Coating standards specifically available for the oil & gas industry

Abbreviations

ABS American Bureau of Shipping
ABNT AssociaçãoBrasileira de NormasTécnicas AFNOR Association Française de Normalisation ASME American Society of Mechanical Engineers ANSI American National Standards Institute
API American Petroleum Institute AWWA American Water Works Association BS British Standards
CEN European Committee for Standardization CSA Canadian Standards Association
DNV Det Norske Veritas (Norway)
DIN German Institute for Standardization
EEMUA Engineering Equipment & Materials Users' Association EFC European Federation of Corrosion
EN European Norm
GCC Cooperation Council for the Arab States of the Gulf
GSO Gulf Standardization Organization for the Cooperation Council for the Gulf Arab States IEC International Electrotechnical Commission
IMO International Maritime Organization EEMUA Instrumentation and Control Committee IS Indian Standard
ISO International Organization for Standardization NACE National Association of Corrosion Engineers (US) NF National French Standard
NORSOK Norwegian Competitive Position on the Continental Shelf NPD Norwegian Petroleum Directorate
NS Norwegian Standard
OCIMF Oil Companies International Marine Forum OCMA Oil Companies Materials Association
OGP International Association of Oil & Gas Producers OLF Norwegian Oil Industry Association
PAS Publicly Available Specification (ISO) PIP Process Industry Practices (US)
PSA Petroleum Safety Authority (Norway)
RAL German Reichsausschußfür Lieferbedingungen und Gütesicherung SDO Standards Developing Organization

SFS Finnish Standards Association SSPC Society for Protective Coatings (US) STG Specific Technology Groups
TBL Federation of Norwegian Manufacturing Industries TEG Technology Exchange Groups
TC Technical Committee
TF Task Force
TG Task Group
UKOOA UK Offshore Operator Association (Now UK Oil & Gas) VDI Association of German Engineers
WG Working Group

Available coating standards

The primary and specific coating standards for the oil & gas industry are singled out in paragraph 1.0 below, as these standards are the responsibility of the coating experts of the oil & gas industry community to develop and maintain, and nobody else.
Many of the references in paragraph 2.0 below are generally applicable coating and paint related standards not specifically made for the oil & gas industry, but they are frequently used by the coating discipline and hence listed to check if they are commonly referenced by the global oil & gas industry for their individual and specific purposes.

1.0 Coating standards specifically available for the oil & gas industry

API Bull 91 Planning and Conducting Surface Preparation and Coating Operations for Oil and Natural Gas Drilling and Production Facilities in a Marine Environment
API RP 5L2 RP for Internal Coating of Line Pipe for Non-Corrosive Gas Transmission Service
API RP 5L7 RP for Un-primed Internal Fusion Bonded Epoxy Coating of Line Pipe
API RP 5L9 External Fusion Bounded Epoxy Coating of Line Pipe
API RP 652 Linings of Aboveground Petroleum Storage Tank Bottoms
API 1160 Managing system integrity for hazardous liquid pipelines
API 2217A Guidelines for Work in Inert Confined Spaces in the Petroleum Industry
ASTM 06.02 Paint-Products and Applications; Protective Coatings; Pipeline Coatings
ASTM G 8 Test method for cathodic disbanding of pipeline coatings
ASTM G14 Standard Test Method for Impact Resistance of Pipeline Coatings (Fall- ing Weight Test).
ASTM G17 Standard Test Method for Penetration Resistance of Pipeline Coatings (Blunt Rod).
DNV RP-F102 Pipeline field joint coating and field repair of line pipe coating
DNV RP–F106 Factory applied external pipeline coatings for corrosion control.
EN 10288 Steel Tubes and Fittings for Onshore and Offshore Pipelines - External Two Layer Extruded Polyethlene Based Coatings
EN 10289 Steel Tubes and Fittings for Onshore and Offshore Pipelines - External Liquid Applied Epoxy and Epoxy-Modified Coatings
EN 10290 Steel Tubes and Fittings for Onshore and Offshore Pipelines External Liquid Applied Polyurethane and Polyurethane-Modified Coatings
EN 10300 Steel tubes and fittings for onshore and offshore Pipelines - Bituminous hot applied materials for external coating
EN 10301 Steel tubes and fittings for on and offshore pipelines - Internal coating for the reduction of friction for conveyance of non corrosive gas
EN 10310 Steel tubes and fittings for onshore and offshore pipelines - Internal and external polyamide powder based coatings

EN 10329 Steel tubes and fittings for onshore and offshore pipelines - External field joint coatings
EEMUA 194 Guidelines for Materials Selection and Corrosion Control for Subsea Oil and Gas Production Equipment
ISO 15741 Paints and varnishes - Friction-reduction coatings for the interior of on- and offshore steel pipelines for non-corrosive gases
ISO 20340 Paints and varnishes – Performance requirements for protective paint systems for offshore and related structures
ISO 21809 Petroleum and natural gas industries – External coatings for buried or submerged pipelines used in pipeline transportation systems:
Part 1: Polyolefin coatings (3-layer PE and 3-layer PP) (In preparation)
Part 2: Fusion-bonded epoxy coatings (issued 2007) Part 3: Field joint coatings (issued 2008)
Part 4: Polyethylene coatings (2-Layer PE) (In preparation) Part 5: External concrete coatings (In preparation)

NACE 30105 Electrical Isolation/Continuity and Coating Issues for Offshore Pipeline Cathodic Protection Systems
NACE RP0105 Standard Recommended Practice Liquid-Epoxy Coatings for External Repair, Rehabilitation, and Weld Joints on Buried Steel Pipelines
NACE RP-0176 Corrosion Control of Steel, Fixed Offshore Platforms Associated with Petroleum Production
NACE RP0178 Fabrication Details, Surface Finish Requirements, and Proper Design Considerations for Tanks and Vessels to be Lined for Immersion Sur- face.
NACE RP0188 Discontinuity (Holiday) Testing of Protective Coatings
NACE RP0191 Application of Internal Plastic Coatings for Oilfield Tubular Goods and Accessories
NACE RP0193 External Cathodic Protection of On-Grade Carbon Steel Storage Tank Bottoms
NACE RP0198 Control of Corrosion Under Thermal Insulation and Fireproofing Materials - A Systems Approach
NACE RP0274 High-Voltage Electrical Inspection of Pipeline Coatings
NACE RP0303 Standard Recommended Practice Field-Applied Heat-Shrinkable Sleeves for Pipelines: Application, Performance, and Quality Control
NACE RP0304 Design, Installation, and Operation of Thermoplastic Liners for Oilfield Pipelines
NACE RP0375 Field-Applied Underground Wax Coating Systems for Underground Pipelines: Application, Performance, and Quality Control
NACE RP0394 Application, Performance, and Quality Control of Plant-Applied, Fusion-Bonded Epoxy External Pipe Coating
NACE RP0399 Plant Applied, External Coal Tar Enamel Pipe Coating Systems: Application, Performance, and Quality Control
NACE RP0402 Field-Applied Fusion-Bonded Epoxy (FBE) Pipe Coating Systems for Girth Weld Joints: Application, Performance, and Quality Control
NACE RP0602 Field-Applied Coal Tar Enamel Pipe Coating Systems: Application, Performance, and Quality Control
NACE RP0892 Coatings and Linings over Concrete for Chemical Immersion and Containment Service
NACE SP0108 Corrosion Control of Offshore Structures by Protective Coatings
NACE SP0169 Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE SP0181 Liquid-Applied Internal Protective Coatings for Oilfield Production Equipment

NACE SP0185 Extruded Polyolefin Resin Coating Systems with Soft Adhesives for Underground or Submerged Pipe
NACE SP0490 Holiday Detection of Fusion-Bonded Epoxy External Pipeline Coatings of 250 to 760 um (10 to 30 Mils)
NACE TM0102 Measurement of Protective Coating Electrical Conductance on Under- ground Pipelines
NACE TM0104 Offshore Platform Ballast Water Tank Coating System Evaluation
NACE TM0105 Test Procedures for Organic-Based Conductive Coating Anodes for Use on Concrete Structures
NACE TM0174 Laboratory Methods for the Evaluation of Protective Coatings and Linings Materials on Metallic Substrates in Immersion Service
NACE TM0185 Evaluation of Internal Plastic Coatings for Corrosion Control of Tubular Goods by Autoclave Testing
NACE TM0186 Holiday Detection of Internal Tubular Coatings of 250 to 760µm (10 to 30 Mils) Dry Film Thickness
NACE TM0204 Exterior Protective Coatings for Seawater Immersion Service
NACE TM0299 Corrosion Control and Monitoring in Seawater Injection Systems
NACE TM0304 Offshore Platform Atmospheric and Splash Zone Maintenance Coating System Evaluation
NACE TM0384 Holiday Detection of Internal Tubular Coatings of Less Than 250 Micrometers (10 mils) Dry-Film Thickness
NACE TM0404 Offshore Platform Atmospheric and Splash Zone New Construction Coating System Evaluation
NORSOK M-501 Surface preparation and protective coating

2.0 Generally applicable coating or related standards

ABS 49 The Inspection, Maintenance and Application of Marine Coating Systems

ABS 153 Guide for the Class Notation Coating performance standard
AFNOR NF M87-803 Oil industry - Ballast coating for pipes - Implementation.
AFNOR NF M88-516 Steel tanks with outside concrete coating for underground storage of mineral oils.
ANSI A13.1 Scheme for identification of piping systems
ANSI Z535.1 Safety Color Code
API/EI Std 1541 Performance requirements for protective coating systems used in avia- tion fuel storage tanks & piping
ASTM A 123/A123M Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 143 Safeguarding Against Embrittlement of Hot-Dip, Galvanized Structural Steel Products
ASTM A 153/A153M Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 385 Standard Specification for Zinc Dust Pigment
ASTM A 392 Specification for zinc-coated steel chain-link fence fabric.
ASTM A 780 Specification for repair of damaged hot-dip galvanized coatings. ASTM A 972/A972M Standard Specification for Fusion Bonded Epoxy Coated Pipe Piles ASTM B 117 Standard Practice for Operating Salt Spray (fog) Apparatus
ASTM C633 Standard Test Method for Adhesion or Cohesion Strength of Thermal Spray Coatings (NOTE - often preferred by thermal sprayers to ASTM D4541).
ASTM D16 Standard Terminology for Paint, Related Coatings, Materials, and Applications
ASTM D 521 Test methods for chemical analysis of zinc dust (metallic zinc powder)
ASTM D 570 Standard test method for water absorption of plastics
ASTM D 610 Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces.
ASTM D 638 Standard Test Method for Tensile Properties of Plastics
ASTM D 823 Method of producing films of uniform thickness of paint, varnish, lac- quer and related products on test panels
ASTM D 1000 Method of testing pressure sensitive adhesive coated tapes used for electrical insulation
ASTM D 1141 Specification for substitute ocean water
ASTM D 1186 Standard Test Methods for Non-Destructive Measurement of Dry Film Thickness of Non-Magnetic Coatings Applied to a Ferrous Base.

ASTM D 1200 Test method for viscosity of paints, varnishes and lacquers by Ford viscosity cup
ASTM D 1212 Standard Test Methods for Measurement of Wet Film Thickness of Organic Coatings
ASTM D 3276 Standard Guide for Painting Inspectors (Metal Substrates)
ASTM D 1640 Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D 2092 Practices for preparation of zinc-coated galvanized steel structures for paint
ASTM D 2240 Standard Test Method for Rubber Property—Durometer Hardness
ASTM D 2369 Test method for volatile content of coatings
ASTM D 2371 Test method for pigment content of solvent-reducible paints
ASTM D 3359 Method for measuring adhesion by tape test
ASTM D 3418 Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calor- imetry
ASTM D3451 Standard Guide for Testing Coating Powders and Powder Coatings
ASTM D 4060 Standard test method for abrasion resistance of organic coatings by the Taber abraser
ASTM D4228 Standard Practice for Qualification of Coating Applicators for Application of Coatings to Steel Surfaces.
ASTM D 4285 Test method for indicating oil or water in compressor air
ASTM D 4414 Standard Practice for Measurement of Wet Film Thickness by Notch Gages
ASTM D 4417 Method C Test method for Field Measurement of Surface Profile
ASTM D 4541 Test method for pull-off strength of coatings using portable adhesion testers.
ASTM D 4752 Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub.
ASTM D 4940 Standard Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blasting Abrasives
ASTM D5144 Standard Guide for Use of Protective Coating Standards in Nuclear Power Plants
ASTM D7490 Standard Test Method for Measurement of the Surface Tension of Solid Coatings, Substrates and Pigments using Contact Angle Measurements
ASTM E 337 Standard Test Method for Measuring Humidity with a Psychrometer (Wet and Dry Bulb Temperatures)

ASTM F 21 Standard Test Method for Hydrophobic Surface Films by Atomiser Test
ASTM G 53 Recommended practice for operating light – and water – exposure apparatus (fluorescent UV-condensation type) for exposure of nonmetallic materials
ASTM G65 Standard Test Method for Measuring Abrasion Using the Dry Sand/ Rubber Wheel Apparatus
ASTM G99 Standard Test Method for Wear Testing with a Pin-on-Disk Apparatus
AWWA C-203 Coal tar protective coatings and linings for steel water pipelines- enamel and tape-hot applied
AWWA C213 Standard for Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Lines
BS 381C Colour for Identification, Coding and Special Purposes
BS 1710 Identification of Pipelines and Services
BS 2451 Chilled Iron, Shot and Grit
BS 2482 Whirling Hygrometers
BS 3900 Methods for Testing Coatings
BS 4164 Specification for coal tar based, hot applied coating materials for protecting iron and steel including suitable primers.
BS 4800 Specification for Paint Colours for Building Purposes
BS 5378 Safety Signs and Colours: Colour and Design.
BS 5493 Code of Practice for Protective Coating of Iron and Steel against Corrosion
BS 5973 Code of Practice for Access and Working Scaffolds and Special Scaffold Structures in Steel
BS 6374 Lining of Equipment with Polymeric Materials for the Process Industries
CSA–Z245.20-06 External Fusion Bond Epoxy Coating for Steel Pipe
CSA Z245.21-06 External polyethylene coating for pipe
DIN 32521 Acceptance test and quality control for thermal spraying equipment.
DNV CN 33.1 Corrosion prevention of tanks and holds
DNV OS–F101 Submarine pipeline systems
EFC 20 Organic and Inorganic Coatings for Corrosion Prevention - Research and Experience
EFC 54 Innovative pre-treatment techniques to prevent corrosion of metallic surfaces

EN Standards CEN has adopted most of the ISO standards issued by ISO/TC35 Paints and varnishes, but for simplicity they are not shown here.
EN 582 Thermal spraying. Determination of tensile adhesive strength
EN 1403 Corrosion protection of metals - Electrodeposited coatings - Method of specifying general requirements
EN 10142 Specification for continuously hot-dip zinc coated low carbon steel sheet and strip for cold forming: technical delivery conditions
EN 10147 Continuously hot-dip zinc coated structural steels strip and sheet. Technical delivery conditions
EN 10240 Internal and/or External Protective Coatings for Steel Tubes - Specification for Hot Dip Galvanized Coatings Applied in Automatic Plants
EN 12540 Corrosion protection of metals - Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and copper plus nickel plus chromium
EN 13143 Metallic and other inorganic coatings - Definitions and conventions concerning porosity
EN 13144 Metallic and other inorganic coatings – Method for quantitative measurement of adhesion by tensile test
EN 22063 Metallic and Other Inorganic Coatings – Thermal Spraying
IMO MSC.215(82) Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers
IMO MSC.244(83) Performance standard for protective coatings for void spaces on bulk carriers and oil tankers
IMO A.798(19) Guidelines for the selection, application and maintenance of corrosion prevention systems of dedicated seawater ballast tanks
IMO MSC.1/Circ.1279 Guidelines for corrosion protection of permanent means of access arrangements
IMO MSC.1/Circ.1330 Guidelines for maintenance and repair of protective coatings
IS-5 Colour coding
IS-101 Methods for test for ready mixed paints and enamels
IS-2379 Indian Standard for Pipe line identification-colour code
ISO 62 Plastics – Determination of water absorption
ISO 179-2 Plastics – Determination of Charpy impact properties – Part 2: Instrumented impact test

ISO 306 Plasctics – Thermoplastic materials – Determination of Vicat softening temperature
ISO 527-1 Plastics – Determination of tensile properties – Part 1: General principles
ISO 527-2 Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
ISO 787-10 General methods of test for pigments and extenders - Part 10: Determination of density. Pyknometer method
ISO 868 Plastics and ebonite – Determination of indentation hardness by means of a Durometer (Shore hardness)
ISO 1133 Plastics – Determination of the melt-mass flow rate (MFR) and melt- volume flow rate (MVR) of thermoplastics
ISO 1183 Plastics-Test method for determinig the density and relative density of non-cellular plastics
ISO 1461 Metallic coatings - Hot-dip galvanised coating on fabricated ferrous products
ISO 1512 Paints and varnishes – Sampling of products in liquid or paste forms
ISO 1513 Paints and varnishes – Examination and preparation of samples for test- ing
ISO 1514 Paints and varnishes – Standard panels for testing
ISO 1516 Paints and varnishes – Closed cup equilibrium method
ISO 1517 Paints and varnishes – Surface-drying test – Ballotini method
ISO 1519 Paints and varnishes – Bend test (cylindrical mandrel)
ISO 1524 Paints and varnishes – Determination of fineness of grind
ISO 2063 Thermal Spraying - Metallic and Other Inorganic Coatings - Zinc, Aluminium and Their Alloys
ISO 2080 Metallic and other inorganic coatings – Surface treatment, metallic and other inorganic coatings – Vocabulary
ISO 2409 Paints and varnishes – Cross-cut test
ISO 2431 Paints and varnishes – Determination of flow time by use of flow cups
ISO 2555 Plastics – Resins in the liquid state or as emulsions or dispersions – Determination of apparent viscosity by the Brookfield Test method
ISO 2808 Paints and varnishes - Determination of film thickness
ISO 2811 Paints and varnishes – Determination of density
ISO 2812 Paints and varnishes - Determination of resistance to liquids
ISO 2813 Paints and varnishes – Determination of specular gloss of non-metallic paint films at 20 degrees, 60 and 85 degrees.

ISO 2814 Paints and varnishes - Comparison of contrast ratio (hiding power) of paint of the same type and colour
ISO 2815 Paint and Varnishes – Buchholz Indentation Test Method
ISO 2632 Roughness Comparison Specimens, Cast Surfaces
ISO 2808 Paints and varnishes – Determination of film thickness
ISO 2814 Paints and varnishes - Comparison of contrast ratio (hiding power) of paint of the same type and colour
ISO 3001 Plastics – Epoxy compounds – Determination of epoxy equivalent
ISO 3231 Paints and varnishes – Determination of resistance to humid atmospheres containing sulphur dioxide
ISO 3233 Coating and varnishes determination of volume of dry coating obtained from a given volume of liquid coating
ISO 3251 Paints and varnishes –Determination of non-volatile matter of paints, varnishes and binders for paints and varnishes
ISO 3549 Zinc dust pigments for paints – Specifications and test methods
ISO 3678 Paints and varnishes - Print-free test
ISO 3892 Conversion coatings on metallic materials - Determination of coating mass per unit area - Gravimetric methods
ISO 4287 Geometrical Product Specifications (GPS) – Surface texture: Profile method – Terms, definitions and surface texture parameters
ISO 4541 Metallic and other non-organic coatings - Corrodkote corrosion test
ISO 4543 Metallic and other non-organic coatings - General rules for corrosion tests applicable for storage conditions
ISO 4623 Paints and varnishes – Determination of resistance to filiform corrosion
ISO 4624 Paints and varnishes - Pull-off test for adhesion
ISO 4628 Paints and varnishes - Evaluation of degradation of paint coatings Designation of intensity, quantity and size of common types of defect
ISO 4892-2 Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps
ISO 4998 Continuous hot-dip zinc-coated carbon steel sheet of structural quality
ISO 6270 Paints and varnishes – Determination of resistance to humidity
ISO 6860 Paints and varnishes – Bend test (conical mandrel)

ISO 6964 Polyolefine pipes and fittings: Determination of carbon black content by calcinations and pyrolysis: Test method and basic principles
ISO 7253 Paints and Varnishes – Determination of Resistance to Neutral Salt Spray.
ISO 7724 Paints and varnishes. Determination of colour and colour difference
ISO 8130-6 Coating powders – Part 6- Determination of gel time of thermosetting coating powders at a given temperature
ISO 8401 Metallic coatings - Review of methods of measurement of ductility
ISO 8403 Metallic coatings - Coatings anodic to the substrate - Rating of test specimens subjected to corrosion tests
ISO 8302 Thermal insulation-Determination of steady state thermal resistance and related properties-Guarded hot plate apparatus
ISO 8501 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
Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coatings
Part 3: Preparation grades of welds, edges and other areas with surface imperfections
Part 4: Initial surface conditions, preparation grades and flash rust grades in connection with high-pressure water jetting
ISO 8502 Preparation of steel substrates before application of paints and related products – Test for the assessment of surface cleanliness
Part 2: Laboratory determination of chloride on cleaned surfaces
Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)
Part 4: Guidance on the estimation of the probability of condensation prior to paint application
Part 5: Measurement of chloride on steel surfaces prepared for painting (ion detection tube method)
Part 6: Extraction of soluble contaminants for analysis - The Bresle method
Part 8: Field method for the refractometricdedetermination of moisture Part 9: Field method for the conductometric determination of water- soluble salts
Part 11: Field method for the turbidimetric determination of water-soluble sulfate

Part 12: Field method for the titrimetric determination of water-soluble ferrous ions
ISO 8503 Preparation of steel substrates before application of paints and related products - Surface roughness characteristics of blast cleaned substrates. Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces
Part 2: Method for the grading of surface profile of abrasive blast- cleaned steel - Comparator procedure
Part 3: Method for the calibration of ISO surface profile comparators and for the determination of surface profile - Focusing microscope procedure
Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile - Stylus instrument procedure
Part 5: Replica tape method for the determination of the surface profile
ISO 8504 Preparation of steel substrates before application of paints and related products - Surface preparation methods
Part 1: General principles
Part 2: Abrasive blast cleaning.
Part 3: Hand- and power-tool cleaning

ISO 9220 Metallic coatings - Measurement of coating thickness - Scanning electron microscope method
ISO 9223 Corrosion of metals and alloys. Atmospheres' corrosivity. Classification
ISO 9227 Corrosion tests in artificial atmospheres – Salt spray tests
ISO 10308 Metallic coatings – review of porosity test
ISO 11124 Preparation of steel substrates before application of paints and related products – Specifications for metallic blast-cleaning abrasives – 4 parts
ISO 11125 Paints and varnishes – Preparation of steel substrates before application of paints and related products. Test methods for metallic blast-cleaning abrasives – 7 parts
ISO 11126 Preparation of steel substrates before application of paints and related products – Specifications for non-metallic blast-cleaning abrasives – 8 parts
ISO 11127 Paints and varnishes – Preparation of steel substrates before application of paints and related products. Test methods for non-metallic blast- cleaning abrasives – 7 parts
ISO 11295 Guidance on the classification and design of plastics piping systems used for renovation
ISO 11357-1 Plastics – Differential scanning calorimetry (DSC) – Part 1: General principles
ISO 11357-3 Plastics – Differential scanning calorimetry (DSC) – Part 3: Determination of temperature and enthalpy of melting and crystallization
ISO 12944 Paints and Varnishes – Corrosion protection of steel structures by protective paint systems
Part 1: General introduction
Part 2: Classification of environments
Part 3: Design considerations.
Part 4: Types of surface and surface preparation
Part 5: Protective paint systems
Part 6: Laboratory performance test methods
Part 7: Execution and supervision of paint work
Part 8: Development of specifications for new work and maintenance

ISO 14713 Protection Against Corrosion of Iron and Steel in Structures – Zinc and Aluminium Coatings - Guidelines
ISO 14918 Thermal Spraying - Approval Testing of Thermal Sprayers
ISO 16348 Metallic and other inorganic coatings - Definitions and conventions concerning appearance
ISO 19840 Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Measurement of, and acceptance criteria for, the thickness of dry film on rough surfaces
ISO 28199 Paints and varnishes - Evaluation of properties of coating systems related to the application process – 3 parts
NACE 6A100 Coatings Used in Conjunction with Cathodic Protection
NACE 6A192 Dehumudification and Temperature Control During Surface Preparation, Application, and Curing for Coatings/Linings of Steel Tanks, Vessels, and Other Enclosed Areas
NACE 6A287 Electroless Nickel Coatings
NACE 6H188 Coatings over Nonabrasive-Cleaned Steel Surfaces
NACE 10D199 Coatings for the Repair and Rehabilitation of the External Coatings of Buried Steel Pipelines
NACE 2103 Liquid-Applied Coatings for High-Temperature Atmospheric Service
NACE 37507 Corrosion Prevention by Protective Coatings
NACE 80200 Preparation of Protective Coating Specifications for Atmospheric Service
NACE NO. 4 Brush-Off Blast Cleaning
NACE NO. 5 Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
NACE NO. 8 Industrial Blast Cleaning
NACE NO. 11 Thin-Film Organic Linings Applied in New Carbon Steel Process Vessels
NACE RP0169 Standard Recommended Practice for Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0188 Discontinuity (holiday) testing of protective coatings
NACE RP 0274 High voltage electrical inspection of pipeline coatings prior to installation
NACE RP0287 Field Measurements of Surface Profile of Abrasive Blast Cleaned Steel Surface Using Replica Tape.
NACE RP0394 Standard Recommended Practice for Application, Performance and Quality Control of Plant Applied, Fusion-Bonded Epoxy External Pipe Coating.

NACE RP0490 Standard Recommended Practice for Holiday Detection of Fusion- Bonded Epoxy External Coating of 250 to 760 Microns (10 to 30 mils)
NACE RP0495 Guidelines for Qualifying Personnel as Abrasive Blasters and Coating and Lining Applicators in the Rail Industries
NACE SP0188 Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates
NACE TM0109 Aboveground Survey Techniques for the Evaluation of Underground Pipeline Coating Condition
NACE TM0174 Laboratory Methods for the Evaluation of Protective Coatings and Lining Materials on Metallic Substrates in Immersion Service
NACE TM0183 Evaluation of Internal Plastic Coatings for Corrosion Control of Tubular Goods in an Aqueous Flowing Environment
NF A 49 710 External three layer polyethylene based coating
NF A 49 711 External triple layer polypropylene based coating – Appendix K: Test for evaluating delamination resistance under negative polarization
NF T 34 550 Paints and varnishes- Corrosion protection of steel structures by protective paints systems – Specifications
NORSOK M-001 Material selection
NORSOK S-002 Working environment
NS 476 Paints and coatings - Approval and certification of surface treatment inspectors
OCIMF International Safety Guide for Oil Tankers and Terminals
PIP CTCE1000 External Coating System Selection Criteria
PIP CTSC1000 Application of Coatings to Concrete
PIP CTSE1000 Application of External Coatings
PIP CTSL1000 Application of Internal Linings
PIP CTSU1000 Application of Underground Coatings PIP CTEG1000 Guidelines for Use of Coatings Practices PIP CTGG1000 Coatings Document Use Guideline
RAL 840 HR DeutschenNormenAuschuss
SIS 055900 Pictorial Surface Preparation Standards for Coating Steel Surfaces

SFS 8145 Anticorrosive painting, surface preparation methods of blast cleaned and shop primer coated steel substrates and preparation grades for respective treatments.
SSPC Volume 1 Good Painting Practice
SSPC Volume 2 Systems and Specifications
SSPC-SP COM, Surface Preparation Commentary for Steel and Concrete Substrates
SSPC-SP 1, Solvent Cleaning
SSPC-SP 2, Hand Tool Cleaning
SSPC-SP 3, Power Tool Cleaning
SSPC-SP 5/NACE No. 1 White Metal Blast Cleaning SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning SSPC-SP 7/NACE No. 4 Brush-Off Blast Cleaning SSPC-SP 8 Pickling
SSPC-SP 10/NACE No. 2 Near-White Blast Cleaning
SSPC-SP 11 Power Tool Cleaning to Bare Metal
SSPC-SP 12/NACE No. 5 Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
SSPC-SP 13/NACE No. 6 Surface Preparation of Concrete
SSPC-SP 14/NACE No. 8 Industrial Blast Cleaning
SSPC-SP 15 Commercial Grade Power Tool Cleaning
SSPC-TR 1/NACE 6G194 Thermal Pre-Cleaning
SSPC-TR 2/NACE 6G198 Wet Abrasive Blast Cleaning
SSPC-TR 3/NACE 6A192 Dehumidification and Temperature Control During Surface Preparation, Application, and Curing for Coatings/Linings of Steel Tanks, Vessels, and Other Enclosed Spaces
SSPC-TR 4/NACE 80200 Preparation of Protective Coating Specifications for Atmospheric Service
SSPC-TR 5/ICRI 03741/NACE 02203
Design, Installation, and Maintenance of Protective Polymer Flooring Systems for Concrete

SSPC-AB 1 Mineral and Slag Abrasives
SSPC-AB 2 Cleanliness of Recycled Ferrous Metallic Abrasives
SSPC-AB 3 Ferrous Metallic Abrasive
SSPC-PS 1.00 Guide for Selecting Oil Base Painting Systems
SSPC-PS 1.09 Three-Coat Oil Base Zinc Oxide Painting System (Without Lead or Chromate Pigment)
SSPC-PS 1.10 Four-Coat Oil Base Zinc Oxide Painting System (Without Lead or Chromate Pigment)
SSPC-PS 1.13 One-Coat Oil Base Slow Drying Maintenance Painting System (Without Lead or Chromate Pigments)
SSPC-PS Guide 2.00 Guide for Selecting Alkyd Painting Systems SSPC-PS Guide 4.00 Guide for Selecting Vinyl Painting Systems SSPC-PS 4.02 Four-Coat Vinyl Painting System
SSPC-PS 4.04 Four-Coat White or Colored Vinyl Painting System (For Fresh Water, Chemical, and Corrosive Atmospheres)
SSPC-PS Guide 7.00 Guide for Selecting One-Coat Shop Painting Systems
SSPC-PS Guide 8.00 Guide to Topcoating Zinc-Rich Primers
SSPC-PS 9.01 Cold-Applied Asphalt Mastic Painting System with Extra Thick Film
SSPC-PS 10.01 Hot-Applied Coal Tar Enamel Painting System
SSPC-PS 10.02 Cold-Applied Coal Tar Mastic Painting System
SSPC-PS 11.01 Black (or Dark Red) Coal Tar Epoxy-Polyamide Painting System
SSPC-PS Guide 12.00 Guide to Zinc-Rich Coating Systems SSPC-PS 12.01 One Coat Zinc-Rich Painting System SSPC-PS 13.01 Epoxy Polyamide Painting System SSPC-PS 14.01 Steel Joist Shop Painting System
SSPC-PS Guide 15.00 Guide for Selecting Chlorinated Rubber Painting Systems
SSPC-PS 15.01 Chlorinated Rubber Painting System for Salt Water Immersion
SSPC-PS 15.02 Chlorinated Rubber Painting System for Fresh Water Immersion
SSPC-PS 15.03 Chlorinated Rubber Painting System for Marine and Industrial Atmospheres
SSPC-PS 15.04 Chlorinated Rubber Painting System for Field Application Over a Shop- Base Inorganic Zinc-Rich Primer
SSPC-PS 16.01 Silicone Alkyd Painting System for New Steel SSPC-PS Guide 17.00 Guide for Selecting Urethane Painting Systems SSPC-PS 18.01 Three-Coat Latex Painting System

SSPC-PS Guide 19.00 Guide for Selecting Painting Systems for Ship Bottoms SSPC-PS Guide 20.00 Guide for Selecting Painting Systems for Boottoppings SSPC-PS Guide 21.00 Guide for Selecting Painting Systems for Topsides
SSPC-PS Guide 22.00 Guide for Selecting One-Coat Preconstruction or Prefabrication Paint- ing Systems
SSPC-CS 23.00/AWS C2.23M/NACE No. 12
Specification for the Application of Thermal Spray Coatings (Metalliz- ing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel

SSPC-PS 24.00 Latex Painting System for Industrial and Marine Atmospheres, Performance-Based
SSPC-PS 26.00 Aluminum Pigmented Epoxy Coating System Materials Specification, Performance-Based
SSPC-PS 27.00 Alkyd Coating System Materials Specification, Performance-Based
SSPC-Paint COM Commentary on Paint Specifications
SSPC-Paint 8 Aluminum Vinyl Paint
SSPC-Paint 9 White (or Colored) Vinyl Paint
SSPC-Paint 15 Steel Joist Shop Primer/Metal Building Primer
SSPC-Paint 16 Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint
SSPC-Paint 17 Chlorinated Rubber Inhibitive Primer
SSPC-Paint 18 Chlorinated Rubber Intermediate Coat Paint
SSPC-Paint 19 Chlorinated Rubber Topcoat Paint
SSPC-Paint 20 Zinc-Rich Coating, Type I - Inorganic and Type II - Organic
SSPC-Paint 21 White or Colored Silicone Alkyd Paint
SSPC-Paint 22 Epoxy Polyamide Paints (Primer, Intermediate, and Topcoat)
SSPC-Paint 23 Latex Primer for Steel Surfaces
SSPC-Paint 24 Latex Semigloss Exterior Topcoat
SSPC-Paint 25 Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel
SSPC-Paint 25 BCS, Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Blast Cleaned Steel
SSPC-Paint 26 Slow-Drying Linseed Oil Black Maintenance Primer (Without Lead or Chromate Pigment)
SSPC-Paint 27 Basic Zinc Chromate-Vinyl Butyral Wash Primer SSPC-Paint 28 Water-Borne Epoxy Primer for Steel Surfaces SSPC-Paint 29 Zinc Dust Sacrificial Primer, Performance-Based SSPC-Paint 30 Weld-Through Inorganic Zinc Primer
SSPC-Paint 31 Single-Package Water-Borne Alkyd Primer for Steel Surfaces, Perform- ance-Based
SSPC-Paint 32 Coal Tar Emulsion Coating
SSPC-Paint 33 Coal Tar Mastic, Cold Applied
SSPC-Paint 34 Water-Borne Epoxy Topcoat for Steel Surfaces
SSPC-Paint 35 Medium Oil Alkyd Primer (Air Dry/Low Bake)

SSPC-Paint 36 Two-Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based
SSPC-Paint 37 Waterborne Epoxy Coating for Cementitious Substrates, Performance- Based
SSPC-Paint 38 Single-Component Moisture-Cure Weatherable Aliphatic Polyurethane Topcoat, Performance-Based
SSPC-Paint 39 Two-Component Aliphatic Polyurea Topcoat, Fast or Moderate Drying, Performance-Based
SSPC-Paint 101 Aluminum Alkyd Paint
SSPC-Paint 102 Black Alkyd Paint
SSPC-Paint 104 White or Tinted Alkyd Paint
SSPC-Paint 106 Black Vinyl Paint
SSPC-Paint 108 High-Build Thixotropic Leafing Aluminum Paint
SSPC-PA COM Commentary on Paint Application Monitoring and Controlling Ambient Conditions During Coating Operations
SSPC-PA 1 Shop, Field, and Maintenance Painting of Steel
SSPC-PA 2 Measurement of Dry Coating Thickness with Magnetic Gages
SSPC-PA 3 A Guide to Safety in Paint Application
SSPC-PA Guide 4 Guide to Maintenance Repainting with Oil Base or Alkyd Painting Systems
SSPC-PA Guide 5 Guide to Maintenance Coating of Steel Structures in Atmospheric Surface
SSPC-PA 6/NACE No. 10 Fiberglass-Reinforced Plastic (FRP) Linings Applied to Bottoms of Carbon Steel Aboveground Storage Tanks
SSPC-PA 7 Applying Thin Film Coatings to Concrete
SSPC-PA 8/NACE No. 11 Thin-Film Organic Linings Applied in New Carbon Steel Process Vessels
SSPC-QP COM Commentary on Qualification Procedures
SSPC-QP 1 Standard Procedure for Evaluating Painting Contractors (Field Applica- tion to Complex Industrial Structures)
SSPC-QP 2 Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)
SSPC-QP 3 Standard Procedure for Evaluating Qualifications of Shop Painting Applicators

SSPC-QP 4 Standard Procedure for Evaluating the Qualifications of Contractors Disturbing Hazardous Coatings During Demolition and Repair Work
SSPC-QP 5 Standard Procedure for Evaluating the Qualifications of Coating and Lining Inspection Companies
SSPC-QP 6 Standard Procedure for Evaluating the Qualifications of Contractors Who Apply Thermal Spray (Metallizing) for Corrosion Protection of Steel and Concrete Structures
SSPC-QP 7 Procedure for Evaluating Painting Contractors with Limited Industrial Work Experience
SSPC-QP 8 Standard Procedure for Evaluating the Qualifications of Contracting Firms That Install Polymer Coatings and Surfacings on Concrete and Other Cementitious Substrates
SSPC-QS 1 Standard Procedure for Evaluating a Contractor's Advanced Quality Management System
SSPC-Guide 6 Guide for Containing Debris Generated During Paint Removal Operations
SSPC-Guide 7 Guide for the Disposal of Lead-Contaminated Surface Preparation Debris
SSPC-Guide 9 Guide for Atmospheric Testing of Coatings in the Field
SSPC-Guide 10 Guide to Specifying Coatings Conforming to Volatile Organic Com- pound (VOC) Content Requirements
SSPC-Guide 12 Guide for Illumination of Industrial Painting Projects
SSPC-Guide 13 Guide for the Identification and Use of Industrial Coating Materials in Computerized Product Databases
SSPC-Guide 14 Guide for the Repair of Imperfections in Galvanized, Organic, or Inor- ganic Zinc-Coated Steel Using Organic Zinc-Rich Coatings
SSPC-Guide 15 Field Methods for Retrieval and Analysis of Soluble Salts on Steel and Other Nonporous Substrates
SSPC-Guide 16 Guide to Specifying and Selecting Dust Collectors
SSPC-Guide 17 Guide to Developing a Corporate Safety Program for Industrial Painting and Coating Contractors
SSPC-TU 1 Surface-Tolerant Coatings for Steel
SSPC-TU 2 Design, Installation, and Maintenance of Coating Systems for Concrete Used in Secondary Containment (NACE 6G197)
SSPC-TU 3 Overcoating
SSPC-TU 5 Accelerated Testing of Industrial Protective Coatings
SSPC-TU 6 Chemical Stripping of Organic Coatings from Steel Structures

SSPC-TU 7 Conducting Ambient Air, Soil, and Water Sampling During Surface Preparation and Paint Disturbance Activities
SSPC-TU 8 The Use of Isocyanate-Containing Paints as Industrial Maintenance Coatings
SSPC-TU 9 Estimating Costs for Protective Coatings Projects
SSPC-TU 10 Procedures for Applying Thick Film Coatings and Surfacings Over Concrete Floors
SSPC-TU 11 Inspection of Fluorescent Coating Systems

Steel tubes and fittings for steel tubes

Published standards of relevance to the oil & gas industry:

EN 10288 Steel tubes and fittings for onshore and offshore pipelines - External two layer extruded polyethylene based coatings
EN 10289 Steel tubes and fittings for onshore and offshore pipelines - External liquid applied epoxy and epoxy-modified coatings
EN 10290 Steel tubes and fittings for onshore and offshore pipelines - External liquid applied polyurethane and polyurethane-modified coatings
EN 10298 Steel tubes and fittings for on shore and offshore pipelines - Internal lining with cement mortar
EN 10300 Steel tubes and fittings for onshore and offshore pipelines - Bituminous hot applied materials for external coating
EN 10301 Steel tubes and fittings for on and offshore pipelines - Internal coating for the reduction of friction for conveyance of non corrosive gas
EN 10310 Steel tubes and fittings for onshore and offshore pipelines - Internal and external polyamide powder based coatings
EN 10329 Steel tubes and fittings for onshore and offshore pipelines - External field joint coatings
EN 10339 Steel tubes for onshore and offshore water pipelines - Internal liquid applied epoxy linings for corrosion protection

The following three standards emanating from the ISO/TC67 work are on the ECISS/TC29 programme for adoption:
prEN ISO 21809-1 Petroleum and natural gas industries - External coatings for buried or sub- merged pipelines used in pipeline transportation systems - Part 1: Polyole- fin coatings (3-layer PE and 3-layer PP) (ISO/DIS 21809-1)
prEN ISO 21809-3 Petroleum and natural gas industries - External coatings for buried or submerged pipelines used in pipeline transportation systems - Part 3: Field joint coatings
prEN ISO 21809-5 Petroleum and natural gas industries - External coatings for buried or sub- merged pipelines used in pipeline transportation systems - Part 5: External concrete coatings (ISO/DIS 21809-5)

The structure of ECISS/TC29 includes the following of interest:

ECISS/TC 29/SC 4 Coatings for steel tubes
ECISS/TC 29/SC 4/WG 15 Internal liquid epoxy lining

(Reference: corrosionclinic.com)