

Australian Standard[®]

**External field joint coatings for steel
pipelines**



This Australian Standard® was prepared by Committee ME-038, Petroleum Pipelines. It was approved on behalf of the Council of Standards Australia on 30 April 2008. This Standard was published on 26 August 2008.

The following are represented on Committee ME-038:

- API Research and Standards Committee
 - Australasian Corrosion Association
 - Australian Chamber of commerce and Industry
 - Australian Institute of Petroleum
 - Australian Pipeline Industry Association
 - Bureau of Steel Manufacturers of Australia
 - Department of Consumer and Employment Protection (WA)
 - Department of Mines and Energy (Qld)
 - Department of Primary Industry, Fisheries and Mines (NT)
 - Department of Water and Energy (NSW)
 - Energy Networks Association
 - Energy Safe Victoria
 - Gas Association of New Zealand
 - Primary Industries and Resources SA
 - Welding Technology Institute of Australia
-

This Standard was issued in draft form for comment as DR 07367.

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.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

External field joint coatings for steel pipelines

First published as AS 4822—2008.
Reissued incorporating Amendment No. 1 (April 2010).

COPYRIGHT

© Standards Australia

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.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia
ISBN 0 7337 8870 X

PREFACE

This Standard was prepared by Standards Australia Committee, ME-038, Petroleum Pipelines.

This Standard incorporates Amendment No. 1 (April 2010). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide manufacturers, suppliers, specifier and users of oil and gas pipelines the application of and testing requirements for external field joint coatings (FJCs) of seamless or welded steel pipelines for onshore steel pipelines.

The performance of field joint coatings is a critical part of the corrosion protection of steel pipelines. This Standard makes no appraisal of the relative performance of the coating systems that are covered herein. There should be careful selection of the field joint coating chosen for each application, taking into account its importance in providing satisfactory corrosion protection for the service life under the construction and operating conditions of the pipeline.

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.

Statements expressed in mandatory terms in notes to figures and tables are deemed to be requirements of this Standard. All other notes are for information and guidance only.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	5
1.2 NORMATIVE REFERENCES	5
1.3 TERMS AND DEFINITIONS	6
1.4 SYMBOLS AND ABBREVIATED TERMS.....	7
1.5 GENERAL REQUIREMENTS	7
SECTION 2 SELECTION OF FJCs	
2.1 GENERAL	9
2.2 TYPES OF FJCs.....	9
SECTION 3 APPLICATOR’S OBLIGATIONS	
3.1 APPLICATION PROCEDURE SPECIFICATION (APS).....	10
3.2 COATING MATERIALS	10
3.3 PROCEDURE QUALIFICATION TRIAL (PQT).....	11
3.4 QUALIFICATION OF COATING AND INSPECTION PERSONNEL.....	12
3.5 PRE-PRODUCTION TRIAL (PPT)	12
3.6 PRODUCTION TESTING AND INSPECTION	12
3.7 CERTIFICATES OF COMPLIANCE FOR FJC AND TRACEABILITY	13
SECTION 4 SURFACE PREPARATION, APPLICATION, INSPECTION, TESTING, REPAIR AND SAFETY	
4.1 SURFACE PREPARATION	14
4.2 PRIOR TO THE APPLICATION OF THE COATING	15
4.3 VISUAL INSPECTION OF THE APPLIED COATING	15
4.4 TESTING OF THE FJC AND REPAIRS	15
4.5 PRELIMINARY QUALITY INSPECTION	16
4.6 SAFETY CONSIDERATIONS	16
SECTION 5 PETROLATUM OR POLYMERIC TAPE COATINGS	
5.1 GENERAL	17
5.2 DESCRIPTION OF THE COATINGS	17
5.3 SURFACE PREPARATION	17
5.4 APPLICATION OF THE COATINGS	17
5.5 INSPECTION AND TESTING OF THE APPLIED COATINGS	19
SECTION 6 COATINGS FROM HEAT-SHRINKABLE MATERIALS	
6.1 GENERAL	26
6.2 DESCRIPTION OF THE COATINGS	26
6.3 SURFACE PREPARATION	26
6.4 APPLICATION OF THE COATINGS	27
6.5 INSPECTION AND TESTING OF THE APPLIED COATINGS	28
SECTION 7 FUSION-BONDED EPOXY POWDER (FBE) COATINGS	
7.1 GENERAL	32
7.2 STORAGE CONDITIONS	32
7.3 CONTAINERS	32
7.4 TRANSPORT OF POWDER.....	32
7.5 DESCRIPTION OF THE COATINGS	32

	<i>Page</i>
7.6 SURFACE PREPARATION	32
7.7 APPLICATION OF THE COATINGS	33
7.8 INSPECTION AND TESTING OF THE APPLIED COATINGS	34
 SECTION 8 LIQUID APPLIED COATINGS	
8.1 GENERAL	37
8.2 DESCRIPTION OF THE COATINGS	37
8.3 SURFACE PREPARATION	37
8.4 APPLICATION OF THE COATINGS	38
8.5 INSPECTION AND TESTING OF THE APPLIED COATINGS	38
 APPENDICES	
A PURCHASING GUIDELINES	42
B MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD	44
C PEEL STRENGTH TEST	46
D IMPACT TEST	51
E INDENTATION TEST	53
F RESISTANCE OF COATING TO IMMERSION IN HOT WATER	55
G DRIP RESISTANCE OF PETROLATUM TAPES	56
H LAP SHEAR STRENGTH	57
I PEEL STRENGTH BETWEEN LAYERS	59
J THERMAL AGEING RESISTANCE	62
K GUIDE TO COMPATABILITY OF COATINGS	65
 BIBLIOGRAPHY	 67

STANDARDS AUSTRALIA

Australian Standard
External field joint coatings for steel pipelines

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets minimum requirements for the field joint coating (FJC) of seamless or welded steel onshore pipelines. It specifies the application and testing of the corrosion protection coatings applied to steel surfaces left bare after the pipes and fittings (components) are joined by welding. Field joints and other specific points are coated on-site.

NOTES:

- 1 Information to be supplied at the time of order is given in Appendix A.
- 2 Means for demonstrating compliance with this Standard are given in Appendix B.

1.2 NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this document.

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

AS

- | | |
|--------|--|
| 1145 | Determination of tensile properties of plastics materials |
| 1145.3 | Part 3: Test conditions for films and sheets |
| 1391 | Metallic materials—Tensile testing at ambient temperature |
| 1627 | Metal finishing—Preparation and pretreatment of surfaces |
| 1627.2 | Part 2: Power tool cleaning |
| 1627.4 | Part 4: Abrasive blast cleaning of steel |
| 1627.9 | Part 9: Pictorial surface preparation standards for painting steel surfaces |
| 2706 | Numerical values—Rounding and interpretation of limiting values |
| 3894 | Site testing of protective coatings |
| 3894.1 | Part 1: Non-conductive coatings—Continuity testing—High voltage ('brush') method |
| 3894.3 | Part 3: Determination of dry film thickness |
| 3894.4 | Part 4: Assessment of degree of cure |
| 3894.5 | Part 5: Determination of surface profile |
| 3894.6 | Part 6: Determination of residual contaminants |
| 3894.9 | Part 9: Determination of adhesion |
| 4352 | Testing for coating resistance to cathodic disbonding |

AS/NZS

- | | |
|------|--|
| 3862 | External fusion-bonded epoxy coating for steel pipes |
|------|--|

ASTM

- | | |
|-------|---|
| D2240 | Standard Test Method for Rubber Property—Durometer Hardness |
|-------|---|

ISO

- | | |
|-----|---|
| 868 | Plastics and ebonite—Determination of indentation hardness by means of a durometer (Shore hardness) |
|-----|---|

SSPC

- | | |
|-----|---|
| SP1 | Steel Structures Paint Council
Surface preparation specification no. 1 |
|-----|---|