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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS OF DESTRUCTIVE TESTING OF WELDS IN METAL

PART 2: TENSILE TESTS

AS 2205.2.2
METHOD 2.2: ALL-WELD-METAL TENSILE TEST

1 SCOPE. This Standard sets out the method for the all-weld-metal tensile test of deposited weld metal.

2 REFERENCED DOCUMENTS. The documents below are referred to in this Standard.

AS
1391 Methods of tensile testing of metals

1553 Covered electrodes for welding
Part 1: Low carbon steel electrodes for manual metal-arc welding of carbon and carbon-manganese steels (AS 1553.1)
Part 2: Low and intermediate alloy steel electrodes for manual metal-arc welding of carbon steels and low and intermediate alloy steels (AS 1553.2)

1858 Electrodes and fluxes for submerged-arc welding
Part 1: Carbon steels and carbon-manganese steels (AS 1858.1)

2203 Carbon steel electrodes, cored (for arc welding)

2205 Methods of destructive testing of welds in metal
Part 1: General requirements for tests (AS 2205.1)

2717 Welding—Electrodes—Gas metal arc
Part 1: Ferritic steel electrodes (AS 2717.1)

3 PRINCIPLE. An all-weld-metal test specimen is taken from a weld in which the weld metal has been deposited under specified conditions. It is subjected to uniaxial tension and the tensile strength is determined.

4 PREPARATION OF TEST SPECIMEN. The test specimen shall be prepared in accordance with the requirements of AS 2205.1 and the following:

(a) It shall be cut from the weld metal as illustrated in Figure 1(a).

(b) It shall be of the maximum attainable diameter conforming to the dimensional requirements for circular proportional test pieces in Table 1, AS 1391, unless specifically required otherwise (see Note to (c) below).

Where it is not possible to obtain a complete test specimen from the joint, it is permissible to add extra weld metal at the locations shown in Figure 1(a). The weld should be checked by etching the test piece before final machining so as to ensure that the test specimen is correctly located (see Figure 1(a)).

(c) Where required for the qualification of welding consumables, it shall be in accordance with the dimensions of Figure 1(b).

NOTE: The dimensions of the specimen illustrated in Figure 1(b) complies with the requirements of International (ISO), British, and Australian Standards for welding consumables and Ship Classification Societies Unified Rules for Welding Consumables, and requires a different angle of weld preparation from that shown in Figure 1(a) (see AS 1553.1, AS 1553.2, AS 1858.1, AS 2203, or AS 2717.1).

(d) Where the material thickness exceeds 70 mm, two specimens shall be taken, one above the other.

5 PROCEDURE. The procedure shall be in accordance with AS 1391 using any convenient straining rate in accordance with AS 1391 or, if applicable, the straining rate specified in the application Standard.

6 REPORTING OF RESULTS. The test results shall be reported as follows:

(a) Identification of this and any relevant application Standard(s), i.e. AS 2205.2.2, All-weld-metal tensile test; and .....(if applicable).

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