

Paints and varnishes — Friction-reduction coatings for the interior of on- and offshore steel pipelines for non-corrosive gases

ICS 87.020

National foreword

This British Standard reproduces verbatim ISO 15741:2001 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee STI/27, Paint systems for metallic substrates, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Materials and Chemicals Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 21 May 2002

Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to v, a blank page, pages 1 to 23 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

© BSI 21 May 2002

ISBN 0 580 39649 5

**Paints and varnishes — Friction-reduction
coatings for the interior of on- and offshore
steel pipelines for non-corrosive gases**

*Peintures et vernis — Revêtements réduisant le frottement pour l'intérieur
de gazoducs en acier enterrés et immergés pour le transport de gaz non
corrosifs*



Reference number
ISO 15741:2001(E)

Contents

	Page
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Coating material	3
5 Application of the coating material	11
6 Production control	12
7 Repairs	14
8 Handling, transportation and storage	14

Annexes

A Determination of ash (refer to subclause 4.2.5).....	15
B Dry film thickness (refer to subclause 4.3.3 and 6.1.2)	16
C Resistance to gas pressure variations (refer to subclause 4.3.9)	17
D Hydraulic-pressure blistering (refer to subclause 4.3.12).....	19
E Porosity of a film of the coating material on a glass panel (refer to subclause 6.2.6)	20
F Curing test (refer to subclause 6.2.5).....	21
G Wet-sponge test (refer to subclause 6.2.6)	22
Bibliography.....	23

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15741 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 14, *Protective paint systems for steel structures*.

Annexes A, B, C, D, E, F and G form a normative part of this International Standard.

Introduction

Internal coating of pipelines is used to reduce friction and improve the flow conditions when conveying non-corrosive gases, and to offer sufficient corrosion protection during storage and transport of the pipes. The reduction in friction depends on various parameters like the pressure and temperature of the gas, and the diameter of the pipe. Therefore it is not possible to give a single figure for this reduction in friction.

In order to establish sufficient corrosion protection and to ensure optimum performance of the internal coating in the steel pipes, it is necessary for owners of pipelines, planners, consultants, companies carrying out the work, inspectors of protective coatings and manufacturers of coating materials to have at their disposal state-of-the-art information in concise form including requirements for the coating. Such information has to be as complete as possible, unambiguous and easily understandable to avoid difficulties and misunderstandings between the parties concerned.

Paints and varnishes — Friction-reduction coatings for the interior of on- and offshore steel pipelines for non-corrosive gases

1 Scope

This International Standard specifies requirements and methods of test for liquid epoxy paints and internal coatings of such paints in steel pipes and fittings for the conveyance of non-corrosive gas. It also deals with the application of the paint. Other paints or paint systems are not excluded provided they comply with the requirements given in this International Standard. The coating consists of one layer, which is normally shop-applied on blast-cleaned steel by airless spray or other suitable spraying techniques. The applied and cured paint film must be smooth to give the desired reduction in friction. Brush application is only used for small repair jobs.

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 2409:1992, *Paints and varnishes — Cross-cut test*

ISO 2431:1993, *Paints and varnishes — Determination of flow time by use of flow cups*

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

ISO 2811 (all parts), *Paints and varnishes — Determination of density*

ISO 2812-1:1993, *Paints and varnishes — Determination of resistance to liquids — Part 1: General methods*

ISO 2812-2:1993, *Paints and varnishes — Determination of resistance to liquids — Part 2: Water immersion method*

ISO 2815:—¹⁾, *Paints and varnishes — Buchholz indentation test*

ISO 3233:1998, *Paints and varnishes — Determination of percentage volume of non-volatile matter by measuring the density of a dried coating*

ISO 3251:—²⁾, *Paints, varnishes and plastics — Determination of non-volatile-matter content*

ISO 6743-4:1999, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems)*

ISO 6860:1984, *Paints and varnishes — Bend test (conical mandrel)*

ISO 7253:1996, *Paints and varnishes — Determination of resistance to neutral salt spray (fog)*

1) To be published. (Revision of ISO 2815:1973)

2) To be published. (Revision of ISO 3251:1993)

ISO 8501-1:1988, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings*

ISO 8503-1:1988, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces*

ISO 8503-2:1988, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel — Comparator procedure*

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

3.1

coat

a continuous layer of a coating material resulting from a single application

[ISO 4618-1]

3.2

coater

the company which is responsible for application of the coating material in accordance with the provisions of this International Standard

3.3

coating material manufacturer

the supplier of the coating material

3.4

corrosion

physico-chemical interaction between a metal and its environment which results in changes in the properties of the metal and which may often lead to impairment of the function of the metal, the environment or the technical system of which these form a part

[ISO 8044]

3.5

dry film thickness (DFT)

the thickness of a coating remaining on the surface when the coating has hardened

[ISO 12944-5]

3.6

natural gas

complex mixture of hydrocarbons, primarily methane, but generally also including ethane, propane and higher hydrocarbons in much smaller amounts and some non-combustible gases, such as nitrogen and carbon dioxide

[ISO 14532]

3.7

nominal dry film thickness

NDFT

the dry film thickness specified for each coat or for the whole paint system to achieve the required durability

[ISO 12944-5]