 1588 Filler Rods for Welding
AS 2203 Carbon Steel Electrodes, Cored (For Arc Welding)
AS . . . . Electrodes for Gas Metal-arc Welding*

The classification of the consumables is by alloy type (chemical analysis and microstructure) and hardness of the weld deposit. Surfacing consumables may be deposited by many different processes and may take the form of continuous wire (solid or tubular), covered electrodes or spray metal (wires or spray metal powders).

In those tables in the standard where particle size is specified the sizes comply with AS 1152, Test Sieves, and are in line with ISO standards, following an R 40/3 preferred number series.

Guidance in the selection of a suitable consumable for a particular application is given in Appendix C. Additional information on this aspect is given in Australian Welding Research Association Technical Note 4.

*In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
WELDING CONSUMABLES FOR BUILD-UP AND WEAR RESISTANCE—CLASSIFICATION SYSTEM

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard describes a classification system for welding consumables for build-up and wear resistance related to the properties of the weld deposit (chemical composition, microstructure and hardness) and to the method of deposition of, and the form of, the welding consumables.

Criteria relating to the selection of the welding consumable most appropriate for the particular surfacing requirement and additional information likely to be of use to the user in the choice of a consumable are provided in appendices.

1.2 APPLICATION. The classification system shall be in accordance with Section 1. The properties and requirements of the consumables shall be in accordance with Sections 2 and 3, as appropriate.

Appendix A describes the methods of test. Appendix B contains micrographs of the various alloy types and Appendix C gives additional information for users of the consumables.

1.3 REFERENCED DOCUMENTS. The following documents are referred to in this standard:

AS 1050 Methods for the Analysis of Iron and Steel

AS 1204 Structural Steels—Ordinary Weldable Grades

AS 1674 Fire Precautions in Cutting, Heating and Welding Operations

AS 1815 Method for Rockwell Hardness Test Part 1—Testing of Metals

AS K1 Methods for the Sampling and Analysis of Iron and Steel

AS Z5 Glossary of Metal Welding Terms and Definitions

ANSI/AWS A5.4-78 Corrosion-resisting Chromium and Chromium-Nickel Steel Covered Electrodes

AWS/AWI Technical Note No 7 Health and Safety in Welding

1.4 DEFINITIONS. For the purpose of this standard, the terms given in AS Z5 and the following definitions apply:

1.4.1 Impact—the degree of severity of the impact expressed as follows:

(a) High impact—impact causing fracture or plastic deformation.

(b) Low impact—impact causing no perceptible deformation.

1.4.2 Loading condition—the degree of severity of the loading condition expressed as follows:

(a) High loading—gross local deformation of the surface.

(b) Medium loading—some local deformation.

(c) Low loading—no visible deformation.

1.4.3 Lot (or batch) number—a number from which the manufacturer is able to identify the constituents of the consumable and the date of manufacture.

1.4.4 Shall and should—the word 'shall' is to be understood as mandatory, and the word 'should' as non-mandatory, advisory or recommended.

1.4.5 Self-shielded arc—an arc where the shielding medium protecting the arc and metal in transfer is obtained from the electrode.

1.4.6 Surfacing—the application of a wear-resistant material to the surface of a component by welding, braze welding or spraying.

1.4.7 Temperature—the temperature due to the component's environment, e.g. in a furnace, or to heat generated during working, expressed as follows:

(a) High temperature—greater than 500°C (red heat and above).

(b) Medium temperature—over 200°C to 500°C.

(c) Low temperature—from ambient temperature to 200°C.

1.4.8 Welding consumables—electrodes (in the form of rod or continuous wire, either tubular or solid), filler rods, spray metal powders, spray metal wires and wire/flux combinations.

1.5 CLASSIFICATION.

1.5.1 Basis of Classification. Welding consumables for build-up and wear resistance shall be classified according to the following characteristics:

(a) Alloy group.

(b) Hardness of an undiluted deposit.

(c) Method of deposition.

(d) Form of the consumable.

1.5.2 Designation of Classification. The classification shall be designated by four digits followed by an alphanumeric suffix (see Fig. 1.1 for example). The elements of the designation shall have the following meanings:

(a) The *first digit* shall indicate the alloy group as listed below: