

INTERNAL COATING OF LINE PIPE FOR NON-CORROSIVE GAS TRANSMISSION SERVICE (AMENDMENTS/SUPPLEMENTS TO ISO 15741)

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DESIGN AND ENGINEERING PRACTICE



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The information set forth in these publications is provided to users for their consideration and decision to implement. This is of particular importance where DEPs may not cover every requirement or diversity of condition at each locality. The system of DEPs is expected to be sufficiently flexible to allow individual operating companies to adapt the information set forth in DEPs to their own environment and requirements.

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- 3) Contractors/subcontractors and Manufacturers/Suppliers under a contract with users referred to under 1) or 2) which requires that tenders for projects, materials supplied or - generally - work performed on behalf of the said users comply with the relevant standards.

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All administrative queries should be directed to the DEP Administrator in Shell GSI.

TABLE OF CONTENTS

PART I	INTRODUCTION	4
1.1	SCOPE.....	4
1.2	DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS	4
1.3	INFORMATION TO BE SUBMITTED BY THE PRINCIPAL.....	4
1.4	INFORMATION TO BE SUBMITTED BY THE CONTRACTOR OR APPLICATOR	5
1.5	QUALITY ASSURANCE SYSTEM	5
1.6	RETENTION OF RECORDS	5
1.7	MEASURING DEVICES	5
1.8	DEFINITIONS	5
1.9	ABBREVIATIONS	6
1.10	CROSS-REFERENCES	6
1.11	CHANGES SINCE PREVIOUS EDITION	6
1.12	COMMENTS ON THIS DEP	6
PART II	AMENDMENTS/SUPPLEMENTS TO ISO 15741:2001	7
1.	SCOPE.....	7
3.	TERMS AND DEFINITIONS	7
4.	COATING AND APPLICATOR QUALIFICATION	7
5.	APPLICATION OF THE COATING MATERIAL	12
6.	PRODUCTION CONTROL	14
7.	REPAIRS	15
8.	HANDLING, STORAGE AND TRANSPORT	16
9.	DOCUMENTATION	17
PART III	REFERENCES	19

PART I INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for the factory application of internal flow coat to bare or externally coated line pipe for use in single phase gas transmission pipelines with the objective of reducing surface roughness and pressure losses. The coating may also offer short term corrosion protection during transport and storage, however additional preservation measures may still be required. It specifies the requirements for coating materials, coating application, inspection and testing and gives procedures for the qualification of coating materials and coating applicators.

The requirements for the application of coating to protect against internal corrosion by corrosive transported fluids are outside of the scope of this DEP.

Part II of this DEP provides amendments and supplements to ISO 15741:2001 and shall be read in conjunction with that document. The clause numbering in Part II of this DEP follows that of ISO 15741. Where clauses of ISO 15741 are not amended or supplemented by this DEP, they shall apply as written.

This DEP can be used for general qualification purposes or for specific projects.

General coating qualification is performed for the purpose of an overall qualification of coating system and Applicator, but is not necessarily related to a specific project. With this process, a list of qualified coating systems and Applicators is developed, from which the Principal may select a coating system and Applicator for a specific project. It saves time and avoids re-qualification for similar projects.

The general qualification is given independent of line pipe diameter and wall thickness. When required for specific projects, additional testing should be performed on different line pipe diameters and wall thicknesses.

This is a revision of the DEP of the same number dated July 1998; see (1.11) regarding the changes.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by Shell GSI, the distribution of this DEP is confined to Shell companies and, where necessary, to Contractors and Manufacturers/Suppliers nominated by them.

This DEP is intended for use in oil refineries, chemical plants, gas plants, exploration and production facilities and, where applicable, supply/marketing installations.

When DEPs are applied, a Management of Change (MOC) process should be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements may be more stringent than in this DEP the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable as regards safety, environmental, economic and legal aspects. In all cases the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned with the object of obtaining agreement to follow this DEP as closely as possible.

1.3 INFORMATION TO BE SUBMITTED BY THE PRINCIPAL

For a project qualification, the Principal shall supply technical information to the Contractor or Applicator regarding the project, in particular the installation and operating conditions. This information shall contain as a minimum:

- project name;
- the type and thickness of coating required;

- the maximum and minimum operating temperature of the pipeline;
- description of steel pipe;
- the applicable line pipe specification;
- the geographical area (land/subsea);
- expected ambient temperatures during installation;
- installation method;
- external coatings to be applied;
- fluids to be transported, including those used in commissioning such as methanol, glycol, or gels;
- length of coating cut back;
- whether temporary protection of bare pipe ends is required;
- internal pipe marking requirements.

The Principal shall indicate whether a specific brand of coating shall be used or whether the Contractor or Applicator shall select the coating.

1.4 INFORMATION TO BE SUBMITTED BY THE CONTRACTOR OR APPLICATOR

The Contractor shall submit information to the Principal on the coating system to be used. This information shall contain as a minimum:

- Coating Manufacturer's product data sheet;
- Coating system qualification information;
- Coating application procedures;
- Name(s) of the proposed coating Applicator(s);
- Applicator's qualification information;
- Quality Plan.

The Contractor shall confirm that the coating system is suitable for use under the specified conditions.

1.5 QUALITY ASSURANCE SYSTEM

The Applicator and the Coating Manufacturer shall implement a quality management system in accordance with ISO/TS 29001 or with an alternative standard if agreed by the Principal.

1.6 RETENTION OF RECORDS

Contract records, and any others requiring retention by the Applicator's quality assurance system, shall be retained by the Applicator and made available to the Principal upon request for a period of five years after completion of the order.

1.7 MEASURING DEVICES

The Applicator shall control measuring devices in accordance with ISO 10012-1.

1.8 DEFINITIONS

1.8.1 General definitions

The **Contractor** is the party, which carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project, or operation or maintenance of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Inspector** is the party appointed by the Principal to ensure that the products supplied conforms to the requirement of this specification

The **Manufacturer/Supplier** is the party which manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party which initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.8.2 Specific definitions

Applicator	The party which applies the flow coating system in the coating plant
Coating Contractor	The party which is ultimately responsible for the coating operation which may include supply of coating materials, application of the coating and transport of uncoated and coated line pipe as specified in the relevant contract. The coating Contractor may be the Applicator, the Coating Manufacturer, the Line Pipe Manufacturer or the Pipeline Construction Contractor.
Coating Manufacturer	The party, which manufactures the coating materials, supplied to the Applicator. Where the term Supplier has been used in ISO 15741 it shall be taken to mean Coating Manufacturer.
Shift	A production run of which the beginning and end coincide with a change in personnel. In the context of the quality control procedures of this DEP, the maximum duration of a shift is 10 h.

1.9 ABBREVIATIONS

NDFT	Nominal dry film thickness
HSE	Health, Safety and Environment
WFT	Wet film thickness

1.10 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section is shown in brackets. Other documents referenced in this DEP are listed in (Part III).

1.11 CHANGES SINCE PREVIOUS EDITION

The previous edition of this DEP was dated July 1998. The previous edition was based on API RP 5L2, whereas this edition is based on ISO 15741. It is therefore impractical to list the differences herein.

1.12 COMMENTS ON THIS DEP

Comments on this DEP may be sent to the DEP Administrator at standards@shell.com. Shell staff may also post comments on this DEP on the Surface Global Network (SGN) under the Standards folder. The DEP Administrator and DEP Author monitor these folders on a regular basis.

PART II AMENDMENTS/SUPPLEMENTS TO ISO 15741:2001

1. SCOPE

Delete this clause.

3. TERMS AND DEFINITIONS

3.2 COATER

Delete the existing definition and replace with the following:

Where the term 'coater' has been used in this document it shall be taken to mean Applicator as defined in Part I –1.8.2.

3.3 COATING MATERIAL MANUFACTURER

Delete the existing definition and replace with the following:

The Coating Manufacturer as defined in Part I - 1.8.2

3.8 PAINT

Delete the existing definition and replace with the following:

Where the term 'paint' has been used in this document it shall be taken to mean 'coating', which is defined as:

total coating system, having the properties specified in this DEP.

3.11 PURCHASER

Delete the existing definition and replace with the following:

The Principal, as defined in Part I - 1.8.2.

4 COATING MATERIAL

Change the heading of this clause to:

4. COATING AND APPLICATOR QUALIFICATION

4.1 GENERAL

Add the following:

Before a coating system may be applied in a production run, the Contractor shall submit all the data specified in (4.6) and (4.7) and shall ensure that both the coating system and the Applicator have been qualified in accordance with the procedures in (4.3) and (4.9).

Delete the 6th and 7th paragraphs.

Add new clause:

4.1.1 Coating material qualification

Qualification shall be carried out according to the following procedures.

The Contractor or the coating Manufacturer shall show that samples of the coating system applied on panels of the specified material have been successfully subjected to the tests as specified in Table 6. The tests shall be carried out by an independent and certified test laboratory or, if approved by the Principal, by the coating Manufacturer. The Principal shall witness the application and the tests.

The number of panels to be tested and the test procedures are also given in Table 6.