

Australian Standard[®]

**External fusion-bonded epoxy
coating for steel pipes**

This Australian Standard was prepared by Committee WS/9, Rolled and Welded Steel Pipes. It was approved on behalf of the Council of Standards Australia on 25 September 1990 and published on 28 March 1991.

The following interests are represented on Committee WS/9:

Interests represented on the committee:

Board of Works, Vic.
Brisbane City Council
Confederation of Australian Industry
Engineering and Water Supply Department, S.A.
Gas and Fuel Corporation of Victoria
Hobart City Council
Hunter Water Board
Metal Trades Industry Association of Australia
Public Works Department, N.S.W.
Rural Water Commission, Vic.
State Electricity Commission of Victoria
Victorian Water and Sewerage Authorities Association
Water Authority of Western Australia
Water Board Sydney
Water Resources Commission, Qld

Additional interests participating in preparation of Standard:

State Energy Commission, W.A.
The Pipeline Authority

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard' which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 88040.

Australian Standard[®]

**External fusion-bonded epoxy
coating for steel pipes**

First published as AS 3862—1991.

Incorporating:
Amdt 1—1992

PREFACE

This Standard was prepared by the Standards Australia Committee for Rolled and Welded Steel Pipes at the request of manufacturers and users of fusion-bonded epoxy coating for pipes. It is one of a series of Standards being prepared for alternative coatings to the original coal-tar primer/enamel coating systems.

The fusion-bonded epoxy coating referred to in this Standard is to be applied only to external surfaces of pipes.

Attention is drawn to the fact that this Standard does not purport to satisfy all requirements for pipelines.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
1 SCOPE	4
2 REFERENCED DOCUMENTS	4
3 DEFINITIONS	4
4 MATERIAL REQUIREMENTS	5
5 MILL APPLICATION	7
6 FIELD APPLICATION	8
7 REPAIRS	10
8 STORAGE, HANDLING AND TRANSPORT	11
9 MARKING	13
 APPENDICES	
A PURCHASING GUIDELINES	14
B METHODS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD	16
C TEST 1—DENSITY OF POWDER	17
D TEST 2—GEL TIME OF POWDER	18
E TEST 3—PARTICLE SIZE ANALYSIS OF POWDER	19
F TEST 4A—MOISTURE ANALYSIS OF POWDER	20
G TEST 4B—VOLATILE CONTENT OF POWDER	21
H TEST 5—DSC ANALYSIS	22
I TEST 6—FOAMING	27
J TEST 7—ADHESION OF COATINGS TO STEEL	30
K TEST 8—RESISTANCE OF COATING TO IMMERSION IN HOT WATER	31
L TEST 9—FLEXIBILITY	32
M TEST 10—RESISTANCE TO CATHODIC DISBONDING	33
N TEST 11—UNIFORMITY OF HEATING	40
O TEST 12—HEAT DECAY PERIOD	41
P TEST 13—HOLIDAY TESTING	42
Q WATER ABSORPTION OF COATING TEST	43
R THERMAL STABILITY OF COATING TEST	44
S PREPARATION OF A TEST PANEL AND VISUAL INSPECTION	45
T PREPARATION OF TEST PANELS FOR REPAIR MATERIALS	46
U METHOD FOR SAMPLING OF STEEL PIPES FOR CHLORIDE CONTAMINATION ANALYSIS	47
V DETERMINATION OF PRESENCE OF SOLUBLE IRON CORROSION PRODUCTS	48

STANDARDS AUSTRALIA

Australian Standard

External fusion-bonded epoxy coating for steel pipes

1 SCOPE This Standard specifies requirements for external fusion-bonded epoxy (FBE) coating of steel pipes for protection against corrosion. It includes coating in the mill and coating in the field.

NOTES:

- 1 Guidelines to purchasers on information that should be supplied by the purchaser and those variables that should or may be agreed upon at the time of enquiry or order are given in Appendix A.
- 2 Alternative methods for determining compliance with this Standard are given in Appendix B.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1199	Sampling procedures and tables for inspection by attributes
1399	Guide to AS 1199—Sampling procedures and tables for inspection by attributes
1627	Metal finishing—Preparation and pretreatment of surfaces.
1627.4	Part 4: Abrasive blast cleaning
1697	SAA Gas Pipeline Code
2243	Safety in laboratories
2243.2	Part 2: Chemical aspects
2490	Sampling procedures and charts for inspection by variables—5 percent defective
2885	Pipelines—Gas and liquid petroleum
2990	Quality systems for engineering and construction projects
3900	Quality systems—Guide to selection and use
3901	Quality systems for design/development, production, installation and servicing
3902	Quality systems for production and installation
3903	Quality systems for final inspection and test
3904	Quality systems—Guide to quality management and quality system elements

ASTM

D 149	Tests for dielectric breakdown voltage and dielectric strength of solid electrical insulating materials at commercial power frequencies
D 257	Tests for D-C resistance or conductance of insulating materials
D 1044	Test for resistance of transparent plastic materials to surface abrasion
D 1653	Test for water vapour permeability of organic coating films
D 1921	Test for particle size (sieve analysis) of plastic materials
D 2370	Test for tensile properties of organic coatings
G 11	Test for effects of outdoor weathering on pipeline coatings
G 14	Test for impact resistance of pipeline coatings (falling weight test)
G 17	Test for penetration resistance of pipeline coatings
G 62	Test methods for holiday detection in pipeline coatings

API RP

5L1	Recommended practice for railroad transportation of line pipe
5L2	Recommended practice for marine transportation of line pipe

3 DEFINITIONS For the purpose of this Standard, the following definitions apply.

3.1 Batch (FBE Powder)—a manufacturing run, in tonnes.

3.2 Bolster—support for coated pipes during transport and storage.

3.3 Coupon—sample of steel pipe coated with fusion-bonded epoxy and used for laboratory tests.