10 18 30 60

IGP-KORROPRIMER

Safer and longer-lasting corrosion protection with IGP powder base coats

IGP

POWDER COATINGS.

WHAT IS CORROSION?

As per DIN 50900, corrosion means “the destruction of metals through chemical or electrochemical reactions to their environment.” This “environment” is made up of the natural circumstances such as the surrounding atmosphere, amount of precipitation and proximity to rivers or oceans.

Corrosion factors

The environmental impact caused by “humans”, such as air pollution or increased solar radiation, are taking on ever-increasing importance. Among factors that can also accelerate the negative corrosion reaction is the residue from the individual metal processing phases. The best known example of corrosion is the rusting of iron. This oxide is a solid substance, which grows continuously as a bulky, porous covering on the metal and negatively impacts characteristics such as load-bearing capacity, cohesiveness, and durability. But corrosion is not only a well-known issue for steel substrates. Aluminium substrates can also be affected by Filiform corrosion, which is caused by the effect of chlorides in connection with corresponding humidity levels.

Economical effect and ecological solution

According to estimates, the average annual accumulating costs and related costs due to losses in production and capacity that are a result of corrosion amount to 3.5 % of the national incomes in industrial countries: a loss totalling billions.

To avoid this and to protect steel and aluminium constructions, organic coating systems can be applied. IGP’s 2-layer powder coating system specifically protects a variety of substrates such as steel, galvanised steel and aluminium against the various outward forms of corrosion. The systems consist of corrosion inhibiting and adhesion promoting IGP-KORROPRIMERS in the form of a powder base coat and a weather-proof, UV-resistant powder coating.

The advantages of the environmentally friendly and long-lasting IGP powder coating systems have been confirmed in the corrosion protection sector of industry and construction by standards like DIN 55633 “Coating materials, corrosion protection of steel structures through powder coating systems” as well as by product certifications, e.g. as per the Qualisteelcoat guidelines. Precisely this has created an important building block for metalworking to meet the strict requirements of DIN EN 1090 “Execution of steel and aluminium structures.”

Glatttalbahn, Zurich

Bridge Leidschenveen, Den Haag

TESTED CORROSION PROTECTION – GUARANTEED VALUE PRESERVATION

IGP Pulvertechnik AG has been involved in the development and production of ecological powder coatings for more than 40 years. The topic of "corrosion protection" has a great emphasis at IGP. The high quality and safety standard we provide for the benefit of our customers are demonstrated by our continuous new product developments, ongoing certification procedures, qualified personnel and specialized seminar series on the topic of corrosion protection.

Tested professional competence

Only professionally applied corrosion protection measures can help prevent damage. This requires specifically trained personnel with special expertise. By using "DIN-tested coating inspectors", IGP guarantees the competent implementation of corrosion protection measures as well as the repair of corrosion damage. Through the international recognition of the DIN label and verification by an accredited certification institute, all IGP customers can safely trust the quality statement in terms of corrosion protection.

IGP corrosion testing

Our service for your safety. We can conduct a corrosion inspection of your coating structures using standardised IGP testing devices. We provide you with the results for your interpretation (see DIN 55633).

Salt spray test to DIN EN ISO 9227

IGP Certificates

IFO – Institute for Surface Technology GmbH

Certificate of the IFO on observance of the anti-corrosive effect on blasted and galvanised steel components with powder coating systems. IGP corrosion protection systems passed the test as per Qualisteelcoat C4-H and C5-H with the system elements ST2 and HD2. Approved systems: anti-corrosive primers 10 and 60 + topcoats 58. We would be happy to provide you with the certificates of our corrosion protection systems upon request.

SP – Technical research institute of Sweden, chemistry and material technology

The Swedish institute successfully tested the coating structures of IGP's KORROPRIMER systems in accordance with the STD VCS 1027.149 "accelerated corrosion test". This test is a demanding version of the salt spray test, which is commonly used in the automobile industry.

Qualicoat international – quality seal for aluminium coating in architectural applications

IGP-KORRO*system* – Qualicoat-certified two-coat system (no. P-1165) for aluminium substrates comprising IGP-KORROPRIMER 30 and a freely selected Qualicoat-tested IGP topcoat (e.g. KORROPRIMER 3002A70420A00 and topcoat 5903A90050F00).

DNV · GL – Germanischer Lloyd

EC certification in the modules B + D on proof of the fire behaviour of IGP-KORROPRIMER 18 as per the European Directive 2010/68/EC, for ship equipment as per A.1/3.186.

DNV · GL

DIN coating inspector

SP – Technical research institute of Sweden

swiss quality

THE RIGHT PROTECTION FOR ANY CORROSION

IGP-KORROPRIMER 10

This primer is the modern classic based on epoxy resin and was especially developed for steel substrates. Thanks to its pronounced wetting characteristics, it ensures outstanding adhesiveness to the substrate and with its barrier effect for excellent corrosion protection. We recommend IGP-KORROPRIMER 1001 (V) for use on galvanised steel (or other outgassing substrates).

IGP-KORROPRIMER 18

The more thick-walled the substrate, the more interesting the use of an epoxy low-temperature primer becomes. With its outstanding corrosion protection properties the innovative IGP-KORROPRIMER 1809 holds great saving potential for you. You can lower your energy costs and optimise the process times with curing conditions from 130 °C. Consequently, combined with low temperature topcoats, you get an ecologically advantageous coating system for solid steel components.

IGP-KORROPRIMER 30

This anti-corrosion primer was developed especially for the coating structure on aluminium and aluminium alloys. Its special combination of epoxy and polyester resins ensures ideal adhesive capacity between pre-treated aluminium and the topcoat. It benefits from improved protection against filiform corrosion, chemicals and improved edge covering.

IGP-KORROPRIMER 60

Outstanding corrosion protection combined with improved adhesiveness between the substrate and topcoat are what distinguish this primer. Thanks to its polyester resin basis, it is intended for corrosion protection combined with great weathering resistance. Beneath a highly weather-proof powder system (IGP-HWF), KORROPRIMER 60 boasts high corrosion protection with great weather-resistance both on steel as well as aluminium.

Product overwiev

Substrate	IGP corrosion protection systems	Curing conditions (object temperature)	Colors	IGP Item number
Steel	IGP-KORROPRIMER 1001	190 °C / 10 – 15 min. 180 °C / 20 – 25 min.	Light grey approx. RAL 7035 Traffic grey B approx. RAL 7043	1001A70354A00 1001A70434A00
	IGP-KORROPRIMER 1001 **V** for galvanised steel	190 °C / 10 – 15 min. 180 °C / 20 – 25 min.	Iron grey approx. RAL 7011 Tele grey 4 approx. RAL 7047	1001A70114V00 1001A70474V00
	IGP-KORROPRIMER 1809 low temperature system SAVE ENERGY	140 °C / 10 – 12 min. 130 °C / 15 – 20 min.	Light grey approx. RAL 7035 Silk grey approx. RA 7044	1809A70354A00 1809A70444A00
Aluminium	IGP-KORROPRIMER 3002	190 °C / 10 – 15 min. 180 °C / 20 – 25 min. 170 °C / 20 – 30 min.	Basalt grey approx. RAL 7012 Traffic grey A approx. RAL 7042	3002A70124A00 3002A70420A00
Steel & Aluminium	IGP-KORROPRIMER 6007	190 °C / 8 – 12 min. 180 °C / 10 – 15 min. 170 °C / 15 – 20 min.	Traffic grey approx. RAL 7035	6007A70354A00

IGP-KORROPRIMER SYSTEMS – CORROSION PROTECTION SOLUTIONS FOR ALUMINIUM AND STEEL

The corrosion-resistant IGP-KORROPRIMER is particularly notable for its outstanding chemical resistance and its excellent mechanical properties. The primer is ideally suited for finishing with all IGP powder coatings as well as other topcoat paint systems.

Product advantages:

– Can achieve protection class C5-M/-I with appropriate coating structure
– Excellent chemical resistance
– Excellent adhesion to the substrate and between the coats
– Good mechanical properties
– Free of heavy metals
– Low specific weight (cost efficiency)
– Variable finishing (coating powder or liquid varnishes)

Application range:

– Blasted steel
– Chemically pre-treated steel
– Zinc-plated, chromatised steel
– Swept galvanised steel
– Zincor sheet metal for protection of exposed, zinc-free areas
– Steel plate in damp interiors (primer for coarse structures)

IGP solutions for special substrates

IGP-KORROPRIMER 1001 V – the outgas-friendly corrosion protection for galvanised steel

This V-version primer is specially developed for galvanised steel and is suitable for all conventional pre-treatments. Prior to the cross-linking, it allows degassing of the porous zinc surface. This gives a smoother surface.

Tip: The lower the temperature during curing, the less degassing occurs. The low temperature primer IGP-KORROPRIMER 1809 offers an interesting option

IGP-KORROPRIMER 3002A – anti-corrosion primer for aluminium and aluminium alloys

For optimal adhesion between the pre-treated aluminium and the top coat:
– Improved protection against filiform corrosion
– Improved protection against chemicals
– Better edge coverage

Qualicoat-certified two-coat system

Especially for use in aggressive environmental conditions such as chlorinated indoor swimming pools and close to the coast.

Surface disturbance by outgassing

Blister-free coating solution with IGP-KORROPRIMER 1001 V

OPTIMAL PROTECTION AGAINST EVERY TYPE OF CORROSION

Three steps to optimal protection

In the norm DIN 55633 (2009), all the aspects that are significant for appropriate corrosion protection with powder coating systems were taken into consideration. It has supplemented the norm DIN EN ISO 12944, which only deals with protection by means of liquid coating systems and is closely related to it. Both norms characterise the atmospheric surroundings in terms of corrosion categories based on mass loss information of uncoated steel within the first year of weathering. To select the right powder coating system, follow the 3 steps found below the table.

Note

- The single-layer IGP interior and exterior qualities may be used to cover the minimal demands in accordance with corrosion category C2.
- We recommend a chemical pre-treatment (phosphating or organic silicon) for zinc-plated surfaces.
- We generally recommend the V-version IGP-KORROPRIMER 1001 and the IGP-KORROPRIMER 1809 (low-temperature powder) plus an IGP top coat for spray-galvanised components.
- Zinc phosphating with IGP powder coating solutions meet the requirements of the C4 corrosion category.

Names of IGP coating systems

Top coat outdoor area	**IGP-KORROPRIMER systems**
IGP-DURA®*pol*	10 primer for iron and steel substrates
IGP-DURA®*than*	10V primer for galvanised substrates
IGP-DURA®*cryl**	18 low temperature powder
IGP-DURA®*face*	30 primer for aluminium substrates
IGP-DURA®*xal**	60 primer for iron, steel and aluminium substrates
IGP-HWF*	

Table for the selection of the optimal coating system (In accordance with DIN 55633 and DIN EN ISO 12944-1)

Corrosion category (Corrosion level)	**Typical environment** Outside area	**Typical environment** Indoor area	**Duration of protection**		**Test procedures** in hours			**Pre-treatment processes and recommended IGP coating system**							
			Class	**Years**	**ISO 2812-1** Chemical resistance	**ISO 6270** Condensate test	**ISO 9227** Salt spray test	**Phosphating** and comparable phosphate-free methods		**Abrasive blasting** SA 2½		**Hot dip galvanising**			
												Sweeping		Chromating	
C3 (moderate)	City and industrial atmosphere with moderate sulphur dioxide exposure. Moderate coast climate with low salt exposure.	Production rooms with high moisture levels and some air pollution, e.g. systems for food production, laundries, breweries, creameries.	low	< 5	–	48	120	●	Top coat 80 µm	●	Top coat 60 µm	●		●	
			medium	5 – 15	–	120	240	●	Primer 10/18/60 60 µm	●	Primer 10/18/60 60 µm	●	Top coat 80 µm	●	Top coat 80 µm
			high*	> 15	–	240	480	–	Substrate	–	Substrate	●	Substrate + zinc layer	●	Substrate + zinc layer
C4 (severe)	Industrial atmosphere and coast region with moderate salt exposure.	Chemical plants, swimming pools, dry docks.	low	< 5	–	120	240	not recommended		●	Top coat 80 µm	●	Top coat 60 µm	●	Top coat 60 µm
			medium	5 – 15	–	240	480			●	Primer 10/18/60 80 µm	●	Primer 10V/18 60 µm	●	Primer 10V/18 60 µm
			high*	> 15	–	480	720			●	Substrate	●	Substrate + zinc layer	●	Substrate + zinc layer
C5-I (very severe, industry)	Industrial atmosphere with high relative humidity and an aggressive atmosphere.	Buildings or areas with nearly continuous condensation and high contamination levels.	low	< 5	168	240	480	not recommended		○	Top coat 80 µm	○	Top coat 80 µm	○	Top coat 80 µm
			medium	5 – 15	168	480	720			○	Primer 10/18/60 100 µm	○	Primer 10V/18 80 µm	○	Primer 10V/18 80 µm
			high*	> 15	168	720	1440			–	Substrate	–	Substrate + zinc layer	○	Substrate + zinc layer
C5-M (very severe, ocean)	Coastal and surrounding region with high salt exposure.	Buildings or areas with nearly continuous condensation and high contamination levels.	low	< 5	–	240	480	not recommended		○	Top coat 80 µm	○	Top coat 60 µm	○	Top coat 80 µm
			medium	5 – 15	–	480	720			○	Primer 10/18/60 100 µm	○	Primer 10V/18 80 µm	○	Primer 10V/18 80 µm
			high*	> 15	–	720	1440			–	Substrate	○	Substrate + zinc layer	○	Substrate + zinc layer

1st step | 2nd step | 3rd step

Step 1

Selecting the corrosion category

Using the table above, select the corresponding corrosion category.

Step 2

Decision on the duration of protection and associated test requirements

Based on the low, medium and high classes, you can determine which foreseeable protection duration the object to be coated will have in the respective environment. The protection duration based on DIN EN ISO 12944 refers to the time lapse up to the first major overhaul. The inspection times listed in the test methods give you an idea of the respective protection duration (class and years) and thus also the corrosion category.

*see recommended IGP top coat system in step 3

Step 3

Selecting the pre-treatment and coating systems

Based on your corrosion category, you select the appropriate coating system with the corresponding pre-treatment. When doing so, pay attention to the recommended IGP-KORROPRIMER system and the minimum layer thickness in accordance with DIN EN ISO 12944. The proper selection of pre-treatment and the correct application have a significant effect on the performance of the entire corrosion protection.

low = short
medium = moderate
high = long

○ IFO certified IGP coating system
● DIN 55633 tested and fulfilled

USAGE INFORMATION AND BENEFITS

"Gelling" the primer coat

Two-coat application processes are time-consuming. It is therefore important to keep the oven retention time as short as possible. The term "gelling" refers to reaching the recommended temperature one time in accordance with our technical data sheets. Gelling does not result in fully curing the primer coat. The stability of the coating is nevertheless ensured (no thinning at the edge). This saves you both time and money in the coating process. Please observe our processing instructions (www.igp.ch).

Both ecological and economical thanks to being zinc-free

IGP-KORROPRIMER do not contain any zinc! Since the potential zinc ratio in the powder coating cannot be high enough to form active corrosion protection, this heavy metal, which is subject to labelling, would make powder coating uneconomical as a result of its high specific weight while not increasing the protective properties either.

Substrate thickness and required time-/temperature-combinations				
Oven circulating air temperature 200 °C				
Required object temperature for gelling	140 °C	160 °C	180 °C	200 °C
Substrate thickness 0,8 mm	2,2 min.	3,2 min.	4,4 min.	7,9 min.
Substrate thickness 3,0 mm	6,0 min.	7,3 min.	11,1 min.	~ 25 min.
Substrate thickness 20,0 mm	16 min.	22 min.	33 min.	> 60 min.

The table shows the relationship between oven circulating air temperature and the various timespans for reaching a specific object temperature (gelling).

Spreading rate		
	IGP-KORROPRIMER	Primer with zinc content
Specific weight	1,6 g / cm³	3,2 g / cm³
Substrate thickness	70 µm	70 µm
Coating result	8,9 m² / kg	4,4 m² / kg

Benefits in practical application

All IGP-KORROPRIMER powder coatings for steel (1001, 1809) and aluminium coatings (3002) have very good mechanical properties. Due to their film flexibility, they have excellent functionality for subsequent processing steps. The user-friendly handling and highly practical functionality are impressive features. Production-related and/or application-related deviations are possible. Please observe our technical data sheets and technical information as well as the processing instructions. Practical experiments adapted to the particular object and stoving oven to determine the best possible curing conditions are recommended in any event.

Leutenegger + Frei AG, Andwil

REFERENCES

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