

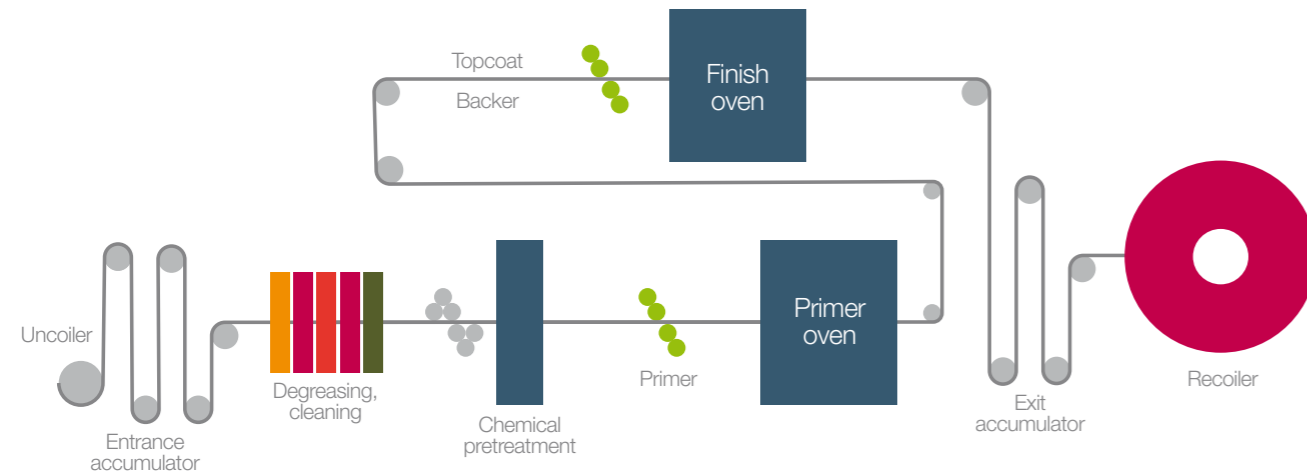
AkzoNobel Coil Coatings China

# Product Portfolio Overview

Building and Construction

AkzoNobel

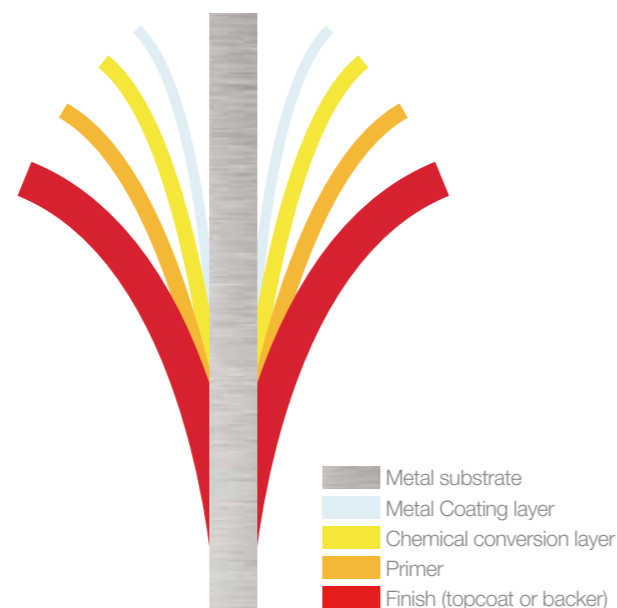




# Coating Process for Typical Metal Coils



Cross-sectional view of Pre-coated metal sheet



- Metal substrate
- Metal Coating layer
- Chemical conversion layer
- Primer
- Finish (topcoat or backer)

## Overview of Coil Coatings

### Coil coatings and their applications

Coil coatings are the products (primer, backer, and topcoat) applied to a metal substrate in the creation of pre-painted metal coils. The coating is continuously applied on the cleaned and pretreated metal surface, at high speed, similar to roll coating, which then forms a film after being cured at high temperature.

Common metal substrates include: aluminum sheets, galvanized steel sheets, Galvalume® steel sheets, or other coated steel sheets.

Modern coil coating lines boast fast speed and a high level of automation, during which, incineration equipment can efficiently recycle organic solvents discharged through the curing process. Compared to other coating processes, this process features uniform coating quality and higher production efficiency, and is more environment-friendly.

The metal material made as a result of this process is called pre-coated metal coil, also known as pre-coated metal sheet. Customers can directly use processing forming technology to manufacture into various metal components or products. The finished products are mainly applied in metal construction materials, including metal roof, wall, door panel, gutter, downspout, etc. Coil coatings can also be used in other sectors, such as domestic appliances, transportation, and within the packaging industry.

### Main components of coating

All common coil coatings contain four key components, namely; resin, pigment, solvents and additives.

Resin is a film-forming material for coatings, which becomes the foundation of dense paint film after the coatings undergo a thorough baking and curing treatment. It determines the basic physical property of paint film, and is also one of the key factors to determine the weatherability of paint film.

Pigment is used to color paint film, showing a variety of colors. Different types of pigment feature different chemical stability, so they need to be perfectly matched with resin to reflect the weatherability of paint film.

Solvents enable coatings to achieve appropriate fluidity in the liquid state, and evaporate during the process of coating baking and curing. They play a key role in the manufacturing, storage stability and film-forming quality of coatings.

Additives are used to improve coating performance. Although they only have low use level, they are indispensable components, such as the catalyst that is used to promote paint film curing, leveling agent that is used to improve the surface quality of paint film, and defoamer that is used to prevent coatings from producing bubbles during the coating, etc.

### Function of each coating

For common construction pre-coated metal sheets' coatings mainly include primer, topcoat and backer. It is possibly a requirement to apply a layer of clear varnish for some special needs.

Primer offers good adhesion to metal substrates and topcoat, while topcoat provides the necessary color and luster, demonstrating the decorative properties of pre-coated metal sheets. Back coating provides base protection and clear varnish provides extra decorative properties and durable protection for the topcoat.

Each coating should be viewed as a complete coating system, and applied onto qualified metal substrates after proper cleaning and pretreatment according to appropriate parameters and conditions, which can provide good performance for metals and meet the requirements of transport, processing and use of pre-coated metal sheets.

### Basic performance requirements of construction coatings

As a complete coating system, the basic function of coil coating is to provide protection and decorative properties for metal building materials, allowing them to be durable and beautify the appearance. It helps to showcase metal constructions, demonstrate their applied function, and maximize their design potential.

Coating systems should have suitable mechanical properties, enabling coated steel sheet to provide damage resistance during coiling, recoiling, transportation, forming processes and installation.

Coating systems should also have appropriate corrosion resistance and chemical resistance. Coating systems together with metal plating and a chemical pretreatment layer prevents metal substrates from early damage as a result of corrosion.

Additionally, coating systems need to have appropriate outdoor weatherability, which is an important factor to determine the cost performance of construction pre-coated metal sheets. Coatings will be subjected to a variety of climatic conditions such as ultraviolet rays, moisture, high temperatures, and temperature changes. The coating's response to these conditions affect its durability which is shown in the occurrence of chalking and color fading and ultimately impact the service life of coated metal sheets.

# Weather Resistance of Construction Coatings

**Coatings with poor weather resistance will significantly impair the cost-performance ratio of building sheets!**

The service life of many good metal building materials is well above 20 years. However, if the coating fades quickly, the owner will have to replace metal materials before schedule, causing financial loss.

Superb durability of coatings helps to maximize the protection and maintain the bright appearance of a building, making it look new despite years of exposure. If the coating is poorly durable, a building will lose its color quickly with its original appearance fading away.



Figure above: The colored steel sheet roof has severely faded. The dark blue in the small piece of material is the original color. The light blue is the color resulting from years of severe fading.

Figure below: The pre-coated sheet roof is unevenly faded and chalked. The roof is covered by different coatings in different positions, offering varying weather resistance. After several years of outdoor exposure, part of the roof has retained its appearance but part of roof, covered by poor weather resistant material, has severely faded and chalked.



## Both resin and pigment are susceptible to weatherability

The long-term weatherability of coatings depends on the chemical bond strength of resin and the stability of the selected pigments. To ensure outstanding weather resistance capabilities, both resin with remarkable strength and stable pigments are required.

### Varieties and difference of resin

Resin is a high molecular polymer aggregated by organic monomers. In addition to their difference in chemical stability, different varieties of resin are different from one another in resistance to ultraviolet radiation, moisture and heat, industrial pollution and other harsh weather conditions with regards their aging and erosion rate.

Resin used for construction coil coatings can be categorized into three groups by chemical types.

**Polyester resin:** Owing to diversity of monomer options, the durability ranges are extremely wide. The low cost polyester resin is only durable for outdoor application for no more than five years. The excellent polyester resin, noted for outstanding durability, is suitable for use for at least fifteen years.

**Silicone Modified Polyester:** Silicone Modified Polyester is made by adding a dose of silicone resin into polyester resin. Owing to the diversity of polyester resin monomer, the varieties, synthetic process and contents of silicone modified polyester vary, therefore the durability of such resins vary extensively. Some varieties are fairly similar to ordinary polyester in durability life, but some others have outstanding durability with expected lifespan of up to 20 years.

**Fluorocarbon coating:** Usually called 70% PVDF coating, namely polyvinylidene fluoride, in the industry, the coil coating is a type of resin noted for an extremely stable chemical structure, with relatively homogeneous varieties. The paint film is prominently resistant to weather conditions and chemicals, with superb capabilities in color and gloss retention when used together with durable pigment.

### Different resins, different weather resistance



Figure above: Three sample groups of exposed panels; the small one above is the original color and the below is the color following exposure. The three groups of samples are all polyester coating systems. According to the result of exposure in Townsville Australia, the sample on the right is superior to the sample on the left. It shows that the selection of resin and pigment type is very critical to the product performance.

Figure below: The two exposed panel samples both belong to Fluorocarbon Resin Coating Systems. Based on results of 10 years exposure in Townsville Australia, the sample covered by inorganic pigment on the right is obviously superior to the sample on the left with regards fading resistance. The pigment is the dominant reason behind this difference.

### Varieties and difference between pigments

The pigments give colors to coating. Correct choice of pigments in formula is of key importance to coating's fading and chalking resistance capabilities. The pigments can be approximately categorized into three major groups in accordance with their chemical structures.

**Organic pigments:** comprising a class of pigments that may have good — but usually not supreme — durability. Just as the curtains in your living room can be expected to fade with time, so can the organic pigments used in coatings. It generally costs less to use organic pigments.

**Inorganic pigments:** pigments that are synthetic or naturally occurring which do not contain carbon compounds. The majority of these colorants provide excellent long-term performance.

**Ceramic pigments:** named after their original use in ceramic products, these complex inorganic pigments are made from mixed metal oxides synthesized at molten metal temperatures.

The most color stable pigments available today, they offer unparalleled resistance to heat, light and chemical attack.

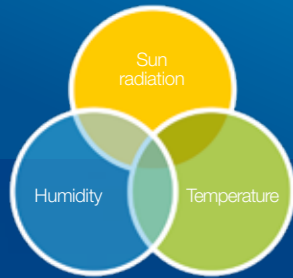
These attributes make them ideal for use in the highest quality exterior coatings to assure long-term color retention even after decades of weathering. Higher cost is usually associated with their higher performance.



# Outdoor Exposure, Irreplaceable

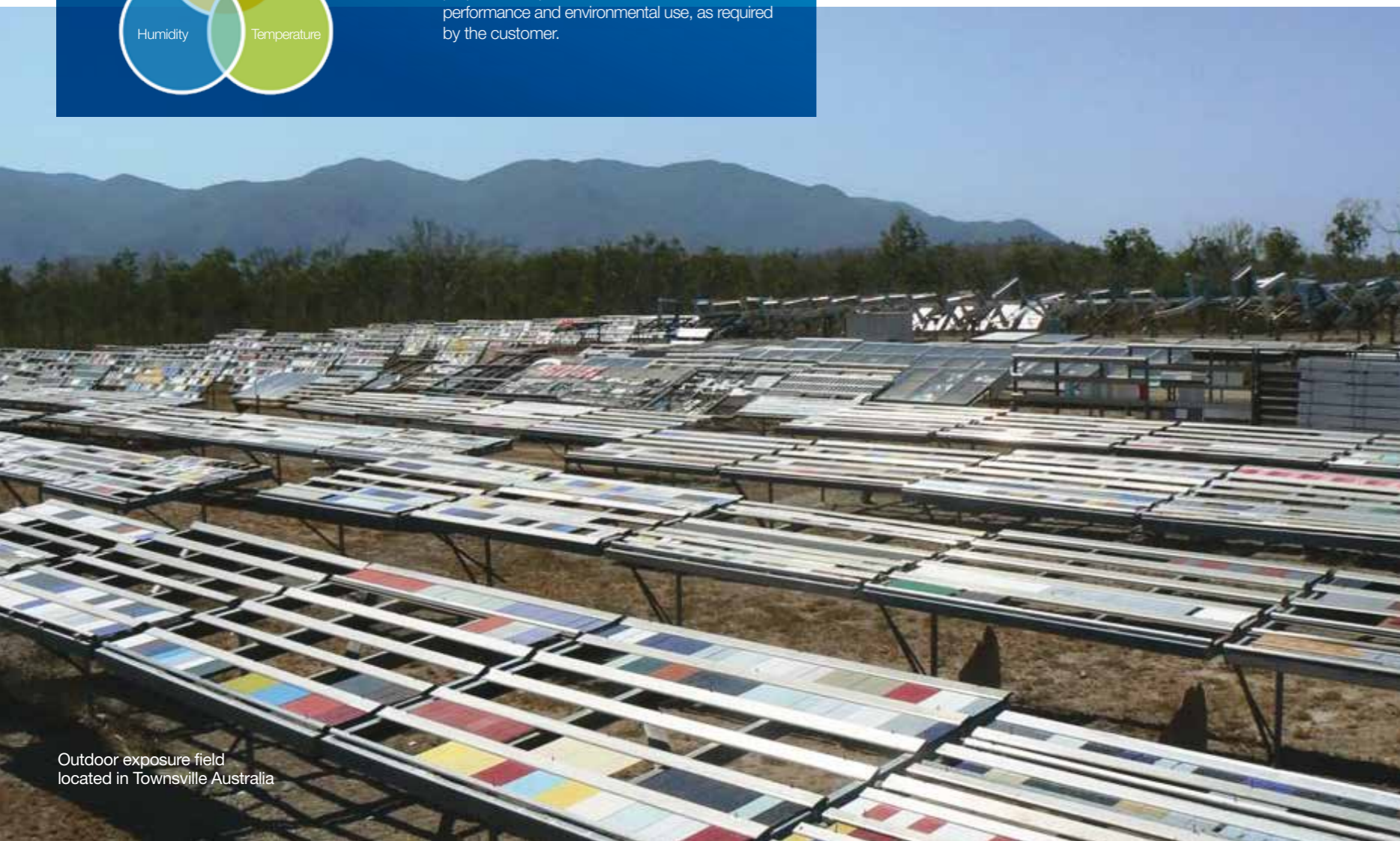
For the metal coating sheets for outdoor use, the aging and degradation of paint film for coatings is mainly caused by the combined impact of sun radiation, temperature and humidity in normal atmospheric conditions. The sun's radiation, especially stronger ultraviolet radiation strength, and higher temperature and humidity, will result in faster coating degradation.

Different weather conditions will lead to variants in conditions for aging of paint film and different speeds and processes of degradation.



The combined impact of natural conditions cannot be simulated in a laboratory. Therefore, outdoor exposure experiments are irreplaceable. AkzoNobel has thousands of panels experiencing outdoor exposure tests in all weather conditions in the US, Australia, New Zealand, Sweden, China, Indonesia and many other countries throughout the world.

All the products we produce must be verified by an outdoor exposure test before being launched to market, thus we endeavour to explore the performance of our products in different weather conditions. We have accumulated over four decades of outdoor exposure experiences, so that we can choose appropriate resins and pigments, and put forward the most reasonable proposals for products in view of the color, performance and environmental use, as required by the customer.



Outdoor exposure field located in Townsville Australia

"All UV-B lamps emit UV below normal sunlight cut-on. This short wavelength UV can produce rapid polymer degradation and often causes degradation by mechanisms that do not occur when materials were exposed to sunlight. This may lead to anomalous results."

ASTM Standard Practice G53, 1995

"It is now established fact that they [ASTM B 117 salt spray and QUV-B] do not correlate well to natural exposures, and in some specific cases can lead to totally wrong conclusions being made."

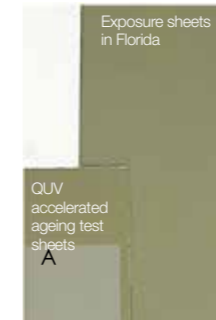
Dr. G. C. Simmons, European



Natural exposure rack



QUV accelerated ageing test device



AkzoNobel high durable silicone modified polyester



Common silicone modified polyester from other coating producers



6 year exposure in Florida



QUVA test panel QUVB test panel

Ceramic pigments

Ceramic pigments

Organic pigments

**Accelerated testing is not entirely reliable!**  
Compared to real world natural exposure, using only accelerated testing offers questionable results. All research programs can use accelerated testing as a tool, but only as a directional indicator, because it can lead to false conclusions. To verify the outdoor weatherability of coatings, field exposure test is the most reliable means.

The experiment can demonstrate that the accelerated testing is not always reliable. Two paint systems (A & B) are selected, both samples are exposed outdoors and in QUVB accelerated testing. According to the outdoor test result, the sample A shows more resistance to color fading and chalking than sample B. However, in the QUVB experiment, the sample B is showing better color fading and chalking than sample A. Based on this, it can be misleading to judge the performance of the sample just based on the QUVB accelerated testing only.

The experiment can also demonstrate that the result of the accelerated testing is not always accurate and reliable. We chose three groups of fluorocarbon coating formulated with different pigments for outdoor exposure test and accelerated testing (QUVA and QUVB tests) for comparison. According to the outdoor exposure test results; two groups of the sample contained the ceramic pigments are more resistant to fading than that contained by organic pigments. The accelerated testing did not replicate the poor performance of the panel with organic pigments.



5 years exposure at Townsville, Australia

6 years exposure at Florida, USA

This experiment can demonstrate that the same coating will present varying aging rates in different weather environments. Covered by the same coating, the pre-coated sheets on the right and left have experienced exposure tests respectively in Townsville Australia and Florida US for almost the same time period. The fading and chalking of the sample exposed in Florida is not obvious, but the sample exposed in Townsville Australia obviously faded and chalked severely.

AkzoNobel relies on the outdoor exposure experience of products under different weather environments rather than the accelerated testing, in an effort to evaluate the best products for customers around the world.

The Coil Coatings division of AkzoNobel has a variety of product series and brands, and has become a favorite within the global building trade.

- FLEXIDURE® is a product brand of a universal polyester coating system. The product's flexibility, hardness, outdoor durability, and colors are varied and have a wide scope of applications.
- POLYDURE® is a product brand of a durable polyester coating system. The product has better flexibility and hardness, and has a good outdoor durability, which is the most durable model in polyester coatings.
- SILKSTAR® is a product brand of a silicone-modified polyester paint system. The product has good hardness and with good scratch resistance, which enhances the outdoor durability of polyester coatings.
- TRINAR® is a product brand of a fluorocarbon coating system. The product has good flexibility and outdoor durability, and it has excellent anti-fading and anti-chalking performance, which is a classic global brand within the building industry.
- COOL CHEMISTRY® is AkzoNobel's heat reflective technology which can be incorporated to our various coating brands. Providing excellent durability, this product reduces the absorption of solar heat which helps save energy in cooling requirements.



# AkzoNobel construction coil coatings



### Global

AkzoNobel Coil Coatings' business footprint is known around the world, and our global technical experts have a wealth of knowledge and experience, with a dedication to providing a high-quality service and technical support to users around the world.

We have six global and regional R&D labs, and our natural exposure fields are around the world. Our expertise comes from our understanding of the global climate and constantly developing coatings that meet a variety of climatic conditions.

### Sustainable development strategy

AkzoNobel is committed to developing a sustainable portfolio. We have been ranked at the top of the prestigious Dow Jones Sustainability Index for four consecutive years and in the top three for the past ten years, as compared to over 350 companies in the Materials Index Group.

We are committed to develop environmentally friendly pioneering products and continuously provide users with innovative energy-saving solutions and technologies.

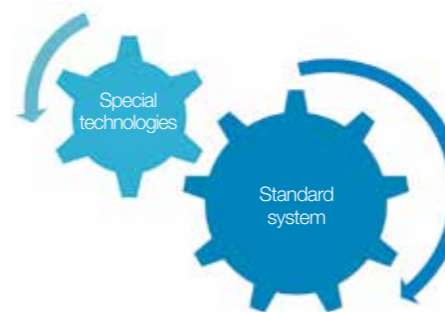
We have banned the use of lead pigment in any formulation, reducing the destruction of the ecological environment and striving to lead the field within environmental protection and assisting users to become leaders in environmental protection.

We partner with customers to jointly develop innovative pre-coated products and to bring real quality products to the construction market.

We help and support our customers in making unremitting efforts to reduce carbon dioxide emissions to the atmosphere.

### Provide products for users in China

STANDARD SYSTEM	SPECIAL TECHNOLOGIES
General durability series FLEXIDURE® 50 FLEXIDURE® 100LD FLEXIDURE® 100	Special features USDA Antimicrobial Antistatic Heat-reflective Self-cleaning
High durability series FLEXIDURE® 1200 SILKSTAR® 500	Special appearance effect Metallic effect Pearlescent Texture and mesh Printing coating
Super durability series POLYDURE® 2000 SILKSTAR® 2000 TRINAR® 5000	



### Full coating solutions

As a global market leader of coil coatings, AkzoNobel coil coatings provide a full range of products for use in the construction industry, resulting in outstanding projects and meeting the requirements of various specification indicators. Whatever climate conditions your project is in, we can provide the best technical advice and solution to ease your mind.

Outdoor durability is continually pursued value of construction metal sheets. Our construction use products have three series, and there are additional standard systems for you to choose from to meet your needs for weathering resistance.

Our standard products can also be combined with a variety of special innovative technologies to achieve special applications for metal construction materials, giving the pre-painted steel more personalized special features and a unique appearance to meet the diverse needs of customers.

**We make a unique difference to meet the growing demand in an ever-changing world.**

# Standard System

## General durability series

Products:  
FLEXIDURE® 50  
FLEXIDURE® 100LD  
FLEXIDURE® 100  
Recommended Uses:  
Outdoor applications for economic buildings  
Indoor applications for all types of buildings

## High durability series

Products:  
FLEXIDURE® 1200  
SILKSTAR® 500  
Recommended Uses:  
Outdoor applications for high and medium grade buildings

## Super durability series

Products:  
POLYDURE® 2000  
SILKSTAR® 2000  
TRINAR® 5000  
Recommended Uses:  
Outdoor applications for high-grade and typical building

# Being applicable is the best!

We provide the market with three series and eight standard coating systems to meet the different needs of users.

## General durability series

- ✓ Three standard polyester systems to choose from
- ✓ Wide range of colors
- ✓ Suitable to be used under general Asia climatic conditions with a warranty period of 5 to 10 years



## High durability series

- ✓ Two optional resin systems, namely polyester and silicone-modified polyester systems
- ✓ Both offering color and weathering resistance
- ✓ Suitable to be used under general Asia climatic conditions with a warranty period of 15 years



## Super durability series

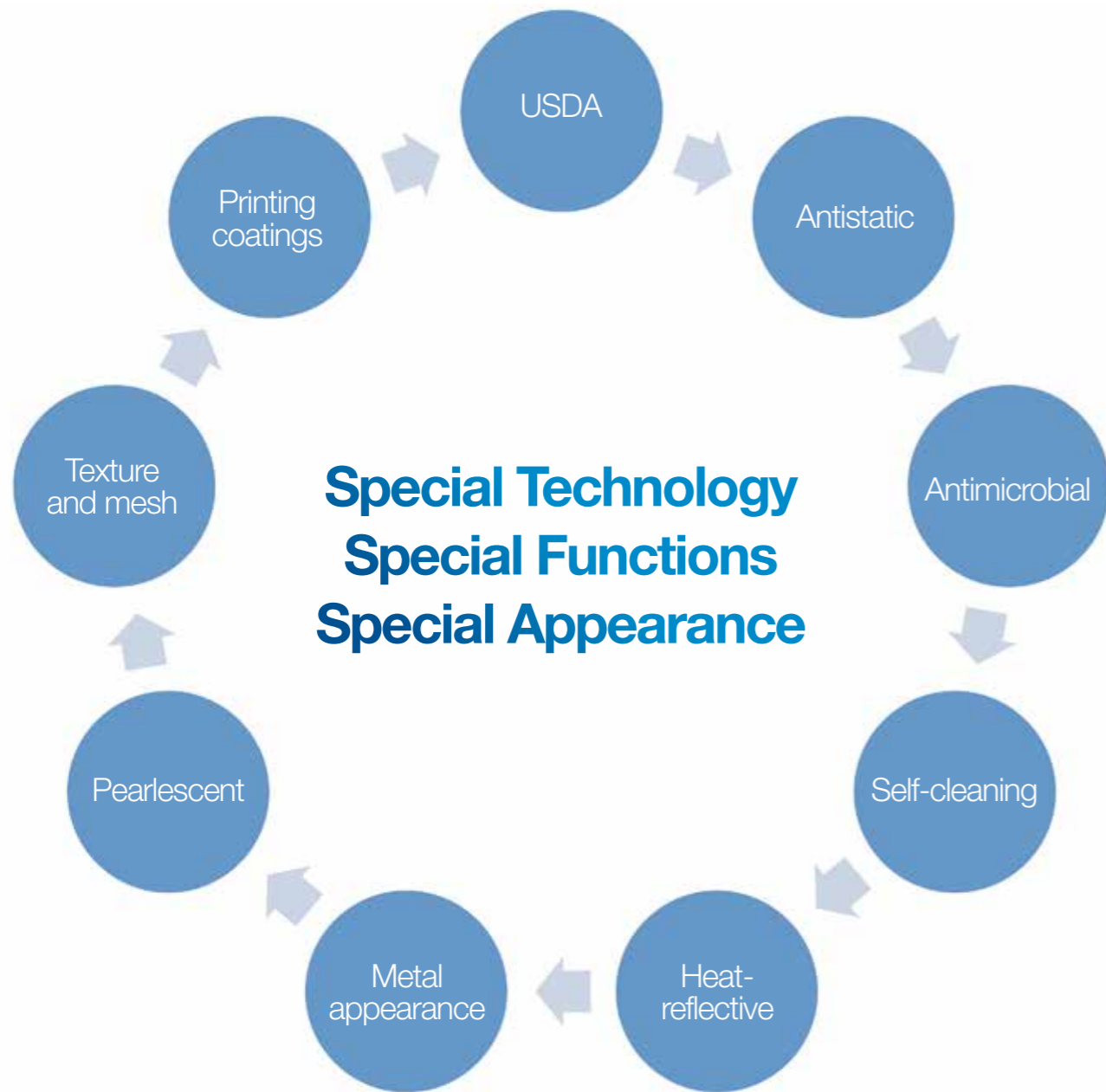
- ✓ Three optional resin systems, namely polyester, silicone-modified polyester and PVDF systems
- ✓ Excellent outdoor durability
- ✓ Suitable to be used under general Asia climatic conditions with a warranty period of 20 to 30 years

AkzoNobel offers three series and eight standard product systems. Each standard system offers a range of weathering resistance and meets the varying needs of users. Based on decades of exposure tests, we have established a strict formula specification to guarantee that every product reaches its performance in design.

Different types of constructions have specific requirements. For differencing weatherability norms, pigments that can be chosen in each standard system are also different. In general, the higher the level of weathering resistance of coating systems, the smaller the optional range of pigments, and the limited colour choice. Refer to "color card" for reference.

The thickness of the coating film is directly related to the weathering resistance, with an insufficient film thickness affecting the weatherability performance of the product. Therefore, we recommend a film thickness range for each standard system to ensure the product performance.





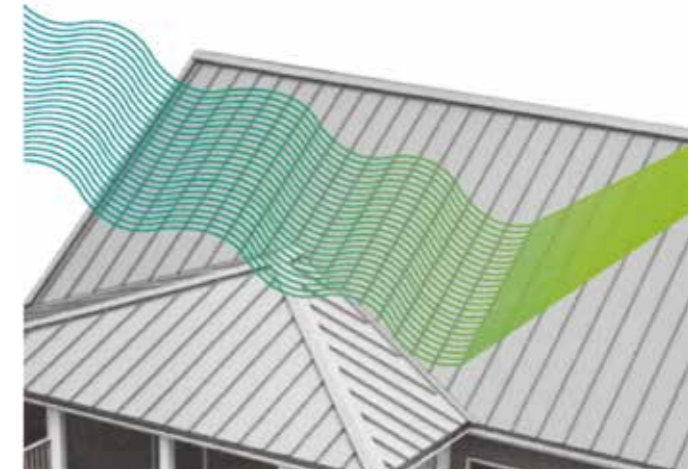
# Integrate creative ideas into paint technology!

In addition to the weatherability, we believe that special appearance and functional coating technology can bring added values to users and can achieve superior and further developed metal construction materials.

### Special functions

Our innovative coating technology can produce special functionality and break the traditional application limitations of metal construction materials, as well as intelligently realize the special features of the building, bringing added value to metal construction.

- USDA coating technology
- Antimicrobial coating technology
- Antistatic coating technology
- Heat-reflective coating technology
- Self-cleaning coating technology

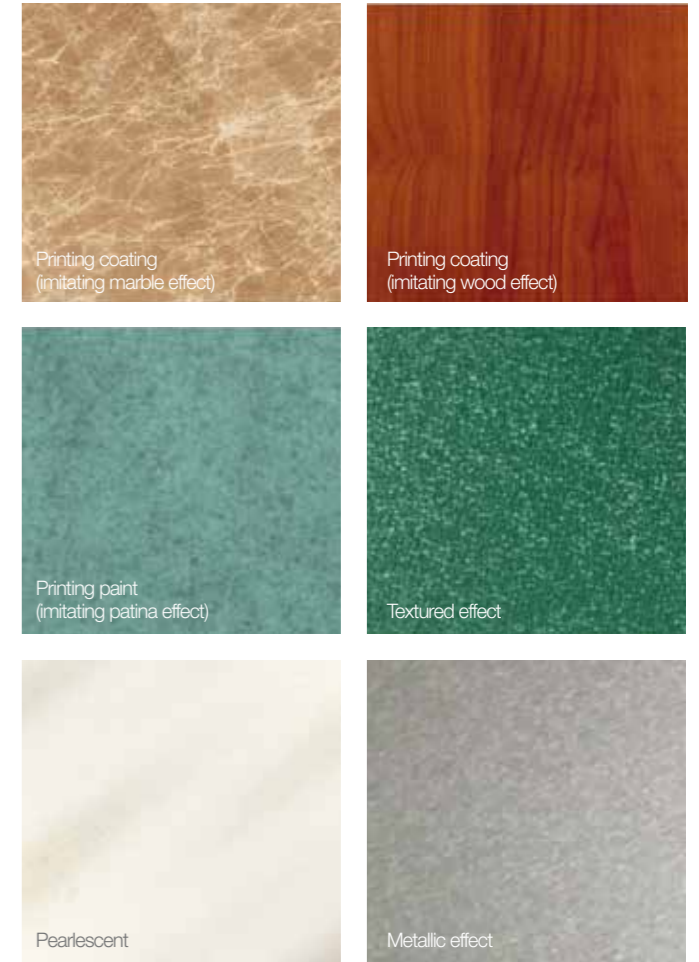


### Special Appearance

Coatings help to shape the image of a building and enhance the beauty of metal products. Our special appearance coatings can greatly improve steel or aluminum, and are durable, lightweight and environmentally friendly high-quality building materials. Our products are perfect to replace traditional building materials, to protect the non-renewable resources by reducing consumption of building materials, and thus decreasing maintenance costs.

Using a variety of pre-coated metal sheets with colorful appearance, a variety of architectural design can easily interpreted to reflect the personality of metal buildings.

- Metallic effect
- Pearlescent
- Texture or mesh effect
- Printing paint



# Standard System

Help you to choose the most appropriate and the most cost-effective products!

We understand that users are most concerned about cost-performance and application of products when selecting pre-coated metal construction coatings. With proper selection, users can maximize the effectiveness of material to achieve added value. Moreover, correct selection can also eliminate wasteful investment and reduce maintenance costs. Our global experts have a wealth of knowledge and experience and know the important factors to be considered in the use of paint. So, wherever you are in the world, you can fully trust our expertise and advice in choosing the most appropriate and the most cost-effective products.

## Standard System - Product Specifications

	Product system	Chemical type of topcoat resins	Chemical type of topcoat pigments	Colorrange	Anti-fading and anti-chalking	Scratch resistance	Flexibility (T bend)	Pencil Hardness	Dry primer film thickness (micron)	Dry finish film thickness (micron)	Warranty period for color fading and chalking	Warranty period for completeness of coat film
General durability series	FLEXIDURE® 50	Polyester	Organic and inorganic pigments	★★★★★	★★	★★★	≤1T	≥H	5	≥18	N/A	5 years
	FLEXIDURE® 100LD	Polyester	Organic and inorganic pigments	★★★★★	★★	★★★★	≤3T	≥H	5	≥12	N/A	5 years
	FLEXIDURE® 100	Polyester	Organic and inorganic pigments	★★★★★	★★★	★★★★	≤3T	≥H	5	≥15	5 years	10 years
High durability series	FLEXIDURE® 1200	Polyester	Featured organic and inorganic pigments	★★★★	★★★★	★★★★	≤3T	≥H	5	≥18	10 years	15 years
	SILKSTAR® 500	Silicone-modified polyester	Featured organic and inorganic pigments	★★★★	★★★★	★★★★	≤3T	≥H	5	≥18	10 years	15 years
Super durability series	POLYDURE® 2000	Polyester	Featured organic and inorganic pigments	★★★	★★★★★	★★★★	≤3T	≥H	5	≥20	10 years	20 years
	SILKSTAR® 2000	Polyester	Featured inorganic and ceramic pigments	★★★	★★★★★	★★★★	≤3T	≥2H	5	≥20	15 years	20 years
	TRINAR® 5000	Fluoro-carbon (PVDF)	Featured inorganic ceramic pigments	★★★	★★★★★	★★★★	≤1T	≥HB	5	≥20	20 years	30 years

Remarks: 1. Test Methods shall be according to GB/T 13448-2006, and the test results may differ slightly due to changes of substrates and test environments. 2. In Product Performance, \*\*\* represents meeting the standards and \*\*\*\*\* represents super excellent. 3. According to demands, quality warranty for specific product may be issued for coating plant that meets the requirements. The warranty period listed in specification table is taking the general environment in Asia-Pacific region as an example. 4. Fading and chalking period is relevant to the used pigments. For products containing organic pigments, quality warranty may not contain those clauses for fading and chalking. 5. Supporting system: standard system is by default two-coating system, which needs to use specified primer from AkzoNobel. According to the requirements for a few special colors and appearance, the specified coatings are recommended.

## Special technology - Features and Applications

	Categories	Product features	Common applications
Special functions	USDA	In line with the relevant norms of USDA, permitted to be used in an environment of occasional brief contact with food.	Interior wall of food storage compartment
	Antimicrobial	Inhibit or kill common pathogenic microorganisms.	Hygiene demanding environment, such as care rooms in hospitals.
	Antistatic	Continue to effectively reduce the accumulation of static electricity within the life period of film.	Clean room, such as electronic factories, computer rooms etc.
	Heat-reflective	High sunlight reflecting rate and achieving energy savings in cooling.	Wall or roof panel of green and environmental building.
	Self-cleaning	Easy-clean and reduce maintenance costs.	Places where there is more dust or other contaminant particles in air; environment with abundant rain, such as industrial buildings under hot and humid climate conditions.
Special appearance	Mesh or texture surface	Wrinkle pattern/structure.	Roof or wall panel with decorative requirements.
	Metallic effect	Having metallic color.	Roof and wall panel with decorative requirements.
	Pearlescent	Having beautiful and elegant pearl-like color.	Roof or wall panel with decorative requirements.
	Printing coating	Providing a variety of patterns and texture effects.	Roof or wall panel with decorative requirements.

## Corresponding table of standard systems and special technologies

Name of system	General durability series			High durability series		Super durability series		
	FLEXIDURE® 50	FLEXIDURE® 100LD	FLEXIDURE® 100	FLEXIDURE® 1200	SILKSTAR® 500	POLYDURE® 2000	SILKSTAR® 2000	TRINAR® 5000
Standard product	✓	✓	✓	✓	✓	✓	✓	✓
Special functions	USDA			✓		✓		
	Antimicrobial			✓		✓		
	Antistatic			✓				
	Heat-reflective					✓	✓	✓
	Self-cleaning				✓	✓		✓
Special appearance	Mesh or texture surface			✓				
	Metallic effect				✓	✓	✓	
	Pearlescent					✓	✓	✓
	Printing coating			✓	✓	✓		

## Special techniques – product specifications

	Categories	Product name	Scratch resistance	Flexibility (T bend)	Pencil Hardness	Dry primer film thickness (micron)	Dry top coat film thickness (micron)	Characteristic indicators
Special functions	USDA	FLEXIDURE® 1200 USDA	★★★★	≤3T	≥H	5	≥18	In line with the requirements of USDA on products and processes.
	Antimicrobial	FLEXIDURE® 1200 AB	★★★★	≤3T	≥H	5	≥18	Antimicrobial activity for Escherichia coli and Staphylococcus aureus as per JIS Z 2801:2006
	Antistatic	FLEXIDURE® 100AS	★★★★	≤3T	≥H	5	≥15	Surface resistance is 10 <sup>6</sup> ~ 10 <sup>9</sup> Ω /cm <sup>2</sup> .
	Heat-reflective	POLYDURE® 2000CC	★★★★	≤3T	≥H	5	≥20	Product with TSR (total solar reflectance) greater or equal (use the symbol) to 0.25.
		SILKSTAR® 2000CC	★★★★★	≤3T	≥2H	5	≥20	
		TRINAR® 5000CC	★★★★	≤1T	≥HB	5	≥20	
	Self-cleaning	FLEXIDURE® 1200SC	★★★★	≤3T	≥H	5	≥18	Water contact angle ≤50° (laboratory conditions, test after aging).
		POLYDURE® 2000SC	★★★★	≤3T	≥2H	5	≥20	
		TRINAR® 5000 SC	★★★★	≤1T	≥HB	5	≥20	
	Special appearance	Mesh or texture surface	FLEXIDURE® 50WR/ FLEXIDURE® 50FW	★★★★	≤1T	N/A	5	≥18
Metallic effect			FLEXIDURE® 100M	★★★★	≤3T	≥H	5	≥18
		FLEXIDURE® 1200M	★★★★	≤3T	≥H	5	≥18	Metallics
		SILKSTAR® 500M	★★★★	≤3T	≥H	5	≥18	Metallics
Pearlescent		POLYDURE® 2000Pearl	★★★★	≤3T	≥H	5	≥20	Pearl luster
		SILKSTAR® 2000Pearl	★★★★★	≤3T	≥H	5	≥20	Pearl luster
		TRINAR® 5000Pearl	★★★★	≤1T	≥HB	5	≥20	Pearl luster
Printing coating		FLEXIDURE® 50Ink	★★★★	≤1T	≥H	5	≥18	Provide a full set of coating system, including primer, topcoat and inks.
		FLEXIDURE® 100LDInk	★★★★	≤3T	≥H	5	≥12	
		FLEXIDURE® 100Ink	★★★★	≤3T	≥H	5	≥15	

Remarks: 1. To meet the specific application requirements, some special paint coating technologies have certain differences from the products with corresponding standard systems in film thickness and other technical specifications. 2. For other special technology products, please contact the Sales department of our Company.



# Reliable Quality

## Product Performance

We pursue reasonable and reliable product performance to adapt to the environmental requirements. To this end, all standard systems have several years or even decades of outdoor exposure and field use experience and proven performance. These standard systems are the cornerstone of our products and the guarantee of product performance.

We are committed to meet and exceed the needs of users. Each new product is required to undergo rigorous testing and validation before launching into market. Through this process, we have always worked closely with the applicator and provided the end users with high-quality pre-coated products.

## Reducing Hazardous Substances

AkzoNobel is committed to reducing the impact on the environment by eliminating the harmful substances in manufacturing process and products, committing to meet the needs of customers and to protect human health and the environment.

We understand and comply with Chinese laws and requirements of other stakeholders, including EU's RoHS regulations, other relevant international regulations and customer requirements.

## Quality Control

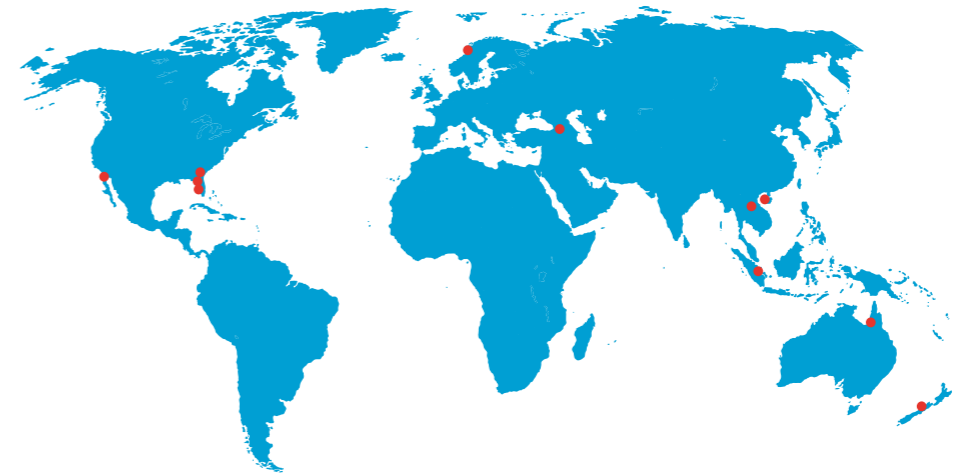
We know that the product quality and stability depends on a sound management system. Our factory has the most advanced production equipment and leading technologies, which implements ISO9001 management system to continually and effectively improve the quality management system.

We have a complete set of specifications on orders, order processing, raw materials control, recipe management, production, quality inspection, packaging, warehousing, delivery, and complain handling and other work flows. These strict work systems enable us in transferring the products that meet the demands to the customers timely, accurately and safely.

## Technical Services

Through quick and reliable technical services, we can eliminate concerns of the user. Our technical staff are close to the production base of the coating workshop, and promptly and efficiently respond to the needs of coating production lines, and provide technical guidance and services to enhance the coating quality.

We provide fast color matching services. Decades of exposure experience enable us to select products and paint systems which meet the color and performance needs of users with the most economical, applicable and reliable products and solutions.



- Natural exposure fields of AkzoNobel are across the world, including:**
- Arizona, United States
  - West Virginia, United States
  - Ohio, United States
  - Florida, United States
  - Muriwai, New Zealand
  - Cikarang, Indonesia
  - Townsville, Australia
  - Malmo, Sweden
  - Sochi, Russia
  - Hainan, China
  - Penghu, Taiwan

# Quality and Commitment

## Professional and Reliable

Upon requests of end users, we may provide warranty commitments for specific products of the qualified coating manufacturer. Our warranty commitments are according to the product system, color and regional climate.

Take the general climatic conditions in Asia as an example, general durability series have 5-10 year of warranty commitments; high durability series have 15-year of warranty commitments; super durability series can provide 20 to 30-year of warranty commitments.

Our quality warranty commitments are based on AkzoNobel's profound coating knowledge and decades of accumulated exposure experience around the world. It not only embodies the most stringent forecast for the true performance of our products, but also reflects our rich experience for performance of our products shown under different geographical climates, which represents a professional and reliable quality warranty commitment.

## Production Line Audit System

The final product, as a complete system, including quality substrate and properly pretreated metal will show their optimal performance. Therefore, we implement the production line audit and certification system to the applicator that qualify the production line audit.

The line audit system is to ensure that the applicator has sufficient technological capacity to produce a quality pre-coated products that meet customer's expectation and requirements.

### Each quality commitment of AkzoNobel carries:

Deep paint knowledge	Decades of exposure accumulation	Global practice experiences	Complete production line audit principle

# AkzoNobel, strive for progress

## What we provide is more than paint

At AkzoNobel, we believe that paint can exceed its core function and can give the world a new look. Our concern is not only that the surface effect paint plays its role on the object or the formulation on which it is applied, but that it has much to offer beyond the surface.

Coil coating is a part of a complete system of pre-painted steel. To maximize its role and value, we spare no effort to work closely with the production plant of pre-painted steel, according to the product applying environment, features and processing requirements, to provide targeted technical support and coating solutions for end-users.

AkzoNobel has a complete set of performance testing systems to ensure the product quality. Take the outdoor durability test system as an example, where we have more than 20,000 panels in our outdoor exposure field around the world for researching the outdoor durability. The research system helps us to confirm that our outdoor building products will provide weatherability that is in line with users' requirements.

## Sustainable Development

AkzoNobel has always been committed to sustainable development. We work together with our customers and suppliers to continuously improve the resource efficiency of the entire chain and to develop leading-edge solutions creating more value with fewer resources.

In the field of coil coatings, we have continued to explore and develop sustainable products. We follow the market trend and customize for the pre-painted steel manufacturers and end users to promote the development and application of sustainable products, both to help customers to create a new green way for the future, and to reduce the carbon footprint of our company.

We have completely abandoned the use of lead pigments in our formulation, which is an important measure to lead and drive the coatings industry going with the environmental tide; it also helps our users to become a leader in environmental protection.

In regard to elimination of chromium, we have made good progress. AkzoNobel's chromate free coil primer has been applied to the European construction market, and will be fully applied to the global construction market.

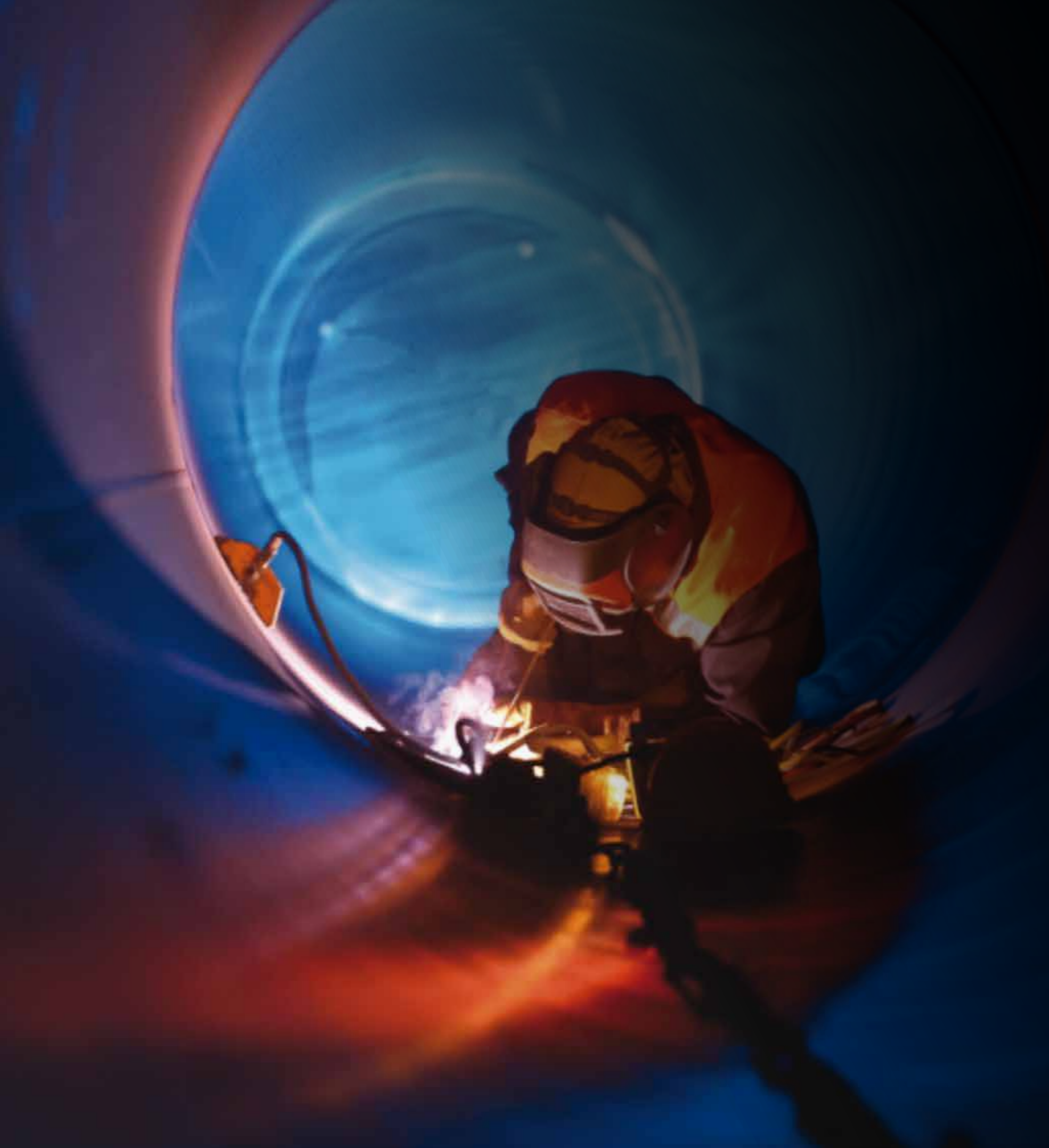
Our COOL CHMESTRY® product is a high heat reflective product that can be used in metal roofs and walls. This is a sustainable construction material that can reduce the electricity expenses of air conditioning and can reduce the electricity power demand in peak hours, as well as relieve the urban heat island effect.

## Technological Innovation

Technology innovation is very important for AkzoNobel. AkzoNobel innovates continuously and strives to meet the changing market demand with the highest quality products, advances with the times to create valuable solutions for users.

Within the coil coating business, we continue to develop new functional coatings, give metal construction materials unique features which improve the comfort and security within our life. For example, our self-cleaning products can maintain a shiny and smooth appearance after a long period of time, reducing the frequency of cleaning and maintenance of owners. Our Antimicrobial products can inhibit the growth of bacteria and fungi and can significantly kill many common harmful bacteria, introducing a healthier environment. Our antistatic products can reduce static accumulation and lower the static electricity hazards, as well as promote environmental safety.

We have also developed a variety of special effect paint, breaking the monotony of the traditional look and feel of metal construction materials and offering creative ideas to architects, by improving the appearance of metal buildings. Through exterior coatings with special, unique designs, metal construction materials can exhibit the appearance of a variety of materials such as marble, wood, bronze, brass, brick, etc.



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AkzoNobel is a global leading company of paints and coatings and is also a major producer of special chemicals. With hundreds of years of accumulated experiences, we provide innovative products and sustainable development technologies for numerous industries and consumers around the world to meet the growing demand in rapidly changing global market. AkzoNobel, based in Amsterdam, the Netherlands, has over 46,000 employees around the world and its operations are widespread in more than 80 countries. We have a large variety of brands, including Dulux, Sikkens, International, Interpon and Eka and other famous brands. We always stay ahead in the sustainable development field, and are committed to create a more livable life for people and help to build a more people-oriented city.

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