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Interpon

# Interpon Anticorrosion Systems









## SELECTION GUIDE FOR STEEL



The long term corrosion protection of an item depends on many factors. The initial design, the choice of anticorrosion system, the production techniques, the ongoing maintenance scheme and the operating environment will all have an effect on the performance throughout the in-service life.

The correct selection and good application of the coating system play a vital role in providing the appropriate corrosion protection to give long term performance. Akzo Nobel Powder Coatings offers a range of different high performance anticorrosion coating systems combine with detailed and rigorous application guidelines. Our expertise is at your disposal, so don't hesitate to take advice from our technical specialists.

## THE CHOICE OF A SUITABLE ANTICORROSION SYSTEM

An anticorrosive powder coating system is defined by:

- the surface pre-treatment of the pieces to be coated
- the powder coating product or products
- the coating system specification ie number of coats, film thickness and application conditions

Selection of the most appropriate system can be made by following these steps.

## 1 Anticipate key factors

### Type of substrate

For instance, a low viscosity primer could be useful to give a better surface to an irregular cast.

#### Type of environment

For instance in an environment with high humidity  $\delta$  condensation a system with a good barrier protection would be recommended.

### Expected durability of anticorrosion protection

Shop fittings are periodically changed so a standard anticorrosion protection is sufficient. Whereas an item exposed to harsh weather and located in an inaccessible area requires high anticorrosion protection

### Type of part - geometry, mass, quantity

Heavy parts cannot generally been pre-treated by chemical pre-treatment: a mechanical pre-treatment is then necessary. On the other hand the chemical pre-treatment is more adapted to parts showing crevices.

The chemical pre-treatment is also better adapted for large quantities treatments even if the automatic grit blasting allows large volume treatments.

#### Working constraints

If the coated parts could be subject to specific requirements such as contact with chemical products, silkscreen printing, exposure to specific temperatures, resistance to specific mechanical stresses, government controlled uses (contact with food) such uses must be the subject of specific recommendations.



### Post-forming operations after coating

Any kind of parts which will be submitted to post-forming operations like folding, stamping, boring should have been pre-treated in a way to provide a very good adhesion of the powder coating.

However, to get the best anticorrosion protection it is highly recommended to reduce the post-forming operations to the minimum.

# Select a protection technique

### **Barrier effect protection**

This technology aims to isolate steel from its environment by covering it with a water and airtight cover such as enamel, paint, plastic coating, etc. It is called a barrier protection. The barrier protection works well as long as there is no defect in the protecting layer.

#### Cathodic protection

This technology consists of putting the steel in contact with a less noble metal which will oxidize preferentially to iron. Iron is less easily oxidized than zinc and can be protected by it. Zinc bring a cathodic protection to iron by an electrochemical effect.







## OUR ANTICORROSION SYSTEMS IN DETAIL

### >> Interpon APP 120 system

This two layer system consists of an active protective primer Interpon APP 120 overcoated with a polyester topcoat or a hybrid topcoat for interior exposure. It is dedicated to steel protection with a surface pre-treatment obtained by grit blasting or phosphating with passivation. Interpon APP120 is an epoxy polyester primer including active anticorrosive pigments which provide a passivating effect to protect the substrate. This primer has also been formulated to provide the best adhesion of the topcoat, powder or liquid. Interpon APP 120 can be formulated in different colours to approach to the topcoat colour. This hybrid primer can also be used as a holding primer but never as a durable single coat.

- ✓ Good performance with phosphating with passivation
- ✓ Zinc free anticorrosive primer
- ✓ High finish quality due to good flow of primer
- ✓ Good protection of the part's edges
- Holding primer for a powder / liquid topcoat. (maximum overcoating time of 6 weeks and a preliminary cleaning)
- Easy and flexible application with precise guidelines
- ✓ Possibility to have a similar colour to the topcoat colour





 $^{\wedge}_{\wedge}$  Hellbergs' boat doors protected by Interpon APP 120

### >> Interpon BPP 330 system

This two layers system is made of a barrier protective primer Interpon BPP 330 overcoated with a polyester topcoat or a hybrid topcoat for interior exposure. It is dedicated to steel protection with a surface pre-treatment obtained by grit blasting or phosphating. Interpon BPP 330 is a pure epoxy primer providing excellent barrier protection. This is made possible by formulating techniques to achieve a high level of cross-linking in the polymer matrix together with the incorporation of barrier effect agents. This combination significantly enhances the performance when compared with other systems such as normal epoxy primers. It is available in grey and satin.

- Very good anticorrosion in particular with a phosphating with passivation
- Very good flow
- ✓ Zinc free anticorrosive primer
- ✓ High finish quality system due to good flow of primer
- Easy spraying
- Possibility to use it also as a barrier primer on hot dip galvanised steel.

<< Veles e Ventes - Valencia Spain, protected with a 3 layer system including Interpon BPP 300 primer as a second layer.



### >> Interpon PZ system

This duplex technology system combines cathodic protection and barrier effect. It consists of a two layer system with a zinc rich primer - Interpon PZ 660 or Interpon PZ 770 - overcoated with a polyester topcoat or a hybrid topcoat for interior exposure.

Dedicated to steel protection with a surface pre-treatment obtained by grit blasting or phosphating with passivation, the Interpon PZ formulation is patented by Akzo Nobel. It is made of an epoxy resin, including 50% of zinc; dust and in particular lamellate to improve conductivity. Interpon PZ 770 includes a specific anticorrosive function which improves the protection in case of scratch. Both Interpon PZ products have a grey zinc colour.

- ✓ High anticorrosion protection specially with a grit blasting
- ✓ Interpon PZ 770 is certified by ACQPA (N° C4A NV 572) and approved by SNCF (French railways) according to the NF F 19-478 specification
- ✓ Good finish quality (no irregular and porous surface)
- $\checkmark$  Economical zinc powder primer /m<sup>2</sup> (density 2,0)
- ✓ Strict application specification
- Approved applicators network
- Possibility to apply a PU 2K liquid topcoat on the Interpon PZ primer (maximum application delay of 12 hours) and if required a third antigraffiti powder layer.





 $^{\wedge}_{\wedge}$  Various Industrial parts protected by Interpon PZ system.

### >> 3 layer system

The Interpon PZ + Interpon BPP 330 system is used in highly corrosive environments. This 3 layer system consists of a zinc rich primer Interpon PZ 770, a barrier protective primer Interpon BPP 330 and a polyester topcoat / hybrid topcoat for interior

It is mainly intended for steel protection with a surface pre-treatment obtained by grit blasting or crystalline Zn-Ni phosphating with passivation.

The system combines the benefits of cathodic protection (Interpon PZ) and the high barrier effect (Interpon BPP 330)



### **Steel passivation protection**

With paints or powder coatings, it is possible to delay the corrosion creep under the coating by the use of inhibiting pigments which can passivate the steel substrate.

These pigments, depending on their nature, can build a passivating layer slowing down the reaction with the water-oxygen mixture or can neutralize the acid ions caused by humidity.

The effectiveness of these corrosion inhibiting pigments varies considerably depending on the coating chemistry and the formulating technique used.

### **Duplex system protection**

When a zinc or zinc rich covering is overcoated with paint or powder coating, it is called a duplex system.

This two layer system combines cathodic protection provided by the zinc and an impermeable barrier protection provided by the coating.



 $\bigwedge^{\wedge}$  Diagram of the Duplex System protection

### 3 Match it with our Interpon System

To aid selection the following tables present:

- The recommended Interpon anticorrosive systems depending on the category of the corrosive environment and on some generic pre-treatment types
- The additional characteristics of the different proposed systems.

This selection guide, based on the experience of Akzo Nobel Powder Coatings, is given as information. Please consult us for advice adapted to a specific need.

### >> By Corrosivity category

The following tables are split by environment types exterior / interior. They are built using the corrosivity categories of ISO 12944-2. The anticorrosion systems presented are based on the different protection techniques.



Steel passivation	Active Protective Prime Interpon APP 120 + topcoat
Barrier effect	Barrier Protective Primer Interpon BPP 330 + topcoat
Duplex system	Zinc rich primer Interpon PZ + topcoat

# Selection guide of Interpon steel anticorrosion systems per corrosivity of the environment

						1		
		Corrosivity ca	ategories of the environment ISO 12	944				
					-			
	C2	C3	C4	C5-I	C5-M	-		
exposure	Corrosivity Low Middle		Corrosivity High	Corrosivity Very High Industrial	Corrosivity Very High Marine	Pieces expos		
	Rural zones Low level of pollution	Urban, Industrial / coastal area moderated pollution / low salinity	Industrial/coastal area moderate salinity	Industrial high humidity /aggressive	Coastal/offshores area high salinity			
Chemical treatments	Amorphous Posphating or Amorphous Phosphating with Passivation or Cristalline Zn-Ni Phosphating with Passivation	Amorphous Phosphating with Passivation or Cristalline Zn-Ni Phosphating with Passivation	Cristalline Zn-Ni Phosphating with Passivation	Specific study, consult us	Cristalline Zn-Ni Phosphating with Passivation		Surface treatments	Chemica treatment
Or		Or Or		Or		Note 1	Or	
Mechanical treatments	Grit blasting Ra 6 - 12 $\mu$ SA ≥ 2,5	Grit blasting Ra 6 - 12 $\mu$ SA ≥ 2,5	Grit blasting Ra 6 - 12 $\mu$ SA ≥ 2,5		Grit blasting Ra 6 - 12 µ SA 3			Mechanica treatment
On chemical treatments	Interpon 610, TC or Interpon D1036 or Interpon D1094 (mini 60µ)	$\frac{2 \text{ layer system}}{\text{or}} :$ Interpon APP120 or Interpon BPP330 (mini 60 $\mu$ ) + Interpon 610, TC or Interpon D1036 or D1094 (min. 70 $\mu$ )	Depending on the environment : $\begin{array}{c} 2 \text{ layer system} :\\ \text{Interpon APP120} \\ \text{or} \\ \text{Interpon BPP330} \\ (mini 60\mu) \\ + \\ \text{Interpon 610, TC} \\ \text{or} \\ \text{Interpon D1036 or D1094} \\ (mini 70\mu) \\ \text{Note 4} \\ \text{Or} \\ \hline 3 \text{ layer system} : \\ \text{Interpon PZ 770} \\ (min. 60\mu) \\ + \\ \text{Interpon BPP330} \\ (min. 60\mu) \\ + \\ \end{array}$		Specific study, consult us		Coatings	On chemical treatment
	Note 3Note 3Interpon D1036 or D1094 (min. 70µ) Note 3Specific study, consult us							
On mechanical treatments	$\frac{2 \text{ layer system}}{1 \text{ Interpon PZ 660 or } 770 } (min. 60\mu) + 1 \text{ Interpon 610, TC } or \\ 1 \text{ Interpon D1036 or } D1094 } (min. 70\mu)$	$\frac{2 \text{ layer system}}{1 \text{ Interpon PZ 660 or } 770 (min. 60\mu) + Interpon 610, TC or Interpon D1036 or D1094 (min. 70\mu)}$	Depending on the environment : $\begin{array}{c} 2 \text{ layer system} :\\ \text{Interpon PZ 770}\\ (min. 60\mu) \\ +\\ \text{Interpon D1036 or D1094}\\ (min. 70\mu) \\ \text{Note 4} \\ Or \\ \hline 3 \text{ layer system} :\\ \text{Interpon PZ 770}\\ (min. 60\mu) \\ +\\ \text{Interpon BPP330}\\ (min. 60\mu) \\ +\\ \text{Interpon D1036 or D1094}\\ (min. 70\mu) \end{array}$		With a durability depending on the elements design, use and maintenance : 3 layer system : Interpon PZ 770 (min. $60\mu$ ) + Interpon BPP330 (min. $60\mu$ ) + Interpon D1036 or D1094 (min. $70\mu$ )			On mechanica treatment
	exposure Chemical treatments Or Or Mechanical treatments On chemical treatments	exposure $\begin{bmatrix}             C2 \\             Corrosivity Low             C2             Corrosivity Low             Rural zones Low level of pollution             Chemical treatments             Chemical treatments             Cristalline Zn-Ni             Phosphating with Passivation             Or             Or          $	Corrosivity caexposureC2C3C2C3Corrosivity LowCorrosivity MiddleRural zones pollutionUrban, Industrial / coastal area moderated pollution / low salinityChemical treatmentsAmorphous Posphating with Passivation or Cristalline Zn-Ni Phosphating with PassivationOrOrOrOrMechanical treatmentsGrit blasting Grit blasting rander at 2,2,5Or chemical treatmentsInterpon 610, TC or Interpon D1036 or Interpon D1094 (mini 60µ)On chemical treatmentsInterpon 610, TC or Interpon D1036 or Interpon D1036 or Interpon D1094 (mini 60µ)Note 3Note 3Note 3Note 3Note 31On chemical treatments2Imeron PZ 660 or 770 (min. 60µ) + h (min. 70µ)On chemical treatments2Imeron D1036 or poly (min. 70µ)On chemical treatmentsNote 3Note 3Note 3Note 3Note 3Note 3Note 3Note 3Note 3Note 3	Correstivity categories of the environment ISO 12           exposure         C.2         C.3         C.4           Corrostivity         Model         Industrial/coastal area moderated polition / polition         Industrial/coastal area moderated polition / posphating with Passivation or of Corrostivity         Cristalline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristaline Zn-Ni         Cristaline Zn-Ni         Prosphating with Passivation or of Cristali		Correstly calculated to 12544           Correstly calculated to 12544           Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544           Rund acrest calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Rund acrest calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Rund acrest calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544         Correstly Calculated to 12544           Correstly calculated to 12544         Correstly Calculated to 12544         Corestly Calculated to 12544         Correstly Calcu		Consistive unsequences of the environment ISO 12944         Consistive unsequences of the environment ISO 12944         Consistive unsequences of the environment ISO 12944         Consistive unsequences       Conses       Consistive unsequences

Note 1 : for cast iron, in some cases, a degassing operation and a surfacer primer application could be recommended Note 2 : some Interpon 310 or Interpon 700 finishes containing metal pigments can not be used in humid environments Note 1 : for cast iron, in some cases, a degassing operation and a surfacer primer application could be recommended Note 2 : some Interpon 310 or Interpon 700 finishes containing metal pigments could not be used in humid environments

Note 3 : high durability powder coatings are also available, Interpon 810 for industrial uses and Interpon D2525 for architegingal usefigh durability powder coatings are also available, Interpon 810 for industrial uses and Interpon D2525 for architectural use

Note 4 : only for pieces located over 500 meters from a coast or an aggressive atmosphere

C1

Corrosivity

Very low

Heated building,

clean atmosphere

office, stores,

school

Amorphous

Phosphating

or

Amorphous

Phosphating with

Passivation

or Cristalline Zn-Ni

Phosphating with

Passivation

Grit blasting

Ra 6 - 12  $\mu$ SA  $\geq$  2,5

Interpon 700

or

Interpon 310

or Interpon 610

Interpon D1036

Interpon D1094

(mini  $60\mu$ )

Interpon 700

or

Interpon 310

Interpon 610

Interpon D1036

or

or

Interpon D1094

(mini 60µ)

C2

Corrosivity

Low

Not heated

building, possible

condensation

Warehouse, Sporthall

Amorphous

Phosphating

or

Amorphous

Phosphating with

Passivation or

Cristalline Zn-Ni

Phosphating with

Passivation

Grit blasting

Ra 6 - 12 µ

SA ≥ 2,5

Interpon 700

or

Interpon 310

Interpon 610

Interpon D1036

Interpon D1094

(mini 60µ)

Note 2

Interpon 700

Interpon 310

Interpon 610

or

or

Interpon D1094

(mini 60µ)

Note 2

Interpon D1036

or

		. 100 100 / /	
Corrosivity ca	tegories of the environ	ment ISO 12944	
~~~	Interior ampland	ce	05
C2	C3	C4	C5
LOW	Middle	High	Very High
heated g, possible ensation ehouse, orthall	Production room, high humidity and air pollution Food ind., laundries, dairies	Chemical Plants, Swimming pool costal ship, boatyard	Building/area Condensation, high pollution
orphous phating or orphous lating with sivation or ine Zn-Ni lating with sivation	Amorphous Phosphating with Passivation or Cristalline Zn-Ni Phosphating with Passivation	Cristalline Zn-Ni Phosphating with Passivation	Specific study,
(	Dr		consult us
blasting 5 - 12 μ ≥ 2,5	Grit blasting Ra 6 - 12 µ SA ≥ 2,5	Grit blasting Ra 6 - 12 $\mu$ SA $\ge$ 2,5	
2000 700 or or or on 610 or or D1036 or on D1094 hi 60μ)	2 layer system : Interpon APP120 or Interpon BPP330 (mini 60µ) + Interpon 700 or Interpon 610, TC or Interpon D1036 or D1094 (mini 60µ)	$\frac{3 \text{ layer system}}{\text{Interpon PZ 770}}$ $(mini 60\mu)$ $+$ $(mini 60\mu)$ $+$ $(mini 60\mu)$ $+$ $(mini 60\mu)$ $r$ $(mini 610, TC)$ $r$ $r$ $(mini 60\mu)$ $(mini 60\mu)$	
ote 2	Note 2	Note 2	Specific study,
2001 700 or 2001 310 or 2001 610 or 2010 00 2010 00 2000 0000000000	2 layer system : Interpon PZ 660 or 770 (mini 60µ) + Interpon 700 or Interpon 610, TC or Interpon D1036 or D1094 (mini 60µ)	<u>3 layer system</u> : Interpon PZ 770 (mini 60µ) + Interpon BPP330 (mini 60µ) + Interpon 700 or Interpon 610, TC or Interpon D1036 or D1094 (mini 60µ)	consult us
ote 2	Note 2	Note 2	



< Chemical pretreatment

Mechanical pretreatment >>

### >> By additional characteristics

Regarding the primer choice some additional characteristics of the primer should be taken in account such as its application conditions, its overcoatability with a liquid paint etc.

The following table provides some of this information which should be completed by consulting the primer technical documentation.

### Additional characteristics of the systems

Primer	Туре	Hollow bodies penetration	Edge coverage power	Primers - colours availability	Powder spraying easiness	Powder recycling	Topcoat flow quality	Overcoatability with liquid paints	Use as holding primer	Safety Label
Interpon APP 120	Powder Epoxy- polyester	••	••••	Yes	••••	••••	••••	Yes : PU 1K or 2K	Yes, with a maximum waiting delay of 6 weeks	Free
Interpon BPP 330	Powder Pure Epoxy	••	••••	Grey	••••	••••	••••	Yes : PU 1K or 2K	Yes, with a maximum waiting delay of 1 week	Free
Interpon PZ 660	Powder Zinc rich Epoxy	•	••••	Zinc grey	••••	••••	••••	Yes : PU 1K or 2K	No	Xi Irritant N-Dangerous for the environment
Interpon PZ 770	Powder Zinc rich Epoxy	•	••••	Zinc grey	•••	•••	•••	Yes : PU 1K or 2K	No	Xi Irritant N-Dangerous for the environment