

DEP SPECIFICATION

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

DEP 31.40.30.35-Gen.

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DESIGN AND ENGINEERING PRACTICE



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PREFACE

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These views are based on the experience acquired during involvement with the design, construction, operation and maintenance of processing units and facilities. Where deemed appropriate DEPs are based on, or reference international, regional, national and industry standards.

The objective is to set the standard for good design and engineering practice to be applied by Shell companies in oil and gas production, oil refining, gas handling, gasification, chemical processing, or any other such facility, and thereby to help achieve maximum technical and economic benefit from standardization.

The information set forth in these publications is provided to Shell companies 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 Units to adapt the information set forth in DEPs to their own environment and requirements.

When Contractors or Manufacturers/Suppliers use DEPs, they shall be solely responsible for such use, including the quality of their work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will typically expect them to follow those design and engineering practices that will achieve at least the same level of integrity as reflected in the DEPs. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own responsibility, consult the Principal.

The right to obtain and to use DEPs is restricted, and is typically granted by Shell GSI (and in some cases by other Shell Companies) under a Service Agreement or a License Agreement. This right is granted primarily to Shell companies and other companies receiving technical advice and services from Shell GSI or another Shell Company. Consequently, three categories of users of DEPs can be distinguished:

- 1) Operating Units having a Service Agreement with Shell GSI or another Shell Company. The use of DEPs by these Operating Units is subject in all respects to the terms and conditions of the relevant Service Agreement.
- 2) Other parties who are authorised to use DEPs subject to appropriate contractual arrangements (whether as part of a Service Agreement or otherwise).
- 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.

Subject to any particular terms and conditions as may be set forth in specific agreements with users, Shell GSI disclaims any liability of whatsoever nature for any damage (including injury or death) suffered by any company or person whomsoever as a result of or in connection with the use, application or implementation of any DEP, combination of DEPs or any part thereof, even if it is wholly or partly caused by negligence on the part of Shell GSI or other Shell Company. The benefit of this disclaimer shall inure in all respects to Shell GSI and/or any Shell Company, or companies affiliated to these companies, that may issue DEPs or advise or require the use of DEPs.

Without prejudice to any specific terms in respect of confidentiality under relevant contractual arrangements, DEPs shall not, without the prior written consent of Shell GSI, be disclosed by users to any company or person whomsoever and the DEPs shall be used exclusively for the purpose for which they have been provided to the user. They shall be returned after use, including any copies which shall only be made by users with the express prior written consent of Shell GSI. The copyright of DEPs vests in Shell Group of companies. Users shall arrange for DEPs to be held in safe custody and Shell GSI may at any time require information satisfactory to them in order to ascertain how users implement this requirement.

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

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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 non-corrosive 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 III of this DEP provides amendments and supplements to ISO 15741:2001. The clause numbering in Part III of this DEP follows that of ISO 15741. Where clauses of ISO 15741 are not amended or supplemented by this DEP, they apply as written.

This DEP-Gen. is a revision of the DEP of the same number dated December 2005. It incorporates content from and supersedes local Deepwater standard DEP 31.40.30.35-DWP, which is now retired with this revision of the DEP-Gen. The DEP-Gen. is based on ISO 15741 rather than supplementing API 5L2.

This is a revision of the DEP of the same number dated September 2012; see (1.5) 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. Any authorised access to DEPs does not for that reason constitute an authorisation to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to oil and gas production, gas handling, oil refining, chemical processing, gasification, distribution and supply/marketing. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall 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 could 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 with regards to the 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, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

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

The **Manufacturer/Supplier** is the party that 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 it. 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.

The word **may** indicates a permitted option.

1.3.2 Specific definitions

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

1.3.3 Abbreviations

Term	Definition
AFC	Approved For Construction
DFT	Dry Film Thickness
HSSE	Health, Safety, Security and Environment
ITP	Inspection Test Plan
WFT	Wet Film Thickness

1.4 CROSS-REFERENCES

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

1.5 SUMMARY OF MAIN CHANGES

This DEP-Gen. is a revision of the DEP of the same number dated September 2012. It incorporates content from and supersedes local Deepwater standard DEP 31.40.30.35-DWP, which is now retired with this revision of the DEP-Gen. The DEP-Gen. is based on ISO 15741 rather than supplementing API 5L2.

Section/Clause	Change
All	Restructured and clarified requirements, enforced shall/should.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be submitted to the Administrator using one of the following options:

Shell DEPs Online (Users with access to Shell DEPs Online)	Enter the Shell DEPs Online system at https://www.shelldeps.com Select a DEP and then go to the details screen for that DEP. Click on the "Give feedback" link, fill in the online form and submit.
DEP Feedback System (Users with access to Shell Wide Web)	Enter comments directly in the DEP Feedback System which is accessible from the Technical Standards Portal http://www.shell.com/standards . Select "Submit DEP Feedback", fill in the online form and submit.
DEP Standard Form (other users)	Use DEP Standard Form 00.00.05.80-Gen. to record feedback and email the form to the Administrator at standards@shell.com .

Feedback that has been registered in the DEP Feedback System by using one of the above options will be reviewed by the DEP Custodian for potential improvements to the DEP.

1.7 DUAL UNITS

This DEP contains both the International System (SI) units, as well as the corresponding US Customary (USC) units, which are given following the SI units in brackets. When agreed by the Principal, the indicated USC values/units may be used.

1.8 NON NORMATIVE TEXT (COMMENTARY)

Text shown in italic style in this DEP indicates text that is non-normative and is provided as explanation or background information only.

Non-normative text is normally indented slightly to the right of the relevant DEP clause.

PART II GENERAL REQUIREMENTS

1.1 GENERAL

1. Part III of this DEP is written as amendments and supplements to ISO 15741:2001. Wherever reference is made to ISO 15741:2001, it shall be understood to mean ISO 15741:2001 as amended/supplemented by this DEP.
2. For ease of reference, the clause numbering of ISO 15741:2001 has been used throughout Part III of this DEP.
3. Clauses in ISO 15741:2001, which are not mentioned in this DEP, shall remain valid as written.
4. Specifications related to materials testing in this DEP refer to ISO standards. Contractor or Manufacturer/Supplier may propose equivalent ASTM or API standards for testing for Principal review and approval in their Inspection Test Plan.

1.2 QUALIFICATION OF COATING SYSTEM

This DEP may 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.

NOTE: For this purpose, Shell companies may use the list of Technically Accepted Manufacturers and Products maintained by Shell Projects and Technology.

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.

1.3 INFORMATION TO BE SUBMITTED BY THE PRINCIPAL

1. 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 and include as a minimum:
 - a. project name;
 - b. the type and thickness of coating required;
 - c. the maximum and minimum operating temperature of the pipeline and the design pressure of the pipeline;
 - d. description of steel pipe;
 - e. the applicable line pipe specification;
 - f. the geographical area (land/subsea);
 - g. expected ambient temperatures during installation;
 - h. installation method;
 - i. external coatings to be applied;
 - j. fluids to be transported, including those used in commissioning such as methanol, glycol, or gels;
 - k. length of coating cut back;
 - l. whether temporary protection of bare pipe ends is required;
 - m. internal pipe marking requirements;
 - n. use of pigging during commissioning or operation;
 - o. maximum pipe bending radius;
 - p. gas analysis;
 - q. maximum water and liquid hydrocarbon contents.
3. The Principal shall indicate whether a specific brand of coating can be used or whether the Contractor or Applicator can select the coating.

1.4 INFORMATION TO BE SUBMITTED BY THE CONTRACTOR OR APPLICATOR

1. The Contractor shall submit information to the Principal on the coating system to be used and include as a minimum:
 - a. coating manufacturer's product data sheet;
 - b. coating system qualification information;
 - c. coating application procedures;
 - d. name(s) of the proposed coating Applicator(s);
 - e. applicator's qualification information;
 - f. quality plan.
2. The Contractor shall confirm that the coating system is qualified and suitable for use under the specified conditions specified in Section 1.3.