AS 4827.1—2008
Reconfirmed 2018

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Australian Standard®

Coating defect surveys for buried pipelines

Part 1: Direct current voltage gradient (DCVG)

This Australian Standard® was prepared by Committee MT-014, Corrosion of Metals. It was approved on behalf of the Council of Standards Australia on 1 August 2008.
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The following are represented on Committee MT-014:

- Australasian Corrosion Association
- Australian Chamber of Commerce and Industry
- Australian Electrolysis Committee
- Australian Paint Approval Scheme
- Australian Pipeline Industry Association
- AUSTROADS
- Blast Cleaning and Coating Association of Australia
- Bureau of Steel Manufacturers of Australia
- Corrosion Prevention Centre
- CSIRO Manufacturing & Materials Technology
- Galvanizers Association of Australia
- Materials Australia
- Plumbing Products Industry Group
- Water Services Association of Australia
- Water Utility Interests

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 4827.1–2008

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RECONFIRMATION NOTICE

Technical Committee MT-014 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.

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The following are represented on Technical Committee MT-014:

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Australasian Corrosion Association, NZ Branch Incorporated
Australian Chamber of Commerce and Industry
Australian Industry Group
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CSIRO
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Galvanizers Association of Australia
Galvanizing Association of New Zealand
New Zealand Heavy Engineering Research Association
Plumbing Products Industry Group
Water Services Association of Australia

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PREFACE

This Standard has been prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-014, Corrosion of Metals.

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 this Standard is to specify a method for determining coating defects in pipelines using direct current voltage gradient surveys.

During the preparation of this Standard, cognisance was taken of work done by NACE.

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

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FOREWORD

Pipeline coatings are used primarily as a means to protect the pipe metal from corrosion. Coating defects will reduce the effectiveness of the coating, increase the load on the cathodic protection system and increase the risk of corrosion. Coating defect surveys are carried out to locate and characterize any defects that might exist so that remedial measures can be considered.

When direct current flows through the soil to or from a pipeline coating defect it creates voltage gradients in the soils. Detection and measurements of these gradients can be used to locate the defects and to assess the likely severity of the defects.

The direct current voltage gradient technique is one method used to find and assess coating defects.

STANDARDS AUSTRALIA

Australian Standard
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1 SCOPE

This Standard specifies a direct current voltage gradient (DCVG) survey method for identifying defects in coatings on buried pipelines.

NOTES:

1 For guidance on the coating defect survey procedure refer to Appendix B.

2 For guidance on data interpretation refer to Appendix C.

3 For guidance on information relevant to the selection of the DCVG survey method and procurement of a survey refer to Appendix D.

2 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

2.1 Anode (in general)

An electrode, placed in the electrolyte, to apply cathodic protection to the structure.

2.2 Anomaly

Any deviation from normal conditions in the external wall of a pipe, its coating, or the electromagnetic conditions around the pipe.

2.3 Cathode

The structure which is to be protected by cathodic protection.

2.4 Cathodic disbonding

Detachment of a coating due to the effect of cathodic polarization.

2.5 Cathodic protection (CP)

The prevention or reduction of corrosion of metal by making the metal the cathode in a galvanic or electrolytic cell.

2.6 Coating

A liquid, liquefiable, or mastic composition that, after application to a surface, is converted into a solid protective, decorative, or functional adherent film. For the purposes of this Standard, the term 'coating' could also be a tape wrapping applied to the pipeline.

2.7 Coating defects per unit length

Ranking of the coating quality based on the number of coating defects per unit length and/or its electrical conductance.

2.8 Coating defect

A discontinuity in a protective coating that exposes the pipe metal surface to the environment.