EXPERTISE
in Surface Treatment

SURFACE TREATMENT

Surface preparation

Coating systems

Corrosion protection

SMART IN FLOW CONTROL

Content

1 Manual

Scope

Surface treatment especially to provide corrosion protection is becoming increasingly important. This manual provides information on the surface treatment of SAMSON products and assists users to select a suitable protective coating system.

Validity

This manual applies to control valves and valve accessories manufactured by SAMSON AKTIENGESELLSCHAFT. Further information to products can be found in the corresponding data sheets.

Intended use

This manual is intended to assist planners and operators to select a suitable protective coating system for a control valve or instrument.

Valves and instruments must only be commissioned and serviced by qualified personnel. For further details refer to the mounting and operating instructions of the product and the protective coating specifications.

2 General

2.1 Terms and definitions

Control valves are used in diverse applications and locations. The ambient conditions at the site of installation vary significantly and place different demands on the surface finish. Corrosion can arise and damage valve components. SAMSON has the right protective coating system to suit all types of environmental conditions (e.g. abrasive wear or corrosive environment).

What is corrosion?

The term "corrosion" can be applied generally to mean a process involving the deterioration of materials and often even the failure of a product.
Corrosion is the reaction of a metallic material to its environment, which effects measurable change in the material and can lead to impairment of the function of a metal construction part or of an entire system.

The reaction can be affected by environmental effects as well as by mechanical or dynamic stress.

Combined effects			
Mechanical			Chemical
Wear	Sliding abrasion Rolling wear Rolling/sliding wear Fretting wear Cavitation wear Erosive wear Solid particle erosion High velocity erosion	Wear corrosion Fretting corrosion Cavitation corrosion Erosion corrosion	**Corrosion** DIN EN ISO 8044

There are different kinds of corrosion, such as crevice corrosion, pitting corrosion, shallow pitting or surface corrosion, as well as various causes of corrosion.
Corrosion damage occurs when a component's function is impaired or it fails completely.

2.2 Durability and corrosion protection categories

DIN EN ISO 12944-1 determines the various coating durability ranges and DIN EN ISO 12944-2 classifies the corrosivity categories for protective coating systems.
The durability does not constitute a warranty period. Durability is a technical term to help users establish a maintenance scheme. The durability describes the time period within which a painted component is protected against corrosion.

DIN EN ISO 12944-1 Durability	Time span
Low (L)	Up to 7 years
Medium (M)	7 to 15 years
High (H)	15 to 25 years
Very high (VH)	More than 25 years

The corrosivity categories provide a uniform classification to clearly assign corrosion stress and environmental conditions. This helps the selection of a suitable protective coating system for each application.

DIN EN ISO 12944-2 Corrosivity category	Typical ambient conditions
C1 (very low)	Heated buildings with clean atmospheres
C2 (low)	Atmospheres with low level of pollution; unheated buildings where condensation may occur
C3 (medium)	Urban and industrial atmospheres, medium level of pollution (sulfur dioxide); coastal areas with low salinity; production rooms with high humidity and some air pollution
C4 (high)	Industrial areas and coastal areas with moderate salinity; chemical plants; swimming pools etc.
C5 (very high)	Industrial areas with high air humidity and aggressive atmosphere; coastal and offshore areas with high salinity; buildings or areas with almost permanent condensation and with high pollution
CX (extreme)	Offshore areas with high salinity; industrial areas with extremely high air humidity and aggressive atmosphere; subtropical and tropical climates
Im1	Fresh water: river installations, hydroelectric power plants
Im2	Salt or brackish water: immersed steel structures without cathodic protection (e.g. port zones with steel structures, such as locks or landing stages)
Im3	Soil: buried tanks, steel piles, steel pipes
Im4	Salt or brackish water: immersed steel structures with cathodic protection (e.g. offshore installations)

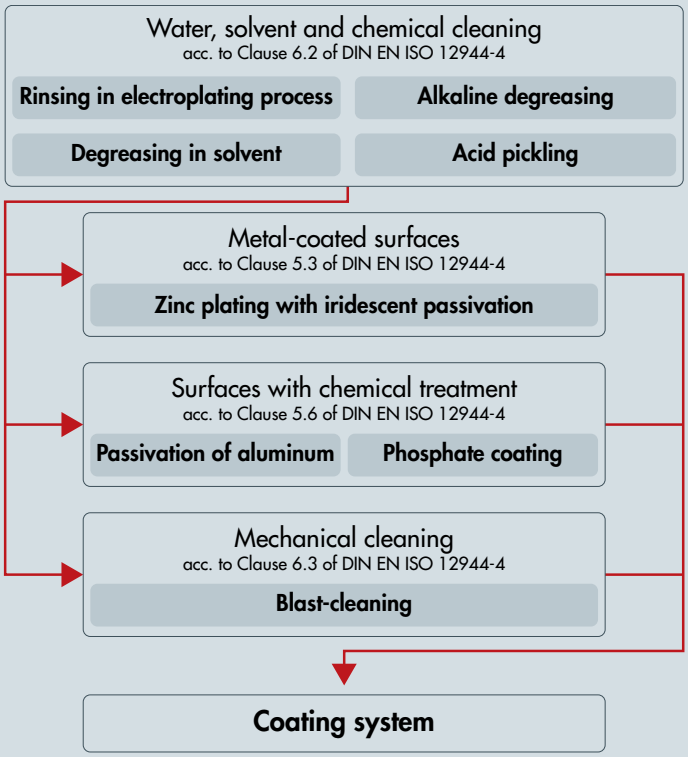
3 Surface Treatment at SAMSON

Corrosion can cause great economic loss. Damage to the environment cannot be ruled out either.
To counteract damage caused by corrosion, the surface treatment at SAMSON is performed according to paint suppliers' specifications under controlled process and ambient conditions (constant temperature and air humidity monitoring) in a heated building.

Ongoing testing during the coating application process additionally ensure that the surface treatment remains at a constant high quality.

3.1 Surface preparation

Optimal surface preparation is necessary to achieve durable, long-lasting corrosion protection. The methods used (see chart) are listed in the coating system specifications.



4 Coating systems

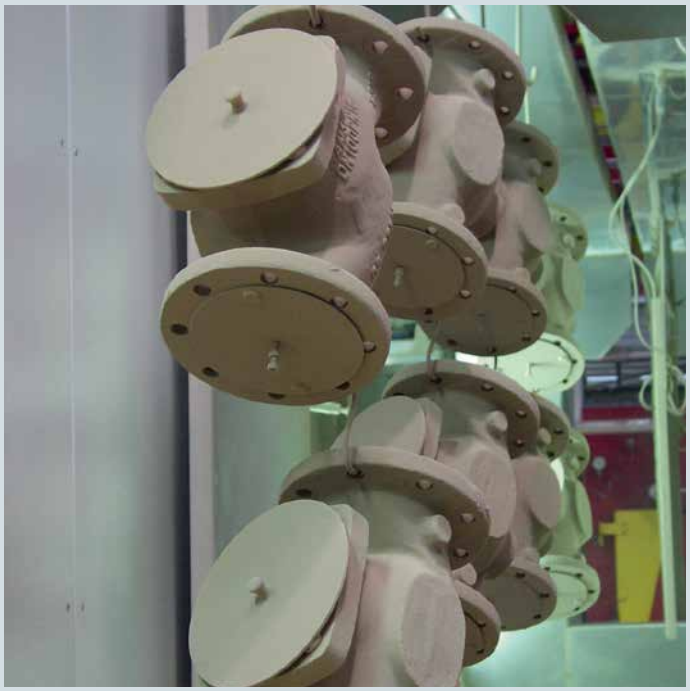
4.1 General description of the painting process

4.1.1 Powder coating

Powder coating involves applying the paint or protective coating as dry powder. The powder is electrostatically charged and sprayed onto the component and then cured in an oven.

Advantages:

- Free from volatile organic compounds
- No solvent emissions
- Less toxic waste
- Minimized waste and high powder yield (up to 98 %) thanks to recovery
- Excellent coating quality
- Excellent adhesion to the substrate
- High film thickness can be achieved
- High level of automation possible



4.1.2 Wet painting – Air gun spraying

Wet paint coatings are liquid mixtures of substances which form a firmly adhering coating after they have dried on the surface of the component. Depending on the intended application, the paint contains dyes, pigments, fillers, softeners, resins and binders. In addition to giving the component the desired appearance, the paint coating protects against damage and corrosion.

Advantages:

- Well-suited for one-off or small series production
- Multilayer coatings with variable layer structures possible
- Easy change of paint and component
- Coating of heat-sensitive components possible
- Customizable color possible on request

4.2 Coating systems for control valves

4.2.1 Corrosivity category up to C3, medium durability

Standard coating system according to DIN EN ISO 12944-2		
Coating system		**No. 1a**
Typical environment		– Urban and industrial atmospheres with moderate sulfur dioxide pollution – Coastal areas with low salinity – Production rooms with high humidity and some air pollution
Materials		Steel, stainless steel and aluminum
Service temperature		Max. 120 °C
Surface preparation		Phosphate coated, zinc plating with iridescent passivation, stainless steel etched, aluminum passivated
System description		
First layer	Coating material	Powder coating, epoxy polyester base (powder mixture)
	Film thickness (NDFT)	100 µm
	Method of application	Powder coating
Total film thickness (NDFT)		100 µm
Standard color		RAL 1019 Gray-beige
Special color		In cases where a special paint color is specified, select a different coating system.

Standard coating system according to DIN EN ISO 12944-2		
Coating system		**No. 2a**
Typical environment		– Urban and industrial atmospheres with moderate sulfur dioxide pollution – Coastal areas with low salinity – Production rooms with high humidity and some air pollution
Materials		Steel
Service temperature		Max. 120 °C
Surface preparation		Phosphate coated, dry ice blasting
System description		
First layer	Coating material	Two-component epoxy primer (zinc-rich)
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Total film thickness (NDFT)		120 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 2b**
Typical environment		– Urban and industrial atmospheres with moderate sulfur dioxide pollution – Coastal areas with low salinity – Production rooms with high humidity and some air pollution
Materials		Steel, stainless steel and aluminum
Service temperature		Max. 120 °C
Surface preparation		Zinc plating with iridescent passivation, stainless steel etched, aluminum passivated, dry ice blasting
System description		
First layer	Coating material	Two-component epoxy primer (zinc-free)
	Film thickness (NDFT)	40 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	80 µm
	Method of application	Spray painting
Total film thickness (NDFT)		120 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

Standard coating system according to DIN EN ISO 12944-2		
Coating system		**No. 2c**
Typical environment		– Urban and industrial atmospheres with moderate sulfur dioxide pollution – Coastal areas with low salinity – Production rooms with high humidity and some air pollution
Materials		Steel
Service temperature		Max. 120 °C
Surface preparation		Phosphatized
System description		
First layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	120 µm
	Method of application	Spray painting
Total film thickness (NDFT)		120 µm
Standard color		RAL 1019 Gray-beige
Special color		In cases where a special paint color is specified, select a different coating system.

4.2.2 Corrosivity category up to C4, low durability

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 1b**
Typical environment		– Industrial atmospheres and coastal areas with moderate salinity – Indoors (e.g. chemical plants, swimming pools, coastal shipyards)
Materials		Steel, stainless steel and aluminum
Service temperature		Max. 120 °C
Surface preparation		Phosphate coated, zinc plating with iridescent passivation, stainless steel etched, aluminum passivated
System description		
First layer	Coating material	Powder coating, epoxy polyester base (powder mixture)
	Film thickness (NDFT)	100 µm
	Method of application	Powder coating
Second layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	30 µm
	Method of application	Spray painting
Total film thickness (NDFT)		130 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paints (RAL, Munsell, BS etc.) on request: pearl or shining effects are not possible with RAL paints.

4.2.3 Corrosivity category up to C5, high durability

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 03a**
Typical environment		– Industrial areas with high air humidity and aggressive atmosphere; coastal and offshore areas with high salinity – Buildings or areas with almost permanent condensation and with high pollution
Materials		Steel, stainless steel and aluminum
Service temperature		Max. 120 °C
Surface preparation		Phosphate coated, zinc plating with iridescent passivation, stainless steel etched, aluminum passivated
System description		
First layer	Coating material	Powder coating, epoxy polyester base (powder mixture)
	Film thickness (NDFT)	100 µm
	Method of application	Powder coating
Second layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	140 µm
	Method of application	Spray painting
Third layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	40 µm
	Method of application	Spray painting
Total film thickness (NDFT)		280 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paints (RAL, Munsell, BS etc.) on request: pearl or shining effects are not possible with RAL paints.

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 3b**
Typical environment		– Industrial areas with high air humidity and aggressive atmosphere; coastal and offshore areas with high salinity – Buildings or areas with almost permanent condensation and with high pollution
Materials		Steel
Service temperature		Up to 120 °C
Surface preparation		Phosphatized
System description		
First layer	Coating material	Zinc-rich two-component primer
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component epoxy coating containing micaceous iron oxide
	Film thickness (NDFT)	160 µm
	Method of application	Spray painting
Third layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Total film thickness (NDFT)		280 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 3c**
Typical environment		– Industrial areas with high air humidity and aggressive atmosphere; coastal and offshore areas with high salinity – Buildings or areas with almost permanent condensation and with high pollution
Materials		Steel, stainless steel and aluminum
Service temperature		Up to 120 °C
Surface preparation		Zinc plating with iridescent passivation, stainless steel etched, aluminum passivated
System description		
First layer	Coating material	Two-component epoxy primer (zinc-free)
	Film thickness (NDFT)	50 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component epoxy coating containing micaceous iron oxide
	Film thickness (NDFT)	150 µm
	Method of application	Spray painting
Third layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	80 µm
	Method of application	Spray painting
Total film thickness (NDFT)		280 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

4.2.4 Corrosivity category up to C5, very high durability

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 4**
Typical environment		– Industrial areas with high air humidity and aggressive atmosphere; coastal and offshore areas with high salinity – Buildings or areas with almost permanent condensation and with high pollution
Materials		Steel
Service temperature		Max. 120 °C
Surface preparation		Blast-cleaning, cleanliness grade Sa 2.5, medium (G)
System description		
First layer	Coating material	Zinc-rich two-component primer
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component epoxy coating containing micaceous iron oxide
	Film thickness (NDFT)	160 µm
	Method of application	Spray painting
Third layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Total film thickness (NDFT)		280 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

4.2.5 Paint coatings for insulated or non-insulated steel or stainless steel in highly corrosive ambient conditions and cryogenic applications (cryogenic ambient conditions)

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 8**
Typical environment		Ambient conditions (indoor and outdoor) with additional influence due to increased or high temperatures
Materials		Steel and stainless steel
Operating temperature		–196 to +230 °C
Service temperature		Max. 230 °C
Surface preparation		Blast-cleaning, cleanliness grade Sa 2.5, medium (G)
System description		
First layer	Coating material	Epoxy phenolic
	Film thickness (NDFT)	125 µm
	Method of application	Spray painting
Second layer	Coating material	Epoxy phenolic
	Film thickness (NDFT)	125 µm
	Method of application	Spray painting
Total film thickness (NDFT)		250 µm
Standard color		Gray, pink or olive gray
Special color		–

4.2.6 High-temperature-resistant systems

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 5**
Typical environment		– Ambient conditions (indoor and outdoor) with additional influence due to high temperatures – "Dry heat"
Materials		Valve bodies made of steel
Operating temperature		120 to 540 °C
Service temperature		Max. 540 °C
Surface preparation		Phosphatized
System description		
First layer	Coating material	Ethyl silicate zinc dust primer
	Film thickness (NDFT)	75 µm
	Method of application	Spray painting
Second layer	Coating material	High-temperature silicone coating
	Film thickness (NDFT)	25 µm
	Method of application	Spray painting
Third layer	Coating material	High-temperature silicone coating
	Film thickness (NDFT)	25 µm
	Method of application	Spray painting
Total film thickness (NDFT)		125 µm
Standard color		Aluminum (approx. white aluminum)
Special color		–

Coating system with special requirements according to DIN EN ISO 12944-2		
Coating system		**No. 6**
Typical environment		– Ambient conditions (indoor and outdoor) with additional influence due to high temperatures – "Dry heat"
Materials		Valve bodies made of stainless steel
Operating temperature		120 to 540 °C
Service temperature		Max. 540 °C
Surface preparation		Stainless steel etched
System description		
First layer	Coating material	High-temperature silicone coating
	Film thickness (NDFT)	25 µm
	Method of application	Spray painting
Second layer	Coating material	High-temperature silicone coating
	Film thickness (NDFT)	25 µm
	Method of application	Spray painting
Total film thickness (NDFT)		50 µm
Standard color		Aluminum (approx. white aluminum)
Special color		–

4.3 Coating systems for valve accessories

4.3.1 Corrosivity category up to C2, up to high durability

Paint coatings for aluminum surfaces		
Coating system		**No. 10a**
Typical environment		– Urban and industrial atmospheres with moderate sulfur dioxide pollution – Coastal areas with low salinity – Production rooms with high humidity and some air pollution
Materials		Aluminum version of valve accessories (Types 373x, 376x, 379x, 476x, 3755)
Service temperature		Max. 120 °C
Surface preparation		Aluminum passivated
System description		
First layer	Coating material	Powder coating, epoxy polyester base (powder mixture)
	Film thickness (NDFT)	70 to 120 µm
	Method of application	Powder coating
Total film thickness (NDFT)		70 to 120 µm
Standard color		RAL 1019 Gray-beige
Special color		In cases where a special paint color is specified, select a different coating system.

Coating of aluminum with special color specification		
Coating system		**No. 10b**
Typical environment		– Atmospheres with low or moderate pollution, high humidity – Coastal areas with low salinity
Materials		Aluminum version of valve accessories (Types 373x, 376x, 379x, 476x, 3755)
Service temperature		Max. 120 °C
Surface preparation		Aluminum passivated
System description		
First layer	Coating material	Two-component epoxy primer (zinc-free)
	Film thickness (NDFT)	40 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Total film thickness (NDFT)		100 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

Paint coatings on stainless steel (coloring only)		
Coating system		**No. 11a**
Typical environment		– Atmospheres with low or moderate pollution, high humidity – Coastal areas with low salinity
Materials		Stainless steel version of valve accessories (Types 373x, 376x, 379x, 476x, 3755)
Service temperature		Max. 120 °C
Surface preparation		Stainless steel etched
System description		
First layer	Coating material	Powder coating, epoxy polyester base (powder mixture)
	Film thickness (NDFT)	70 to 120 µm
	Method of application	Powder coating
Total film thickness (NDFT)		70 to 120 µm
Standard color		RAL 1019 Gray-beige
Special color		In cases where a special paint color is specified, select a different coating system.

Paint coatings of stainless steel with special color specifications		
Coating system		**No. 11b**
Typical environment		– Atmospheres with low or moderate pollution, high humidity – Coastal areas with low salinity
Materials		Stainless steel version of valve accessories (Types 373x, 376x, 379x)
Service temperature		Max. 120 °C
Surface preparation		Stainless steel etched
System description		
First layer	Coating material	Two-component epoxy primer (zinc-free)
	Film thickness (NDFT)	40 µm
	Method of application	Spray painting
Second layer	Coating material	Two-component polyurethane top coat
	Film thickness (NDFT)	60 µm
	Method of application	Spray painting
Total film thickness (NDFT)		100 µm
Standard color		RAL 1019 Gray-beige
Special color		Special paint colors (RAL, Munsell, BS etc.) on request Pearl or shining effects are not possible with RAL paints.

4.4 Customized solutions

Contact SAMSON if you require a protective coating system not included in this brochure or simply want a different color.

Color

RAL 1019 is the standard color for SAMSON products. Other colors are possible on request to meet various international standards. The exact color code must be specified for customized solutions.

Customized protective coating systems

The following customized solutions are available:

- Coating systems according to NORSOK M-501 on request
- Customized coatings for high and low-temperature applications
- Coatings according to customer specifications (only after prior agreement)
- Adaptation of the coating thickness according to customer specifications on request (with manufacturer specifications)

5 Test methods

Ongoing tests of coating systems are performed to ensure a constant high quality. Specific tests to verify the quality can be performed on customer request. The test results are documented in inspection certificates. Customers can also appoint an authorized inspector to verify test results. The conventional test methods listed below are performed during the application of paint coatings.

Dust test

Dust particles or other residue present on surfaces after blast-cleaning can reduce the adhesion of the coating to the substrate. The dust test is performed to assess the quantity and size of dust particles on surfaces prepared for painting.

- DIN EN ISO 8502-3

Salt test

Soluble salts and ion-specific contamination that are not visible to the naked eye can impair the adhesion of the coating to the substrate. During the salt test, a conductivity meter is used to determine the concentration of salts and ion-specific contamination present on the surface and assess the cleanliness of surfaces prepared for painting.

- DIN EN ISO 8502-6
- DIN EN ISO 8502-9

Film thickness measurement

After a coating has dried, its film thickness is measured according to the magnetic induction method. The film thickness of each layer (i.e. the primer, intermediate coat and top coat) is measured at defined measuring points.

- DIN EN ISO 19840
- DIN EN ISO 12944-5

Holiday test

The presence of discontinuities or 'holidays' in coating films can prevent the coating from fulfilling its function. A high-voltage holiday detector fitted with a brush probe can be used to detect discontinuities on coatings.

- DIN EN ISO 55670

Cross-cut test

The coating must remain adhered to the substrate in order for the coating to fulfill its function. The cross-cut test is performed to subjectively assess the adhesion of coatings with a film thickness (NDFT) lower than 250 µm. This test is a destructive test method. Therefore, it is performed on a test plate.

- DIN EN ISO 2409

X-cut tape test

The coating must remain adhered to the substrate in order for the coating to fulfill its function. The X-cut tape test is performed to subjectively assess the adhesion of coatings with a film thickness (NDFT) greater than 250 µm. This test is a destructive test method. Therefore, it is performed on a test plate.

- ASTM D3359

Pull-off test

The coating must remain adhered to the substrate in order for the coating to fulfill its function. In contrast to the cross-cut and X-cut tape tests, the pull-off test provides quantitative results. The force required to pull off the dolly is measured in megapascals (MPa) by an instrument. This test is a destructive test method. Therefore, it is performed on a test plate.

- DIN EN ISO 4624

MEK test

The solvent rub test is performed to determine the degree of cure of a baked film by the paint film resistance to a specified solvent. Methyl ethyl ketone (MEK) is used as the solvent in the solvent rub test. The MEK resistance or degree of cure applies to paint top coats and primers.

- ASTM D4752

6 Environmental protection

Environmentally safe powder coating

- Free from volatile organic compounds (e.g. solvents)
- Up to 98 % efficiency is achieved by recovering overspray

Wastewater cleaning

- Precipitation of heavy metals and other suspended matter
- pH neutralization
- Professional waste disposal

7 Relevant standards

Standard	Designation
DIN EN ISO 12944-1:2019-01	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 1: General introduction
DIN EN ISO 12944-2:2018-04	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 2: Classification of environments
DIN EN ISO 12944-3:2018-04	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 3: Design considerations
DIN EN ISO 12944-4:2018-04	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 4: Types of surface and surface preparation
DIN EN ISO 12944-5:2020-03	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 5: Protective paint systems
DIN EN ISO 12944-6:2018-06	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 6: Laboratory performance test methods
DIN EN ISO 12944-7:2018-04	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 7: Execution and supervision of paint work
DIN EN ISO 12944-8:2018-04	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 8: Development of specifications for new work and maintenance
DIN EN ISO 12944-9:2018-06	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 9: Protective paint systems and laboratory performance test methods for offshore and related structures
DIN EN ISO 2409:2020-12	Paints - Cross-cut test
DIN EN ISO 2808:2019-12	Paints and varnishes – Determination of film thickness
DIN EN ISO 4624:2016-08	Paints and varnishes – Pull-off test for adhesion
DIN EN ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings
DIN EN ISO 8501-2:2002-03	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coating
DIN EN ISO 8501-3:2007	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 3: Preparation grades of welds, edges and other areas with surface imperfections
DIN EN ISO 8502-3:2017-05	Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)
DIN EN ISO 8502-6:2020-08	Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 6: Extraction of water soluble contaminants for analysis (Bresle method)
DIN EN ISO 8502-9:2020-12	Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 9: Field method for the conductometric determination of water-soluble salts
DIN EN ISO 8503-1:2013-05	Preparation of steel substrates before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates – Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces
DIN EN ISO 8503-2:2012-06	Preparation of steel substrates before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates – Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel – Comparator procedure
DIN EN ISO 8504-2:2020-03	Preparation of steel substrates before application of paints and related products – Surface preparation methods – Part 2: Abrasive blast-cleaning
DIN EN ISO 9223:2012-05	Corrosion of metals and alloys – Corrosivity of atmospheres – Classification, determination and estimation
DIN EN ISO 9717:2018-02	Metallic and other inorganic coatings – Phosphate conversion coating of metals

DIN 50961:2012-04	Electroplated coatings – Zinc coatings on iron or steel – Terms, testing and corrosion resistance
DIN 55633-1:2021-03	Paints and varnishes – Corrosion protection of steel structures by powder coating systems – Assessment of powder coating systems and execution of coating
DIN 55670:2011-02	Paints and varnishes – Method for testing paint coatings for pores and cracks using high voltage
ASTM D3359-22	Standard Test Methods for Rating Adhesion by Tape Test
ASTM D4752-20	Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub
ISO 19840:2012	Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Measurement and acceptance criteria for the thickness of dry films on rough surfaces
NACE SP0188-2006	Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates

SAMSON AT A GLANCE

STAFF

- Worldwide 4,500
- Europe 3,600
- Asia 600
- Americas 200
- Frankfurt am Main, Germany 1,900

INDUSTRIES AND APPLICATIONS

- Chemicals and petrochemicals
- Food and beverages
- Pharmaceuticals and biotechnology
- Oil and gas
- Liquefied Natural Gas (LNG)
- Marine equipment
- Power and energy
- Industrial gases
- Cryogenic applications
- District energy and building automation
- Metallurgy and mining
- Pulp and paper
- Water technology
- Other industries

PRODUCTS

- Valves
- Self-operated regulators
- Actuators
- Positioners and valve accessories
- Signal converters
- Controllers and automation systems
- Sensors and thermostats
- Digital solutions

SALES SITES

- More than 50 subsidiaries in over 40 countries
- More than 200 representatives

PRODUCTION SITES

- SAMSON Germany, Frankfurt, established in 1916
  Total plot and production area: 150,000 m²
- SAMSON France, Lyon, established in 1962
  Total plot and production area: 23,400 m²
- SAMSON Turkey, Istanbul, established in 1984
  Total plot and production area: 11,100 m²
- SAMSON USA, Baytown, TX, established in 1992
  Total plot and production area: 20,000 m²
- SAMSON China, Beijing, established in 1998
  Total plot and production area: 47,000 m²
- SAMSON India, Pune district, established in 1999
  Total plot and production area: 28,000 m²
- SAMSON AIR TORQUE, Bergamo, Italy
  Total plot and production area: 27,000 m²
- SAMSON CERA SYSTEM, Hermsdorf, Germany
  Total plot and production area: 14,700 m²
- SAMSON KT-ELEKTRONIK, Berlin, Germany
  Total plot and production area: 1,100 m²
- SAMSON LEUSCH, Neuss, Germany
  Total plot and production area: 18,400 m²
- SAMSON PFEIFFER, Kempen, Germany
  Total plot and production area: 20,300 m²
- SAMSON RINGO, Zaragoza, Spain
  Total plot and production area: 19,000 m²
- SAMSON SED, Bad Rappenau, Germany
  Total plot and production area: 10,400 m²
- SAMSON STARLINE, Bergamo, Italy
  Total plot and production area: 27,000 m²
- SAMSON VDH PRODUCTS, the Netherlands
  Total plot and production area: 12,000 m²
- SAMSON VETEC, Speyer, Germany
  Total plot and production area: 27,100 m²

SAMSON AKTIENGESELLSCHAFT

Weismuellerstrasse 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
E-mail: samson@samsongroup.com
Internet: www.samsongroup.com

2023-01 · WA 268 EN

SMART IN FLOW CONTROL