

NACE Standards

NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
RP0104-2004	The Use of Coupons for Cathodic Protection Monitoring Applications	Cathodic Protection	ANSI APPROVED. Addresses applications for cathodic protection (CP) coupons attached to buried pipelines to determine the level of corrosion protection provided by a CP system. Appendixes cover coupons attached to other structures such as underground storage tanks (USTs), aboveground (on-grade) storage tank bottoms, and steel in reinforced concrete structures. CP coupons may also be used to evaluate compliance with CP criteria, including considering the IR drop.	Key words: cathodic protection, coupons, underground storage tanks, aboveground storage tank bottoms	21105			
TM0190-2012	Impressed Current Test Method for Laboratory Testing of Aluminum Anodes	Cathodic Protection	Describes a quality assurance procedure for determining the potential and current capacity characteristics under laboratory conditions for aluminum alloy anodes used for cathodic protection. The procedure screens various heats or lots of anodes to determine performance consistency on a regular basis from lot to lot. One method for anode potential evaluation and two methods (mass loss and hydrogen evolution) for current capacity evaluations are described. Performance criteria and sampling frequency are left to the discretion of users of the standard.	Key words: anodes, cathodic protection, testing	21221			
TM0108-2012	Testing of Catalyzed Titanium Anodes for Use in Soils or Natural Waters	Cathodic Protection	This test method is intended to provide an indication of an anode's ability to perform satisfactorily for a specific number of years. Because such anodes can fail with little or no weight loss, lifetime expectation cannot be extrapolated from operation at normal operating current density, and testing must be conducted at high current density until an acceptable amount of charge has been accumulated. This standard is applicable for catalyzed titanium anodes intended for use in underground or underwater environments.	Key words: CP anodes, titanium, underground, underwater	21252			
TM0211-2011	Durability Test for Copper/Copper Sulfate Permanent Reference Electrodes for Direct Burial Applications	Cathodic Protection	This standard describes a test method to measure specific physical properties and the relative stability of Cu/CuSO ₄ permanent reference electrodes (PREs) when they are subjected to specific environmental stresses. These reference electrodes, while "permanent" in the physical sense (they are not commonly removed), do exhibit a finite service life. This test method is intended to provide a measure of the relative durability that may be expected. The test method specifically focuses on the ability of the Cu/CuSO ₄ PRE to (1) resist migration of CuSO ₄ from within the PRE into its surrounding environment and (2) to resist the migration of chloride from its surrounding environment into the PRE.	Key words: permanent reference electrode, PRE, copper/copper sulfate, CuSO ₄	21257			
SP0387-2006 (formerly RP0387)	Metallurgical and Inspection Requirements for Cast Sacrificial Anodes for Offshore Applications	Cathodic Protection	Defines minimum physical quality and inspection standards for cast sacrificial anodes for offshore applications. The objectives of the standard are (1) to standardize an industry-wide practice that can be used by consultants, manufacturers, and users to define the physical requirements of anodes and (2) to be specific enough to assist the inspection authority in its task of confirming that anodes comply with the physical requirements.	Key words: cracking, defects, fabrication, identification marking, inserts, inspection, sacrificial anodes, welding	21036			

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SP0492-2006 (formerly RP0492)	Metallurgical and Inspection Requirements for Offshore Pipeline Bracelet Anodes	Cathodic Protection	Sets minimum physical quality and inspection standards for cast sacrificial anodes for offshore pipeline applications. The standard is applicable to typical half-shell or segmented bracelet-type anodes and is not intended to apply to platform, hull, tank, or extruded-type anodes. The section on physical requirements includes information on samples for chemical analysis; anode identification, weight, dimensions, and straightness; insert dimensions and position; insert material; fabrication of inserts by welding; insert surface preparation; surface irregularities on the anode casting; cracks in cast anodic materials; defects; and more.	Key words: anodes, fabrication, inspection, offshore platforms, pipelines, sacrificial anodes	21056			
NACE ASTM G193-12d	Standard Terminology and Acronyms Relating to Corrosion	Cathodic Protection, Chemical Inhibitors, Coatings, Highways and Bridges, Maritime, Material Selection and Design, Oil and Gas Exploration and Production, Pipelines, Refining, Tanks, Underground Systems, Water and Wastewater	This joint NACE/ASTM standard defines commonly used terms in the field of corrosion as agreed by a joint NACE/ASTM committee. It also includes acronyms for corrosion-related expressions, listed in two sections—with the words the acronym stands for first in one section, and the acronym first in the next section.	Key words: NACE, ASTM, corrosion, G193, terminology, acronyms, definitions, glossary	21137			
SP0313-2013	Guided Wave Technology for Piping Applications	Cathodic Protection, Coatings, Pipelines, Tanks and Underground Systems, Water and Wastewater	In 1998, pipeline operators began to use a form of instrumented inspection technology that has evolved into what is known at present as guided wave testing (GWT), which detects changes in the cross-sectional area of the pipe wall. Test equipment software provides a percent estimate of the change (gain or loss) and is often expressed as percent estimated cross-sectional loss. These changes include metal loss indications, anomalies, or defects such as corrosion, gouges, etc., or metal pickup such as welds, valves, flanges, etc. When properly applied, GWT can monitor cross-sectional loss over time, and provide economic benefits and efficiencies in integrity assessments.	Key words: external corrosion, direct assessment, pipelines	21174			
TM0105-2012	Test Procedures for Organic-Based Conductive Coating Anodes for Use on Concrete Structures	Cathodic Protection, Coatings	Evaluates the performance characteristics of organic-based conductive coating anode materials applied to steel-reinforced concrete surfaces for the purpose of supplying cathodic protection current to the embedded steel. Provides methods to test the durability of the organic conductive coating anode under defined laboratory conditions (i.e., conditions present when current discharges from the anode as it would in a working cathodic protection system). Tests consist of resistivity, adhesion, coating appearance, anode life, and water vapor permeation tests.	Key words: adhesion, cathodic protection, coating appearance, coating application, electrochemical test, organic-based conductive coating, resistivity, test panel, water vapor permeation	21247			
SP0177-2014 (formerly RP0177)	Mitigation of Alternating Current and Lightning Effects on Metallic Structures and Corrosion Control Systems	Cathodic Protection, Pipelines	Presents guidelines and procedures for use during design, construction, operation, and maintenance of metallic structures and corrosion control systems used to mitigate the effect of lightning and overhead alternating current (AC) power transmission systems.	Key words: alternating current power systems, cathodic protection, corrosion control, electric shields, electric shock, electrical grounding, lightning arresters	21021	21160 (SP0177-2007)		

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SP0607-2007/ISO 15589-2 (Modified)	Petroleum and natural gas industries- Cathodic protection of pipeline transportation systems—Part 2: Offshore pipelines (NACE modified adoption of ISO standard)	Cathodic Protection, Pipelines	This ANSI/NACE standard is a modified adoption of ISO Standard 15589-2. It specifies requirements and gives recommendations for the pre-installation surveys, design, materials, equipment, fabrication, installation, commissioning, operation, inspection, and maintenance of cathodic protection systems for offshore pipelines for the petroleum and natural gas industries, as defined in ISO 13623. This standard is applicable to carbon and stainless steel pipelines in offshore service, retrofits, modifications, and repairs made to existing pipeline systems. It applies to all types of seawater and seabed environments encountered in submerged conditions and on risers up to mean water level.	Key words: carbon steel, cathodic protection, offshore, pipelines, seabed, seawater, stainless steel	21125			
SP0388-2014 (formerly RP0388)	Impressed Current Cathodic Protection of Internal Submerged Surfaces of Steel Water Storage Tanks	Cathodic Protection, Water and Wastewater	Presents procedures and practices used in providing impressed current cathodic protection to the normally submerged steel surfaces inside water storage tanks. Recommendations for the design and installation of cathodic protection systems and methods for determining the effectiveness of these systems are also given.	Key words: anodes, cathodic protection, coatings, reference electrodes, storage tanks, water storage tanks	21040	21114 (RP0388-2001)		
SP0196-2011 (formerly RP0196)	Galvanic Anode Cathodic Protection of Internal Submerged Surfaces of Steel Water Storage Tanks	Cathodic Protection, Water and Wastewater	Presents procedures used in providing galvanic anode cathodic protection to the normally submerged steel surfaces inside water storage tanks used for municipal water supply and fire protection. Includes guidelines for the design and installation of these cathodic protection systems; methods for determining the effectiveness of these systems; and recommendations for the operation and maintenance of these systems.	Key words: anodes, cathodic protection, design, reference electrodes, storage tanks, water storage tanks	21077	21117 (RP0196-2004)		
TM0397-2002	Screening Tests for Evaluating the Effectiveness of Gypsum Scale Removers	Chemical Inhibitors	Presents test methods for screening the effectiveness of two types of gypsum scale removers—one for scale dissolvers and another for scale converters. Listed are necessary apparatus, reagents, and procedures for conducting these screening tests.	Key words: gypsum, scale removers	21230			
TM0208-2013	Laboratory Test to Evaluate the Vapor-Inhibiting Ability of Volatile Corrosion Inhibitor Materials for Temporary Protection of Ferrous Metal Surfaces	Chemical Inhibitors	Volatile corrosion inhibitor (VCI) materials are widely used to provide temporary corrosion protection for the surfaces of ferrous and nonferrous metal parts. This standard test method evaluates the vapor-inhibiting ability (VIA) of various forms of VCI materials for temporary corrosion protection of ferrous metal surfaces, and is called the "VIA-Ferrous" test. It can be performed reproducibly with relatively simple and low-cost apparatus. The VIA-Ferrous test provides for standard conditions in a test jar of water-saturated, warm air without the presence of accelerating contaminants. This test method evaluates the combination of (1) vapor transport across a gap containing air, water vapor, and VCI, and (2) corrosion protection.	Key words: volatile corrosion inhibitor, vapor inhibitor, ferrous	21253			
SP0775-2013 (formerly RP0775)	Preparation, Installation, Analysis, and Interpretation of Corrosion Coupons in Oilfield Operations	Chemical Inhibitors, Materials Selection and Design Oil and Gas Exploration and Production	Encourages the use of uniform, industry-proven methods to monitor corrosion in oil production systems. Outlines procedures for preparing, analyzing, and installing corrosion coupons. Corrosion rate calculations and a typical form for recording data are also included.	Key words: cleaning, corrosion coupons	21017			

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SP0273-2007 (formerly RP0273)	Handling and Proper Usage of Inhibited Oilfield Acids	Chemical Inhibitors, Oil and Gas Exploration and Production	Outlines methods and procedures for the handling and use of inhibited hydrochloric acid for oilfield applications. Includes general considerations when using inhibited acid in wells, such as material and equipment checks, acid solution preparation, acid solution pumping and injection, and return fluids handling; field testing of 15% or less hydrochloric acid solution for presence or absence of corrosion inhibitors; and dispersibility tests for corrosion inhibitors in oilfield acids.	Key words: corrosion inhibitors, inhibited acids, wells	21009			
SP0192-2012 (formerly RP0192)	Monitoring Corrosion in Oil and Gas Production with Iron Counts	Chemical Inhibitors, Oil and Gas Exploration and Production	Describes the use of iron counts as a corrosion monitoring method and some common problems encountered when using this method. Includes sections on sampling, analysis, and interpretation.	Key words: corrosion monitoring, corrosion testing, iron counts	21053			
TM0173-2005	Methods for Determining Quality of Subsurface Injection Water Using Membrane Filters	Chemical Inhibitors, Oil and Gas Exploration and Production	Provides two standard test methods for use in the evaluation of water quality for injection water in oilfield equipment. Describes the apparatus required, test conditions, test procedures, reporting procedures, and supplementary tests.	Key words: membrane filters, water quality	21205			
TM0113-2013	Evaluating the Accuracy of Field-Grade Reference Electrodes	Chemical Inhibitors, Science of Corrosion	This standard describes a test method for evaluating the accuracy of field-grade reference electrodes used for obtaining field measurement of structure-to-electrolyte potentials. The test method described in this standard is a relatively quick, simple, and inexpensive way to evaluate the accuracy of a field-grade reference electrode. The test method measures the potential difference between the field-grade electrode and a master reference electrode.	Key words: field-grade reference electrodes, copper, sulfate, silver, chloride, TM0101, TM0497	21265			
SP0214-2014	Inspection, Cleaning, and Remediation Technology for Water Piping in Buildings	Chemical Inhibitors, Water and Waste Water	This standard presents information and procedures that can be used by owners, managers, or operators of inhabited, nonindustrial buildings to assess the quality of the piping systems and the options available to return the piping systems to a serviceable condition (remediation). The remediation may involve cleaning, piping replacement, or other steps. It is a risk-based approach—the ultimate risk is leakage of the system, system unavailability, or both. The focus of this standard is on the options available and the steps taken when determining whether the risk is acceptable or if a more cautious remediation program must be selected. This standard presents recommendations on how to identify the problems, assess their severity, determine an appropriate course of action, and guide the owner through the implementation of that course of action.	Key words: chemical cleaning, inspection, monitoring, potable water, mechanical cleaning, remediation, wastewater	21176			
SP0274-2011 (formerly RP0274)	High-Voltage Electrical Inspection of Pipeline Coatings Prior to Installation	Coatings	Provides information on high-voltage electrical inspection of pipeline coatings. Gives guidelines on testing voltages, grounding, exploring electrodes, speed of travel, voltage measurements, surface condition, and care of equipment.	Key words: electrical grounding, electrodes, holiday detection, voltage measurement	21010			21168 (Redline)*
SP0178-2007 (formerly RP0178)	Fabrication Details, Surface Finish Requirements, and Proper Design Considerations for Tanks and Vessels to Be Lined for Immersion Service	Coatings	Provides detailed recommendations on design, fabrication, and surface finish requirements with generic and graphic descriptions of various degrees of surface finishing of welds that may be specified in preparation for lining of tanks and vessels. A visual comparator may be purchased.	Key words: chemical-resistant linings, fabrication, immersion service, surface finishing, tanks, vessels, visual inspection, welding	21022			22001, 22001-1
RP0281-2004	Method for Conducting Coating (Paint) Panel Evaluation Testing in Atmospheric Exposures	Coatings	Provides procedures for testing coatings in atmospheric service, including specific recommendations for surface preparation, coating panel evaluation, and the selection of test sites and coating panels. Also included are three sample forms for recording testing results, as well as a comprehensive bibliography of other applicable standards related to coating panel testing.	Key words: atmospheric corrosion testing, protective coatings, surface finishing, test panels	21026			

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SP0386-2007 (formerly RP0386)	Application of a Coating System to Interior Surfaces of Covered Steel Hopper Rail Cars in Plastic, Food, and Chemical Service	Coatings	This standard practice encompasses the requirements for expert application of a quality coating system to the interior surfaces of covered steel hopper rail cars that have been prepared to a specified, recognized standard. Qualified inspection of the completed coating system and testing by the use of adequate, readily available instruments are also covered in this standard. This standard is applicable for hopper car coating systems when the intended service requires the degree of rust-free surface and cleanliness that is being requested for coating systems in the plastic, food, and chemical industries.	Key words: blast cleaning, holiday detection, hopper cars, protective coatings, rail cars, surface finishing	21033			
RP0287-2002	Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using a Replica Tape	Coatings	Provides a procedure for measuring the surface profile of abrasive blast-cleaned steel that involves using a special tape that replicates the surface profile. The standard covers the areas of equipment and procedures, provides a definition of "surface profile," and includes an appendix that presents the results of a round-robin series of measurements illustrating the degree of accuracy of the procedure described in the standard. A second appendix statistically summarizes the data presented in the first appendix.	Key words: blast cleaning, measurements, steel	21035	21140		
SP0487-2007 (formerly RP0487)	Considerations in the Selection and Evaluation of Rust Preventives and Vapor Corrosion Inhibitors for Interim (Temporary) Corrosion Protection	Coatings	Discusses considerations in selection and performance criteria of interim coatings. Quality control criteria are listed to enable the manufacturer and user to select appropriate test procedures to maintain prescribed standards. The standard is intended to assist the new buyer or user as well as the experienced user of interim coatings in the proper selection and evaluation of these coatings.	Key words: corrosion control, rust inhibitors, vapor corrosion inhibitors	21037			
SP0188-2006 (formerly RP0188)	Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates	Coatings	Provides a procedure for electrical detection of minute discontinuities in coating systems that are liquid-applied to conductive substrates other than pipelines. Procedures are described for determining discontinuities using two types of test equipment: (1) low-voltage wet sponge and (2) high-voltage spark testers.	Key words: high-voltage electrical inspection, holiday detection, low-voltage wet sponge testing, surface finishing	21038			
SP0288-2011 (formerly RP0288)	Inspection of Linings on Steel and Concrete	Coatings	Provides appropriate inspection requirements to verify compliance to a specification. It is not intended to address the selection of a coating or to specify surface preparation and application requirements.	Key words: coatings, concrete, inspection, linings, steels	21039	21142 (RP0288-2004)		21169 (Redline)*
SP0592-2006 (formerly RP0592)	Application of a Coating System to Interior Surfaces of New and Used Rail Tank Cars in Concentrated (90 to 98%) Sulfuric Acid Service	Coatings	Addresses the need for high-quality coatings application to the interior surfaces of rail tank cars handling shipments of concentrated sulfuric acid at ambient temperatures. Qualified inspection of the completed coating system and testing by the use of adequate, readily available instruments are covered. Sections include information on areas of responsibility, surface preparation, coating system materials and application, coating of particular parts and attachments, and inspection. A tank car coating system inspection report form and listing of essential facilities and equipment for application of coating systems to the interior of tank cars for concentrated sulfuric acid service are included.	Key words: protective coatings, rail cars, sulfuric acid handling, tanks	21057			

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RP0692-2003	Application of a Coating System to Exterior Surfaces of Steel Rail Cars	Coatings	Encompasses the requirements for expert application of a quality coating system to exterior surfaces of a rail car that have been prepared in accordance with the specified, recognized standard. It is intended for use with NACE SP0386. Includes information on areas of responsibility; surface preparation; coatings system materials and application; coating of particular parts and attachments; curing; stenciling; and inspection.	Key words: protective coatings, rail cars	21058			
SP0892-2007 (formerly RP0892)	Linings over Concrete for Immersion Service	Coatings	This standard sets forth guidelines for the application of quality protective coating systems to properly prepared concrete surfaces. Information is intended as a guide for personnel who prepare specifications, standards, and procedures for the coating or lining of concrete surfaces. The information provided in this standard is based on the best current knowledge and experience of committee members and not necessarily on reproducible scientific evidence.	Key words: coatings, concrete	21060			
NACE No. 1/SSPC-SP 5	White Metal Blast Cleaning (SP0494-2007)	Coatings	Presents requirements for white metal blast cleaning of steel surfaces by the use of abrasives. Defines white metal blast cleaning and includes sections on procedures before blast cleaning, blast cleaning methods and operation, blast cleaning abrasives, procedures following blast cleaning, inspection, and safety and environmental requirements.	Key words: blast cleaning, cleaning, steels, visual inspection	21065	21129	21135	
NACE No. 2/SSPC-SP 10	Near-White Metal Blast Cleaning (SP0594-2007)	Coatings	Presents requirements for near-white metal blast cleaning of steel surfaces by the use of abrasives. Defines near-white metal blast cleaning and includes sections on procedures before blast cleaning, blast cleaning methods and operation, blast cleaning abrasives, procedures following blast cleaning, inspection, and safety and environmental requirements.	Key words: blast cleaning, cleaning, steels, visual inspection	21066	21130	21136	22018 - Guide and Reference Photographs for Steel Surfaces Prepared by Wet Abrasive Blast Cleaning
NACE No. 3/SSPC-SP 6	Commercial Blast Cleaning (SP0694-2007)	Coatings	Presents requirements for commercial blast cleaning of steel surfaces by the use of abrasives. Defines commercial blast cleaning and includes sections on procedures before blast cleaning, blast cleaning methods and operation, blast cleaning abrasives, procedures following blast cleaning inspection, and safety and environmental requirements.	Key words: blast cleaning, cleaning, steels, visual inspection	21067	21131		22018 - Guide and Reference Photographs for Steel Surfaces Prepared by Wet Abrasive Blast Cleaning
NACE No. 4/SSPC-SP 7	Brush-Off Blast Cleaning (SP0794-2007)	Coatings	Presents requirements for brush-off blast cleaning of steel surfaces by the use of abrasives. Defines brush-off blast cleaning and includes sections on procedures before blast cleaning, blast cleaning methods and operation, blast cleaning abrasives, procedures following blast cleaning, inspection, and safety and environmental requirements.	Key words: blast cleaning, cleaning, steels, visual inspection	21068	21132	21180	
SP0295-2008 (formerly RP0295)	Application of a Coating System to Interior Surfaces of New and Used Rail Tank Cars	Coatings	Covers requirements for surface preparation, coatings, application, inspection, and quality tests for internally coating a tank car. The standard emphasizes that corrosion and product contamination are major factors that must be considered in the design of tank cars transporting liquid commodities.	Key words: protective coatings, rail cars, tanks	21070			
SP0395-2013 (formerly RP0395)	Fusion-Bonded Epoxy Coating of Steel Reinforcing Bars	Coatings	Provides owners, architects, engineers, and contractors with specific information and guidelines on obtaining and installing properly cleaned and coated steel reinforcing bars. Included are requirements for the organic coatings and instructions for ordering, cleaning, coating, inspecting, handling, transporting, and installing the reinforcing bars.	Key words: coatings, epoxy coatings, protective coatings, rebar, steels	21071			

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RP0495-2003	Guidelines for Qualifying Personnel as Abrasive Blasters and Coating and Lining Applicators in the Rail Industries	Coatings	Describes a formal system of training and qualification that was developed to aid in recognizing the essential qualifications of craftsmen engaged in abrasive blasting and the application of modern coatings and linings systems.	Key words: blast cleaning, protective coatings, rail cars	21072			
SP0297-2012 (formerly RP0297)	Maintenance Painting of Electrical Substation Apparatus Including Flow Coating of Transformer Radiators	Coatings	A guide for maintenance personnel for utilities and large industrial concerns who are responsible for painting electrical equipment. Use of the standard is intended to help protect equipment from the detrimental effects of corrosion and help it perform to the fullest extent of its operating life.	Key words: coatings, measurement, transformer radiators	21081			
NACE No. 6/SSPC-SP 13	Surface Preparation of Concrete (RP0397-2003)	Coatings	Presents requirements for preparation of concrete surfaces prior to the application of protective coating or lining systems. These requirements are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. Includes definitions, inspection procedures, and acceptance criteria in addition to surface preparation procedures.	Key words: coatings, concrete, surface finishing	21082	21139		
SP0198-2010 (formerly RP0198)	The Control of Corrosion Under Thermal Insulation and Fireproofing Materials—A Systems Approach	Coatings	Provides current technology and industry practices for mitigating corrosion under thermal insulation and fireproofing materials. Adopts a systems approach. Contains sections on corrosion mechanisms, mechanical design, protective coatings, insulation materials, and inspection and maintenance.	Key words: carbon steels, coatings, corrosion control, fireproofing materials, insulation, protective coatings, steels, thermal insulation	21084	21116 (RP0198-2004)		21167 (Redline)*
SP0298-2007 (formerly RP0298)	Sheet Rubber Linings for Abrasion and Corrosion Service	Coatings	Provides detailed recommendations for the use of rubber-lining protection on new and in-service equipment, including recommended dimensions and considerations in the design of equipment that is to be lined, as well as important factors to consider when choosing a rubber lining or adhesive. Installation and curing of rubber linings, including specific procedures for properly lining joints, flanges, and ends of pipe, are also covered. Recommended inspection and repair specifications are also outlined.	Key words: coatings, linings, protective linings, rubber linings	21085			
SP0398-2006 (formerly RP0398)	Recommendations for Training and Qualifying Personnel as Coating Inspectors in the Railcar Industry	Coatings	Provides guidelines specific to the rail industry for the in-house training and employer-administered qualification of coatings inspectors. Includes recommended criteria for the qualification of employees for coating inspection, as well as a list of training topics and references to publications that are useful in such a training program.	Key words: coatings, inspection, rail cars	21086			
NACE No. 8/SSPC-SP 14	Industrial Blast Cleaning (SP0299-2007)	Coatings	Presents requirements for industrial blast cleaning of steel surfaces by the use of abrasives. Defines industrial blast cleaning and includes sections on procedures before blast cleaning, blast cleaning methods and operation, blast cleaning abrasives, procedures following blast cleaning, inspection, and safety and environmental requirements.	Key words: blast cleaning, cleaning	21088			
SP0302-2007 (formerly RP0302)	Selection and Application of a Coating System to Interior Surfaces of New and Used Rail Tank Cars in Molten Sulfur Service	Coatings	Addresses the need for quality application of coatings to the interior surfaces of rail tank cars transporting molten sulfur. Surface preparation; selection and application of coating materials; inspection of the completed coating system; and testing using adequate, readily available instruments are covered. Provides guidelines to the builder, owner, shipper, and all those involved in the production and use of rail tank cars intended for the transport of molten sulfur.	Key words: coatings, surface finish, rail cars	21095			

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NACE No. 11/SSPC-PA 8	Thin-Film Organic Linings Applied in New Carbon Steel Process Vessels (RP0103-2003)	Coatings	Specifies procedures to design, install, and inspect thin-film organic linings applied to new carbon steel process vessels to prevent corrosion and other forms of degradation, such as hydrogen-induced cracking, or to prevent product contamination. It is also useful for lining applications in existing process vessels and equipment. Based on applications of organic linings 500 µm (20 mil) or less. Useful for lining vessels in many industries including, but not limited to, refining, chemical, water-treating, and food.	Key words: protective linings, vessels	21099			
NACE No. 13/SSPC-ACS-1	Industrial Coating and Lining Application Specialist Qualification and Certification (SP0307-2007)	Coatings	This standard sets forth the requirements for qualification and certification of an industrial coating and lining application specialist, referred to hereafter as an Application Specialist. The qualification and certification process is a stepwise achievement process that includes all aspects of surface preparation and coating application for steel and concrete surfaces of complex industrial structures.	Key words: coatings, application specialist, skills, knowledge, industrial structures	21122			
SP0508-2010	Methods of Validating Equivalence to ISO 8502-9 on Measurement of the Levels of Soluble Salts	Coatings	Describes a method to show equivalence of other methods for measuring the level of contamination of salts on surfaces to the Bresle patch method defined by ISO 8502-9. A definition of equivalence is provided, along with information on the allowable range of variance, test methods, preparation of steel panels, data analysis, reporting, validation of test methods, and rationale for testing. This standard is an aid to those who must comply with the International Maritime Organization (IMO)'s Performance Standard for Protective Coatings (PSPC).	Key words: soluble salts, Bresle patch, equivalence, doping, contamination	21134			
NACE WJ-2/SSPC-SP WJ-2	Waterjet Cleaning of Metals—Very Thorough Cleaning (WJ-2) (SP0312-2012)	Coatings	Defines the Very Thorough Cleaning (WJ-2) degree of surface cleanliness of coated or uncoated metallic substrates achieved by the use of waterjet cleaning before the application of a protective coating or lining. WJ-2 provides a greater degree of surface cleanliness than Thorough Cleaning (WJ-3), but a lesser degree of surface cleanliness than Cleaning to Bare Substrate (WJ-1). Waterjet cleaning to achieve the WJ-2 degree of surface cleanliness is used when the objective is to remove almost all rust and other corrosion products, coating, and mill scale, but when the extra effort to remove all of these materials is determined to be unwarranted. Discoloration of the surface may be present. Waterjet cleaning is the use of pressurized surface preparation water for removing coatings and other materials, including hazardous materials, from a substrate to achieve a defined degree of surface cleanliness.	Key words: waterjet cleaning, cleaning, coatings, high-pressure waterjetting, steels	21155			

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NACE WJ-3/SSPC-SP WJ-3	Waterjet Cleaning of Metals—Thorough Cleaning (WJ-3) (SP0412-2012)	Coatings	Defines the Thorough Cleaning (WJ-3) degree of surface cleanliness of coated or uncoated metallic substrates achieved by the use of waterjet cleaning prior to the application of a protective coating or lining. WJ-3 provides a greater degree of surface cleanliness than Light Cleaning (WJ-4), but a lesser degree of cleaning than Very Thorough Cleaning (WJ-2). Waterjet cleaning to achieve the WJ-3 degree of surface cleanliness is used when the objective is to remove much of the rust and other corrosion products, coating, and mill scale, and leave tightly adherent thin films, but when the extra effort required to remove almost all of these materials is determined to be unwarranted. Discoloration of the surface may be present. Waterjet cleaning is the use of pressurized surface preparation water for removing coatings and other materials, including hazardous materials, from a substrate to achieve a defined degree of surface cleanliness.	Key words: waterjet cleaning, cleaning, coatings, high-pressure waterjetting, steels	21156			
NACE WJ-4/SSPC-SP WJ-4	Waterjet Cleaning of Metals—Light Cleaning (WJ-4) (SP0512-2012)	Coatings	Defines the Light Cleaning (WJ-4) degree of surface cleanliness of coated or uncoated metallic substrates achieved by the use of waterjet cleaning prior to the application of a protective coating or lining. WJ-4 provides a lesser degree of surface cleanliness than Thorough Cleaning (WJ-3). Waterjet cleaning to achieve the WJ-4 degree of surface cleanliness is used when the objective is to allow as much of the tightly adherent rust and other corrosion products, coating, and mill scale to remain as possible, but when the extra effort required to remove more of these materials is determined to be unwarranted. Discoloration of the surface may be present. Waterjet cleaning is the use of pressurized surface preparation water for removing coatings and other materials, including hazardous materials, from a substrate to achieve a defined degree of surface cleanliness.	Key words: waterjet cleaning, cleaning, coatings, high-pressure waterjetting, steels	21157			
NACE WJ-1/SSPC-SP WJ-1	Waterjet Cleaning of Metals—Clean to Bare Substrate (WJ-1) (SP0212-2012)	Coatings	Defines the Clean to Bare Substrate (WJ-1) degree of surface cleanliness of coated or uncoated metallic substrates achieved by the use of waterjet cleaning before the application of a protective coating or lining. WJ-1 provides a greater degree of surface cleanliness than Very Thorough Cleaning (WJ-2). Waterjet cleaning to achieve the WJ-1 degree of surface cleanliness is used when the objective is to remove every trace of rust and other corrosion products, coating, and mill scale. Discoloration of the surface may be present. Waterjet cleaning is the use of pressurized surface preparation water for removing coatings and other materials, including hazardous materials, from a substrate to achieve a defined degree of surface cleanliness.	Key words: waterjet cleaning, cleaning, coatings, high-pressure waterjetting, steels	21158			
TM0174-2002	Laboratory Methods for the Evaluation of Protective Coatings and Lining Materials in Immersion Service	Coatings	Provides guidelines to help manufacturers and users of protective coatings select materials by providing standard test methods for evaluating protective coatings used as linings for immersion service. This standard provides two test methods for evaluating protective coatings on any substrate, such as steel, copper, aluminum, etc., so the factors of both chemical resistance and permeability can be considered.	Key words: immersion testing, protective linings, test panels	21206			

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NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
TM0304-2004	Offshore Platform Atmospheric and Splash Zone Maintenance Coating System Evaluation	Coatings	Specifies test methods to evaluate the performance of offshore atmospheric and splash zone maintenance coating systems on platforms, such as fixed-leg, semi-submersible, tension-leg, and floating production storage offloading systems (FPSOs).	Key words: cathodic protection, galvanic anode CP, impressed current CP, offshore platforms, protective coatings, sacrificial anodes	21245			
TM0404-2004	Offshore Platform Atmospheric and Splash Zone New Construction Coating System Evaluation	Coatings	Specifies test methods to evaluate the performance of offshore atmospheric and splash zone new construction coating systems on platforms, such as fixed-leg, semi-submersible, tension-leg, and floating production storage and offloading (FPSOs).	Key words: cathodic protection, coatings, testing, design, fabrication, offshore platforms, protective coatings	21246			
SP0108-2008	Corrosion Control of Offshore Structures by Protective Coatings	Coatings, Maritime	This standard provides guidance for corrosion control personnel, coating applicators, and coating manufacturers in providing more effective corrosion protection for offshore structures, which are being placed in deeper waters and have become larger, more complex, and more expensive. Control of corrosion on offshore structures is necessary to sustain oil and gas production, provide safe working and living areas, and avoid potential harm to the environment. For this standard, "offshore structures" includes metallic offshore structures such as fixed-leg platforms, tension-leg platforms (TLPs), semisubmersibles, spar platforms, and floating production storage and offloading vessels (FPSOs). The standard covers coating materials, coating test protocol and acceptance criteria, surface preparation, coating application, quality assurance and control, and repair methods. It also covers generic protective coating systems, fastener coatings, and corrosion control of flanges, pipe supports, and stainless steel tubing.	Key words: coatings, corrosion control, offshore platforms, test protocol, maintenance	21126	21145		
SP0111-2011	Coating Technical File in Accordance with the IMO Performance Standard for Protective Coatings	Coatings, Maritime	This standard describes requirements and guidelines for ways of organizing and maintaining the coating technical file (CTF) for ships to help those in the maritime industry comply with the International Maritime Organization(IMO)'s "Performance Standard for Protective Coatings" (PSPC). Information on file formats, including electronic and paper, along with what should be included, is provided. The structure of the files for both new construction and repair procedures is described in an easy-to-use format.	Key words: coating, coating technical file, ship, maintenance, repair, survey, inspection	21153			
SP0213-2013	Definition of Set Soluble Salt Levels by Conductivity Measurements	Coatings, Maritime	Provides a method to clearly describe specific levels of soluble salt contamination from testing for the purpose of specifying surface cleanliness prior to coating. The purpose of this standard is to present a relevant and reasonably achievable set of soluble salt contamination values obtained from surface conductivity measurements and based on known common industry-specified values.	Key words: salt contamination, conductivity, salt levels	21172			
TM0104-2004	Offshore Platform Ballast Water Tank Coating System Evaluation	Coatings, Maritime	Specifies test methods to evaluate ballast water tank coatings on offshore platforms, such as tension leg platforms (TLPs), semi-submersible platforms, or floating production and storage offloading systems (FPSOs).	Key words: coating systems, coating materials, test specimens, offshore platforms	21243			
TM0204-2004	Exterior Protective Coatings for Seawater Immersion Service	Coatings, Maritime	Specifies test methods to evaluate coating systems for seawater immersion service on exterior surfaces of submerged offshore platform steel structures, piers, docks, pilings, subsea valves, and wellheads.	Key words: cathodic disbondment, test specimens, coating materials, seawater immersion, edge retention	21244			

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NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
TM0112-2012	Test to Determine the Potential Corrosion Effects of Ballast Water Treatment Systems on Ballast Tanks	Coatings, Maritime	This standard is designed to test the effect of long-term exposure of treated water on an approved coating system and other materials such as ballast piping and anodes located within a ship's ballast tank. It covers testing in seawater and fresh water and provides detailed procedures for performing tests and reporting the results. The standard is intended for use by shipbuilding companies, shipping companies, ship personnel, coating companies, cathodic protection (CP) service providers, and ballast water treatment (BWT) suppliers to help prevent corrosion in ballast water tanks.	Key words: ballast water, ships, seawater	21258			
SP0292-2012 (formerly RP0292)	Installation of Thin Metallic Wallpaper Lining in Air Pollution Control and Other Process Equipment	Coatings, Materials Selection and Design	Provides guidelines that assist in specification writing for handling and installing nickel-based alloy, stainless steel, and titanium linings in air pollution control equipment, such as FGD systems, ducts, and stacks. It includes information on materials, design, delivery, storage, and handling, as well as substrate preparation and installation, and detailed information on welding, welder performance qualifications, inspection, and repair.	Key words: air pollution control equipment, flue gas desulfurization (FGD), nickel alloys, process industries, protective linings, stainless steels, wallpaper lining (metallic), welds	21054			
RP0375-2006	Wax Coating Systems for Underground Piping Systems	Coatings, Pipelines	Provides material requirements, surface preparation recommendations, and application techniques for the successful use of hot- or cold-applied wax and component wrappers and wax tape coating systems for the protection of pipes, fittings, and valves. Lists recommend physical requirements for different types of coating systems and the corresponding ASTM standard test methods.	Key words: cathodic protection, pipelines, surface finishing, wax coatings	21013			
SP0185-2007 (formerly RP0185)	Extruded Polyolefin Resin Coating Systems with Soft Adhesives for Underground or Submerged Pipe	Coatings, Pipelines	Details materials and methods of application for two types of polyolefin resin coating systems extruded over soft adhesives on pipe for underground or submerged service. The standard addresses surface preparation, application methods, electrical inspection, pipe handling techniques, and coating system repair methods. The two types of coating systems are (1) polyolefin resin that is crosshead-extruded on the pipe as a seamless coating over a hot-applied mastic adhesive and (2) polyolefin resin that is extruded spirally around the pipe to fuse and form as a seamless coating over an extruded butyl-rubber adhesive.	Key words: holiday detection, pipelines, polyolefin resin coatings, surface finishing	21029			
SP0490-2007 (formerly RP0490)	Holiday Detection of Fusion-Bonded Epoxy External Pipeline Coatings of 250 to 760 μm (10 to 30 mils)	Coatings, Pipelines	Presents recommended techniques in the operation of holiday detector equipment currently used on fusion-bonded epoxy (FBE) pipeline coatings following shop application of the coating and prior to on-site installation of the coated pipeline. It also presents recommended voltages for various coating thicknesses. This standard is intended to serve the needs of pipeline owners, coating applicators, coating inspectors, and other interested parties in the electrical inspection of FBE pipe coatings.	Key words: epoxy coatings, holiday detection, pipelines	21045			
NACE SP0394-2013 (formerly RP0394)	Application, Performance, and Quality Control of Plant-Applied, Fusion-Bonded Epoxy External Pipe Coating	Coatings, Pipelines	This NACE standard describes methods for qualifying and controlling the quality of plant-applied, single layer fusion-bonded epoxy (FBE) coatings to the external surfaces of carbon steel pipe, provides guidelines for proper application, and identifies inspection and repair techniques to obtain the best applied FBE coating system. It is intended for use by corrosion control personnel concerned with mitigation of corrosion on buried and submerged piping used for transportation and storage of oil, gas, water, and similar products.	Key words: coatings, fusion-bonded epoxy, pipelines, protective coatings	21064			

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NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
RP0399-2004	Plant-Applied, External Coal Tar Enamel Pipe Coating Systems: Application, Performance, and Quality Control	Coatings, Pipelines	Presents guidelines for establishing minimum requirements to ensure proper performance of coal tar enamel coating systems. Recommended physical property requirements and surface preparation, application, inspection, and repair practices are described.	Key words: coal tar enamel, coatings, inspection, pipelines, protective coatings	21089			
RP0402-2002	Field-Applied Fusion-Bonded Epoxy (FBE) Pipe Coating Systems for Girth Weld Joints: Application, Performance, and Quality Control	Coatings, Pipelines	Provides the most current technology and industry practices for the use of field-applied fusion-bonded epoxy (FBE) external pipe coating systems for girth weld joints. This standard is intended for use by corrosion control personnel, design engineers, project managers, purchasing personnel, and construction engineers and managers. It is applicable to underground steel pipelines in the oil and gas gathering, distribution, and transmission industries.	Key words: coatings, field joints, fusion-bonded epoxy, pipelines, protective coatings	21096			
RP0602-2002	Field-Applied Coal Tar Enamel Pipe Coating Systems: Application, Performance, and Quality Control	Coatings, Pipelines	Provides the most current technology and industry practices for the use of field-applied coal tar enamel external pipe coating systems. This standard is applicable to underground steel pipelines in the oil and gas gathering, distribution, and transmission industries.	Key words: coal tar enamel, coatings, field joints, pipelines, protective coatings	21098			
RP0303-2003	Field-Applied Heat-Shrinkable Sleeves for Pipelines: Application, Performance, and Quality Control	Coatings, Pipelines	Provides the most current technology and industry practices for the use of field-applied heat-shrinkable sleeve systems. Included are methods for qualifying and controlling the quality of a heat-shrinkable sleeve, guidelines for proper application, and inspection and repair techniques to ensure its long-term performance.	Key words: protective coatings, field joints, heat-shrinkable sleeves, pipelines	21101	21120		
RP0304-2004	Design, Installation, and Operation of Thermoplastic Liners for Oilfield Pipelines	Coatings, Pipelines	Defines the process necessary to design, install, and operate a thermoplastic-lined oilfield pipeline. Intended to set a standard for performance within the scope of procedures and instructions already developed by installers and operators.	Key words: internal pipe coatings, liners, linings, pipelines, protective coatings, thermoplastic	21103			
RP0105-2005	Liquid-Epoxy Coatings for External Repair, Rehabilitation, and Weld Joints on Buried Steel Pipelines	Coatings, Pipelines	Presents guidelines for establishing minimum requirements to ensure proper material selection, application, and inspection of pipeline liquid-epoxy coatings used for the repair and rehabilitation of previously coated pipelines and for coating field joints on the external surfaces of pipe.	Key words: backfill, coating material, field joints, liquid-epoxy coatings, surface preparation, weld joints	21106			
SP0109-2009	Field Application of Bonded Tape Coatings for External Repair, Rehabilitation, and Weld Joints on Buried Metal Pipelines	Coatings, Pipelines	Presents guidelines to ensure the proper selection, application, and performance of bonded tape coatings used as the external corrosion protection for new and existing pipe, girth welds, and fittings, and for repair and rehabilitation. The primary function of these tape coating systems is to prevent corrosion of the pipeline when used with or without cathodic protection (CP). This standard provides guidelines for proper pipeline surface preparation, tape coating system application, inspection, and tape coating damage repair to ensure long-term performance.	Keywords: Pipelines, bonded tape coatings, external, repair	21143	21150		
TM0102-2002	Measurement of Protective Coating Electrical Conductance on Underground Pipelines	Coatings, Pipelines	Presents guidelines and procedures for use primarily by corrosion control personnel in the pipeline industry to determine the general condition of a pipeline coating. These techniques are used to measure the coating conductance (inverse of coating resistance) on sections of underground pipelines. This test method applies only to pipe coated with dielectric coatings.	Key words: coating conductance, corrosion testing, measurement	21241			

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NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
NACE No. 10/SSPC-PA 6	Fiberglass-Reinforced Plastic (FRP) Linings Applied to Bottoms of Carbon Steel Aboveground Storage Tanks	Coatings, Pipelines, Tanks, and Underground Systems	This standard practice specifies the procedures to design, apply, and inspect fiberglass-reinforced plastic (FRP) linings that are applied internally to the bottom of carbon steel aboveground storage tanks (ASTs). This standard serves as a resource to facility owners preparing specifications for achieving successful lining applications in ASTs in the petroleum/petrochemical industry. However, the practices described are useful during preparation of specifications for ASTs in other services as well.	Key words: carbon steels, coatings, fiber-reinforced plastic (FRP), protective linings, storage tanks	21093	21144		
SP0187-2008 (formerly RP0187)	Design Considerations for Corrosion Control of Reinforcing Steel in Concrete	Highways and Bridges	Gives architect-engineers and facility owners design considerations for controlling corrosion of proposed reinforced portland cement concrete structures. The standard includes sections on site history and environmental survey, recommendations for corrosion control, materials, design considerations, and construction practices. The guidelines include information on concrete mixtures, chemical admixtures, coating of reinforcing steel, cathodic protection, monitoring equipment, and the isolation of steel from aggressive environments.	Keywords: cathodic protection, concrete, coating, monitoring, steel	21034			
SP0290-2007 (formerly RP0290)	Impressed Current Cathodic Protection of Reinforcing Steel in Atmospherically Exposed Concrete Structures	Highways and Bridges	Presents guidelines for cathodic protection of reinforcing steel in concrete structures. The guidelines are limited to impressed current cathodic protection systems for new or existing atmospherically exposed reinforced concrete and are not intended for application to prestressed concrete. Criteria described include 100 mV polarization development/decay, statistical distribution analysis, and E log I analysis. This standard includes sections that address criteria for achieving cathodic protection, design of cathodic protection systems, installation practices, energizing and system adjustment, operation and maintenance of cathodic protection systems, and records.	Key words: cathodic protection, concrete, steels, polarization, impressed current	21043			
SP0390-2009 (formerly RP0390)	Maintenance and Rehabilitation Considerations for Corrosion Control of Existing Steel-Reinforced Concrete Structures	Highways and Bridges	Includes sections on maintenance of reinforced-concrete structures (site survey, structural survey, repair options) and corrosion-control techniques, with appendixes on sources of additional information, bibliographic information, and definitions. Repair and corrosion-control options that are described include "no action," minor repair, major repair, isolating the reinforcement from the aggressive environment, cathodic protection, and using specific installation and maintenance methods.	Key words: concrete, rebar, rehabilitation, maintenance survey	21044			
SP0107-2007	Electrochemical Realkalization and Chloride Extraction for Reinforced Concrete	Highways and Bridges	This standard addresses corrosion of reinforcing steel in concrete, a serious problem throughout the world in parking structures, bridges and roadways, buildings, sanitary and water facilities, marine structures, concrete pipe, storage facilities, and other structures. This corrosion is directly attributable to the presence of significant amounts of aggressive substances at the steel surface. This standard provides procedures to control corrosion of conventional reinforcing steel in portland cement concrete structures through the application of chloride extraction or realkalization. These electrochemical techniques are related to the use of impressed current cathodic protection of steel in concrete, as described in NACE SP0290.	Key words: concrete, realkalization, chloride, corrosion, rebar, cathodic protection	21113			

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NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
SP0308-2008	Inspection Methods for Corrosion Evaluation of Conventionally Reinforced Concrete Structures	Highways and Bridges	This standard practice provides testing procedures and investigative techniques for the evaluation of conventionally reinforced concrete structures. The investigation and evaluation techniques described in this standard focus on degradation resulting from corrosion of the reinforcing steel. When distress of a structure is evident, it is important to determine the nature of the degradation to select the best restoration strategy.	Key words: concrete, rebar, inspection, cathodic protection	21128			
SP0408-2008	Cathodic Protection of Reinforcing Steel in Buried or Submerged Concrete Structures	Highways and Bridges	This standard presents guidelines for cathodic protection (CP) of reinforcing steel in buried or submerged concrete structures. These guidelines provide corrosion control personnel with information to control corrosion of conventional reinforcing steel in portland cement concrete structures through the application of CP.	Keywords: concrete, cathodic protection, submerged, buried	21133			
SP0112-2012	Corrosion Management of Atmospherically Exposed Reinforced Concrete Structures	Highways and Bridges	This standard provides a structure for maintaining a Corrosion Management System for existing conventionally reinforced concrete structures. Risk-based management of corrosion may maintain the safe operation of structures and plants and minimize the risk of unexpected failures and unplanned closures and outages. Corrosion management may require investigation and evaluation by qualified corrosion, materials, and structural engineering personnel, depending on the nature and extent of the distress.	Key words: reinforced concrete, corrosion management, risk assessment, evaluation	21166			
TM0294-2007	Testing of Embeddable Anodes for Use in Cathodic Protection of Atmospherically Exposed Steel-Reinforced Concrete	Highways and Bridges	This standard provides users and manufacturers of embeddable anodes with a test method for evaluating the anode material to an expected lifetime criterion. It is applicable to embeddable anode materials, such as titanium mesh, commonly used for cathodic protection of atmospherically exposed steel-reinforced concrete. The test is intended to evaluate whether an embeddable anode material complies with minimum required specifications of design life expectancy at rated current output. This test method is not applicable to surface-mounted anodes or conductive coating materials.	Key words: anodes, cathodic protection, concrete, life expectancy, steels	21225			
SP0176-2007 (formerly RP0176)	Corrosion Control of Steel Fixed Offshore Platforms Associated with Petroleum Production	Maritime	Provides guidelines for materials, practices, and methods of corrosion control for fixed offshore structures associated with petroleum production located in offshore areas. Includes information on three major areas: the submerged zone, the splash zone, and the atmospheric zone. Addresses structural design, cathodic protection criteria, design and installation of cathodic protection systems, control of interference currents, dielectric shields, surface preparation, coatings and inspection, and corrosion control records.	Key words: corrosion control, offshore platforms, submerged zone, splash zone, atmospheric zone	21018	21118 (RP0176-2003)		
NACE No. 12/AWS C2.23M/SSPC-CS 23.00	Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel	Maritime, Oil and Gas Production	A procedure for the application of metallic thermal spray coating (TSC) of aluminum, zinc, and their alloys and composites for the corrosion protection of steel. Required equipment, application procedures, and in-process quality control (QC) checkpoints are specified. May be used by owners and design, fabrication, and maintenance engineers to detail and contract for the application of TSCs for the preservation and maintenance of steel structures, as well as TSC inspectors and TSC applicators to develop and maintain application procedures, equipment inventory, and an operator-training program.	Key words: protective coating, steels, thermal spray, metallizing, zinc, aluminum	21100	21141		

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SP0690-2009 (formerly RP0690)	Standard Format for Collection and Compilation of Data for Computerized Material Corrosion Resistance Database Input	Material Selection and Design	Defines data categories and specific data elements (fields) that are considered desirable or essential to accommodate search strategies and reliable data comparisons in computerized corrosion databases. The data entries are designed to accommodate data relative to the basic forms of corrosion and to serve as a guide for structuring multiple-source database compilations with the capability of assessing compatibility of engineering materials (metals and nonmetals) for a wide range of environments and exposure conditions.	Key words: computer, database, design	21047			
RP0391-2001	Materials for the Handling and Storage of Concentrated (90 to 100%) Sulfuric Acid at Ambient Temperatures	Material Selection and Design	Provides information for use in the design and selection of materials used in the handling and storage of commercial concentrated sulfuric acid (H ₂ SO ₄) at temperatures of up to 50 °C (120 °F). This standard is intended to assist engineers and CPI operations and maintenance personnel who are involved in the design, modification, and maintenance of ambient-temperature, concentrated sulfuric acid systems and equipment.	Key words: design, storage tanks, sulfuric acid handling, tanks	21050			
SP0294-2006 (formerly RP0294)	Design, Fabrication, and Inspection of Tanks for the Storage of Concentrated Sulfuric Acid and Oleum at Ambient Temperatures	Material Selection and Design	Provides recommended design, fabrication, and inspection practices for maintaining the mechanical integrity and minimizing the potential occurrence of undetected corrosion in concentrated fresh sulfuric acid tanks, process sulfuric acid tanks, or oleum storage tanks at atmospheric and low pressure. Inspection guidelines that aid in detecting and monitoring corrosion are presented, with the overall aim being to avert catastrophic failures that can be caused by corrosion of carbon steel.	Key words: sulfuric acid, oleum, tanks, carbon steel, process acid	21063			
SP0197-2009 (formerly RP0197)	Standard Format for Computerized Electrochemical Polarization Curve Data Files	Material Selection and Design	Defines data categories and specific data elements (fields) that are considered necessary for meaningful transfer of electrochemical polarization curve data from one laboratory to another.	Key words: computer, data, polarization curve data files	21080			
RP0497-2004	Field Corrosion Evaluation Using Metallic Test Specimens	Material Selection and Design	Describes how field corrosion evaluation using metallic test specimens is conducted, what types of corrosion information may be obtained, and how test racks and specimens are designed. A summary of critical data that must be recorded is provided. Guidelines for interpreting and reporting test results are also discussed.	Key words: field corrosion testing, metals, test specimens	21083			
SP0199-2009 (formerly RP0199)	Installation of Stainless Chromium-Nickel Steel and Nickel Alloy Roll-Bonded and Explosion Bonded Clad Plate in Air Pollution Control Equipment	Material Selection and Design	Provides technical and quality assurance guidelines for the fabrication, welding, and installation of clad plate bonded to air pollution control or other equipment such as FGD systems, ducts, and stacks. Also included are procedures for the qualification of welders and the inspection and repair of welds, as well as an appendix on handling clad plate components. Detailed figures on weld joint design are included.	Key words: air pollution control equipment, chromium-nickel steel alloys, explosion-bonded clad plate, nickel alloys	21087			
NACE TM0169/ASTM G31	Standard Guide for Laboratory Immersion Corrosion Testing of Metals	Material Selection and Design	Standardizes immersion corrosion testing, and provides a consensus on the technology in this field of laboratory corrosion testing. It enumerates and discusses the many factors that must be considered, controlled, and reported to aid in correlation or reproducibility of such tests. The techniques described permit the investigator to reproduce to a considerable extent in the laboratory, through judicious experimental design, the process conditions that govern corrosion mechanisms. The methods described are also applicable to materials qualification tests for quality control. However, the latter require more rigid definition of apparatus, conditions, and technique.	Key words: cleaning, corrosion testing, metals, process industries	21200			

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TM0193-2000	Laboratory Corrosion Testing of Metals in Static Chemical Cleaning Solutions at Temperatures Below 93°C (200°F)	Material Selection and Design	Describes a simple method for measuring the relative corrosiveness of inhibited solutions used for chemical cleaning in a static system; the tests described are conducted with corrosion coupons in a clean solution. Addresses testing parameters not covered in ASTM D3263, specifically surface-to-volume ratio, inhibitor handling, pitting corrosion, and the reporting procedure.	Key words: chemical cleaning, corrosion testing, laboratory testing, metals	21223			
TM0498-2014	Evaluation of the Carburization of Alloy Tubes Used for Ethylene Manufacture	Material Selection and Design, Petroleum Refining	Details procedures for two methods of evaluating the relative carburization resistance of alloys intended for use in ethylene cracking furnace tubes, or for evaluating the performance of previously installed tubes. These tests provide standardized data that allow the user to evaluate disparities in tube supplier carburization data.	Key words: carburization, corrosion testing, cracking, ethylene cracking furnace tubes	21235			
TM0499-2009	Immersion Corrosion Testing of Ceramic Materials	Material Selection and Design	Provides for the development and reporting of pertinent corrosion data for ceramic materials. The standard provides a common basis for the evaluation and selection of ceramic materials, reducing the problem of incompletely documented corrosion test data for ceramic materials and increasing the use of meaningful measurements to evaluate the effects of corrosion. Test procedures described include (1) preparation of test specimens, (2) test apparatus, (3) test exposure conditions, (4) post-test cleaning, (5) calculation of corrosion rates, and (6) reporting of test results.	Key words: ceramic testing, corrosion testing, immersion testing	21239			
TM0111-2011	Slow Strain Rate Test Method for Evaluation of Ethanol Stress Corrosion Cracking in Carbon Steels	Material Selection and Design, Pipelines, Tanks, and Underground Systems	This standard establishes a slow strain rate (SSR) test method for screening and evaluating susceptibility of steels to ethanol SCC. It relates to the evaluation of SCC in ethanol environments related to the distribution of fuel ethanol or, for research purposes, related to the effects of environmental or metallurgical variables.	Key words: biofuels, ethanol, stress corrosion cracking, slow strain rate test, corrosion testing	21255			
SP0195-2007 (formerly RP0195)	Corrosion Control of Sucker Rods by Chemical Treatment	Oil and Gas Exploration and Production	Presents corrosion inhibition, wear reduction, and corrosion prevention techniques for use from the manufacturing of bare steel sucker rods and couplings through installation and service in the well. This standard is published in cooperation with the American Petroleum Institute.	Key words: sucker rods, chemical	21069			
TM0194-2014	Field Monitoring of Bacterial Growth in Oil and Gas Systems	Chemical Inhibitors, Materials Selection and Design, Oil and Gas Exploration and Production	Standard based on a report from the former Corrosion Engineering Association (CEA) of the United Kingdom. Intended for use by technical field and service personnel. Describes field methods for estimating bacterial populations, including sessile bacterial populations, commonly found in oilfield systems. Sampling methods are emphasized and media for enumerating common oilfield bacteria are described.	Key words: bacteria, corrosion testing, field monitoring, oilfield production equipment	21224			
TM0297-2008	Effects of High-Temperature, High-Pressure Carbon Dioxide Decompression on Elastomeric Materials	Oil and Gas Exploration and Production	Presents test procedures to measure the effect of rapid depressurization from elevated pressures and temperatures in dry CO ₂ environments on elastomeric materials. Includes sections on the preparation of test specimens and equipment to be used, test procedures to be followed, and procedures for reporting results.	Key words: carbon dioxide environments, decompression, elastomers	21229			

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SP0499-2012	Corrosion Control and Monitoring in Seawater Injection Systems	Oil and Gas Exploration and Production	Provides guidance in controlling and monitoring for corrosion, bacteria, and water quality to corrosion engineers, field corrosion, production, technical, and operating personnel, and others involved in corrosion control of seawater injection systems. Includes descriptions of equipment and practices for controlling and monitoring corrosion in seawater injection systems. Adapted from a report produced by the former Corrosion Engineering Association (CEA) under the auspices of NACE and the Institute of Corrosion (ICorr).	Key words: Key words: corrosion control, corrosion monitoring, injection systems, seawater, SP0499, TM0299, water quality	21237			
MR0174-2007	Recommendations for Selecting Inhibitors for Use as Sucker-Rod Thread Lubricants	Oil and Gas Exploration and Production	Addresses proper selection and use of corrosion inhibitors to provide extended protection of sucker-rod threads and box cavities against the effects of corrosive well fluids that may move in and out of these box cavities and to protect the threads from galling. Provides requirements for inhibited lubricants and suggestions for tests used to select such materials.	Key words: corrosion coupons, inhibitors, corrosion testing, lubricants, sucker rods	21300			
TM0298-2003	Evaluating the Compatibility of FRP Pipe and Tubulars with Oilfield Environments	Oil and Gas Exploration and Production	Provides a means to evaluate the relative resistance of most fiber-reinforced plastic (FRP) pipe and tubular products to specific oilfield environments by comparison of apparent tensile strength before and after exposure. Gives recommendations on the reagents to be used, describes the test specimens and test equipment to be used, and gives the test procedures to be followed. The standard describes seven environment categories.	Key words: fiber-reinforced plastic (FRP), oilfield production equipment, pipelines, test specimens	21233			
TM0374-2007	Laboratory Screening Tests to Determine the Ability of Scale Inhibitors to Prevent the Precipitation of Calcium Sulfate and Calcium Carbonate from Solution (for Oil and Gas Production Systems)	Oil and Gas Exploration and Production, Chemical Inhibitors	Provides a relative and quantitative measure of the abilities of scale inhibitors to prevent the precipitation of solids, a necessary and critical stage in the formation of scale. Describes static laboratory screening tests designed to give a measure of the ability of inhibitors to prevent the precipitation of calcium carbonate and calcium sulfate from solution at 71 °C (160 °F). The test methods are recommended only for ranking the performance of different chemicals under laboratory conditions set by these methods. They are not intended to provide actual field treating rates.	Key words: calcium carbonates, calcium sulfates, scale inhibitors, screening testing	21208			
TM0197-2010	Laboratory Screening Test to Determine the Ability of Scale Inhibitors to Prevent the Precipitation of Barium Sulfate and/or Strontium Sulfate from Solution (for Oil and Gas Production Systems)	Oil and Gas Exploration and Production, Chemical Inhibitors	Provides the user with a relative and quantitative measure of the ability of scale inhibitors to prevent (1) the formation and (2) the precipitation of solid BaSO ₄ and/or SrSO ₄ , which are necessary and critical stages in scale deposition. Intended for ranking the performance of different scale inhibitors under laboratory conditions.	Key words: barium sulfate, laboratory testing, scale inhibitors	21228			21262 (Redline)*
SP0181-2006 (formerly RP0181)	Liquid-Applied Internal Protective Coatings for Oilfield Production Equipment	Oil and Gas Exploration and Production, Coatings	Provides guidelines for obtaining an effective internal lining to protect against general or pitting corrosion of metal tanks and vessels commonly used in oilfield operations at atmospheric and elevated pressures. Also included are various factors required to obtain satisfactory linings in equipment design and fabrication considerations, lining selection, surface preparation, lining application, and inspection.	Key words: coating application, inspection, surface preparation, pitting, tanks, vessels, lining	21025			
SP0191-2008 (formerly RP0191)	The Application of Internal Plastic Coatings for Oilfield Tubular Goods and Accessories	Oil and Gas Exploration and Production, Coatings	Addresses general user and applicator responsibilities; initial inspection of equipment; surface preparation; coating application and inspection; coupling/connection make-up; quality control; handling, storage, and shipping; and marking.	Key words: coatings, oilfield production equipment, plastic coatings	21048			

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NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
RP0291-2005	Care, Handling, and Installation of Internally Plastic-Coated Oilfield Tubular Goods and Accessories	Oil and Gas Exploration and Production, Coatings	Addresses cost-effective use of internal plastic coatings material and includes sections on storage (yard and well/job sites), transportation, tubular goods and accessory installation, operation, and inspection/quality control.	Key words: coatings, oilfield production equipment, plastic coatings	21049			
SP0491-2012 (formerly RP0491)	Worksheet for the Selection of Oilfield Nonmetallic Seal Systems	Oil and Gas Exploration and Production, Coatings	Provides guidelines and a worksheet to be used in selecting nonmetallic seal materials for oilfield applications. Chemical, thermal, and pressure conditions that exist in the environment must be outlined, and this standard is intended to aid and formalize this outlining procedure.	Key words: worksheet, oilfield nonmetallic seal systems, seal materials, chemical, thermal	21051			
TM0183-2006	Evaluation of Internal Plastic Coatings for Corrosion Control of Tubular Goods in Aqueous Flowing Environment	Oil and Gas Exploration and Production, Coatings	Provides manufacturers, applicators, and users of internal pipe coatings with a method of comparing the performance of these coatings. This method provides a means of comparing materials under identical conditions.	Key words: oilfield production equipment, plastic coatings	21213			
TM0384-2002	Holiday Detection of Internal Tubular Coatings of Less Than 250 μm (10 mils) Dry Film Thickness	Oil and Gas Exploration and Production, Coatings	Provides a nondestructive test method for the detection of holidays in a nonconductive coating film (with a dry film thickness of less than 250 μm [10 mils]) that has been applied to the inner wall (bore) of oilfield tubular goods. Test apparatus are described along with the recommended procedure for conducting the test. Methods of reporting test data are also described.	Key words: coatings, corrosion testing, holiday detection, tubular, testing	21216			
TM0185-2006	Evaluation of Internal Plastic Coatings for Corrosion Control of Tubular Goods by Autoclave Testing	Oil and Gas Exploration and Production, Coatings	Provides manufacturers, applicators, and users of internal pipe coatings with a method of comparing the performance of these coatings. Comparisons were made under uniform laboratory conditions.	Key words: autoclave testing, oilfield production equipment, plastic coatings	21217			
TM0186-2002	Holiday Detection of Internal Tubular Coatings of 250 to 760 μm (10 to 30 mils) Dry Film Thickness	Oil and Gas Exploration and Production, Coatings	Provides a nondestructive test method for the detection of holidays in a nonconductive coating film (with a dry film thickness of 250 to 760 μm [10 to 30 mils]) that has been applied to the inner wall (bore) of oilfield tubular goods. Describes test apparatus along with the recommended procedure for conducting the test. Methods of reporting test data also are described.	Key words: coating, holiday detection, testing	21218			
TM0187-2011	Evaluating Elastomeric Materials in Sour Gas Environments	Oil and Gas Exploration and Production, Coatings	Provides a test method that measures the ability of elastomeric materials to withstand static exposure to elevated pressure and vapor-phase sour gas environments (e.g., gaseous hydrocarbons with hydrogen sulfide) and is not designed to be an immersion or functional test. It is designed for testing O-rings or specimens of elastomeric vulcanites cut from standard sheets.	Key words: elastomers, sour environments, hydrocarbons, test specimens	21220			
TM0192-2012	Evaluating Elastomeric Materials in Carbon Dioxide Decompression Environments	Oil and Gas Exploration and Production, Coatings	Provides procedures to measure the effect on elastomeric materials subjected to rapid depressurization from elevated pressures in dry carbon dioxide environments and is designed for testing O-rings or other specimens of elastomeric vulcanites. Includes recommendations on procedures for the preparation of test specimens and equipment to be used, testing, and results reporting.	Key words: carbon dioxide environments, decompression, elastomers, test specimens	21222			
TM0296-2002	Evaluating Elastomeric Materials in Sour Liquid Environments	Oil and Gas Exploration and Production, Coatings	Serves as a tool in the process of evaluating elastomeric materials for use in the oil field and other energy-related areas where sour liquid environments are encountered. Describes an accelerated aging procedure with additional information on sour environment testing under pressures greater than atmospheric pressure, allowing data from separate laboratories to be compared if specified test conditions are used. Designed for testing O-rings or specimens of elastomeric vulcanizates cut from standard sheets.	Key words: corrosion testing, elastomers, hydrogen sulfide, sour environments	21227			

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TM0177-2005	Laboratory Testing of Metals for Resistance to Sulfide Stress Cracking and Stress Corrosion Cracking in H ₂ S Environments	Oil and Gas Exploration and Production, Materials Selection and Design	Addresses testing of metals subjected to tensile stresses for resistance to cracking failure in low-pH aqueous environments containing H ₂ S. The test method facilitates testing conformity so that data from different sources may be compared on an equal basis. Covers sulfide stress cracking (room temperature, atmospheric pressure) and stress corrosion cracking (elevated temperatures and pressures). Discusses environment cracking variability, test reagents and solutions, material properties, test vessels and fixtures, and testing at elevated temperature/pressure. The four test methods described are Method A—Tensile Test; Method B—Bent-Beam Test; Method C—C-Ring Test; and Method D—Double-Cantilever-Beam (DCB) Test. General guidelines to determine the appropriateness of each test method also are given. Complements NACE MR0175/ISO 15156	Key words: austenitic stainless steels, hydrogen sulfide, metals, sulfide stress cracking	21212			
TM0284-2011	Evaluation of Pipeline and Pressure Vessel Steels for Resistance to Hydrogen-Induced Cracking	Oil and Gas Exploration and Production, Materials Selection and Design	Provides a standard set of test conditions for consistent evaluation of pipeline and pressure vessel steels and compares test results from different laboratories pertaining to the results of the absorption of hydrogen generated by corrosion of steel in wet H ₂ S. Describes two test solutions, Solution A and Solution B, and includes special procedures for testing small-diameter, thin-wall, electric-resistance welded and seamless line pipe. Test is intended to evaluate resistance to hydrogen-induced (stepwise) cracking only, and not other adverse effects of sour environments such as sulfide stress cracking, pitting, or weight loss from corrosion. Complements NACE MR0175/ISO 15156.	Key words: steel pipelines, sulfide stress cracking, testing	21215	21249 (TM0284-2003)		21264 (Redline)*
TM0198-2011	Slow Strain Rate Test Method for Screening Corrosion-Resistant Alloys (CRAs) for Stress Corrosion Cracking in Sour Oilfield Service	Oil and Gas Exploration and Production, Materials Selection and Design	Provides a standardized method for screening corrosion-resistant alloys (CRAs) for use in oilfield production environments. The SSR test, which is relatively short in duration, incorporates a slow, dynamic strain applied at a constant extension rate. This results in acceleration of the initiation of cracking in susceptible materials, thereby simulating rather severe conditions. The test is useful in evaluating stainless steels and nickel-based alloys for resistance to stress corrosion cracking (SCC) in simulated oilfield production environments at elevated temperatures.	Key words: corrosion-resistant alloys (CRAs), corrosion testing, hydrogen sulfide, metals, slow strain rate test, sour environments, stress corrosion cracking	21232			21263 (Redline)*
MR0176-2012	Metallic Materials for Sucker-Rod Pumps for Corrosive Oilfield Environments	Oil and Gas Exploration and Production, Materials Selection and Design	Specifies metallic material requirements for the construction of sucker-rod pumps for service in corrosive oilfield environments. Gives tables of recommended materials for mild, moderate, and severe metal-loss corrosion environments, as well as tables of typical mechanical properties of pump barrel materials and plunger materials. Includes appendixes on case hardening processes for steel pump barrels for an H ₂ S environment and selection of optimum type of pump.	Key words: case hardening, metals, record management, sucker rods	21303			

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MR0175/ISO 15156 (2009)	Petroleum and natural gas industries—Materials for use in H ₂ S-containing environments in oil and gas production—Parts 1, 2, and 3	Oil and Gas Exploration and Production, Materials Selection and Design	NACE MR0175/ISO 15156 gives requirements and recommendations for the selection and qualification of carbon and low-alloy steels, corrosion-resistant alloys, and other alloys for service in equipment used in oil and natural gas production and natural gas treatment plants in H ₂ S-containing environments, whose failure could pose a risk to the health and safety of the public and personnel or to the equipment itself. Seven Technical Circulars are included with the purchase of this standard.	Key words: aluminum alloys, austenitic stainless steels, bolts, carbon steels, cast iron, ceramic coatings, cobalt alloys, cold working, copper alloys, fabrication, ferritic stainless steels, free-machining steels, hardness, hydrogen sulfide, identification marking, low-alloy steels, martensitic stainless steels, metals, oilfield production equipment, overlays, precipitation-hardening steels, pressure gauges, protective coatings, sealing rings, shot peening, sour environments, springs, stainless steels, sulfide stress cracking, valves, welding	21307	21310		21308 (Addenda Package)
SP0102-2010 (formerly RP0102)	In-Line Inspection of Pipelines	Pipelines, Tanks, and Underground Systems	This standard outlines a process of related activities that a pipeline operator can use to plan, organize, and execute an ILI project. Guidelines pertaining to ILI data management and data analysis are included. A key companion guide to this standard is NACE International Publication 35100. This standard is intended for use by individuals and teams planning, implementing, and managing ILI projects and programs.	Key words: inspection, pipelines, ILI	21094	21154 21119 (RP0102-2002)		
SP0502-2010 (formerly RP0502)	Pipeline External Corrosion Direct Assessment Methodology	Pipelines, Tanks, and Underground Systems	Covers the NACE external corrosion direct assessment (ECDA) process—a process of assessing and reducing the impact of external corrosion on pipeline integrity. ECDA is a continuous improvement process providing the advantages of locating areas where defects can form in the future, not just areas where defects have already formed, thereby helping to prevent future external corrosion damage. This standard covers the four components of ECDA: Preassessment, Indirect Inspections, Direct Examinations, and Post Assessment.	Key words: external corrosion, direct assessment, pipelines	21097	21110 (RP0502-2002)		21170 (Redline)*
SP0204-2008 (formerly RP0204)	Stress Corrosion Cracking (SCC) Direct Assessment Methodology	Pipelines, Tanks, and Underground Systems	Addresses the situation in which a portion of a pipeline has been identified as an area of interest with respect to SCC based on its history, operations, and risk assessment process and it has been decided that direct assessment is an appropriate approach for integrity assessment. The standard provides guidance for managing SCC by selecting potential pipeline segments, selecting dig sites within those segments, inspecting the pipe and collecting and analyzing data during the dig, establishing a mitigation program, defining the reevaluation interval, and evaluating the effectiveness of the SCCDA process.	Key words: SCCDA, indirect inspection, pipelines, risk assessment, stress corrosion cracking	21104			

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SP0106-2006	Control of Internal Corrosion in Steel Pipelines and Piping Systems	Pipelines, Tanks, and Underground Systems	Describes procedures and practices for achieving effective control of internal corrosion in steel pipe and piping systems in crude oil, refined products, and gas service. Because of the complex nature and interaction between constituents that are found in gas and/or liquid, certain combinations of these impurities being transported in the pipeline may affect whether a corrosive condition exists. Identification of corrosive gas and/or liquid in a pipeline can only be achieved by analysis of operating conditions, impurity content, physical monitoring, and/or other considerations.	Key words: internal corrosion, pipelines, crude oil	21111			
SP0206-2006	Internal Corrosion Direct Assessment Methodology for Pipelines Carrying Normally Dry Natural Gas (DG-ICDA)	Pipelines, Tanks, and Underground Systems	Formalizes the process of internal corrosion direct assessment (ICDA) for pipelines carrying normally dry natural gas that can be used to help ensure pipeline integrity. The basis of DG-ICDA is a detailed examination of locations along a pipeline where water would first accumulate to provide information about the downstream condition of the pipeline. If the locations along a length of pipe most likely to accumulate water have not corroded, other downstream locations less likely to accumulate water may be considered free from corrosion.	Key words: internal corrosion, direct assessment, dry gas, pipelines	21112	21147		
SP0507-2014	External Corrosion Direct Assessment (ECDA) Integrity Data Exchange (IDX)	Cathodic Protection, Coatings, Pipelines, Tanks, and Underground Systems, Water and Waste Water	Joint NACE/PODS standard. The objective of this standard practice is the development of a new external corrosion direct assessment (ECDA) data interchange data structure to enable electronic integration of data and standardize reporting of ECDA data within the pipeline industry to allow transfer between different software packages or computer systems. This is expected to minimize difficulty in using various programs to analyze or graph data and allow for comparison of data gathered for a given pipeline segment at different times, regardless of the software system used to collect it.	Key words: direct assessment, cracking, ECDA, ICDA, pipelines, SCCDA	21124			
SP0208-2008	Internal Corrosion Direct Assessment Methodology for Liquid Petroleum Pipelines	Pipelines, Tanks, and Underground Systems	Describes the basis of the liquid petroleum internal corrosion direct assessment (LP-ICDA) method and its four steps: (1) pre-assessment, (2) indirect assessment, (3) direct examination, and (4) post assessment. With the LP-ICDA approach, assessments can be performed on pipe segments for which alternative methods (e.g., in-line inspection, hydrostatic testing, etc.) may not be practical. This methodology may be incorporated into corrosion integrity and risk management plans.	Key words: liquid petroleum internal corrosion, direct assessment, pipelines	21127	21163		
SP0110-2010	Wet Gas Internal Corrosion Direct Assessment Methodology for Pipelines	Pipelines, Tanks, and Underground Systems	Formalizes the process of internal corrosion direct assessment (ICDA) for pipelines carrying natural gas with condensed water, or with water and liquid hydrocarbons, termed wet gas internal corrosion direct assessment (WG-ICDA). The two primary purposes of the WG-ICDA method are (1) to enhance the assessment of internal corrosion in natural gas pipelines, and (2) to improve pipeline integrity. This standard covers the four components of ICDA: Preassessment, Indirect Inspection, Detailed Examination, and Post Assessment.	Key words: internal corrosion, direct assessment, wet gas, pipelines	21146	21159		

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SP0210-2010	Pipeline External Corrosion Confirmatory Direct Assessment	Pipelines, Tanks, and Underground Systems	This standard practice covers the NACE external corrosion confirmatory direct assessment (ECCDA) process for buried onshore ferrous piping systems. ECCDA is a continuous improvement process that was developed to improve pipeline safety, and it has the advantage and benefit of locating areas where corrosion is likely to occur in the future, not just areas where corrosion has already occurred. ECCDA can be used to validate previous assessment conclusions or determine whether reassessment intervals are still appropriate, and the ECCDA process may detect additional pipeline integrity threats such as mechanical damage, stress corrosion cracking, and microbiologically influenced corrosion. This standard covers the four components of ECCDA: Preassessment, Indirect Inspection, Direct Examination, and Post Assessment.	Key words: external corrosion, pipelines, direct assessment	21148	21161	21179	
SP0113-2013	Pipeline Integrity Method Selection	Pipelines, Tanks, and Underground Systems	Provides guidance on determining the appropriate integrity assessment method for diagnosing the corrosion threats recognized as part of a pipeline integrity process. The integrity assessment process in this standard is specifically intended to address buried onshore pipelines constructed from ferrous materials.	Key words: pipeline integrity, onshore, external corrosion, internal corrosion, SCC, ILI, DA	21171			
TM0106-2006	Detection, Testing, and Evaluation of Microbiologically Influenced Corrosion (MIC) on External Surfaces of Buried Pipelines	Pipelines, Tanks, and Underground Systems	This standard is for ferrous-based metal pipeline facilities and describes types of microorganisms, mechanisms by which MIC occurs, methods of testing for the presence of bacteria, research results, and interpretation of testing results. Discussed in this standard are the technical aspects of MIC, field equipment and testing procedures, and media and techniques that can be used for testing.	Key words: bacteria, microbiologically influenced corrosion, pipelines, sampling and test procedures	21248			
TM0109-2009	Aboveground Survey Techniques for the Evaluation of Underground Pipeline Coating Condition	Pipelines, Tanks, and Underground Systems	Presents various techniques for aboveground evaluation of the coating condition of underground metallic pipelines, including the alternating current (AC) attenuation survey, direct current (DC) survey, AC-voltage gradient survey, and the Pearson survey. This standard is specifically intended to address buried onshore metallic pipelines and is based on available technology and methods that have successfully demonstrated evaluation of the coating condition of buried pipelines.	Key words: aboveground, underground, pipeline, AC, DC, Pearson, survey, onshore	21254	21256		
TM0212-2012	Detection, Testing, and Evaluation of Microbiologically Influenced Corrosion (MIC) on Internal Surfaces of Pipelines	Pipelines, Tanks, and Underground Systems	Microbiologically influenced corrosion (MIC) is corrosion affected by the presence or activity (or both) of microorganisms in biofilms on the surface of the corroding material. This NACE standard test method applies to the internal surfaces of pipelines, and describes types of microorganisms, mechanisms by which MIC occurs, methods for sampling and testing for the presence of microorganisms, research results, and interpretation of tests. Sections 1 through 4 of this standard discuss the technical aspects of MIC. Sections 5 through 7 discuss field equipment and testing procedures.	Keywords: microbiologically influenced corrosion, MIC, pipeline, sampling, testing	21260			
SP0200-2008 (formerly RP0200)	Steel-Cased Pipeline Practices	Pipelines, Tanks, and Underground Systems	Details acceptable practices for the design, fabrication, installation, and maintenance of steel-cased metallic pipelines. It is intended for use by personnel in the pipeline industry.	Key words: pipelines, steels, casing	21091			

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SP0169-2013 (formerly RP0169)	Control of External Corrosion on Underground or Submerged Metallic Piping Systems	Pipelines, Tanks, and Underground Systems, Cathodic Protection	The cathodic protection criteria in this standard for achieving effective control of external corrosion on buried or submerged metallic piping systems are also applicable to other buried metallic structures. The standard includes information on determining the need for corrosion control; piping system design; coatings; cathodic protection criteria and design; installation of cathodic protection systems; and control of interference currents. The cost of corrosion control is also addressed in the appendixes.	Key words: cathodic protection, corrosion control, electrical isolation, interference currents, pipelines, protective coatings	21001	21108 (RP0169-2002)		
SP0572-2007 (formerly RP0572)	Design, Installation, Operation, and Maintenance of Impressed Current Deep Goundbeds	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Presents procedures and practices for design, installation, operation, and maintenance of deep groundbeds used for control of external corrosion of underground or submerged metallic structures by impressed current cathodic protection.	Key words: anodes, deep groundbeds, cathodic protection	21007	21152		
SP0575-2007 (formerly RP0575)	Internal Cathodic Protection Systems in Oil-Treating Vessels	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Presents a general guide for application of effective cathodic protection to all oil-treating vessels. Includes design criteria, selection, and installation of applicable systems, and the operation, monitoring, and maintenance of installed systems.	Key words: anodes, cathodic protection, oil-treating vessels, reference electrodes	21015			
SP0285-2011 (formerly RP0285)	Corrosion Control of Underground Storage Tank Systems by Cathodic Protection	Pipelines, Tanks, and Underground Systems, Cathodic Protection	This standard provides recommendations for controlling external corrosion on underground storage tank systems by cathodic protection. Specifically addressed are existing bare and coated mild steel tanks; new coated mild steel tanks; metallic piping and flexible connectors; and other metallic components. Recommendations on cathodic protection criteria, design, installation, and operation and maintenance are included.	Key words: cathodic protection, corrosion control, interference currents, liquid storage systems, protective coatings, tanks	21030	21109 (RP0285-2002)	21178	
SP0186-2007 (formerly RP0186)	Application of Cathodic Protection for External Surfaces of Steel Well Casings	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Identifies the procedures used to determine the need for cathodic protection and current requirements for well casings associated with oil and gas production and gas storage. The standard also outlines practices for the design and installation of cathodic protection systems and for their operation and maintenance. The standard applies only to well casing exteriors.	Key words: cathodic protection, well casings	21031			
SP0286-2007 (formerly RP0286)	Electrical Isolation of Cathodically Protected Pipelines	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Fully details the requirements necessary to ensure adequate isolation of cathodically protected pipelines, especially those with high-quality dielectric coatings. The standard was developed as a supplement to SP0169 and SP0177. It includes sections on the need for electrical isolation, methods of electrical isolation, comparison of devices available for pipeline isolation, and equipment specification and installation, as well as field testing and maintenance.	Key words: cathodic protection, electrical isolation, isolating equipment, pipelines	21032			
RP0193-2001	External Cathodic Protection of On-Grade Metallic Storage Tank Bottoms	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Outlines practices and procedures for providing cathodic protection to the soil side of bottoms of on-grade carbon steel storage tanks that are in contact with an electrolyte. Recommendations for both galvanic anode systems and impressed current systems are included. Design criteria for the upgrade of existing tanks as well as for newly constructed tanks are included. This standard is intended for use by personnel planning to install new on-grade carbon steel storage tanks, upgrade cathodic protection on existing storage tanks, or install new cathodic protection on existing storage tanks.	Key words: cathodic protection, metals, storage tanks	21061			

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SP0207-2007	Performing Close-Interval Potential Surveys and DC Surface Potential Gradient Surveys on Buried or Submerged Metallic Pipelines	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Presents procedures for performing close-interval DC pipe-to-electrolyte potential surveys on buried or submerged metallic pipelines. This standard addresses the potential survey component of hybrid survey techniques such as trailing-wire DCVG or intensive measurement surveys, but does not address other surveys such as cell-to-cell techniques used to evaluate the direction of current or the effectiveness of the coating.	Key words: cathodic protection, corrosion control, underground pipelines, close-interval potential survey, DC surface potential gradient survey	21121	21162		
TM0172-2001	Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Provides a uniform method of testing the corrosive properties of petroleum product pipeline cargoes. This standard provides guidelines for performing the test method described in ASTM D665, modified so that it is applicable to gasoline and other petroleum products, and so that it permits analysis within a single working day. This short test is particularly applicable to a batch control procedure because of the need for prompt release of cargoes and because time is limited during the working day.	Key words: cargoes, gasoline, petroleum, pipeline	21204	21251		
TM0497-2012	Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Piping Systems	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Provides testing procedures to comply with the requirements of a criterion at a test site on a buried or submerged steel, cast iron, copper, or aluminum pipeline. Contains instrumentation and general measurement guidelines. Includes methods for voltage drop considerations when making pipe-to-electrolyte potential measurements and provides guidance to prevent incorrect data from being collected and used.	Key words: cathodic protection, measurement, pipelines, tanks, underground corrosion, voltage drop	21231			
TM0101-2012	Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems	Pipelines, Tanks, and Underground Systems, Cathodic Protection	Provides descriptions of the measurement techniques and cautionary measures most commonly used on underground tanks to determine whether a specific criterion has been complied with at a test site. This standard includes only those measurement techniques that relate to the criteria or special conditions contained in NACE SP0285. The measurement techniques described in this standard require that measurements be made in the field. Because these measurements are obtained under widely varying circumstances of field conditions and tank design, this standard is not as prescriptive as those NACE standard test methods that use laboratory measurements. Instead, this standard gives the user latitude to make testing decisions in the field based on the technical facts available.	Key words: measurement techniques criteria for cathodic protection, underground storage tank systems, testing	21240			21261 (Redline)*
SP0100-2014 (formerly RP0100)	Cathodic Protection to Control External Corrosion of Concrete Pressure Pipeline and Mortar-Coated Steel Pipelines for Water or Waste Water Service	Pipelines, Tanks, and Underground Systems, Cathodic Protection, Water and Wastewater	Furnishes guidelines that provide the design engineer with information on corrosion control of prestressed concrete cylinder pipe (PCCP) through the application of cathodic protection. The guidelines presented are applicable to new or existing buried pipelines with or without a supplemental coating.	Key words: cathodic protection, concrete, water, prestressing	21090			
SP0170-2012 (formerly RP0170)	Protection of Austenitic Stainless Steels and Other Austenitic Alloys from Polythionic Acid Stress Corrosion Cracking During Shutdown of Refinery Equipment	Refining, Materials Selection and Design	Examines varying procedures used by industry to protect austenitic stainless steel equipment while idle. Basic protection methods include nitrogen purging, alkaline wash solutions, and dry air purging. Protection of reactors is also addressed.	Key words: alkaline washing, austenitic stainless steels, nitrogen purging, polythionic acid, refinery equipment, stress corrosion cracking	21002			

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SP0472-2010 (formerly RP0472)	Methods and Controls to Prevent In-Service Environmental Cracking of Carbon Steel Weldments in Corrosive Petroleum Refining Environments	Refining, Materials Selection and Design	Establishes guidelines to prevent most forms of environmental cracking of weldments in carbon steel refinery equipment and piping. Welding processes covered by this standard include shielded metal arc welding (SMAW); gas metal arc welding (GMAW), including flux-core arc welding (FCAW); gas tungsten arc welding (GTAW); and submerged arc welding (SAW). Almost all types of weld configurations are included. The standard also addresses corrosive environments, hardness, and total stress in relation to in-service cracking of carbon steel welds.	Key words: carbon steels, cracking, hardness, hydrogen embrittlement, refinery equipment, welds	21006	21151	21177	
SP0296-2010 (formerly RP0296)	Guidelines for Detection, Repair, and Mitigation of Cracking of Existing Petroleum Refinery Pressure Vessels in Wet H ₂ S Environments	Refining, Materials Selection and Design	Intended to be a primary source of information on cracking in wet H ₂ S petroleum refinery environments. Provides guidelines on detection, repair, and mitigation of cracking of existing carbon steel refinery pressure vessels, including columns, heat exchangers, drums, reboilers, separators, and more. In this standard, "wet H ₂ S service" is defined as refinery process environments in which the concentration of H ₂ S is 50 ppmw or greater in the aqueous phase. Thirteen tables show the frequency and severity of cracking as reported in a survey conducted on the topic. Examples of cracking are shown in photographs.	Key words: carbon steels, cracking, hydrogen embrittlement, hydrogen sulfide, metals, refinery equipment, sour environments, steels, sulfide stress cracking, vessels	21078	21115 (RP0296-2004)		
SP0403-2008 (formerly RP0403)	Avoiding Caustic Stress Corrosion Cracking of Carbon Steel Refinery Equipment and Piping	Refining, Materials Selection and Design	This standard is intended to provide guidance to those designing, fabricating, and/or maintaining carbon steel equipment and piping that is exposed to caustic environments. An informal review of current industry caustic handling practices was completed in 1999. This standard incorporates the findings of that survey as they apply to refinery applications.	Key words: carbon steels, refinery equipment, stress corrosion cracking	21102			
SP0205-2010 (formerly RP0205)	Design, Fabrication, and Inspection of Tanks for the Storage of Petroleum Refining Alkylation Unit Spent Concentrated Sulfuric Acid at Ambient Temperatures	Refining, Materials Selection and Design	Presents additions to and deviations from NACE SP0294 (formerly RP0294) that apply to alkylation unit spent sulfuric acid storage and was developed to address these differences between fresh acid and spent sulfuric acid as they may have an impact on the integrity of storage tanks.	Key words: acid concentration, alkylation units, carbon steel, hydrocarbon contamination, refining, sulfuric acid	21107			
SP0407-2013	Format, Content, and Guidelines for Developing a Materials Selection Diagram	Refining, Materials Selection and Design	This standard practice provides format, content, and guidelines for developing a materials selection diagram (MSD). A MSD documents the materials selection of new equipment and piping for the refinery, process chemical, power, and other industries. The scope of this standard is to define the minimum and optional information to be included on the MSD, provide recommended formats, and give guidance on key issues that arise when materials are selected.	Key words: materials, refinery, chemical process, materials selection, design	21123			
MR0103-2012	Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments	Refining, Materials Selection and Design	Defines material requirements for resistance to sulfide stress cracking (SSC) in sour refinery process environments (i.e., environments that contain wet hydrogen sulfide [H ₂ S]). The term "wet H ₂ S cracking" as used in the refining industry covers a range of damage mechanisms that can occur as a result of the effects of hydrogen charging in wet H ₂ S refinery or gas plant process environments. One of the types of material damage that can occur as a result of hydrogen charging is sulfide stress cracking (SSC) of hard weldments and microstructures, which is addressed by this standard.	Key words: aluminum alloys, austenitic stainless steels, carbon steels, cast iron, ceramic coatings, cobalt alloys, copper alloys, ferritic stainless steels, free-machining steels, hydrogen sulfide, low-alloy steels, martensitic stainless steels, metals, nickel alloys, oilfield production equipment, precipitation-hardening steels, sour environments, stainless steels, sulfide stress cracking	21305	21309 (MR0103-2005)		

NACE Standards

NACE Standards	Title	Industry	Description	Key Words	Product Number	Chinese Translation Product Number	Spanish Translation Product Number	Visual Aid/ Related Product Number
SP0590-2007 (formerly RP0590)	Prevention, Detection, and Correction of Deaerator Cracking	Water and Wastewater	Addresses procedures for inspection of deaerator heater and water storage vessel welds, including reinspection criteria and qualification of personnel; factors influencing boiler feedwater deaerator cracking based on literature references and case history analyses; standardized nomenclature of deaerator vessel welds and cracking; guidelines for materials, design, fabrication, inspection, and acceptance criteria for new deaerator vessels and for repair of existing deaerator vessels; and operational and water chemistry parameters that may influence deaerator deterioration.	Key words: deaerator cracking, design, fabrication, inspection, repairs	21046			
SP0189-2013 (formerly RP0189)	On-Line Monitoring of Cooling Waters	Water and Wastewater, Chemical Inhibitors	Describes devices used for on-line monitoring of fouling, corrosion, and other parameters in recirculating cooling tower water systems. Methods for collecting test data to determine fouling and corrosion rates are presented. The data are used for predicting the expected service life of heat-exchange equipment, optimizing cooling system operation, detecting operating problems and upset conditions, monitoring corrective actions taken when such conditions occur, assisting in problem solving, and evaluating alternative chemical treatment programs.	Key words: cooling water equipment, fouling/deposit monitoring, heat exchanger equipment, on-line monitoring	21041			
RP0300/ISO 16784-1 (2006) (National adoption)	Pilot Scale Evaluation of Corrosion and Scale Control Additives for Open Recirculating Cooling Water Systems	Water and Wastewater, Chemical Inhibitors	ISO standard based on NACE standard RP0300. Cooling system design and operating characteristics vary widely, within individual plants, from site to site, and worldwide. Thus, selection and optimization of water treatment programs must be a site-specific process. In most systems, optimized cooling water chemical treatment is the key to successful long-term operations. The subject of this standard is, therefore, the establishment of criteria for the pilot-scale evaluation of the performance of cooling water additives under field-specific operating conditions.	Key words: cooling water equipment, corrosion control, corrosion testing, design, fouling/deposit monitoring, heat exchanger equipment, open recirculating cooling water systems, water treatment	21092			
TM0199-2013	Standard Test Method for Measuring Deposit Mass Loading ("Deposit-Weight-Density") Values for Boiler Tubes by the Glass-Bead-Blasting Technique	Water and Wastewater, Material Selection and Design	Documents the procedures used in determining the amount of deposit accumulation on a boiler tube surface, commonly expressed as the deposit weight density (DWD) value, via the glass-bead-blasting technique. This method is suitable for removing a wide variety of boiler deposit types, but it is especially useful when deposition is tightly adherent and would be difficult to dislodge completely via other mechanical or chemical cleaning processes.	Key words: boiler tubes, corrosion control, corrosion monitoring, corrosion testing, laboratory testing, measurement	21236			