AS 3978:2026

Australian STANDARD®

STANDARDS Australia

Non-destructive testing — Visual inspection of metal products and components



AS 3978:2026

This Australian Standard® was prepared by MT-007, Non-Destructive Testing Of Metals And Materials. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 05 May 2026.

This Standard was published on 22 May 2026.

The following are represented on Committee MT-007:

Australasian Thermographers Association
Australian Institute for Non-Destructive Testing
Australian Professional Thermography Association
Austroads
Bureau of Steel Manufacturers of Australia
Institute of Electrical Inspectors
Materials Australia
National Aerospace Non-Destructive Testing Board of Australia
National Association of Testing Authorities Australia
The University of Sydney
Weld Australia

This Standard was issued for comment as DR AS 3978:2025

Status of this document

Standards Australia publications are periodically reviewed to ensure their ongoing relevance and accuracy. This document may be withdrawn, revised, or superseded at any time. To verify this document's current status, visit:

www.standards.org.au

ISBN: 978 1 76175 756 3

Australian Standard®

Non-destructive testing — Visual inspection of metal products and components

First published as AS 3978-1991.
Previous edition 2003.
Third edition 2026.

© Standards Australia Limited 2026

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

Users must not use the content in this publication in combination with artificial intelligence (AI) tools for any purpose, unless they have the express prior written consent from Standards Australia.

How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-007, Non-Destructive Testing of Metals and Materials, to supersede AS 3978:2003.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

The objective of this document is to specify procedures for visual inspection of metal products and components, with specific reference to steel castings and corroded metal surfaces. Procedures for conducting underwater visual inspections may also be developed from this document.

This document also specifies requirements for the qualification of inspection personnel and for the viewing and illumination of items being inspected.

The major changes in this edition are as follows:

(a) Removal of weld inspection from the Scope.

(b) Expanded information on the evaluation of corroded metal surfaces.

(c) Addition of three-dimensional scanning systems to Appendix C.

(d) Addition of metrology equipment accuracy verification requirements.

(e) Withdrawal of Appendix E and Appendix F.

The terms “normative” and “informative” have been used in this document to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

© Standards Australia Limited 2026

Contents

Page

Preface ..... **v**

1 Scope and application **1**
1.1 Scope 1
1.2 Application 1

2 Normative references **1**

3 Terms and definitions **1**

4 Requirements for inspection personnel **2**
4.1 General 2
4.2 Visual acuity requirements 3
4.2.1 Near vision 3
4.2.2 Colour vision 3
4.2.3 Personnel administering vision tests 3
4.3 Experience guidelines 3
4.4 Qualification of inspection personnel 3

5 Equipment **4**
5.1 General requirements 4
5.2 Low-power magnifying equipment 4
5.2.1 Classification 4
5.2.2 Magnification 4
5.2.3 Factors affecting the choice of magnifier 5
5.3 Surface feature modelling equipment and materials 5
5.4 Remote viewing equipment 5
5.5 Photographic equipment 5

6 Illumination **6**
6.1 General 6
6.2 Location of the work piece 6

7 Inspection scope and criteria **7**
7.1 General requirements 7
7.2 The terminology, identification and evaluation of discontinuities 7

8 Preparation of surfaces prior to inspection **7**

9 Requirements of a procedure for visual inspection **7**
9.1 Pre-inspection requirements 7
9.2 Inspection procedure requirements 8
9.3 Identification, recording and evaluation of discontinuities and corrosion 9
9.3.1 General 9
9.3.2 Casting discontinues 9
9.3.3 Corroded metal surfaces 9
9.4 Marking of inspected products and components 9
9.5 Inspection record sheet 9

10 Inspection report **10**

Appendix A (Informative) **Inspection information** **12**

Appendix B (Informative) **Notes on visual acuity** **13**

Appendix C (Informative) **Inspection aids and measuring devices** **14**

Appendix D (Normative) **Items to be documented prior to inspection** **15**

Bibliography **16**

© Standards Australia Limited 2026

Australian Standard®

Non-destructive testing — Visual inspection of metal products and components

1 Scope and application

1.1 Scope

This document specifies procedures for the visual inspection of metal products and components. Procedures for conducting visual inspection under water may also be developed from this document.

This document specifies the requirements for the qualification of inspection personnel, the viewing and illumination of items being inspected, and provides recommendations for the use of approved visual aids to optimize the recognition of surface features.

Information to be supplied by the purchaser at the time of inquiry or order is contained in Appendix A.

Visual inspection of welds is excluded from this document. Refer to AS/NZS ISO 17637.

1.2 Application

This document is intended to be used by the engineering authority, purchasers, employers and operators for the inspection of metal products and components.

NOTE See Clause 3 for descriptions.

2 Normative references

The following documents are referred to in this document in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1680 (series), *Interior lighting*

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

AS/ISO 9712, *Non-destructive testing — Qualification and certification of personnel*

ISO 18490, *Non-destructive testing — Evaluation of vision acuity of NDT personnel*

3 Terms and definitions

For the purposes of this document, the definitions given in AS 1680 and AS 2812, as well as the following, apply.

3.1
employer
organisation or individual responsible for hiring and overseeing non-destructive testing (NDT) personnel, and ensuring that inspection personnel are competent, qualified, certified, and adhere to relevant Standards and procedures

Note 1 to entry: The employer may also be responsible for providing the necessary training, equipment, and work environment to perform NDT tasks effectively.

© Standards Australia Limited 2026