



**GENERAL WARRANTY TERMS FOR POWDER COATING SYSTEMS APPLIED TO
DISCONTINUOUSLY HOT-DIP GALVANISED STEEL**
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These General Warranty Terms for Powder Coating Systems for the Benelux constitute an addition to the General Terms of Sale, Supply and Payment of Zinkinfo Benelux the Contractor has declared applicable to the Agreement (hereinafter referred to as: General Terms of Supply) for the specific application "Powder coating systems applied to discontinuously hot-dip galvanised steel" (hereinafter referred to as PS). In the event of any inconsistencies, the provisions of these General Warranty Terms for Powder Coating Systems for the Benelux shall prevail, unless these terms provide otherwise.

1. Additional definitions

General Warranty Terms for Powder Coating Systems for the Benelux: these General Warranty terms for the Benelux for Powder Coating Systems Applied to Discontinuously Hot-Dip Galvanised Steel of Zinkinfo, including appendices.

Territory: The Netherlands, Belgium and Luxembourg where Items coated with a PS are deployed

Zinkinfo Benelux: foundation for hot-dip galvanisation in the Benelux

Items: discontinuously hot-dip galvanised Items, e.g., constructions, components and objects

GSB: ST 663 Quality Regulations, issued by GSB International e.V. (eingetragener Verein).

Qualisteelcoat: International label for coated steel, issued by Arco Association Management AG

RO water: Reversed-osmosis or demineralised water

2. Preconditions for material to be coated

2.1 All relevant Items shall be supplied by the Customer in a form which permits provision by the Contractor of a PS in conformity with the agreed or applicable standard. The Customer and the Contractor shall reach arrangements concerning the manner and intensity of pretreatment of the Work. The Customer shall in any case ensure that:

- The composition of the Items is such that, when applying a PS (in conformity with the aforementioned standard), they can entirely and without special treatment or special equipment be coated with a PS.
- In cases where chemical pretreatment is to be carried out, hollow Items are provided with correctly situated in- and outflow openings of sufficient size in conformity with the instructions of the Contractor.
- Items are provided with sufficient suspension holes, in conformity with the Contractor's instructions.
- Assembled Items are delivered in dismantled form.
- Items are free of any coatings, other than those applied by means of discontinuous hot-dip galvanised zinc.
- Prior to discontinuous hot-dip galvanising, all edges and sides have been rounded to minimally R = 2 mm.

2.2 To promote the adhesion of the PS, the Contractor shall provide the mechanical or chemical pretreatment of Items.

3. Scope of the warranty

3.1 The Contractor warrants towards the Customer that the PS shall be carried out in conformity with one of the following standards: EN 13438, EN 15773, NEN 5254, Practical Guideline for Powder and Wet Coatings on Zinc. In the event that the Contractor has provided a warranty on the hot-dip galvanised zinc layer of the Items in question, these General Warranty Terms for Powder Coating Systems shall apply as a supplement to that warranty.

3.2 Pursuant to the warranty for powder coating systems, in the event that, within the warranty term, as a result of a defect in the PS and not as a result of mechanical and/or chemical processing or environmental factors, or based on any other exclusion grounds, more than three per cent of the PS surface is no longer protected by the PS, the Contractor or a third party designated by the Contractor shall, with



due observance of Article 6, either repair the Items in question or reapply a PS, be this at the company of the Contractor, that of the third party designated by the Contractor or that of the Customer, always at the discretion of the Contractor. Any costs exceeding the single obligation described in the previous sentence, including, without being limited to transport costs and travel and subsistence costs, as well as disassembly and assembly/installation costs, shall be borne by the Customer.

3.3 The warranty only covers the damage to the PS. It does not cover removal or re-application of coatings other than the PS applied by the Contractor.

3.4 Damage to the PS shall only be considered to be involved if, upon assessment with the naked eye (i.e., without an optical aid, e.g., a magnifying glass or field glass), more than three per cent of the surface exhibits perceptible deviations at a distance of three metres indoors, and five metres outdoors.

Perceptible deviations are here defined as: detachment, blistering and rust (ISO4628 1–8).

Powder coatings for which no quality mark in accordance with GSB or Qualisteelcoat has been issued are excluded from warranty coverage for such powder-specific aspects, including but not limited to colour (retention), hardness, malleability and (residual) lustre retention. For powder coatings for which a quality mark has been issued in accordance with GSB or Qualisteelcoat, warranty coverage for such powder-specific aspects, including but not limited to colour (retention), hardness, malleability and (residual) lustre retention, shall be transferred to the powder supplier. i.e. in such cases, the warranty of the powder supplier shall apply.

With regard to GSB-certified systems, the following table shall apply to residual lustre:

GSB classification for residual lustre	Standard	Master	Premium
Outdoor exposure in Florida (USA) (reference area)			
approx. duration (months)	12	36	60
UV energy (MJ/m ²)	300 max	840 max	1400 max
residual lustre	≥ 50%	≥ 50%	≥ 50%

Concerning quality-mark based quality assurance for powder coatings, reference is made to GSB and Qualisteelcoat.

4. Environmental factors

The Customer confirms that the nature of the atmosphere and the climatological circumstances in which the relevant Items are used are of vital importance to quality and durability of the PS. This means that warranty is given only if the Items are permanently applied in specific atmospheric corrosion-load classes, as set out in Appendix 1 of these General Warranty Terms for Powder Coating Systems for the Benelux.

5. Warranty conditions

Further, the warranty shall only be given if the following additional conditions have been met:

- The Items and construction are suitable and correctly designed, both for the intended use and for the PS.
- The PS may not be exposed to a heat source with a temperature exceeding 65°C and/or to an environment with such conditions that damage can reasonably be expected (e.g., through the presence of aggressive chemicals).
- Items with a PS are continuously located in the relevant Territory.
- The Customer must be able to substantiate that it has inspected the PS for defects a minimum of every two years, and must lodge a claim concerning any defects as soon as possible following discovery (in conformity with the General Terms of Supply).
- The PS must be cleaned demonstrably in accordance with the instructions (see Appendix 1 to these General Warranty Terms for Powder Coating Systems for the Benelux, under Maintenance instructions and schedule).
- Prior to and during assembly, Items coated with a PS must be stored and used/treated in accordance with the current assembly instructions, advice, and recommendations.
- No changes have been made to the purpose of use indicated for Items coated with a PS, nor to their direct environment, during the warranty period, except those made following consultation with, and written permission from, the Contractor.



- No intermediate work (repair, adjustment, etc.) was done on Items coated with a PS other than following consultation with, and permission from, the Contractor.
- The Customer provides proof that the Contractor has coated the Items in question with a PS.
- There are no grounds for exclusion from warranty according to the General Terms of Supply.

6. Term and extent of warranty

Warranty periods are in accordance with Table 4.2 of Appendix 2 of these General Warranty Terms for Powder Coating Systems for the Benelux and are dependent on PS type and climate class. In the event that an Item coated with PS is restored/replaced under the warranty, only the remaining warranty period applies to the restored/replaced PS.

The Contractor only pays (part of) the costs in the event that the repeated application of PS or repair is undertaken by the Contractor or by a third party commissioned by the Contractor.

The cost of renewed application of PS or repair under these General Warranty Terms for Powder Coating Systems for the Benelux, shall be for the account of the Contractor. The Customer shall be responsible for a percentage contribution based on the expired guarantee period.

The share of the Customer in these costs shall be calculated by multiplying these costs with the fraction of the expired full years after the commencement date of the warranty divided by the applicable warranty period with the result rounded up to whole percents.

The share of the Customer is shown in Table 1 as a percentage contribution to the warranty costs by the Customer within the warranty period.

Table 1: Percentage contribution in the warranty costs by the Customer within the warranty period

Expired full years after warranty commencement date	15 years warranty	12 years warranty	10 years warranty	7 years warranty	5 years warranty
0	0%	0%	0%	0%	0%
1	7%	8%	10%	14%	20%
2	13%	17%	20%	29%	40%
3	20%	25%	30%	43%	60%
4	27%	33%	40%	57%	80%
5	33%	42%	50%	71%	100%
6	40%	50%	60%	86%	
7	47%	58%	70%	100%	
8	53%	67%	80%		
9	60%	75%	90%		
10	67%	83%	100%		
11	73%	92%			
12	80%	100%			
13	87%				
14	93%				
15	100%				

If under the General Terms of Supply the Contractor is not bound to warranty, or to a lower amount in costs than set out in this Table 1, the General Terms of Supply shall prevail.

7. Disputes

If the Customer feels that he is entitled to warranty and this is disputed by the Contractor, the technical aspect of this dispute shall be submitted to an independent party to be appointed by the management board of Zinkinfo Benelux, which at the expense of the unsuccessful party shall inspect the surfaces provided with PS and shall



record its results in an assessment report. The Parties agree to be bound to the inspection results of this technical assessment and to accept them.



Appendix 1 to the General Warranty Terms for Powder Coating Systems for the Benelux

For the benefit of the Customer the circumstances under which warranty on PS is given, are set out below.

The categorisation into corrosion classes according to ISO 12944 is used as set out in Tables 2 and 3 below:

Table 2: Atmospheric corrosion load categories (simplified representation ISO 12944)

Corrosion load categories	Examples of typical environments in a temperate climate	
	Outside	Inside
C1 (very low)	-	Heated buildings with clean atmosphere, e.g. offices, shops, schools, hotels
C2 (low)	Atmosphere with low pollution levels Mostly rural areas	Unheated buildings where condensation may occur, e.g. depots, sports halls
C3 (moderate)	Urban and industrial atmospheres, moderate sulphur dioxide pollution. Coastal areas with low salinity	Production halls with high humidity and some air pollution, e.g. food processing factories, laundries, breweries, dairy industry
C4 (high)	Industrial and coastal areas with moderate salinity	Chemical factories, swimming pools
C5 (very high)	Industrial areas with high humidity and an aggressive atmosphere	buildings or areas with an almost permanent condensation and high pollution levels
CX (extreme)	Environment where the corrosion load is extremely high due to chemicals	Environment where the corrosion load is extremely high due to chemicals

Table 3: Categories for water and soil (simplified representation ISO 12944)

Category	Environments	Examples of environments and constructions
Im1	Fresh water	River plants, hydropower plants
Im2	Sea or brackish water	Immersed constructions without cathodic protection (e.g. port areas with constructions such as lock gates, dams, piers)
Im3	Soil	Subterranean storage tanks, steel pillars, steel pipes
Im4	Sea or brackish water	Immersed constructions with cathodic protection (e.g. offshore constructions)



Surfaces not exposed to rain in outdoor situations

There is a clear correlation between little or no exposure of surfaces to rain, and the soiling of PS and the development of corrosion and loss of lustre and colour properties of powder coating systems. If a surface is not exposed to rain, there is a greater probability of the formation of corrosion and loss of lustre and colour properties, and for this reason, for such situations, that warranty shall apply to the entire surface which is one corrosion class higher than that based on atmospheric conditions (i.e.: C2 higher than C1, C3 higher than C2 and so on and so forth).

Maintenance instructions and schedule

Proper and prompt cleaning of the surfaces is essential to maintaining their lifespan. Documentation of thorough cleaning is therefore a condition for the warranty given. For corrosion classes C2 and C3, cleaning a minimum of once per half year must be documented. For the higher corrosion classes (C4 and C5), and in connection with surfaces not exposed to rain in class C3, cleaning a minimum of once per quarter year must be documented. Soiling by chemical and organic means (including excrements) must in all cases be removed without delay.

The following (maintenance) instructions must be followed:

- Heavy soiling must be removed by hosing with mains water or RO water.
- Spray a mist of neutral cleaning agent on the surface and allow it to work. Clean heavy soiling with non-abrasive cleaning agents.
- Solely neutral cleaning agents, with pH values between 5 and 8, may be employed.
- The use of cleaning agents that cause abrasion scratches is not permissible.
- Rinse thoroughly with mains water or RO water.
- Heavily soiled objects may be cleaned using a polishing cleanser. Abrasive cleansers may only be employed extremely sparingly for spots with heavy soiling in case where normal cleaning methods are insufficient.
- The advantage of post-treatment with a waxy product is that lustre is increased and the soiling and water repellent properties of the coating are intensified.



Appendix 2: PS and warranty periods for discontinuously hot-dip galvanised Items coated with PS

Table 4.1: PS

number	description	layer thickness of each layer (µm)	minimum average system thickness (µm)	resin types
1	1 layer of powder coating	80	80	PE/PUR
2	2 layers of powder coating	60–80	120	EP/EP-PE + PE/PUR
3	2 layers of powder coating	80–100	160	EP/EP-PE + PE/PUR
4	3 layers of powder coating	60–80	200	EP/EP-PE + EP/EP-PE + PE/PUR

PE = Polyester

PUR = Polyurethane

EP = Epoxy

EP-PE = Epoxy polyester

Table 4.2: warranty periods by corrosion class

Substrate: discontinuously hot-dip galvanised						
pretreatment	PS in accordance with Table 4.1 number	warranty by corrosion class (in years)*				
		C1	C2	C3	C4	C5
chemically and mechanically	1	15	10	5	0	0
chemically and mechanically	2	15	12	10	5	0
chemically and mechanically	3	15	15	10	5	0
chemically and mechanically	4	15	15	12	7	5

- Please note: for corrosion classes CX and Im 1 up to and including 4, no warranty applies.

If Items coated with PS are used in multiple atmospheric corrosion load categories during the term of the warranty, the warranty for the highest atmospheric corrosion load category (lowest C1 and highest C5) applies.

**to determine the percentage contribution in the warranty costs by the Customer within the warranty term, see Table 1 of the Warranty terms for the Benelux for Powder Coating Systems Applied to Discontinuously Hot-Dip Galvanised Steel.*

