



# **Non-destructive testing – Penetrant testing**

## **Part 1: General principles**



AS ISO 3452.1:2020

This Australian Standard® was prepared by MT-007, Non-Destructive Testing Of Metals And Materials. It was approved on behalf of the Council of Standards Australia on 24 February 2020.

This Standard was published on 6 March 2020.

The following are represented on Committee MT-007:

- Australasian Thermographers Association
- Australian Institute for Non-Destructive Testing
- Australian Nuclear Science and Technology Organisation
- Austrroads
- Engineers Australia
- Institute of Electrical Inspectors
- National Aerospace Non-Destructive Testing Board of Australia
- Weld Australia

This Standard was issued in draft form for comment as DR AS ISO 3452.1:2019.

### **Keeping Standards up-to-date**

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

[www.standards.org.au](http://www.standards.org.au)

ISBN 978 1 76072 752 9



# **Non-destructive testing – Penetrant testing**

## **Part 1: General principles**

Originated as part of AS B260.3A—1968.  
Revised and redesignated as AS 2062—1977.  
Revised, amalgamated with AS 2565—1982 and redesignated as AS 2062—1997.  
Revised and redesignated as AS ISO 3452.1:2020.

### **COPYRIGHT**

© ISO 2020 — All rights reserved  
© Standards Australia Limited 2020

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).

## 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 2062—1997, *Non-destructive testing — Penetrant testing of products and components*.

After consultation with stakeholders 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 Standard is to specify a method of penetrant testing used to detect discontinuities, e.g. cracks, laps, folds, porosity and lack of fusion, which are open to the surface of the material to be tested. It is mainly applied to metallic materials, but can also be performed on other materials, provided that they are inert to the test media and not excessively porous (castings, forgings, welds, ceramics, etc.)

This Standard also includes requirements for process and control testing, but is not intended to be used for acceptance criteria and gives neither information relating to the suitability of individual test systems for specific applications nor requirements for test equipment.

This Standard is identical with, and has been reproduced from, ISO 3452-1:2013, *Non-destructive testing — Penetrant testing — Part 1: General principles*.

As this document has been reproduced from an International Standard, the following applies:

- (a) In the source text “this part of ISO 3452” should read “this Australian Standard”.
- (b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

# Contents

<b>Preface</b> .....	<b>ii</b>
<b>Foreword</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Safety precautions</b> .....	<b>1</b>
<b>5 General principles</b> .....	<b>2</b>
5.1 Personnel .....	2
5.2 Description of the method .....	2
5.3 Process sequence .....	2
5.4 Equipment .....	3
5.5 Effectiveness .....	3
<b>6 Products, sensitivity and designation</b> .....	<b>3</b>
6.1 Product family .....	3
6.2 Testing products .....	3
6.3 Sensitivity .....	3
6.4 Designation .....	3
<b>7 Compatibility of testing materials with the part(s) to be tested</b> .....	<b>4</b>
7.1 General .....	4
7.2 Compatibility of penetrant testing products .....	4
7.3 Compatibility of penetrant testing materials with parts under examination .....	4
<b>8 Test procedure</b> .....	<b>5</b>
8.1 Written test procedure .....	5
8.2 Precleaning .....	5
8.2.1 General .....	5
8.2.2 Mechanical precleaning .....	5
8.2.3 Chemical precleaning .....	5
8.2.4 Drying .....	5
8.3 Temperature .....	5
8.4 Application of penetrant .....	5
8.4.1 Methods of application .....	5
8.4.2 Penetration time .....	6
8.5 Excess penetrant removal .....	6
8.5.1 General .....	6
8.5.2 Water .....	6
8.5.3 Solvents .....	6
8.5.4 Emulsifier .....	6
8.5.5 Water and solvent .....	6
8.5.6 Excess penetrant removal check .....	7
8.5.7 Drying .....	7
8.6 Application of developer .....	7
8.6.1 General .....	7
8.6.2 Dry powder .....	7
8.6.3 Water-suspendable developer .....	8
8.6.4 Solvent-based developer .....	8
8.6.5 Water-soluble developer .....	8
8.6.6 Water- or solvent-based for special application (e.g. peelable developer) .....	8
8.6.7 Development time .....	8
8.7 Inspection .....	9
8.7.1 Viewing conditions .....	9
8.7.2 General .....	9

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-