



ISO 12944 Global Systems Guides



PPG Protective &
Marine Coatings

Introduction

This global coatings systems guide has been published to assist in selecting the PPG Protective and Marine Coatings (PPG PMC) products/systems that comply with various environmental conditions, as described in ISO 12944.

The systems table published here primarily reflects the individual systems which comply with the performance qualification “High” as defined by the ISO 12944. ISO 12944 must be referenced to determine complete system definition.

We have also included a matrix which illustrates the ISO 12944 cross-over of systems to more harsh environmental classifications, but with the consequential reduction to the performance classifications “Medium” or “Low,” with their respective reduced typical durability’s of 5 to 15 years (medium) or 2 to 5 years (low). A reduction in the degree of surface cleanliness will also result in less durability.

ISO 12944 - 2 Classification Of Environments

ISO 12944-2 provides tables of corrosion classes with typical environments for both atmospheric and immersion conditions. These environments are to be interpreted as an indication of the circumstances that the coating system is designed to resist for extended periods. The approximate durability period is categorized as follows: 2 - 5 years “low”, 5-15 years “medium” and 15 + years “high”.

The durability ranges provide an indication of the lifetime of the system before first major maintenance is required. This is usually carried out when the coating system has reached the level of Ri3 as defined in ISO 4628-3 (1% of total surface area rusted).

NOTE: These durability ranges are not “guaranteed times”. They should be considered as a technical consideration that can help to set up a corrosion protection maintenance program. There are no rules to link the guarantee time to this durability range, nor is it the intention to do so.

Maintenance is often required on more frequent intervals, due to other influences than corrosion; for example: wear and tear, fading, aesthetical reasons, contamination etc.

CORROSION CLASSES	Typical Exterior Environments	Typical Interior Environments
C1	-	Heated buildings with clean atmospheres eg. Offices, schools, shops, hotels
C2	Atmospheres with low level of pollution. Mostly rural areas.	Unheated buildings where condensation may occur eg. depots, warehouses, 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 (food processing plants, laundries, breweries, dairies)
C4	Industrial areas and coastal areas with moderate salinity.	Chemical plants, swimming pools, coastal shipyards.
C5I/C5M	Industrial areas with high humidity and aggressive atmosphere. Coastal and offshore areas with high salinity.	Buildings or areas with almost permanent condensation and high pollution



System	Coating	Generic Type	Dft Microns	Dft (mils)	Notes	Main Environments
1	Amercoat 68 Series	Epoxy zinc-rich	75	3	High durability (>15 years) 3-coat system for very high corrosivity (marine) environments; surface prep SA 2½ (SSPC SP-10)	C5/C5M
	Amercoat 385 Series	Epoxy intermediate	200	8		
	Amercoat 450 Series	Polyurethane	50	2		
			325	13		
1A	Dimetcote 9 Series	Zinc silicate	75	3	High durability (>15 years) 3-coat system for very high corrosivity (marine) environments. If a tiecoat is specified apply the Intermediate in two coats, surface prep SA 2½ (SSPC SP-10)	C5/C5M
	Amercoat 385 Series	Epoxy intermediate	200	8		
	Amercoat 450 Series	Polyurethane	50	2		
			325	13		
1B	Amercoat 68 Series	Epoxy zinc-rich	75	3	High durability (>15 years) 2-coat system with superior weatherability and gloss retention for very high corrosivity (marine) environments; surface prep SA 2½ (SSPC SP-10)	C5/C5M
	PSX700	Epoxy Siloxane	125	5		
			200	8		
1C	Dimetcote 9 Series	Zinc silicate	75	3	High durability (>15 years) 2-coat system with superior weatherability and gloss retention for very high corrosivity (marine) environments; surface prep SA 2½ (SSPC SP-10)	C5/C5M
	PSX700	Epoxy Siloxane	125	5		
			200	8		
1D	Amercoat 68 Series	Epoxy zinc-rich	75	3	Medium durability (5-15 years) 3-coat system for very high corrosivity (industrial) environments; surface prep SA 2½ (SSPC SP-10)	C5/C5M
	Amercoat 385 Series	Epoxy intermediate	125	5		
	Amercoat 450 Series	Polyurethane	50	2		
			250	10		
1E	Dimetcote 9 Series	Zinc silicate	75	3	Medium durability (5-15 years) 3-coat system for very high corrosivity (marine) environments. If a tiecoat is specified apply the intermediate in two coats; surface prep SA 2½ (SSPC SP-10)	C5/C5M
	Amercoat 385 Series	Epoxy intermediate	125	5		
	Amercoat 450 Series	Polyurethane	50	2		
			250	10		
2	Amerlock Series	Epoxy	125	5	High durability (>15 years) 3-coat system for high corrosivity environments; surface prep SA 2½ (SSPC SP-10). (Amerlock can also provide good performance with lesser surface prep. contact Ameron)	C4
	Amershield	Polyurethane	125	5		
			250	10		
2A	Amercoat 385PA Series	Zinc Phosphate Epoxy	100	4	High durability (>15 years) 3-coat system for high corrosivity environments; surface prep SA 2½ (SSPC SP-10)	C4
	Amercoat 385 Series	Epoxy intermediate	150	6		
	Amercoat 450 Series	Polyurethane	50	2		
			300	12		
2B	Amerlock Series	Epoxy	125	5	High durability (>15 years) 3-coat system for high corrosivity environments; surface prep SA 2½ (SSPC SP-10). (Amerlock can also provide good performance with lesser surface prep. contact Ameron)	C4
	Amerlock Series	Epoxy	125	5		
	Amercoat 450 Series	Polyurethane	50	2		
			300	12		

Amercoat 450 Series can be replaced by Amercoat 229 Series for environments below C4 high durability and a non-isocyanate option is required

Amercoat 450 Series can be replaced by PSX 1001 where single pack, non-isocyanate option is preferred

Amercoat 385 Series can be replaced by Amercoat 370 If a fast dry epoxy is preferred

Amerlock Series on galvanizing in systems 6 & 6A may be replaced with Amercoat 385 or Amercoat 370

Note: Systems recommended here are to full requirements as specified in ISO 12944, which must be referenced for completeness.

Besides specific generic offerings indicated, PPG PMC added-value systems are also included.



System	Coating	Generic Type	Dft Microns	Dft (mils)	Notes	Main Environments
2C	Amercoat 68 Series	Epoxy zinc-rich	75	3	High durability (>15 years) 2-coat system with superior gloss retention for high corrosivity environments; surface prep SA 2½ (SSPC SP-10)	C4
	PSX700	Epoxy Siloxane	125	5		
			200	8		
2D	Dimetecote 9 Series	Zinc silicate	75	3	High durability (>15 years) 2-coat system with superior gloss retention for high corrosivity environments; surface prep SA 2½ (SSPC SP-10)	C4
	PSX700	Epoxy Siloxane	125	5		
			200	8		
2E	Amerlock Series	Epoxy	150	6	High durability (>15 years) 2-coat system with superior weatherability and gloss retention for high corrosivity environments surface prep SA 2½ (SSPC SP-10)	C4
	PSX700	Epoxy Siloxane	125	5		
			275	11		
3	Amerlock Series	Epoxy	150	6	High durability (>15 years) 2-coat system for medium corrosivity environments; surface prep SA 2½ (SSPC SP-10)	C3
	Amercoat 450 Series	Polyurethane	50	2		
			200	8		
3A	Amerlock Series	Epoxy	100	4	High durability (>15 years) 2-coat system with superior gloss retention for medium corrosivity environments; surface prep SA 2½ (SSPC SP-10)	C3
	Amershield	Polyurethane	100	4		
			200	8		
4	Amerlock Series	Epoxy	150	6	High durability (>15 years) single coat system for low corrosivity environments and where gloss retention is not a key requirement; surface prep SA 2½ (SSPC SP-10)	C2
			150	6		
4A	Amershield	Polyurethane	125	5	Medium durability (5-15 years) single coat system with superior gloss retention for low corrosivity environments. High durability for C1; surface prep SA 2½ (SSPC SP-10)	C2
			125	5		
4B	Amerlock Series	Epoxy	100	4	High durability (>15 years) 2-coat system for low corrosivity environments; surface prep SA 2½ (SSPC SP-10)	C2
	Amercoat 450 Series	Polyurethane	50	2		
			150	6		
4C	Pitt-Tech Primer	Acrylic Latex	75	3	Medium durability (>10 years) 2-coat system for low corrosivity environments; surface prep SA 2 (SSPC SP-6) or SA 2½ (SSPC SP-10)	C2
	Pitt-Tech	Acrylic Latex	50	2		
			125	5		
5	Galvanizing	Suitably treated	-	-	High durability (>15 years) 3-coat system for high corrosivity environments	C3
	Amerlock Series	Epoxy	100	4		
	Amercoat 450 Series	Polyurethane	50	2		
			150	6		
5A	Galvanizing	Suitably treated	-	-	High durability (>15 years) 3-coat system for high corrosivity environments	C4
	Amerlock Series	Epoxy	125	5		
	Amercoat 450 Series	Polyurethane	50	2		
			175	7		
5B	Galvanizing	Suitably treated	-	-	High durability (>15 years) 3-coat system for high corrosivity environments	C5/C5M
	Amerlock Series	Epoxy	125	5		
	Amerlock Series	Epoxy	150	6		
	Amercoat 450 Series	Polyurethane	50	2		
			325	13		

Amercoat 450 Series can be replaced by Amercoat 229 Series for environments below C4 high durability and a non-isocyanate option is required

Amercoat 450 Series can be replaced by PSX 1001 where single pack, non-isocyanate option is preferred

Amercoat 385 Series can be replaced by Amercoat 370 if a fast dry epoxy is preferred

Amerlock Series on galvanizing in systems 6 & 6A may be replaced with Amercoat 385 or Amercoat 370

Note: Systems recommended here are to full requirements as specified in ISO 12944, which must be referenced for completeness.

Besides specific generic offerings indicated, PPG PMC added-value systems are also included.

	Zinc rich epoxy			Zinc silicate (zinc-rich)			Non-zinc rich		
C5I/C5M	High	Medium	Low	High	Medium	Low	High	Medium	Low
Systems	1, 1B	2C, 1D	N/A	1A, 1C	2D, 1E	N/A	5B	N/A	N/A

	Zinc rich epoxy			Zinc silicate (zinc-rich)			Non-zinc rich		
C4	High	Medium	Low	High	Medium	Low	High	Medium	Low
Systems	2C	N/A	N/A	2D	N/A	N/A	2, 2A, 2B, 2E, 5A*	3, 5*	N/A

	Zinc rich epoxy			Zinc silicate (zinc-rich)			Non-zinc rich		
C3	High	Medium	Low	High	Medium	Low	High	Medium	Low
Systems	N/A	N/A	N/A	N/A	N/A	N/A	3, 3A, 5*	4, 4B	4A

	Zinc rich epoxy			Zinc silicate (zinc-rich)			Non-zinc rich		
C2	High	Medium	Low	High	Medium	Low	High	Medium	Low
Systems	N/A	N/A	N/A	N/A	N/A	N/A	4, 4B	4A, 4C	N/A

* Duplex systems (general term for any organic coating over galvanizing). In general, a reduction in the degree of surface cleanliness will also result in a less "durable" system.



This guide offers a cross-reference among the four most widely recognized Standards, as follows:

SSPC Steel Structures Painting Council (U.S.A.)
 NACE National Association of Corrosion Engineers (U.S.A.)
 SA Swedish Standards Organization
 UK United Kingdom Standards (BS 4332)

Common Name	Description	SSPC	NACE	SA	UK
Brush-off	A brush-off cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust and loose paint. Tightly adherent mill scale, rust and paint may remain on the surface. Mill scale, rust and paint are considered tightly adherent if they cannot be removed by lifting with a dull putty knife.	SSPC-SP 7	NACE No.4	SA-1	–
Commercial	A Commercial Blast-cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except for staining. Staining shall be limited to no more than 33% of each square inch of surface area and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied paint. Slight residues of rust and paint may also be left in the bottoms of pits if the original surface is pitted.	SSPC-SP 6	NACE No.3	SA-2	3rd Quality
Near-White Metal	A Near-White Blast-cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and any other foreign matter, except for staining. Staining shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied paint.	SSPC-SP 10	NACE No.2	SA-2½	2nd Quality
White Metal	A White Metal Blast-cleaned surface, when viewed with magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter.	SSPC-SP 5	NACE No.1	SA-3	1st Quality

Note: Consult with local standards organizations to obtain complete specifications on degrees of surface cleanliness.



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