AS 4352—2005

Australian Standard™

Tests for coating resistance to cathodic disbonding

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee MT-014, Corrosion of Metals. It was approved on behalf of the Council of Standards Australia on 30 May 2005. This Standard was published on 15 June 2005.

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Australasian Corrosion Association
Australasian Institute of Metal Finishing
Australian Chamber of Commerce and Industry
Australian Electrolysis Committee
Australian Paint Manufacturers' Federation
Australian Paint Approval Scheme
Austroads
Bureau of Steel Manufacturers of Australia
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Division of Building, Construction and Engineering, CSIRO
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Corrosion consultants
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This Standard was issued in draft form for comment as DR 04430.

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Originated as AS/NZS 4352:1995.
Revised and designated as AS 4352—2005.

Published by Standards Australia, GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6777 X

PREFACE

This Standard has been prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-014, Corrosion of Metals, to supersede AS/NZS 4352:1995, *Tests for coating resistance to cathodic disbonding.*

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 test methods for the determination of the susceptibility of coatings to cathodic disbonding when subjected to cathodic protection.

The objective of this revision is to revise the apparatus design and the disbonding classification for average radial disbonding.

The Committee decided that there was no International Standard (ISO) on this topic that was suitable to be used as an Australian Standard.

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.

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FOREWORD

Protective coatings applied to buried or immersed metallic structures provide a primary line of defence against corrosion. Cathodic protection is usually applied in conjunction with coatings to prevent corrosion attack that could otherwise take place at the inevitable defects which are initially present or subsequently develop in the coating.

Application of cathodic protection causes an electrochemical reaction to occur on the exposed steel surface at any defects in the coating. The chemical species created by this reaction may attack the coating or the interfacial bond between coating and steel substrate, resulting in loss of coating adhesion.

This phenomenon is referred to as cathodic disbonding. It is required that high performance coatings used in conjunction with cathodic protection have the ability to resist such disbonding to ensure a long, useful service life.

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Australian Standard
Tests for coating resistance to cathodic disbonding

1 SCOPE

This Standard specifies the test methods for the determination of the ability of coatings to resist disbonding caused by the application of cathodic protection. Either of two types of test cell may be used for tests, which are carried out over a specified duration, usually either 24 hours or 28 days.

The categories for disbonding are shown in Appendix C.

This is an accelerated test operating at current densities significantly higher than those used in normal practice and may not be representative of long term performance under normal operating conditions.

NOTE: The results of the 24 hour test do not normally correlate with the 28 day test. The 24 hour test is usually used for process variables and process quality control purposes. The 28 day test gives a better indication for long term performance.

2 REFERENCED DOCUMENT

The following document was referred to in this Standard:

AS/NZS	
2243	Safety in laboratories
2243.1	Part 1: General

3 PRINCIPLE OF TEST

An intentional defect (holiday) on a coated panel or section of the coating to be tested is immersed in a saline solution contained in a test cell and cathodic protection is applied.

After a specified period, the panel is examined for evidence of coating disbondment around the intentional defect and, if present, the radial disbondment and disbonded area are determined.

4 CATHODIC DISBONDING TEST CELLS

4.1 General

One of the following two types of test cells shall be used:

(a) Test cell A—concentric pot (see Figure 1).

(b) Test cell B—porous plug (see Figures 2 and 3).

The test cells differ in the manner in which the anode electrolyte is separated from the cathode electrolyte. This separation is necessary in order to produce a high degree of alkalinity at the holiday, as occurs on a cathodically protected structure.

Test cell A is constructed from readily available materials, and is suitable for general usage and process control purposes.

Test cell B creates a more alkaline environment at the coating defect and more closely represents field conditions for cathodically protected structures.

