AS 2177—2006
Reconfirmed 2016

AS 2177—2006

Australian Standard™

Non-destructive testing—Radiography of welded butt joints in metal

This Australian Standard was prepared by Committee MT-007, Non-destructive Testing of Metals and Materials. It was approved on behalf of the Council of Standards Australia on 10 March 2006.
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The following are represented on Committee MT-007:

Australian Railway Association
Australian Aerospace Non-Destructive Testing Committee
Australian Industry Group
Australian Institute for Non-Destructive Testing
Australian Nuclear Science & Technology Organisation
Australian Pipeline Industry Association
Bureau of Steel Manufacturers of Australia
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This Standard was issued in draft form for comment as DR 05325.

STANDARDS AUSTRALIA

RECONFIRMATION
OF
AS 2177—2006
Non-destructive testing—Radiography of welded butt joints in metal

RECONFIRMATION NOTICE

Technical Committee MT-007 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 22 November 2016.

The following are represented on Technical Committee MT-007:

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Engineers Australia
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National Association of Testing Authorities Australia
New Zealand Non-Destructive Testing Association
TestSafe Australia
Welding Technology Institute of Australia
WorkSafe Victoria

NOTES

Australian Standard™

Non-destructive testing—Radiography of welded butt joints in metal

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-007, to supersede AS 2177.1—1994, *Non-destructive testing—Radiography of welded butt joints in metal*, Part 1: *Methods of test*. After consultation with shareholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this revision is to revise the methods, equipment and film types in this Standard.

During the drafting of this Standard the Committee decided that AS 2177.2—1982, *Radiography of welded butt joints in metal,* Part 2: *Image quality indicators (IQI) and recommendations for their use* should be revised so that it was applicable to metallic materials and not exclusively to welds. AS 2177.2 was redesignated as AS 2314.

During the public review process in the drafting of this Standard comments were received from Australian Industry about the need for an Australian Standard on computerized radiography which the Committee decided should be addressed in AS 2168.1 and AS 2168.2.

This Standard is one of a series of Standards covering the range of radiography. The series comprises the following:

AS	
2168	Non-destructive testing—Computerized radiography
2168.1	Part 1: Systems
2168.2	Part 2: Testing of metallic materials using X-rays and gamma rays
2177	Non-destructive testing—Radiography of welded butt joints in metal
2314	Radiography of metals—Image quality indicators (IQI) and recommendations for their use

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.

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FOREWORD

In the methods described in this Standard, the radiographic film is generally placed parallel to and in contact with one surface of the weld. The source of ionizing radiation is located on the remote side of the weld and at a calculated distance from it. For hollow products the radiation may be required to penetrate both walls of the product.

Radiographic sensitivity is affected by parameters which include radiation energy (kilovolt or isotope spectrum), the film/screen combination, scattered radiation control, and exposure geometry (source-to-film distance and effective source size). Although the highest radiographic sensitivity is usually achieved using X-rays, their use is limited by the thickness of the workpiece.

For the radiography of hollow components, either single-wall or double-wall methods are used. Although the radiographic sensitivity obtained when using single-wall methods is generally superior to that obtained when using double-wall methods, other factors such as diameter, thickness and accessibility may influence the choice of method.

STANDARDS AUSTRALIA

Australian Standard
Non-destructive testing—Radiography of welded butt joints in metal

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies methods and requirements for X-ray and gamma-ray radiographic testing of welded butt joints in metal products. It does not cover neutron radiography and does not specify the permissible defect levels used for the acceptance/rejection criteria of welds. The individual methods of test and the permissible defect levels are specified in the relevant product or application Standard.

NOTES:

1 Advice and recommendations on information to be supplied by the purchaser at the time of enquiry or order are contained in Appendix A.

2 Guidance and general information which should assist the users of this Standard is contained in Appendix B.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1929	Non-destructive testing—Glossary of terms
2243	Safety in laboratories
2243.4	Part 4: Ionizing radiations
2314	Radiography of metals—Image quality indicators (IQI) and recommendations for their use
3669	Non-destructive testing—Qualification and approval of personnel—Aerospace
3998	Non-destructive testing—Qualification and certification of personnel
4749	Non-destructive testing—Terminology of and abbreviations for fusion weld imperfections as revealed by radiography
ISO	
11699	Non-destructive testing—Industrial radiographic films
11699-1	Part 1: Classification of film systems for industrial radiography
ASTM	
E1165	Standard test method for measurement of focal spots of industrial X-ray tubes by pinhole imaging
E1815	Standard test method for classification of film systems for industrial radiography
BS	
1384	Photographic density measurements
BS EN	
584-1	Non-destructive testing—Industrial radiographic film—Classification of film systems for industrial radiography