



**HEXIGONE**

Sustainable, smart  
and highly effective  
corrosion inhibitors.

With Intelli-ion® technology



**INTELLI-ION®**



# Corrosion Inhibitors

Intelli-ion® is an award-winning, patented technology that is designed to completely replace heavy metal and chromate inhibitors or co-blend with phosphate inhibitors. It provides the coatings market with cost-effect, high performance, sustainable anti-corrosive additives.

The smart technology fights corrosion when used in primers with full system barrier topcoats and is compatible with a broad spectrum of resin types, coating types and coatings manufacturing routes.

High  
Performance

Sustainable  
Benefits

Smart  
Technology



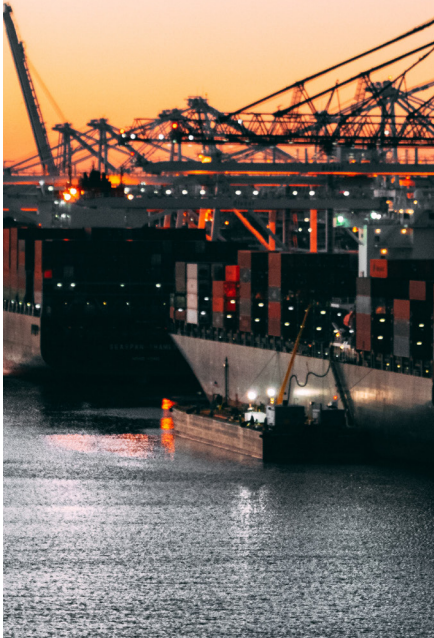
We are a proud member of 'Made in Britain' - a collection of trusted British manufacturers. Our raw materials are of the highest quality and all product is tested in a UKAS accredited Quality Control Laboratory before shipment.



“ Award-winning,  
patented technology...”



# Our technology provides:



## Smart Technology

The award-winning, patented Intelli-ion® technology offers a fast, smart and effective corrosion response. Active ingredients stay dormant in the micro-reservoir system until they sense corrosion activity and release the inhibitor 'on demand.'



## Cost Savings

Intelli-ion® AX1 offers a lower specific gravity and superior performance to phosphate systems, so the loading of inhibitor is greatly reduced. This can deliver anticorrosive cost savings of up to 30% per litre of paint.



## High Performance

Independent testing by leading coatings manufacturers shows that complete replacement offers superior corrosion protection vs current market-leading alternatives. Co-blending with phosphate inhibitors offers cost and environmental benefits with no compromise on performance.



## Sustainable Benefits

Formulating with Intelli-ion® can allow you to remove environmental hazard labelling from packaging and create a safer manufacturing environment for your staff by reducing volumes of chemicals on site.

# Versatile applications

Intelli-ion®'s performance has been independently validated in solventborne, powder and waterborne coatings via industry standard testing (ASTM B117).

Hexigone offers bespoke loadings and formulations advice to optimise the testing and incorporation process with all customers.

Please get in touch with our technical sales team for starter formulations.

- Subject to customer expertise
- Good
- Excellent

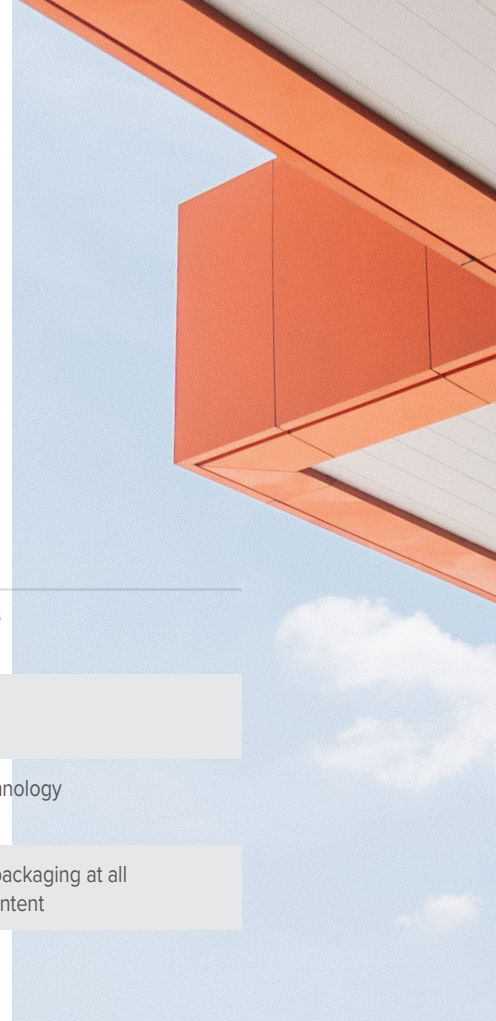
Solvent-based Coatings	Short and medium oil alkyds	●●
	Long oil alkyds	●●
	High solids alkyds	●●
	Epoxies	●●●●
	Epoxyesters	●●
	High solids epoxies	●●●●
	Polyurethanes	●●●●
	High solids polyurethanes	●●●●
	Moisture cured polyurethanes	●
Silicone resins	●	
Water-based Coatings	Alkyd emulsions	●
	Epoxy dispersions	●
	1-part polyurethanes	●
	2-part polyurethanes	●
	Silicone resins	●
	Acrylics and modified acrylics	●
Butadienes (*only with a non-ionic surfactant)	●	
Specialty Coatings	Coil coatings	●●●●
	Aircraft primers	●●●●
	Wash and shop primers	●
	Direct to metal one coat	●
	UV cured systems	●
	Powder coatings	●●●●

# Co-blend or completely replace existing inhibitors?

Intelli-ion® can be used to completely replace existing inhibitors or co-blend with existing phosphate-based systems. Whether you are looking to reduce inhibitor costs, boost performance or improve your sustainability credentials - Intelli-ion® can provide the solution.

	Co-blend	Complete replacement
Cost	Significant cost savings of up to 30% vs. phosphates alone*	Comparable cost to zinc phosphates
Performance	Comparable or better performance Better adhesion	Significant performance increase Better adhesion
Technology	Blend of known plus patented, smart technology	Award-winning, patented smart technology (allowing product differentiation)
Environment	No environmental warning labels when zinc phosphate inhibitors < 2.5%	No environmental label on product packaging at all concentrations. Zero heavy metal content

[\*based on ZnP loadings of 8-15% being purchased between \$2.20-5.50]



# High performance

## Co-blend formulations

Co-blend formulations can retain low concentrations of current anti-corrosives blended with Intelli-ion® technology for smooth step-change market introductions, providing cost and environmental benefits.



10% zinc phosphate



3% Intelli-ion® co-blended with 2% zinc phosphate

Solventborne alkyd primer – no topcoat  
[Post 500 Hours Testing ASTM B117 Salt Spray]

### Comments

The replacement of zinc phosphate with a co-blend of inhibitors clearly provides higher performance as well as improved adhesion. Reducing the % of zinc phosphate to below 2.5% allows to removal of environmental warning labels on the tin. Customers would also benefit from a 10-30% cost reduction on their anti-corrosives.



Topcoated



Stripped with solvent

Waterborne Epoxy primer with PU topcoat  
Both images: formulated with 2% AX1 & 2% ATP co-blend  
[Post 1440 Hours Testing ASTM B117 Salt Spray]

### Comments

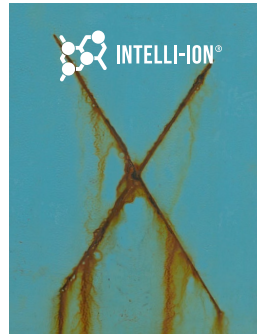
The panels used for testing were shot-blasted to Sa2.5 as per C5 specification. The primer layer had a dry film thickness (DFT) of 120 µm and the topcoat was applied at approx. 60 µm. After 1440 hours of salt spray testing (SST) to ASTM B117, our WB Epoxy system with AX1 displayed zero blistering. Half of the system was removed to reveal minimal corrosion at the scribe, demonstrating Intelli-ion's excellent performance.

## Complete replacement

Complete replacement of your current inhibitor with Intelli-ion® offers a significant increase in corrosion protection and product differentiation.



10% zinc phosphate



5% AX1

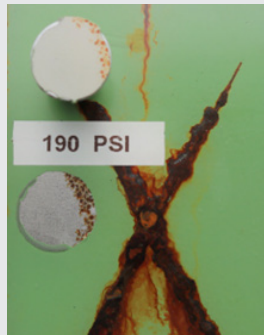
Solventborne alkyd primer + topcoat  
[Post 1000 Hours Testing ASTM B117 Salt Spray]

### Comments

In solventborne systems, AX1 can easily replace chromate and phosphate-based inhibitors and also be used as an additional drop in. No formulation changes in the manufacturing process are required. Testing by industry partners consistently demonstrates higher corrosion protection as well as improved adhesion. Additionally, complete replacement allows customers to remove environmental warning labels from the primer tin whatever the loading of AX1.

## Adhesion promotion

The addition of AX1 has been proven to improve intercoat adhesion - offering additional benefits to corrosion control in your coatings system.



Standard 2K epoxy primer



5% AX1 drop in addition

[Post 1000 Hours Testing ASTM B117 Salt Spray]

### Comments

Intelli-ion AX1 not only offers a better performance against corrosion but also improves adhesion performance and protects metal assets for longer.

#### Results:

*Standard 2k epoxy primer (left):*

100% adhesion failure between the primer and metal (AB)

*5% drop in of AX1 (right):*

10% glue failure

90% cohesive (C) failure within the topcoat

# Patented, award winning protection mechanism:



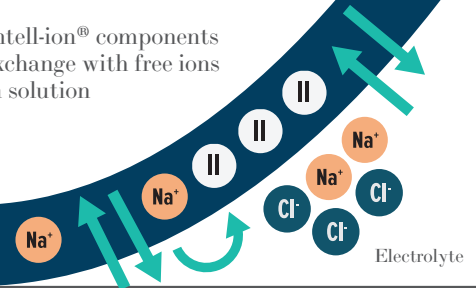
## How the patented technology works:

The technology protects in a 'smart' way via three modes of electrochemical protection. The active ingredient lies dormant in a micro-reservoir and is triggered 'on demand' when corrosion is sensed at the coating surface - via ions or pH changes.

Ions that pass through the coating are sequestered - rendering them neutral and also triggering the release of the inhibitor to migrate to the metal surface.

A defect in the coating or at a cut-edge once under corrosive attack would have the same response from the reservoir system. The inhibitor forms a protective nano layer over the bare metal surface at the anode and cathode, and forms insoluble salts with any dissolved metal ions preventing mass transport of corrosive ions, as well as moderating under-film pH.

Intell-ion<sup>®</sup> components  
exchange with free ions  
in solution



Primer Coating

Metal Substrate

Electrolyte



## Co-blended with phosphate systems:

Zinc phosphate salts on their own are not initially very effective due mainly to their low solubility. As a result, in a corrosive environment, significant amounts of time must pass before there are sufficient concentrations of phosphate anions to react with the metal cations to form an anti-corrosive precipitative layer.



This leads to a time delay where corrosion can proceed unimpeded. Intelli-ion® - because of its very fast formation of an inhibitive layer - acts in synergy with zinc phosphate by reducing corrosion occurring due to this time delay. AX1 provides the initial protection backed up by the zinc phosphate precipitate layer to provide a synergistic anti corrosion solution.



# Sustainability – it's our mission.

## Remove Environmental Warning Labels:

Our Intelli-ion® additives replace heavy metals, phosphates and toxic chromates with highly effective, environmentally favourable additives. By co-blending phosphate-based inhibitors with Intelli-ion®, customers can remove environmental warning labels and provide end-users with coatings that are easier to transport, store and dispose of.

“ Sustainability is at the core of Hexigone's business...”

## EcoVadis Gold & REACH Compliant:

Hexigone has been awarded a Gold rating by EcoVadis®, one of the world's most recognized providers of business sustainability ratings. Additionally, our product is EU REACH compliant - ensuring a high level of protection to human health and the environment.

To find out more about Hexigone's safe materials, CO<sub>2</sub> emissions, circular economy and energy efficiency, then head to our sustainability page.



# Find your local distributor

Hexigone has a large network of leading distributors of speciality chemicals - offering local service and expertise in your area. Our in-house staff and distributor network thrive on collaborative working and excellent customer service to ensure the transition to Intelli-ion® is quick and efficient.

## Africa

**South Africa:** Oxerra

**All other:** Azelis

## Asia

**India:** Ankush Enterprise

**Indonesia:** Titian Abadi

**Malaysia:** Ingredients Plus

**Middle East:** Azelis

**Philippines:** Redechem

**Singapore:** Ingredients Plus

**South Korea:** KD Chemicals

**Taiwan:** Eumate

**Thailand:** Thai Speciality Chemicals

**All other:** Hexigone

## Europe

**United Kingdom:** Hexigone

**All other:** Azelis Europe

## North America

**Canada:** Azelis Canada

**United States of America:** Barentz

**Mexico:** First Quality Chemicals

**Other central America:** Barentz

## South America

**Peru:** Logusaperu

**Venezuela:** Liquidsol

**All other:** Hexigone

## Australia

**Australia:** Oxerra

**New Zealand:** Oxerra

If you would like to discuss Intelli-ion® or order a sample, please get in touch and we'll introduce you to your local agent.



# Vision

To help create a safe  
and sustainable world.

## Values

1. Embrace change and always challenge the norm
2. Strive to achieve the highest quality in everything we do
3. Build relationships based on honesty, respect and kindness
4. Be bold and dynamic to achieve success
5. Make choices that support a sustainable future
6. Work collaboratively to leverage collective brilliance
7. Never forget to have fun along the way!

# Contact us

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