AS 3507.2—2006
Reconfirmed 2016

AS 3507.2—2006

Australian Standard™

Non-destructive testing

Part 2: Radiographic determination of quality of ferrous castings

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 6 January 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
Engineers Australia
National Association of Testing Authorities Australia
New Zealand Non-Destructive Testing Association
TestSafe Australia
Victorian WorkCover Authority
Welding Technology Institute of Australia

This Standard was issued in draft form for comment as DR 05166.

STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 3507.2—2006
Non-destructive testing
Part 2: Radiographic determination of quality of ferrous castings

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.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

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

The following are represented on Technical Committee MT-007:

Australasian Thermographers Association
Australian Aerospace Non-Destructive Testing Committee
Australian Institute for Non-Destructive Testing
Australian Nuclear Science & Technology Organisation
AUSTROADS
Bureau of Steel Manufacturers of Australia
Engineers Australia
Institute of Electrical Inspectors
National Association of Testing Authorities Australia
New Zealand Non-Destructive Testing Association
TestSafe Australia
Welding Technology Institute of Australia
WorkSafe Victoria

NOTES

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Non-destructive testing

Part 2: Radiographic determination of quality of ferrous castings

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PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee MT-007, Non-destructive Testing of Metals and Materials to supersede AS 3507.2—2003, *Non-destructive testing*, Part 2: *Radiographic determination of quality of ferrous castings*.

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 change the method of assessment for quality in ferrous castings.

This Standard is one of a series of Standards covering Non-destructive testing Standards. The series comprises the following:

AS
3507 Non-destructive testing
3507.1 Part 1: Guide to radiography for ferrous castings
3507.2 Part 2: Radiographic determination of quality of ferrous castings (this Standard)

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.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

CONTENTS

Page

FOREWORD

Soundness of castings depends on such factors as size, section, configuration, method of moulding and design of runner and riser systems. These factors, and other aspects such as heat treatment, affect the grain structure and location and orientation of possible discontinuities. These factors have to be considered when choosing the appropriate test method and sensitivity.

Radiographic methods described in AS 3507.1 can be used to determine the size and nature but not necessarily the depth of discontinuities in castings. Each radiographic method can yield a radiograph with a range of sensitivities depending on section thickness.

For convenience in the assessment of integrity of castings, discontinuities in castings have been graded into severity indexes, which vary according to type of discontinuity. The severity index is then converted to a quality class.

Acceptance criteria or acceptable quality classes for discontinuities are normally specified in relevant product Standards or determined by agreement between the contracting parties after due consideration of size, configuration, and service requirements of the casting.

Where alternatives exist, the exact grading should be agreed between customer and contractor, if not covered by the product or application Standard.

Non-destructive testing methods are complementary; it is emphasized that the results of one test should be considered in relation to those obtained by another method. Accordingly, differing interpretations may be advantageously reassessed by alternative methods.

STANDARDS AUSTRALIA

Australian Standard
Non-destructive testing

Part 2: Radiographic determination of quality of ferrous castings

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the method of classification of quality for radiography of steel castings.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1929 Non-destructive testing—Glossary of terms

2314 Radiography of metals—Image quality indicators (IQI) and recommendations for their use

3507 Non-destructive testing,
3507.1 Part 1: Guide for radiography for ferrous castings

3998 Non-destructive testing—Qualification and certification of personnel

4738 Metal castings
4738.1 Part 1: Ferrous sand moulded

4749 Non-destructive testing—Terminology of and abbreviations for fusion weld imperfections as revealed by radiography.

1.3 DEFINITIONS

For the purpose of this Standard, in AS 1929, AS 4749 and those definitions given below apply.

1.3.1 Air lock

A cavity formed by the entrapment of air during pouring and solidification.

1.3.2 Blowholes

Gas porosity (see Clause 1.3.6) that is open to the surface of the casting.

1.3.3 Cold shuts

A discontinuity at the surface formed when liquid metal has flowed over previously solidified or oxidized metal, (not fused together).

1.3.4 Cracks

A stress-induced fracture of metal occurring after solidification.

1.3.5 Filamentary shrinkage

A form of shrinkage (see Clause 1.3.12) characterized by extensive branching and interconnected cavities.