



Shell Global Solutions

# COATINGS STANDARDS and SPECIFICATIONS within Shell

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# Shell Standards

- Design and Engineering Practices – DEP
- a standard for a subject or item considered suitable for use by multiple OUs and Servcos, with the objective of minimising the extent of OU Variations
- providing a means to:
  - carry out business efficiently and cost effectively;
  - enhance technical integrity;
  - transfer knowledge.

# DEP – Design and Engineering Practices

- Based on Shell experience during
  - Design
  - Construction
  - Operation
  - Maintenanceof processing units and facilities
- Recommended standard for good design and engineer practice for operation of
  - Refinery
  - Gas plant
  - Chemical plant
  - Exploration and production unit

# DEP Subject index

- General engineering
- Mechanical engineering
- Instrument engineering
- Electrical engineering
- Civil engineering
- **Surface protection (coatings and cathodic protection)**
- Safety and fire fighting
- Drilling and production

Cathodic protection	DEP 30.10.73.10-Gen.
Design of cathodic protection systems for onshore buried pipelines	DEP 30.10.73.31-Gen.
Design of cathodic protection systems for offshore pipelines (amendments/supplements to DNV RP B401)	DEP 30.10.73.32-Gen.
Installation and commissioning of cathodic protection systems	DEP 30.10.73.33-Gen.
Thermal insulation (amendments/supplements to the CINI Handbook)	DEP 30.46.00.31-Gen.
Protective coating for onshore facilities	DEP 30.48.00.31-Gen.
Cement lining of pipes	DEP 30.48.30.31-Gen.
Thermal sprayed aluminium coatings	DEP 30.48.40.31-Gen.
Electroless nickel plating (amendments/supplements to ASTM B 733)	DEP 30.48.41.31-Gen.
Rubber-lined process equipment	DEP 30.48.60.10-Gen.
Design and installation of chemical-resistant linings for concrete structures	DEP 30.48.60.12-Gen.
Design and installation of chemical-resistant brick lining for process equipment	DEP 30.48.60.13-Gen.
Concrete coating of linepipe	DEP 31.40.30.30-Gen.
External polyethylene and polypropylene coating for line pipe	DEP 31.40.30.31-Gen.
External fusion-bonded epoxy powder coating for line pipe	DEP 31.40.30.32-Gen.
Bituminous enamel coating of steel linepipe	DEP 31.40.30.33-Gen.
Internal coating of line pipe for non-corrosive gas transmission service (amendments/supplements to API RP 5L2)	DEP 31.40.30.35-Gen.
Elastomer coatings and monel sheathing for offshore riser protection	DEP 31.40.30.36-Gen.
External field joint and rehabilitation coating systems for line pipe	DEP 31.40.30.37-Gen.
Design of cathodic protection systems for new fixed offshore steel structures (amendments/supplements to DNV RP B401)	DEP 37.19.30.30-Gen.
Refractory bricks and shapes	DEP 44.24.90.31-Gen.
Refractory materials for sulphur recovery units (claus and scot)	DEP 64.24.32.11-Gen.
Insulating and dense refractory concrete linings	DEP 64.24.32.30-Gen.
Protective coatings for offshore facilities	DEP 70.48.10.30-Gen.

# Line pipe coatings

- Concrete coating of linepipe
- External polyethylene and polypropylene coating for line pipe
- External fusion-bonded epoxy powder coating for line pipe
- Bituminous enamel coating of steel linepipe
- Internal coating of line pipe for non-corrosive gas transmission service (amendments/supplements to API RP 5L2)
- Elastomer coatings and monel sheathing for offshore riser protection
- External field joint and rehabilitation coating systems for line pipe

## Paint coating systems

- Thermal sprayed aluminium coatings
- Protective coatings for offshore facilities
- Protective coatings for onshore facilities

# Requirements for

- Coating materials
- Coating application
- Inspection and testing (QA/QC)
- Qualification of coating materials and applicators
- Documentation

# Qualification of coating materials/applicators

- Review coating materials
- Review coating application procedure
- Performance testing in relation with application procedure
- Acceptance criteria

## Deliverable

- List of approved vendors/applicators used for Shell projects and companies

# International Standards

- Follow international standards
  - ISO 20809 for line pipe coatings
  - ISO 20340 for offshore structures
  - ISO 12944 for onshore structures
- Test procedures according ISO procedures
  - Adhesion
  - Layer thickness
  - Flexibility
  - etc.

# Conclusions and Summary

- Shell coating DEP are used worldwide
- Emphasis on Qualification and QA/QC
- Follow International Standards if possible