

# Advancements in corrosion protection



## PPG PRIMERON® high-performance powder primer series



AMERICAS



We protect and beautify the world®



## Why use a powder primer?

After blasting the metal surfaces, primers can be applied to slow down the speed of oxidation, create more consistency in the application of the powder coatings and allow the powder coatings to more easily bond to metal edges.



### Do I really need a powder primer?

The question really depends on the problem you are solving and the job you are doing. Metals, such as iron and steel, that are prone to corrosion will benefit from the extra protection provided by a powder primer to help guard against puncturing and flaking long term. Powder primer is commonly recommended for these metals:

- Cast and forged aluminum
- Cast and wrought iron
- Zinc alloys

### Do PPG powder primers meet industry specifications?

PPG powder primers meet ISO 12944. This specification serves as the industry benchmark for safeguarding steel structures against corrosion through protective paint systems. Initially introduced in 1998, this standard is a collaborative effort involving representatives from pivotal countries and companies vested in steel structure protection.

ISO 12944 encompasses nine parts, covering aspects such as environment classification, protective paint systems, laboratory test methods and systems for offshore structures.



## ISO 12944 corrosivity categories

The environmental conditions and, thus, the severity of the environmental impact can vary greatly depending on the region. For this purpose, ISO 12944 distinguishes between different corrosivity categories with examples of typical environments.

Category and Typical Environment			Class	ISO 6270-1 Water Condensation	ISO 9227 Neutral Salt Spray	ISO 12944-6 Cyclic Aging
				Hours Tested		
<div>LEAST SEVERE</div> <div>MOST SEVERE</div>	C1	<b>Indoor:</b> Heated indoor spaces without elevated condensation.	Low	-	-	-
			Medium	-	-	-
			High	-	-	-
			Very High	-	-	-
	C2	<b>Indoor:</b> Unheated indoor spaces with increased condensation. <b>Outdoor:</b> Atmospheres with low level of pollution. Mainly rural areas.	Low	48	-	-
			Medium	48	-	-
			High	120	-	-
			Very High	240	480	-
	C3	<b>Indoor:</b> Production rooms with high humidity and low contamination. <b>Outdoor:</b> Urban and industrial atmospheres with moderate sulfur dioxide pollution. Coastal areas with low salinity.	Low	48	120	-
			Medium	120	240	-
			High	240	480	-
			Very High	480	720	-
	C4	<b>Indoor:</b> chemical facilities, swimming pools. <b>Outdoor:</b> Industrial areas and coastal areas with moderate salinity.	Low	120	240	-
			Medium	240	480	-
			High	480	720	-
			Very High	720	1,440	1,680
	C5	<b>Indoor:</b> Buildings with almost permanent condensation and heavy air pollution. <b>Outdoor:</b> Industrial areas with high humidity and aggressive atmosphere.	Low	240	480	-
			Medium	480	720	-
			High	720	1,440	1,680
			Very High	-	-	2,688
	CX	<b>Outdoor:</b> Coastal and offshore areas with high salinity and industrial areas with extreme humidity.	Low	-	-	-
			Medium	-	-	-
			High	-	-	-
			Very High	-	-	4,200





## PPG *Primeron* primer portfolio

Corrosion protection is a decisive factor for the durability of a part and one of the most significant challenges for the coatings industry.

PPG's *Primeron* primer product portfolio is designed to provide high corrosion resistance for a variety of substrates, including steel, hot-dip-galvanized steel, metalized steel and aluminum.

Each of the five product lines were designed with special features that meet various substrate, environmental and end-use requirements.

### Suggested end uses

Gas or liquid tanks and pipelines

Truck, trailer and automotive parts

Agricultural and construction machinery

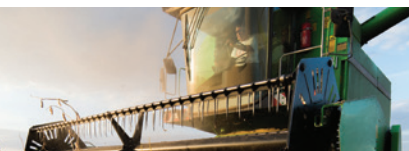
Automotive underbody and other parts

Seacoast or applications with high corrosion performance requirements



### *Primeron* Legacy

A traditional zinc-rich primer offering our best corrosion protection in this technology



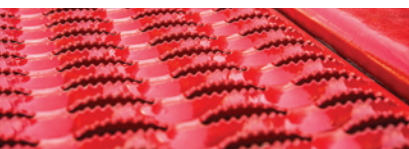
### *Primeron* Optimal

A zinc-rich primer that delivers exceptional corrosion protection and a balanced offering of other properties



### *Primeron* Auto

Designed for layered protection in automotive specialty markets, with options for exceptional flexibility, chip and corrosion resistance, UV durability and outgassing



### *Primeron* Edge

High-edge primer technology offering best-in-class corrosion protection for substrates with sharp and laser-cut edges



### *Primeron* Versa

Outgas-friendly, zinc-alternative primers that provide very excellent corrosion protection for multiple substrates

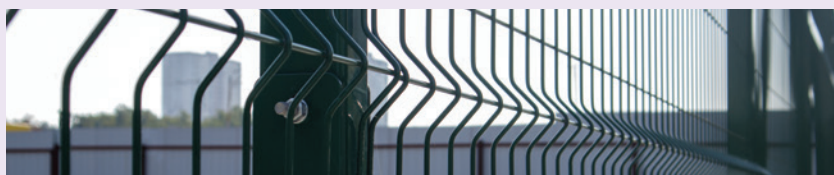








# Zinc-rich primer with exceptional corrosion protection



## Products, benefits and characteristics

- **PCM70140:** A traditional zinc-rich primer for use on mechanically pretreated steel, offering our best corrosion protection in this technology



ISO 12944 C4 primer that passes C5 specification for corrosion resistance



Very good flow and appearance



Low bake capability

Properties	Test Method	Value
Color	-	Dark gray
Surface	-	Semi-gloss, smooth
Gloss at 60°	ISO 2813	55-70
Specific Gravity	Calculated	3.6 g/cm <sup>3</sup>
Impact Resistance	ISO 6272 / ASTM D2794	80 in./lbs. direct 80 in./lbs. reverse
Adhesion	ISO 2409	5B, pass
Conical Mandrel	ISO 6860	1/8", pass

## Suggested Industries

Energy applications

General industrial

Automotive parts and accessories

## Suggested End Uses

Gas or liquid tanks and pipelines

Seacoast walls, fences or metal objects

## ISO 12944 Corrosivity Category

C4

## Partial Curing

7 - 10 minutes	275° F (135° C)
3 - 5 minutes	300° F (149° C)
1 - 2 minutes	350° F (177° C)

## Full Curing

20 minutes	275° F (135° C)
10 minutes	300° F (149° C)
5 minutes	350° F (177° C)

## Storage Conditions

12 months / 77° F (25° C)



# Zinc-rich primer with balanced performance properties



## Products, benefits and characteristics

- **PCMT70149:** Exceptional corrosion resistance and a balanced offering of other properties, including better coverage, applied cost, adhesion, semi-conductivity, recoatability and transfer efficiency than traditional zinc primers



Corrosion performance  
on all substrates



Recoatable with higher  
transfer efficiency than  
traditional zinc primers



Almost double the  
theoretical coverage of  
*Primeron* Legacy primer

Properties	Test Method	Value
Color	-	Dark gray
Surface	-	Semi-gloss, smooth
Gloss at 60°	ISO 2813	55-70
Specific Gravity	Calculated	2.0 g/cm <sup>3</sup>
Impact Resistance	ISO 6272 / ASTM D2794	160 in./lbs. direct
Adhesion	ISO 2409	5B, pass
Conical Mandrel	ISO 6860	1/8", pass

## Suggested Industries

Heavy-duty equipment

General industrial

Automotive parts and accessories

## Suggested End Uses

Construction/agricultural equipment

Seacoast walls, fences or metal objects

## ISO 12944 Corrosivity Category

C5

## Partial Curing

7 - 10 minutes	275° F (135° C)
3 - 5 minutes	300° F (149° C)
1 - 2 minutes	350° F (177° C)

## Full Curing

20 minutes	275° F (135° C)
10 minutes	300° F (149° C)
5 minutes	350° F (177° C)

## Storage Conditions

12 months / 77° F (25° C)



# Layered protection for automotive and specialty markets



## Products, benefits and characteristics

- **PCF90202, PCF70406:** polyester epoxy primers for aluminum wheels with great adhesion to liquid topcoats and excellent outgassing
- **PCT99157:** UV-durable polyester primer for aluminum wheels with great adhesion to liquid topcoats and excellent outgassing
- **PCM90133:** epoxy primer for steel/aluminum underbody applications with excellent performance over electrocoat or used as a monocoat
- **PCF70404:** polyester epoxy primer for steel/aluminum with excellent chip resistance when used over electrocoat
- **PCT90111M:** multi-use, polyester primer optimized for alkyd topcoats



Excellent layering over  
e-coat or under liquid  
topcoats



Good flow, appearance  
and mechanical  
properties



Options for chip  
resistance, UV durability  
and outgassing

## Suggested Industries

Automotive parts and accessories

## Suggested End Uses

Aluminum wheels

Automotive underbody parts

Automotive body

## ISO 12944 Corrosivity Category

C4: PCM90133

C3: All other products

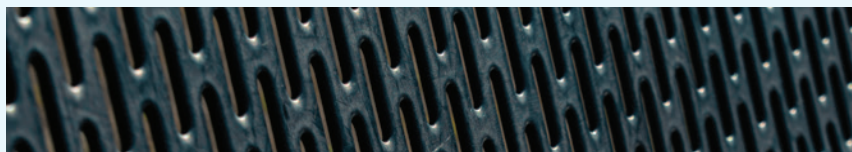
Properties*	PCF90202	PCF70406	PCT99157	PCM90133	PCF70404	PCT90111M
Color	Black	Gray	Black	Black	Gray	Black
Surface	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth
Gloss at 60°	70 minimum	70 minimum	80 minimum	80 minimum	10-25	55-70
Specific Gravity	1.3 g/cm <sup>3</sup>	1.3 g/cm <sup>3</sup>	1.2 g/cm <sup>3</sup>	1.5 g/cm <sup>3</sup>	1.3 g/cm <sup>3</sup>	1.6 g/cm <sup>3</sup>
Impact Resistance	100 in./lbs. direct	100 in./lbs. direct	80 in./lbs. direct	160 in./lbs. direct	100 in./lbs. direct	80 in./lbs. direct
Adhesion	5B, pass	5B, pass	5B, pass	5B, pass	5B, pass	5B, pass
Conical Mandrel	1/8", pass	1/8", pass	1/8", pass	1/8", pass	1/8", pass	1/8", pass
Full Curing	20 minutes 350° F (171° C)	30 minutes 350° F (171° C)	30 minutes 350° F (171° C)	5 minutes 350° F (171° C)	30 minutes 350° F (171° C)	25 minutes 350° F (177° C)

\* Properties on this page use the same test methods as other Primeron products. For information about full curing at other temperatures, partial curing or storage conditions, please contact your PPG sales representative or email ic-na@ppg.com.





Designed for  
best-in-class sharp  
edge protection



## Products, benefits and characteristics

- **PCMT30105:** A semi-conductive product that allows for easier topcoating and provides excellent sharp edge protection
- **PCF70283:** A preferred primer for heavy-duty equipment, offering good edge corrosion resistance and overall protection



Strong corrosion  
protection



Enhanced edge coverage  
for sharp, complex or  
laser-cut parts



Can help eliminate edge  
rounding equipment /  
extra machining

Properties	Test Method	Value*
Color	-	Medium gray (PCF70283) Light tan (PCMT30105)
Surface	-	Smooth
Gloss at 60°	ISO 2813	Varies by product
Specific Gravity	Calculated	1.6 g/cm <sup>3</sup>
Impact Resistance	ISO 6272 / ASTM D2794	80 in./lbs. direct
Adhesion	ASTM D3359	5B, pass
Conical Mandrel	ASTM D522	1/8", pass

\* Values indicate a range of performance across the entire family of products. For product-specific values, please contact your PPG sales representative or email [ic-na@ppg.com](mailto:ic-na@ppg.com).

## Suggested Industries

Heavy-duty equipment

Electrical and power generation

## Suggested End Uses

Vents, steps and louvres

Electrical boxes and air conditioners

## ISO 12944 Corrosivity Category

C4: PCMT30105

C3: PCF70283

## Partial Curing\*

5 - 7 minutes	350° F (177° C)
4 - 5 minutes	375° F (191° C)
3 - 4 minutes	400° F (204° C)

## Full Curing\*

16 - 20 minutes	350° F (177° C)
12 - 15 minutes	375° F (191° C)
8 - 12 minutes	400° F (204° C)

## Storage Conditions

12 -24 months / 77° F (25° C)



# Versatile primers for multi-substrate use



## Products, benefits and characteristics

- **PCMT70101:** Surface-tolerant epoxy primer that has good adhesion, great coverage and easy application with semi-conductivity that facilitates topcoat application
- **PCMB70102:** A user-friendly epoxy primer that can adapt to many different applications; especially outgas-friendly when used over galvanized steel and cast metals



Strong corrosion protection across a broad range of substrates



Good intercoat adhesion and compatibility with a wide range of topcoats



Excellent alternatives to zinc-rich primers

Properties	Test Method	Value*
Color	-	Gray
Surface	-	Smooth
Gloss at 60°	ISO 2813	Varies by product
Specific Gravity	Calculated	1.6 g/cm <sup>3</sup>
Impact Resistance	ISO 6272 / ASTM D2794	80 in./lbs. direct
Adhesion	ASTM D3359	5B, pass
Conical Mandrel	ASTM D522	1/8", pass

\* Values indicate a range of performance across the entire family of products. For product-specific values, please contact your PPG sales representative or email [ic-na@ppg.com](mailto:ic-na@ppg.com).

## Suggested Industries

Electrical and power generation

General industrial

## Suggested End Uses

Fencing, utility poles, lamp posts

Stadium seating

## ISO 12944 Corrosivity Category

C5: PCMT70101

C4: PCMB70102

## Partial Curing\*

6 - 9 minutes	275° F (135° C)
3 - 5 minutes	300° F (149° C)
2 - 3 minutes	350° F (177° C)

## Full Curing\*

20 - 30 minutes	275° F (135° C)
10 - 20 minutes	300° F (149° C)
5 - 10 minutes	350° F (177° C)

## Storage Conditions

12 months / 77° F (25° C)



## Primeron primers key feature summary

	Primeron Legacy	Primeron Optimal	Primeron Auto*	Primeron Edge*	Primeron Versa*
Key Features	<b>Zinc primer</b> offering our best corrosion protection in this technology	<b>Zinc-rich primer</b> with excellent corrosion protection and a balance of other properties	<b>Layer with liquid topcoats or over e-coat</b> for automotive-grade performance	Very good sharp <b>edge coverage</b> , hides casting defects	<b>Multi-substrate capable</b> , good intercoat adhesion, excellent alternative to zinc
Chemistry	Epoxy	Epoxy	Epoxy, polyester, polyester epoxy	Epoxy, polyester epoxy	Epoxy
Density	3.6 g/cm <sup>3</sup>	2.0 g/cm <sup>3</sup>	1.7 g/cm <sup>3</sup>	1.6 g/cm <sup>3</sup>	1.6 g/cm <sup>3</sup>
Overall Corrosion Performance	★★★★	★★★★	★★★	★★★	★★★★
Edge Protection	★	★★★	★★	★★★	★ ★
Mechanical Properties	★★	★★	★★★★	★★	★★
Coverage	★	★★	★★	★★★★	★★★★

\* Values indicate a range of performance across the entire family of products. For product-specific values, please contact your PPG sales representative or email [ic-na@ppg.com](mailto:ic-na@ppg.com).





## PPG: WE PROTECT AND BEAUTIFY THE WORLD®



### A trusted global coatings leader

Over 140 years in business with operations in 70+ countries



### Renowned color expertise

Trend-setting palettes for home, auto and industry paired with unrivaled color matching



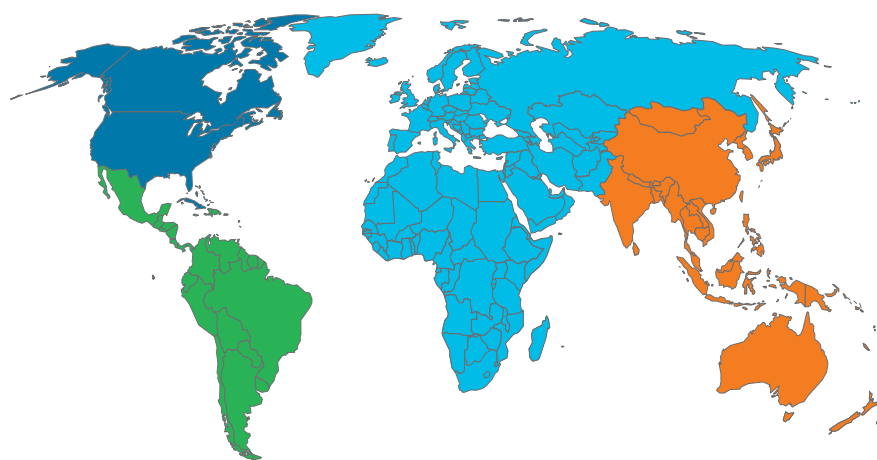
### Commitment to sustainability

50% of annual sales from sustainably advantaged products and processes



### Dedication to innovation

3,000+ technical employees with 700+ new coating patents over the past 10 years



### PPG's Industrial Coatings business offers:

- World-class technical services and training
- Expertise and innovation in sustainably advantaged solutions
- Support for installation of new equipment and improving finishing efficiency
- World-renowned production troubleshooting
- A step-by-step process to accelerate the introduction of new coatings and colors through the SECURE LAUNCH EXCELLENCE™ program

To learn more about PPG coatings, please visit [ppg.com/industrialcoatings](http://ppg.com/industrialcoatings) or contact one of the international sales offices listed below.

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