

PPG coating systems ISO 12944

2024 global system selector



Protective and marine coatings

Primary
markets



Marine



Oil, Gas &
Chemical



Civil
infrastructure



Power



Mining



Rail



Plants &
Facilities

PPG is widely recognized as a world leader in protective and marine coatings. We develop innovative, cutting-edge products and services that deliver value and protect customers' assets.

Our coatings are found around the world, protecting assets in a wide range of applications that include highly specialized, complex industries and the most demanding environments.

We're known for our commitment to providing high-quality, durable products; our high ethical standards, and our commitment to provide a safe, healthy, and fulfilling work environment for employees.



Pioneering technologies

Innovation never rests. We take proven technology and develop it further.

In addition to our standard and proven anticorrosive systems, substantial research and development investment is directed toward the innovation of:

- Passive protection for hydrocarbon fire and cryogenic protection of chemical, petrochemical, and offshore facilities; and cellulosic fire protection for infrastructure projects
- Heat resistant system and spray-on insulation coatings
- Chemical resistant tank linings for land storage tanks and commercial shipping
- Fouling protection on seagoing vessels, which can be either biocidal antifouling or biocide-free fouling release coatings
- High performance topcoats that provide ease of use and unsurpassed durability

Products in the System Selector:

- PPG DIMETCOTE® 9
- PPG SIGMAZINC® 68 GP
- PPG AQUACOVER® ONE 625
- PPG SIGMACOVER® 280
- PPG SIGMACOVER® 809
- PPG SIGMAFAST® 278
- PPG SIGMADUR® 550 SERIES
- PPG PSX® 700
- PPG AQUACOVER® ONE 645



Finding the correct ISO 12944 corrosion protection is as easy as 1,2,3.

Use the System Selector to find the correct PPG protection system for ISO 12944 compliance.

There are three steps:

- 1 Define the corrosion environment category
- 2 Determine the ISO durability requirement
- 3 Select system based on project requirements

With these parameters, you can use the tables on pages 7-12 to choose the ISO 12944 corrosion protection system that's right for your job.

Importance of ISO 12944

ISO 12944 is an international standard on corrosion protection of steel structures by protective paint systems.

ISO 12944 is giving guidelines for the selection of paints available for different environments and different surface preparation grades, and the durability grade to be expected. It will avoid difficulties and misunderstandings between the parties concerned with the practical implementation of protection work.

Working with ISO 12944 will ensure the customer has:

- An effective corrosion protection
- An objective approach to select the coating system



Step 1: Define the corrosion category that matches your project's environment.

Corrosion category	Exterior	Interior
C1	Exterior conditions not applicable	Heated buildings with clean atmospheres, for example, offices, shops, schools, hotels
C2	Atmospheres with low level of pollution, mostly rural areas	Unheated buildings where condensation can occur, for example, depots, sports halls
C3	Urban and industrial atmospheres, moderate sulfur dioxide pollution; coastal areas with low salinity	Production rooms with high humidity and some air pollution, for example, food processing plants, laundries, breweries, dairies
C4	Industrial areas and coastal areas with moderate salinity	Chemical plants, swimming pools, coastal ships and boatyards
C5	Industrial areas with high humidity and aggressive atmosphere and coastal areas with high salinity	Buildings or areas with almost permanent condensation and with high pollution
CX	Offshore areas with high salinity and industrial areas with extreme humidity and aggressive atmosphere and subtropical and tropical atmospheres	Industrial areas with extreme humidity and aggressive atmosphere

Step 2: Determine your ISO durability requirement.

Durability

Main factors influencing durability choice:

- Atmospheric conditions
- Structure design
- Accessibility of asset
- Application conditions

Durability is a technical consideration and planning parameter that can help you set up a realistic maintenance program by determining the expected life of a protective paint system from application to the first major maintenance painting. ISO categories for durability (L, M, H and VH) are defined in the table.

Durability	Years to first major maintenance
Low (L)	Up to 7 years
Medium (M)	7 years to 15 years
High (H)	15 years to 25 years
Very High (VH)	More than 25 years



How to find the best PPG coating system.

This chart can help you decide which coating is best for your project needs; simply follow the steps outlined below.

Process:

Select:

1 Corrosion category

Select:

2 Durability

Select:

3 System

Example:

Industrial areas and coastal areas with moderate salinity

20 years expected before first major maintenance

Take into account the combination of dry times, gloss / color retention and number of coats that best match the needs of the project.

Step 3: Select system based on project requirements

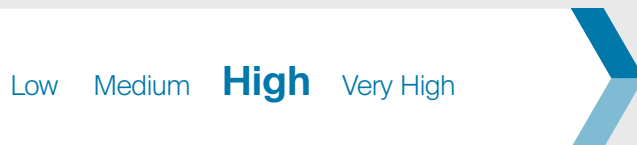
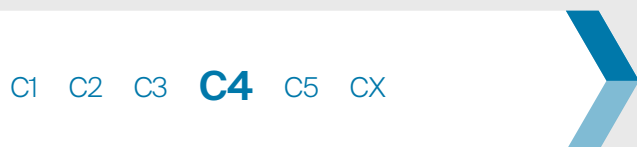
Coatings and applications

Once you have defined the project's corrosion environment and durability requirements, reference the charts on pages 7-12 to select the best PPG coating system for ISO Sa 2½ grit blasted carbon steel based on your specific project requirements.



System Selection:

Selecting the most accurate parameters defines which paint system will fill your specific project needs and requirements.



System Selection:

C4.06

PPG SIGMAFAST 278:




60 µm / 2.4 mils

PPG PSX 700:


125 µm / 5 mils

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ISO 12944-6 C2 High, C3 Medium and C4 Low

System	Layer 1			Layer 2			Number of coats	Total system DFT (µm)	Advantages		
	Generic type	Primer coat	DFT (µm)	Generic type	Finish coat	DFT (µm)					
C2.03*	WB AY	PPG AQUACOVER ONE 625	80	WB AY	PPG AQUACOVER ONE 645	80	2	160	*	**	**
C2.05	EP	PPG SIGMAFAST 278	120		—		1	120	***	*	***




*Also complies with ISO 12944-5:2019 min. Nominal Dry Film Thickness and Minimum Number of Coats requirements

 **Fast dry:** dry to handle times for full system: ***: ≤ 4 hrs; *: > 12 hrs @ 20 °C (68 °F)

 **Aesthetic durability:** gloss and color retention that can be expected for the technology of the final coat: ** : WB topcoat; * : EP


 **Economical:** based on Number of Coats and cost effectiveness of the products: ***: 1 coat; **: 2 coat system


ISO 12944-6 C2 Very High, C3 High, C4 Medium and C5 Low

System	Layer 1			Layer 2			Number of coats	Total system DFT (µm)	Advantages		
	Generic type	Primer coat	DFT (µm)	Generic type	Finish coat	DFT (µm)					
C3.03	WB AY	PPG AQUACOVER ONE 625	90	WB AY	PPG AQUACOVER ONE 645	90	2	180	*	**	**
C3.06*	EP	PPG SIGMAFAST 278	130	PUR	PPG SIGMADUR 550	50	2	180	**	**	**
C3.06*	EP	PPG SIGMAFAST 278	90	EP	PPG SIGMAFAST 278	90	2	180	***	*	***
C3.06*	PS	PPG PSX 700	125	—			1	125	***	***	**




*Also complies with ISO 12944-5:2019 min. Nominal Dry Film Thickness and Minimum Number of Coats requirements

 **Fast dry:** dry to handle times for full system: ***: ≤ 6 hrs; **: ≤ 8 hrs; *: > 12 hrs @ 20 °C (68 °F)

 **Aesthetic durability:** gloss and color retention that can be expected for the technology of the final coat: ***: PS topcoat; **: WB/PUR topcoat; * : EP


 **Economical:** based on Number of Coats and cost effectiveness of the products: ***: 2 coat EP; **: 1 coat / 2 coat EP + PUR or 2 coat WB


ISO 12944-6 C3 Very High, C4 High and C5 Medium

System	Layer 1			Layer 2			Number of coats	Total system DFT (µm)	Advantages		
	Generic type	Primer coat	DFT (µm)	Generic type	Finish coat	DFT (µm)					
C4.06*	EP	PPG SIGMAFAST 278	190	PUR	PPG SIGMADUR 550	50	2	240	**	**	**
C4.06	EP	PPG SIGMAFAST 278	60	PS	PPG PSX 700	125	2	185	**	***	*
C4.06*	EP	PPG SIGMAFAST 278	120	EP	PPG SIGMAFAST 278	120	2	240	***	*	***
C4.10*	ZnR	PPG SIGMAZINC 68GP	50	EP	PPG SIGMAFAST 278	150	2	200	***	*	*
C4.10	ZnR	PPG SIGMAZINC 68GP	50	PS	PPG PSX 700	100	2	150	**	***	*

*Also complies with ISO 12944-5:2019 min. Nominal Dry Film Thickness and Minimum Number of Coats requirements

 **Fast dry:** dry to handle times for full system: ***: ≤ 6 hrs; **: ≤ 8 hrs; *: > 12 hrs @ 20 °C (68 °F)




 **Aesthetic durability:** gloss and color retention that can be expected for the technology of the final coat: ***: PS topcoat; **: PUR topcoat; * : EP

 **Economical:** based on Number of Coats and cost effectiveness of the products: ***: 2 coat EP; **: 2 coat EP + PUR; *: ZnR or PS system

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ISO 12944-6 C4 Very High and C5 High

System	Layer 1			Layer 2			Layer 3			Number of coats	Total system DFT (µm)	Advantages		
	Generic type	Primer coat	DFT (µm)	Generic type	Intermediate coat	DFT (µm)	Generic Type	Finish coat	DFT (µm)					
C5.03*	EP	PPG SIGMAFAST 278	200	–			PUR	PPG SIGMADUR 550 H	100	2	300	*	**	**
C5.03*	EP	PPG SIGMAFAST 278	150	EP	PPG SIGMAFAST 278	150	–			2	300	***	*	***
C5.07	ZnR	PPG SIGMAZINC 68GP	50	EP	PPG SIGMAFAST 278	160	PUR	PPG SIGMADUR 550	50	3	260	**	**	*
C5.07	ZnR	PPG SIGMAZINC 68GP	75	–			PS	PPG PSX 700	125	2	200	***	***	*
C5.07*	ESI	PPG DIMETCOTE 9	60	EP	PPG SIGMAFAST 278	150	PUR	PPG SIGMADUR 550	50	3	260	*	**	*
G5.04* (HDG)	EP	PPG SIGMAFAST 278	150	–			PUR	PPG SIGMADUR 550	50	2	200	***	**	**
TSM 5.01*	EP	PPG SIGMAFAST 278	150	–			PUR	PPG SIGMADUR 550	50	2	200	***	**	**

*Also complies with ISO 12944-5:2019 min. Nominal Dry Film Thickness and Minimum Number of Coats requirements

 **Fast dry:** dry to handle times for full system: ***: ≤ 8 hrs; **: ≤ 10 hrs; *: > 14 hrs @ 20 °C (68 °F)




 **Aesthetic durability:** gloss and color retention that can be expected for the technology of the final coat: ***: PS topcoat; **: PUR topcoat; *: EP

 **Economical:** based on Number of Coats and cost effectiveness of the products: ***: 2 coat EP; **: 2 coat EP + PUR; *: ZnR or ESI system

DFT: Dry Film Thickness
EP: Epoxy primer / Buildcoat
ESI: Ethyl silicate zinc rich primer
PS: Polysiloxane topcoat
PUR: Polyurethane topcoat
ZnR: Zinc rich epoxy primer
WB AY: Waterborne Acrylic

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ISO 12944-6 C5 Very High

System	Layer 1			Layer 2			Layer 3			Number of coats	Total system DFT (µm)	Advantages		
	Generic type	Primer coat	DFT (µm)	Generic type	Intermediate coat	DFT (µm)	Generic Type	Finish coat	DFT (µm)					
C5.04*	EP	PPG SIGMACOVER 809	100	EP	PPG SIGMAFAST 278	200	PUR	PPG SIGMADUR 550	60	3	360	**	**	**
C5.04	EP	PPG SIGMACOVER 809	75	EP	PPG SIGMAFAST 278	145	PUR	PPG SIGMADUR 550	60	3	280	**	**	**
C5.04/1*	EP	PPG SIGMACOVER 809	150	EP	PPG SIGMACOVER 809	150	PUR	PPG SIGMADUR 550	60	3	360	**	**	**
C5.08/1*	ZnR	PPG SIGMAZINC 68 GP	50	EP	PPG SIGMAFAST 278	220	PUR	PPG SIGMADUR 550	50	3	320	**	**	*
C5.08/3*	ESI	PPG DIMETCOTE 9	50	EP	PPG SIGMAFAST 278	220	PUR	PPG SIGMADUR 550	50	3	320	*	**	*
G5.05* (HDG)	EP	PPG SIGMAFAST 278	190	—			PUR	PPG SIGMADUR 550	50	2	240	***	**	***
G5.05* (HDG)	EP	PPG SIGMACOVER 280	25	EP	PPG SIGMAFAST 278	165	PUR	PPG SIGMADUR 550 H	50	3	240	*	**	**
TSM 5.02*	EP	PPG SIGMAFAST 278	190	—			PUR	PPG SIGMADUR 550	50	2	240	***	**	***
TSM 5.02*	EP	PPG SIGMACOVER 280	25	EP	PPG SIGMAFAST 278	165	PUR	PPG SIGMADUR 550 H	50	3	240	*	**	**




*Also complies with ISO 12944-5:2019 min. Nominal Dry Film Thickness and Minimum Number of Coats requirements

 **Fast dry:** dry to handle times for full system: ***: ≤ 8 hrs; **: ≤ 12 hrs; *: > 16 hrs @ 20 °C (68 °F)

 **Aesthetic durability:** gloss and color retention that can be expected for the technology of the final coat: ***: PS topcoat; **: PUR topcoat; *: EP

 **Economical:** based on Number of Coats and cost effectiveness of the products: ***: 2 coat; **: 3 coat; *: ZnR or ESI system

ISO 12944-9 CX High

System	Layer 1			Layer 2			Layer 3			Number of coats	Total system DFT (µm)	Advantages		
	Generic type	Primer coat	DFT (µm)	Generic type	Intermediate coat	DFT (µm)	Generic Type	Finish coat	DFT (µm)					
CX*	EP	PPG SIGMACOVER 809	100	EP	PPG SIGMAFAST 278	200	PUR	PPG SIGMADUR 550	50	3	350	**	**	**
CX*	ZnR	PPG SIGMAZINC 68 GP	60	EP	PPG SIGMAFAST 278	170	PUR	PPG SIGMADUR 550	50	3	280	**	**	*
CX*	ESI	PPG DIMETCOTE 9	60	EP	PPG SIGMAFAST 278	170	PUR	PPG SIGMADUR 550	50	3	280	*	**	*
CX-TSM*	EP	PPG SIGMAFAST 278	150	—			PUR	PPG SIGMADUR 550	50	2	200	***	**	***

*Also complies with ISO 12944-9:2018 min. Nominal Dry Film Thickness and Minimum Number of Coats requirements

 **Fast dry:** dry to handle times for full system: ***: ≤ 8 hrs; **: ≤ 12 hrs; *: > 16 hrs @ 20 °C (68 °F)

 **Aesthetic durability:** gloss and color retention that can be expected for the technology of the final coat: ***: PS topcoat; **: PUR topcoat; *: EP

 **Economical:** based on Number of Coats and cost effectiveness of the products: ***: 2 coat; **: 3 coat; *: ZnR or ESI system

- DFT:** Dry Film Thickness
- EP:** Epoxy primer / Buildcoat
- ESI:** Ethyl silicate zinc rich primer
- PS:** Polysiloxane topcoat
- PUR:** Polyurethane topcoat
- ZnR:** Zinc rich epoxy primer
- HDG:** Hot Dipped Galvanized
- TSM:** Thermal Spray Metalization

PPG products for ISO 12944 coating systems

Zinc primers

PPG DIMETCOTE® 9

Two-component, moisture-curing zinc (ethyl) silicate coating

- Complies with the compositional requirements of SSPC-Paint 20, Level 1
- Suitable as a system primer in various paint systems based on unsaponifiable binders
- When suitably topcoated provides excellent corrosion protection for steel substrates up to 540°C (1000°F)

PPG SIGMAZINC® 68 GP

Two-component, high solids, polyamine adduct-cured, zinc rich epoxy primer

- Designed as a system primer in various paint systems for aggressive environments
- Quick-drying, can be overcoated after a short interval
- Complies with the compositional requirements of ISO 12944-5

Primers and intermediate coats

PPG AQUACOVER® ONE 625

One-component, waterborne acrylic zinc phosphate primer

- Good anticorrosive properties
- Particularly suitable when solvents are not permitted because of health and safety reasons
- Allows safer working during hull outfitting of new-buildings

PPG SIGMACOVER® 280

Two-component, aluminum pigmented polyamide cured universal primer

- General-purpose epoxy primer in protective coating systems for steel and non-ferrous metals
- Excellent adhesion to steel, shop primer, galvanized steel and non-ferrous metals
- Suitable as sealer or tie-coat at DFT 25 - 40 µm (1.0 - 1.6 mils)

PPG SIGMACOVER® 809

Two-component, high solids polyamine adduct cured epoxy coating

- High-performance modified passivation primer and buildcoat for protective coatings systems
- Long-lasting protection to steel structures requiring corrosion protection in extreme environmental conditions
- Suitable for use in offshore and onshore environments with ISO 12944-2 corrosivity categories of C5 and CX (offshore)

PPG SIGMAFAST® 278

Two-component, high solids, zinc phosphate epoxy primer and buildcoat

- Excellent corrosion resistance in atmospheric exposure
- Cures at temperatures down to -5°C (23°F)
- Speed curing in steel fabrication

Finishes

PPG SIGMADUR® 550 SERIES

Two-component, aliphatic acrylic polyurethane finish

- Excellent resistance to atmospheric exposure conditions
- Non-chalking, non-yellowing
- Cures at temperatures down to -5°C (23°F)

PPG PSX® 700

Two-component, engineered siloxane coating

- Unique, high gloss, isocyanate-free solution
- Excellent color and gloss retention
- Applied by brush, roller or spray, without thinning
- Good resistance to splash and spillage of chemicals

PPG AQUACOVER ONE® 645

One-component, waterborne acrylic dispersion finish

- Good weather resistance
- Particularly suitable when solvents are not permitted because of health and safety reasons
- Allows safer working during hull outfitting of new-buildings



DFT:	Dry Film Thickness
EP:	Epoxy primer / Buildcoat
ESI:	Ethyl silicate zinc rich primer
POL:	Polysiloxane topcoat
PS:	Polyurethane topcoat
ZnR:	Zinc rich epoxy primer
WB AY:	Waterborne Acrylic

PPG products for ISO 12944 coating systems

Product specifications

Product	Generic type	Volume solids	VOC (SED) g/kg	VOC (EPA) g/l	VOC (EPA) lb/US gal	Contains free isocyanate	su
PPG AQUA COVER ONE 625	WB AY	42 ± 2 %	4	—	—	No	
PPG AQUA COVER ONE 645	WB AY	44 ± 2 %	4	—	—	No	
PPG DIMETCOTE 9	ESI	63 ± 3 %	221	480	4.0	No	
PPG SIGMAZINC 68 GP	ZnR	68 ± 2 %	130	310		No	
PPG SIGMACOVER 280	EP	57 ± 2 %	327	—	—	No	
PPG SIGMACOVER 809	EP	80 ± 2 %	159	—	—	No	
PPG SIGMAFAST 278	EP	80 ± 2 %	153	220	1.8	No	
PPG SIGMADUR 550	PUR	55 ± 2 %	334	n.a.	n.a.	Yes	
PPG SIGMADUR 550 H	PUR	70 ± 2 %	220	n.a.	n.a.	Yes	
PPG PSX 700	PS	90 ± 2 %	119	84	0.7	No	



Min. substrate Temp	Min. overcoating time with Epoxy @ 20 °C (68 °F)	Min. overcoating time with PUR and PS @ 20 °C (68 °F)	Max. overcoating time @ 20 °C (68 °F)	Dry to handle time @ 20 °C (68 °F)	Pot life @ 20 °C (68 °F)	DFT range (µm)	DFT range (mils)
10 °C / 50 °F	n.a.	6	Unlimited	6 hrs	n.a.	50 - 75	2.0 - 3.0
10 °C / 50 °F	n.a.	12	Unlimited	12 hrs	n.a.	50 - 100	2.0 - 4.0
-18 °C / 0 °F	24	24	Unlimited	30 min	8 hrs	50 - 100	2.0 - 4.0
0 °C / 32 °F	1.5	1.5	3 months	1.5 hrs	6 hrs	50-150	2.0 - 6.0
5 °C / 41 °F	2	6	3 months	2.5 hrs	8 hrs	50 - 100	2.0 - 4.0
0 °C / 32 °F	3	10	1 month	5 hrs	2 hrs	75 - 250	3.0 - 10.0
-5 °C / 23 °F	2	2	1 month	4 hrs	1 hr	75 - 250	3.0 - 10.0
-5 °C / 23 °F	n.a.	6	Unlimited	6 hrs	5 hrs	50 - 60	2.0 - 2.4
-5 °C / 23 °F	n.a.	8	Unlimited	12 hrs	2.5 hrs	50-150	2.0 - 6.0
0 °C / 32 °F	n.a.	4.5	Unlimited	6 hrs	4 hrs	75 - 175	3.0 - 7.0





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