Australian Standard®

Methods for destructive testing of welds in metal

Method 1: General requirements for tests

PREFACE

This Standard was prepared by the Standards Australia Committee WD/6 on Testing of Welds to supersede AS 2205.1—1988, *Methods of destructive testing of welds in metal*, Part 1: *General requirements for tests*.

This edition does not include any technical changes from the previous edition, except that references to other Standards have been brought up to date. It includes some editorial improvements.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

METHOD

1 SCOPE This Standard sets out general requirements for test methods for the destructive testing of welded or brazed joints, such test methods being intended for use unless other procedures are specified by the relevant application Standard.

2 APPLICATION Tests to be specified by reference to these standard methods should include the generic number of the Standard, the Method and the test.

3 REFERENCED DOCUMENT The following document is referred to in this Standard:

AS
2812 Welding, brazing and cutting of metals—Glossary of terms

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

4.1 Face surface of weld—

(a) where the joint is welded from one side, the side from which the weld is made, usually that containing the largest width of weld;

(b) where the joint is welded from both sides, the side from which most welding is carried out or, if equal, the side from which welding first commenced;

(c) where the welding energy is not introduced from the side (e.g. electroslag, flashbutt welding), either side may be nominated, except for pipe and pressure vessels welds; or

(d) in a pipe, the outer surface.

4.2 Root surface of weld—the opposite side to the face surface.

4.3 Side surface of weld—a transverse cross-section of the whole weld joint.

4.4 Weld zone—the zone containing the weld metal and the heat-affected zone.

NOTES:

1 Information on the details of a two-sided weld deposit may be obtained, where necessary, by etching a cross-section of the welded joint.

2 Face, root or side test specimens are used for assessment of metal at, or near, the face surface, the root surface or the whole depth of the weld zone, respectively. The test results obtained on any given weldment may vary according to which of the above types of specimen is chosen.

4.5 Pipe—a hollow cylinder, generally used for conveying fluids. Throughout this Standard, the word 'pipe' is taken to be synonymous with the word 'tube'.

5 PREPARATION OF TEST SPECIMEN

5.1 Preparation Test pieces shall be prepared in accordance with the appropriate application Standard. Where there is no application Standard, representative test pieces shall be prepared using the welding procedures and materials specified for the welded joint. The test pieces shall be of sufficient size to yield the required number of test specimens plus retests if these are permitted. In some circumstances, test pieces may be cut from the welded joint.

NOTES:

1 Angular misalignment between parent materials in the transverse axis of a butt welded joint may introduce errors in the results of some tests, and therefore should not exceed 5 degrees.

2 Where practicable, machining should be in the longitudinal direction of the test specimen, as transverse tool marks may induce localization of stress in some tests and cause premature failure.

5.2 Separation of test specimen The test specimens shall be cut from the test piece by any method that does not change the properties of those parts of the test specimens to be examined.

5.3 Removal of affected material For test specimens separated by shear or thermal cutting, any material strained or heat-affected during separation shall be completely removed, unless exempted by the application Standard.

5.4 Preparation of surfaces (full thickness tests) When the surfaces of full thickness test specimens are being prepared, the following conditions shall apply, unless otherwise specified for the appropriate test or by the application Standard:

(a) Weld reinforcement and root penetration shall not be removed from the face or root surfaces.

(b) Where removal of weld reinforcement, backing and root penetration is specified, both surfaces shall be lightly dressed, so that the original surfaces of the parent materials are not wholly removed.

(c) Where abutting surfaces of equal thickness plates are not level with one another, the parent material may be machined at each surface of the weld to a depth of not more than 1 mm or 5 percent of the original thickness of the parent material, whichever is the lesser.

(d) Where plates of unequal thickness are used in preparation of the test piece, the surfaces of the thicker plate shall be machined to align with the surfaces of the thinner plate.