

Processing guidelines

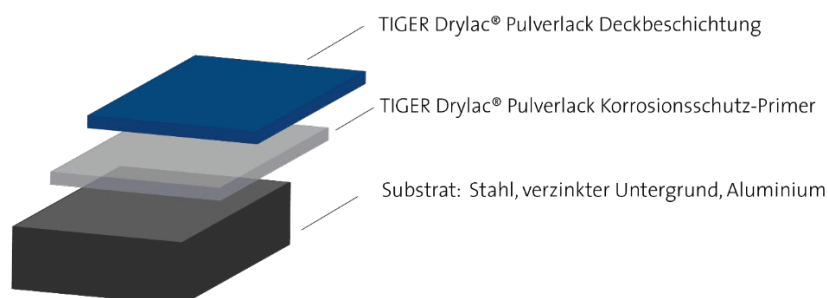
Primer Series 270–273

Introduction

As the most frequently used metal, steel is used wherever sturdiness is required. However, more than 200 µm of the material thickness can be lost due to corrosion every year in extreme cases. With TIGER SHIELD, TIGER Coatings has developed a system that provides lasting protection for steel and galvanized substrates.

In addition to its use on steel and galvanized steel, selected TIGER Drylac® primers can also be applied to aluminum substrates.

TIGER Drylac® primers have been developed for 2-coat applications. The 2-coat application consists of the powder coating primer and a top coat.



TIGER Coatings offers the following primer series:

TIGER Drylac® Primer	Basic chemistry	Properties	Substrate	Gloss level
Series 270	Epoxy	Universal primer for all substrates Out gassing foregiving Very good edge coverage	Steel + aluminum	Flat matte
Series 271	Epoxy	Low-temperature Very good edge coverage Good mechanical properties	Steel	Glossy
Series 272	Epoxy/polyester	Out gassing foregiving Excellent flow Particularly suitable for top-coating with wet paint	Steel + aluminum	Glossy
Series 273	Polyester	UV-stable Very good edge coverage Good mechanical properties	Steel + aluminum	Top-coating

For a detailed recommendation on use and curing conditions from TIGER Coatings, please refer to the **Selector- Guide** on page 6.

Properties

- High corrosion protection (up to C5H possible)
- Good storage stability
- Environmentally friendly
 - 100% free of zinc at equivalent corrosion protection
 - Currently no mandatory labelling
- Low density
 - approx. 1.4–1.6 g/cm³
- High theoretical yield of up to 12 m²/kg (at a film thickness of 60 µm)
- Cost-efficient
- Certified according to Qualisteelcoat, GSB, DBS 918 340
- Tested according to DIN 55634 and ISO 12944

How the process works

Pretreatment

1. Part preparation

To prevent insufficient primer film thicknesses at the edges (running away), sharp edges, such as those that can result from cutting or milling, should be mechanically post-machined to ensure an edge radius of approx. 1 mm to 2 mm.

To prevent the escape of oils and greases during the curing process, open gaps and cracks should be avoided as much as possible in the component design.

Weld seams must be sanded well to prevent or minimize out gassing.

2. Steel

2.1. Blasting

The unmachined steel surface needs to be sandblasted using sharp and edged mineral or cast iron pellets. The tolerances for a sandblasted steel surface thereby need to correspond to the comparison specimen standard G 201 (lower tolerance segment 2, upper tolerance segment 3 = medium grade) and to the surface preparation class of minimum Sa 2.5 according to ISO 8503-1 and ISO 8503-2.

If abrasive or square blasting agents are used, a surface roughness of 40–70 µm is recommended. In airless blast cleaning with round blasting agents, however, this value bears little resemblance to the corrosion protection that can be actually achieved.

Normally, blasting with abrasive and/or square blasting agents achieves higher corrosion protection classes due to better adhesion compared to airless blast cleaning.

The powder coating must take place immediately after blasting in order to prevent possible corrosion.

2.2. Sweep blasting

Sweep blasting is a blasting process at greatly reduced air pressure using non-metal blasting agents for cleaning and roughening the zinc surface. Blasting agents typically used in this process are non-metal slag, corundum or glass beads.

2.3. Chemical pretreatment phosphatizing (see DIN EN ISO 9717)

For exact specifications and guidelines of application, contact the chemical supplier

2.3.1. Iron phosphate conversion coating: Coating weight approx. 0.1–0.8 g/m²

According to Qualisteelcoat specification (Version 4.1 of January 2019), a chemical pre-treatment based on iron phosphate can be applied up to corrosion class C3 as a maximum.

2.3.2. Zinc phosphate conversion coating: Coating weight 1.5–3.5 g/m²

Application of a zinc-phosphate conversion coating allows the product to attain the highest corrosion classes.

3. Aluminum

3.1. Chemical pretreatment

For reasons of sustainability, TIGER Coatings recommends commercially available, chrome-free pretreatment methods. Observation of the specifications and guidelines of the manufacturer is mandatory.

Maximum corrosion protection can be attained using pretreatment complying with GSB/QUALICOAT standards.

Coating/curing

Film thicknesses

Generally, a primer coat thickness of 60 µm–80 µm is recommended for all primer series.

For specific applications, a lower or higher value may be required. Low primer coat thicknesses of 40 µm–60 µm are recommended for applications that are intended to withstand an increased mechanical load (e.g. coating of springs).

Depending on the application and the top coat used, the total film thickness is thus in the range of 100 µm–200 µm, with a recommendation for 120 µm–160 µm.

For the substrate temperature and curing time suitable for you, please refer to the **Selector Guide**.

2-coat application

For 2-coat systems, we generally recommend what is referred to as gelling (partial, incomplete curing) of the primer coat. This means that the curing process of the parts being coated is terminated once the powder coat on the parts has melted. Consequently, the primer does not fully cure in the gelling process. The required oven dwell time depends on the temperature of the recirculating air in the oven and the material thickness (heat-up curve) of the parts being coated. Gelling the primer improves the adhesion between the primer and top coat films and shortens the oven dwell times for the primer.

All primer series can also be fully cured, but the curing conditions according to the product data sheet should not be exceeded, as overcuring can have a negative impact on intercoat adhesion.

TIGER SHIELD products can be processed using all commonly available powder coating systems. Recovered powder can be recycled back into the coating process.

Important: Whenever a primer is to be applied to an e-coat or other primers, users must test compatibility on their own responsibility.

1-coat application / Top coating with wet paint

In the 1-coat process and if wet paint is used as a top coat, the product must be fully cured according to the respective product data sheet. If wet paint is used, we generally recommend testing the intercoat adhesion. Depending on the wet paint used, it may also be necessary to sand the primer coat.

Note – Directly heated gas oven

If directly heated gas ovens are used, it is mandatory to gel the primers to minimize the risk of reduced intercoat adhesion between the primer and the top coat.

Storage Powder

- Use before: see date on product label
- Dry, below 25 °C
- Do not expose to direct heat

Primed components

- Avoid storage of primed parts.
- Do not touch primed parts to which a top coat is to be applied with your bare hands.
- Store the components dry and clean.
- Storage temperature: 20–30 °C
- Protect the component from direct light.
- Parts being coated whose primer has been gelled already must be top-coated within 6 hours.
- Parts being coated whose primer has cured must be given a top coat within 12 hours.
 - If the storage period exceeds these limits, adhesion between the primer and top coat (paint) cannot be ensured due to settled dust and dirt particles from the air.
 - If storage is appropriate, the time between priming and top-coating can be extended.
- In the event of long-term storage, the primed components must be cleaned before top-coating to guarantee flawless adhesion between the primer and the top coat.

General information

- Read and follow the corresponding product and safety data sheet before using the product.
- For the recommended process parameters, see the **Selector-Guide Table**.
- If in doubt, please contact the TIGER Coatings team:
office@tiger-coatings.com or kundendienst@tiger-coatings.com

Corrosion protection classes

Corrosivity category according to DIN EN ISO 12944-2	Neutral salt spray test / h**	Examples for ambient conditions Exterior	Examples for ambient conditions Interior
C1 - very low	–	n/a	Heated buildings with clean atmosphere.
C2 - low	240 h	Outdoor areas without heavy pollution.	Unheated buildings.
C3 - medium	480 h	Outdoor areas with medium SO ₂ load and coastal regions with low salinity.	Production building with high humidity and some contamination.
C4 - high	720 h	Industrial areas and coastal regions with medium salt content.	Chemical plants, swimming pools and ports.
C5 - very high	1.440 h	Industrial areas with aggressive atmosphere and high humidity. Coastal regions with high salinity.	Buildings with continuous condensation and polluted atmosphere.

Selector-Guide

Korrosivitäts- kategorie / - belastung	Umgebungsbedingung	TIGER Drylac® PRIMER		Systemaufbau QSC				Systemaufbau nach DIN 55634		Einbrennbedingung Grundierung		Einbrennbedingung Deckschicht		TIGER Drylac Primer + Top coat	
		TIGER Serie	Chemismus	Stahl (DC01) ST2		verzinkter Stahl HD2		Stahl (DC01) ST2		Objekttemp.	empfohlene Schichtdicke [µm]	Einbrennen Gesamt (Objekttemp. 2-Schicht)		Anzahl der Schichten	empfohlene Gesamt Schichtdicke [µm]
				ST2M mechanisch Vorbehandelt Strahlen NSS DIN EN ISO 9227 2mm Queritz Delamination ≤ 3mm Corrosion ≤ 1mm	ST2C chemisch Vorbehandelt Zn-phos. NSS DIN EN ISO 9227 2mm Queritz Delamination ≤ 3mm Corrosion ≤ 1mm	HD2M mechanisch Vorbehandelt sweeping NSS DIN EN ISO 9227 2mm Queritz Delamination ≤ 8mm Corrosion ≤ 1mm (für C5 ≤ 2mm)	HD2C chemisch Vorbehandelt Zn-phos. NSS DIN EN ISO 9227 2mm Queritz Delamination ≤ 8mm Corrosion ≤ 1mm (für C5 ≤ 2mm)	ST2C chemisch Vorbehandelt Zn-phos. NSS DIN EN ISO 9227 1mm Längeritz Delamination ≤ 3mm Corrosion ≤ 1mm	HD2C chemisch Vorbehandelt Zn-phos. NSS DIN EN ISO 9227 1mm Längeritz Delamination ≤ 8mm Corrosion ≤ 1mm						
C4-H (stark) 720h Salzprühtest	Industrie und Küstenregionen mit geringer Salzbelastung z.B. chem. Anlagen, Schwimmbäder, Werften in Küstenregionen	270	Epoxy stumpfmatt	QIB 0055 PE-0127	QIB 0056 PE-0128	✓ *	✓ *	✓	✓	200°C / 8 min bzw. 160°C / 30 min	60 - 80	Serie 14 Serie 29 Serie 68	170°C/15 170°C/20 170°C/25	2	120 - 160
		271	Epoxy glänzend	QIB 0057 PE-0129	QIB 0058 PE-0130	✓ *	✓ *	✓	✓	200°C / 5min bzw. 140°C / 30 min	60 - 80				
		272	Hybrid glänzend		QIB 0059 PE-0131	nicht geprüft		✓	nicht geprüft	200°C / 8 min bzw. 160°C / 30 min	60 - 80				
		273	Polyester seidenglänzend			✓ *	✓ *	✓	✓	200°C / 8 min bzw. 160°C / 30 min	60 - 80				
C5-H (sehr stark) 1440h Salzprühtest	I: Industrietmosphäre mit hoher Luftfeuchtigkeit und aggressiver Atmosphäre M: Küstenbereiche mit hoher Salzbelastung z.B. Gebäude und Gegenden mit fast kontinuierlicher Kondensation und hoher Verunreinigung	270	Epoxy stumpfmatt	P.A.		QIB 0060 PE-0132	QIB 0061 PE-0133	P.A.		200°C / 8 min bzw. 160°C / 30 min	60 - 80	Serie 14 Serie 29 Serie 68	170°C/15 170°C/20 170°C/25	2	120 - 160
		271	Epoxy glänzend	P.A.		QIB 0062 PE-0134	QIB 0063 PE-0135	P.A.		200°C / 5min bzw. 140°C / 30 min	60 - 80				
		272	Hybrid glänzend	P.A.		nicht geprüft		P.A.		200°C / 8 min bzw. 160°C / 30 min	60 - 80				
		273	Polyester seidenglänzend	P.A.		QIB 0064 PE-0136	QIB 0065 PE-0137	P.A.		200°C / 8 min bzw. 160°C / 30 min	60 - 80				

*das Zertifikat wird jeweils für die maximal geprüfte Korrosivitätskategorie ausgestellt. Das Erreichen von C5-H impliziert das Erreichen von C4-H.

Anforderungen	Umgebungsbedingung	TIGER Drylac® PRIMER		Systemaufbau		Einbrennbedingung Grundierung		Einbrennbedingung Deckschicht		TIGER Drylac Primer + Top coat	
		TIGER Serie	ProduktNr.	Aluminium (EN AW-5005)	Stahl (DC01)	Objekttemp.	empfohlene min. Schichtdicke [µm]	Einbrennen Gesamt (Objekttemp. 2-Schicht)		Anzahl der Schichten	min. Gesamt Schichtdicke [µm]
				chemisch Vorbehandelt / chromfrei AASS DIN EN ISO 9227 1000 Stunden 1mm Sikane / Andreakreuz flächige Unterwanderung ≤ 16 mm²/10cm längste Unterwanderung ≤ 4mm	chemisch Vorbehandelt / Zn-Phos. NSS DIN EN ISO 9227 1000Stunden 1mm Sikane / Längeritz Delamination ≤ 2mm Corrosion ≤ 1mm						
DBS 918 340	Außenanwendung Aluminium	273	Polyester seidenglänzend	Produktqualifikation Nr. 5		200°C / 8 min bzw. 160°C / 30 min	40 - 60	Serie 68	170°C/25'	2	100 - 140
	Außenanwendung Stahl	273	Polyester seidenglänzend		Produktqualifikation Nr. 9 / 10	200°C / 8 min bzw. 160°C / 30 min	40 - 60	Serie 29 Serie 14	170°C/25'	2	100 - 140
		271	Epoxy glänzend		Produktqualifikation Nr. 9 / 10 / 12 / 15	200°C / 5min bzw. 140°C / 30 min	40 - 60	Serie 14 Serie 29 Serie 285 Serie 287	170°C/15' 170°C/20' 170°C/20' 180°C/25'	2	100 - 140

Disclaimer

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EN ISO 9001 / 14001
IATF 16949



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