

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1580.402.1—2003

**Paints and related materials—Methods of test
Method 402.1: Bend test**

RECONFIRMATION NOTICE

Technical Committee CH-003 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 25 September 2013.

The following are represented on Technical Committee CH-003:

Australasian Corrosion Association
Australian Paint Approval Scheme
Australian Paint Manufacturers' Federation
Australian Pipeline Industry Association
Water Corporation Western Australia

NOTES

Paints and related materials—Methods of test

Method Method 402.1: Bend test

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee CH-003, Paints and Related Materials to supersede AS 1580.402.1—1992, *Paints and related materials—Methods of test. Method 402.1: Bend test*. It is technically equivalent to, and reproduced from ISO 1519:2002, *Paints and varnishes—Bend test (cylindrical mandrel)*.

A number of variations and additional requirements have been made in this Standard to the requirements of ISO 1519:2002. These variations and additions, which are necessary for Australian requirements, are listed in Appendix ZZ and are indicated by a marginal bar set adjacent to the varied text.

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

As this Standard is reproduced from an international Standard, the following applies:

- (a) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.
- (c) References to international Standards should be replaced by the equivalent Australian/New Zealand Standard, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
ISO		AS/NZS	
		1580	Paints and related materials—Methods of test
1513	Paints and varnishes—Examination and preparation of samples for testing	1580.103.1	Examination and preparation of samples for testing
1514	Paints and varnishes—Standard panels for testing	1580.104.1	Recommended materials for test panels
15528	Paints, varnishes and raw materials for paints and varnishes—Sampling	1580.102.2	In-process sampling
2808	Paints and varnishes—Determination of film thickness	1580.108.1	Determination of dry film thickness on metallic substrates—Non-destructive methods
		1580.108.2	Dry film thickness—Paint inspection gauge
3270	Paints and varnishes and their raw materials—Temperatures and humidities for conditioning and testing	1580.101.5	Conditions of test—Temperature and humidity control



NOTES

Paints and varnishes — Bend test (cylindrical mandrel)

1 Scope

This International Standard specifies an empirical test procedure for assessing the resistance of a coating of paint, varnish or related product to cracking and/or detachment from a metal or plastic substrate when subjected to bending round a cylindrical mandrel under standard conditions.

For a multicoat system, each coat may be tested separately or the complete system may be tested.

The method specified may be carried out

- either as a “go/no go” test, by carrying out the test with a single specified size of mandrel, to assess compliance with a particular requirement;
- or by repeating the procedure using successively smaller mandrels to determine the diameter of the first mandrel over which the coating cracks and/or becomes detached from the substrate.

Two types of apparatus are specified, type 1 being appropriate for use on test panels of thickness up to 0,3 mm, and type 2 for use on test panels of thickness up to 1,0 mm. Both types of apparatus have been found to give similar results with the same coating, but normally only one will be used for testing a given product.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing*

ISO 1514:—¹⁾, *Paints and varnishes — Standard panels for testing*

ISO 2808:1997, *Paints and varnishes — Determination of film thickness*

ISO 3270:1984, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

ISO 15528:2000, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

3 Required supplementary information

For any particular application, the test method specified in ISO 1519 needs to be completed by supplementary information.

The items of supplementary information are given in annex A.

1) To be published. (Revision of ISO 1514:1993)

4 Apparatus

4.1 Bend test apparatus

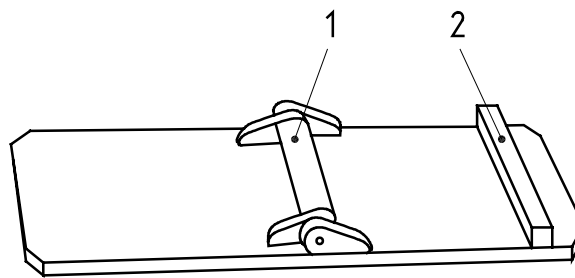
4.1.1 Material

In both types of apparatus specified below, the mandrels shall be made of a rigid and suitably corrosion-resistant material, for example stainless steel.

4.1.2 Type 1 mandrel tester

An example of a type 1 tester is shown in Figures 1 and 2. This type of tester is used with test panels of thickness not greater than 0,3 mm. A set of hinges is provided, each incorporating a cylindrical mandrel. The diameters of the mandrels are 2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm and 32 mm, respectively, with a tolerance of $\pm 0,1$ mm. The dimensions of the apparatus are not critical, except that the gap between the surface of the mandrel and the plates of the hinges shall be $(0,55 \pm 0,05)$ mm. The mandrel shall be free to rotate on its axis and the apparatus shall be provided with a stop to ensure that, when the test panel is bent, the two parts are parallel.

NOTE Especially with the 2-mm-diameter mandrel, it is important to ensure that no distortion of the mandrel takes place during the bending process, and not to use any mandrel showing such distortion.



Key

- 1 Mandrel
- 2 Stop of similar height to mandrel

Figure 1 — Type 1 bend test apparatus

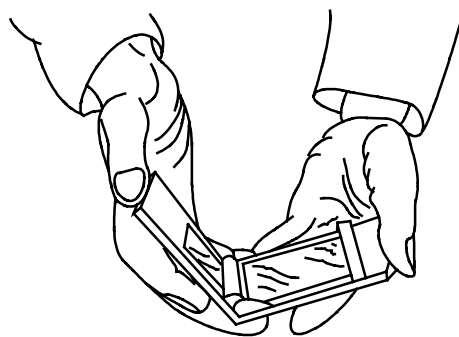


Figure 2 — Type 1 bend test apparatus in use