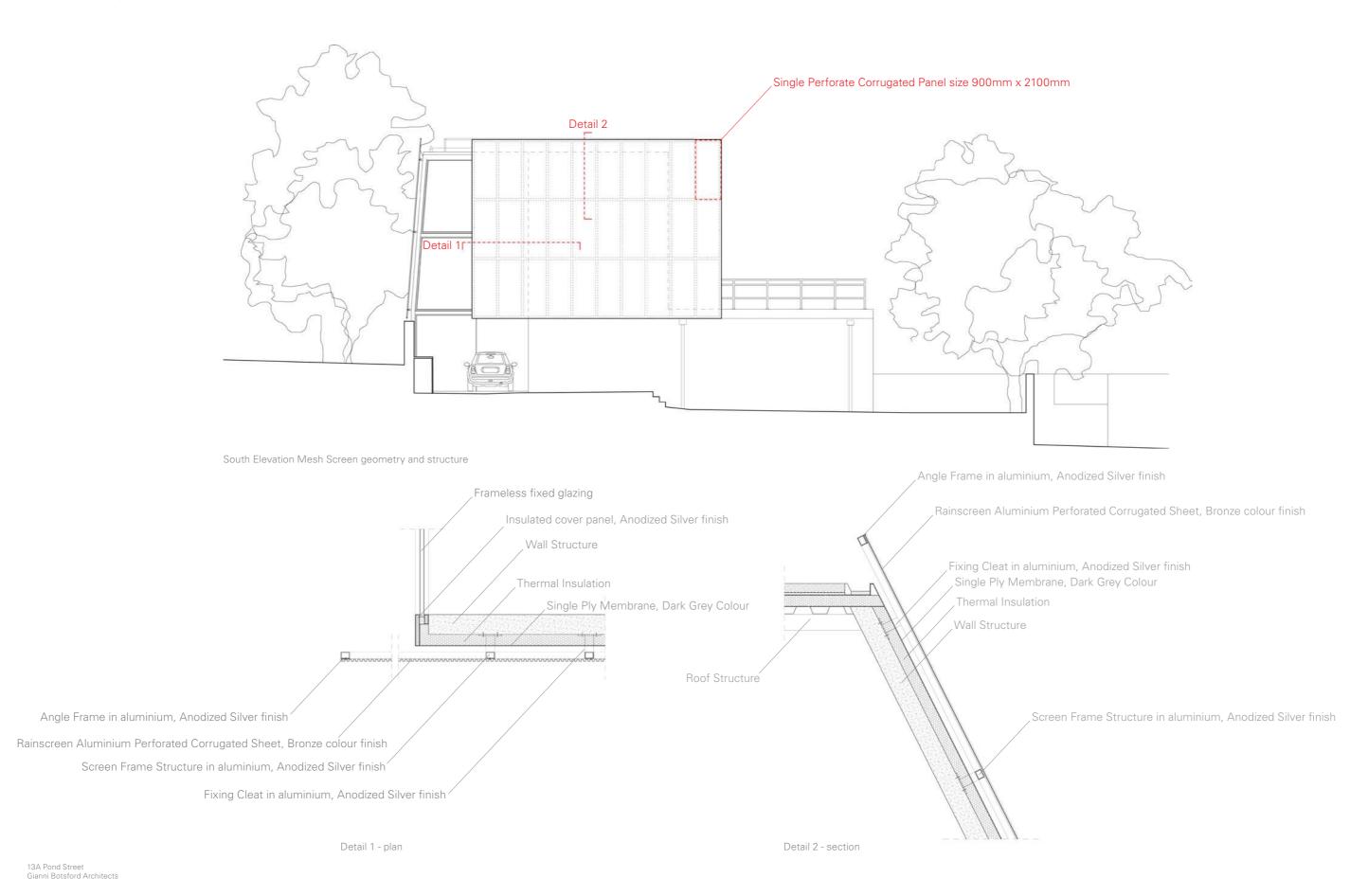
## How large will the panels be? How will the joinery appear?

Detail drawings



## How large will the panels be? How will the joinery appear?

Technical Sheet by supplier



**Type:** W-6/15

Material: Aluminium J57S

Thickness: 1mm
Maximum Height: 3000mm
Width: 1125mm
Holes: R2 T3

Finishes: Anodised Analok 547 Bronze

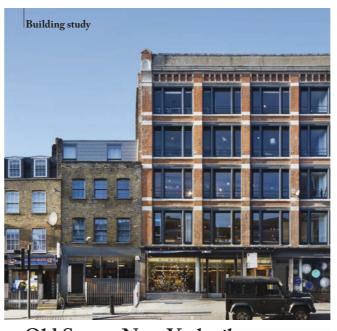
Metal for Design and Architecture www.cadischmda.com
Cadisch MDA Ltd. Unit 2 The IO Centre, Hearle Way, Hatfield, Hertfordshire, AL10 9EW
T: 020 8492 7622 - F: 020 8492 0333 - M: mda@cadisch.com
Registered No: 5130261 - VAT Registration No: GB 849 1444 211

## Do you have any examples where this product has been used externally in a recent project?

Precedent - Curtain Road

Curtain Road is an office building completed in 2014 in Shoredich, London. It is located in the London Borough of Hackney, n the vicinity of several Listed Buildings and part of the South Shoredich Conservation Area. Designed by Duggan Morris Architects, it consists of a three story extension to an existing building. This project has been praised numerous times in the design community and extensively published. In the facade, it uses a perforated corrugated sheet built in anodized aluminium of a champagne colour. This is not dissimilar to the one proposed by GBA for the Pond Street project. It functions as a veil on the facade, creating a result that is lightweight, clean and airy.



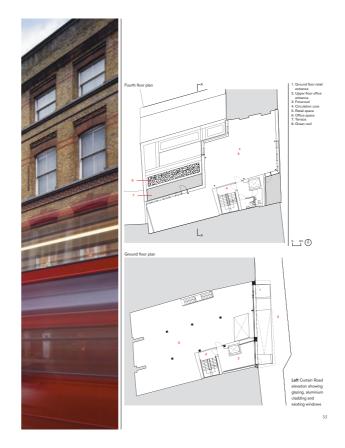




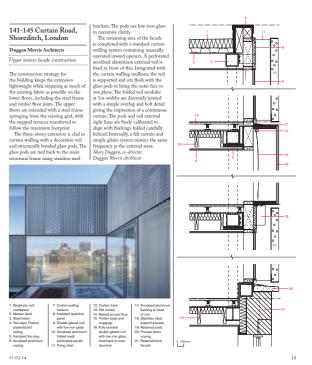






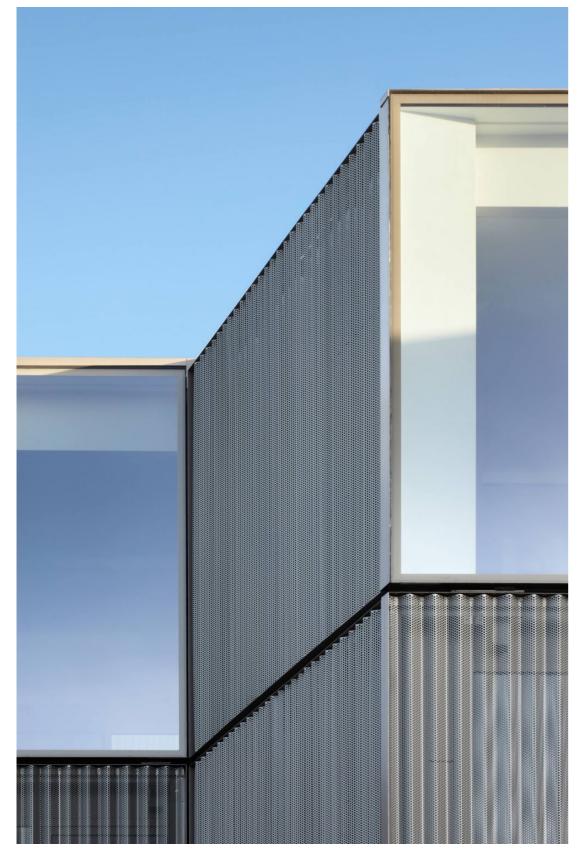


## Working detail

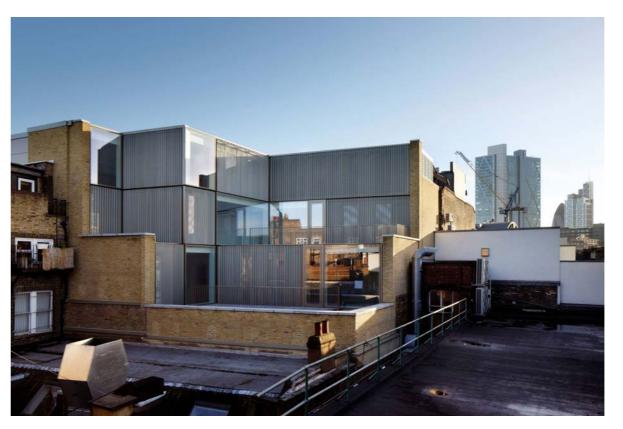


## Do you have any examples where this product has been used externally in a recent project?

Precedent - Curtain Road



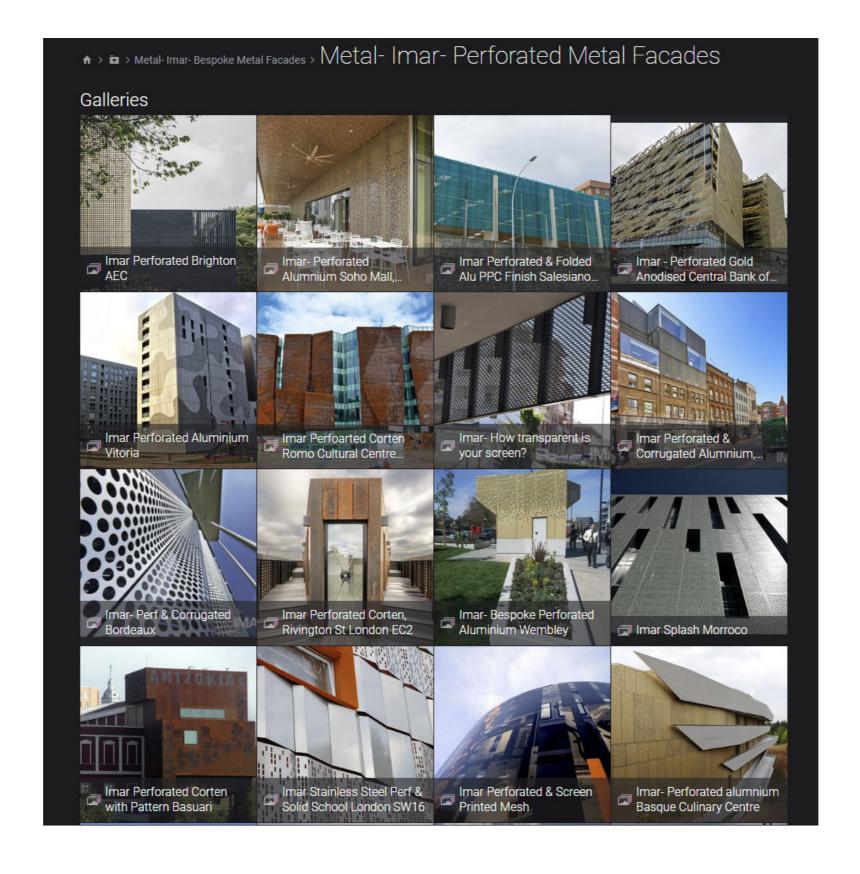




13A Pond Street Gianni Botsford Architects

## Do you have any examples where this product has been used externally in a recent project?

Recent projects with perforated aluminium panels by UK supplier Just Facades



Information about the material and finish by United Anodisers

For this project, GBA has specified and supplied a sample of the following proposed panel:

Supplier: Cadisch MDA Type: Weltec Mesh: W6/15 RZT3 Material: Aluminium J57S Finish: Analok 547

Here below is further information about the material, the finish and its performance through time, from the world leading anodizing UK company United Anodisers.

## The Anodising Process

Anodising is a process of finishing on aluminium in which the visual appearance of the metal is changed to be aesthetically pleasing. This visual appearance must have colour stability and durability, particularly for exterior use.

The aluminium is anodised by the passing of an electrical current from the anode to the cathode. The item to be anodised becomes the anode part of the electrical circuit whilst the cathodes are already in the anodising tank. The electrical current causes oxygen to be released at the anode which combines with the aluminium to form the aluminium oxide which is the anodic film. The depth of the anodic film is determined by the time in the anodising tank, usually between 15 to 60 minutes which will create an anodic film thickness of between 5 and 25 microns.

The quality of the anodic film is determined by the temperature and concentration of the electrolyte and the current density applied. The anodic film is of a very porous honeycomb structure and must then be sealed in order to achieve the desired weather resistant properties.

The film produced is porous, hard, transparent and can be coloured in various ways.

## **Colouring Methods**

- Electrocolouring Anolok™ Bronze & Black
- Combination Colouring UA Organic Colour
- Interference Colouring Anolok™ II

#### Plus

- Chemical Milling Unimill
- Texturing Unitex
- Polishing Unipol



Information about the material and finish by United Anodisers

## The Benefits of Anodising

Modern materials must permit design creativity but at the same time they must be:

- produced responsibly and economically
- · durable, and
- · recyclable at the end of their life

Aluminium, with its exceptional recyclability, minimal maintenance and proven lifetime performance, successfully responds to the need for environmentally friendly and sustainable solutions.

In building applications, aluminium virtually always requires surface treatment. Yet, the choice of surface treatment of aluminum is as important as the choice of the material itself.

Anodising enhances the natural qualities of aluminium still further; it permits a strongly contemporary finish with incomparable corrosion and abrasion resistance. Unique amongst surface treatments, such as coatings, anodising is totally integrated with the metallic substrate - it is not simply a film applied to cover the surface. The result - pure aluminium - is a perfectly and repeatedly recyclable material with remarkable performance characteristics.



anodised aluminium facade

These same exceptional qualities can be found in new product applications in anodising, which now provide new and infinite texture and design possibilities for building exteriors.

The modern, aesthetic beauty of anodised aluminium is founded on its many unique properties. Anodising is a transparent finish integral with the metal, which retains and enhances the inherent beauty of the aluminium; it is totally UV resistant.

A totally homogeneous appearance can be guaranteed, thanks to the nature of the anodising process and the very tight quality controls on both the aluminium and the surface treatment. Colours, textures and patterns can be incorporated in the anodic film, enhancing the natural metallic appearance without affecting the total UV resistance.

The "living" quality of its natural metallic sheen, combining texture with - colour, guarantees a creative interaction of the surfaces and shapes of the building with the constantly changing light conditions through the day and across the different seasons.

The anodic layer will retain its original beauty and protection against corrosion throughout the life of the building - as proven by independent inspection of buildings of more than 30 years old.

## The key advantages of anodising over all paint finishes

The following information provides owners, developers, architects, system companies, specifiers and contractors, with an in-depth understanding of the proven benefits of anodised aluminium and explains why this is increasingly the material of choice for buildings of the future (click links for more information):

## The 15 key advantages of anodised aluminium:

#### No possibility of fading

Natural silver, Anolok™ bronze, and Anolok™ II blue-grey anodised finishes contain no organic elements. No colour fading is possible during the service life of these finishes. Organic powder coatings, on the other hand, are always subject to fading in varying degrees over the lifetime of a building.



The technology of anodising has been established for almost 100 years. Whilst the process has been continuously refined, especially in terms of quality, the chemical and technological fundamentals remain unchanged.



Anodised aluminium can be used to create modern advanced designs - here on a landmark building in Paris-La-Défense constructed over 25 years ago

The on-site behaviour of the anodised surfaces produced today is fully predictable, based on the proven, long term, service experience. Independent inspection commissioned by United Anodisers has confirmed that the anodic protection remains undiminished after more than 40 years.

The chemistry of organic coating is much more recent and, further, due to legal and environmental constraints, has been subject to continuing modifications. As a result, the long term, on-site behaviour of these modern coatings is not proven. Indeed, even some landmark buildings completed in the last 15 years with organic coatings are already showing signs of surface failure.



#### Authentic metallic sheen, lustre and feel

The anodic layer is transparent and integrated in the surface of the metal; the natural metallic appearance and feel of the aluminium are fully preserved. The anodised finish will enhance and reinforce the natural beauty of aluminium to create a living surface constantly interacting with the natural or artificial light playing across its surface.

Information about the material and finish by United Anodisers

Regardless of the substrate material - aluminium, steel, plastic - a painted surface always has the same, flat appearance. In trying to achieve the authentic metallic lustre of anodised aluminium, painted aluminium uses multi-layer systems with metallic pigments with the risk of creation of colour variations, including metameric failure

#### Excellent Corrosion Resistance

Even in its natural state, aluminium does not corrode in the same, destructive, way as iron or steel. On the contrary, its natural oxide layer provides a self defence against corrosion.

Corrosion of aluminium, however, permanently damages the aspect of the metal.

Anodising creates a perfectly formed and scientifically controlled oxide layer, which ensures a surface of unparalleled corrosion resistance and locks in the pure and natural metallic aspect of the metal. It has been used for external building applications for over 60 years. With an appropriate anodic layer thickness for external use, anodised aluminium will perform without problem, even in the most severe environments. In particular, anodised finishes are highly durable in city and marine environments, due to their resistance to chlorides and sulphates.

#### Excellent Abrasion Resistance

Aluminium oxide is a very hard compound, which is second only to diamond, on the Mohs scale of mineral hardness. Anodised aluminium surfaces therefore offer superior scratch and abrasion resistance than coated surfaces.



Because it is only a coating, painted aluminium can suffer surface failure over time

No risk of adhesion failure



Anodised surfaces are very hard - 80% of the hardness of a diamond

Anodising is an electrolytic process, which transforms the surface of the metal into an oxide layer integral with the metal itself. It is not a coating applied to the surface of the metal.

There is, therefore, no risk of adhesion failure such as peeling, blistering, cracking, splitting or chipping which may occur with

surface coatings, such as painting. There will be no adhesion failure, even on cut edges or joints.

#### No possibility of fading or chalking

Natural silver, Anolok™ bronze, and Anolok™ II blue-grey anodised finishes contain no organic elements. No colour fading is possible during the service life of these finishes. Organic powder coatings are always subject to fading in varying degrees over the lifetime of a building.

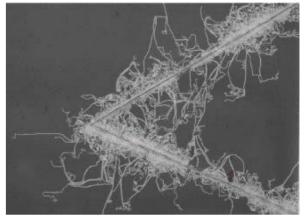
Chalking is the formation of a fine powder on the surface of the paint film during weathering. It can cause significant deterioration in surface appearance, with a reduction in the gloss level, surface lustre and colour.

Anodised aluminium does not suffer from this disfiguring condition, even when exposed to difficult exterior environmental conditions, such as marine locations or very sunny and/or humid climates.

#### · No possibility of filiform corrosion

Filiform corrosion is an attack on the hidden interlayer between the aluminium and the surface finish which results in the propagation of corrosion under the surface finish. With anodising, the oxide (anodic) layer is integral with the aluminium. There is no inter-layer between the metal and this protective oxide layer.

As a result, the finish will remain free from filiform corrosion. If the surface is punctured or damaged, the aluminium will simply repair itself through natural oxidation.



Example of filiform corrosion on a painted metallic surface (Source: CoRI, Belgium

The absence of an inter-layer zone ensures that there can be no corrosion as found with painted products.

#### Uniform surface finish for all metal shapes and textures

Anodising is a process which can be carried out prior to or after the transformation of the metal. Since it is an immersion process rather than an applied finish, anodising provides a particularly uniform and regular finish on most metal shapes and textured surfaces such as perforated sheets, tread plates, linished or brushed metal, mesh material, stucco surfaces, etc.

Anodising avoids the risk of localised high coating thickness or orange peel effect, typically associated with organic coatings on such surfaces.



Building exteriors blend different materials with anodised aluminium without problems

#### Optimal Coverage

Anodising, as an immersion process, achieves a more uniform surface coverage, especially for extruded sections. With spray paint processes and, especially with powder-coating, the non-visible surface is often not coated.

#### · Highly impermeable anodic layer

A properly sealed anodic layer is impermeable. Furthermore, when severe environmental temperature fluctuations occur, the anodic layer is not subject to damaging physical changes and consequential embrittlement. With an organic coating, these

changes may occur when the coating is subjected to temperature cycles above and below its glass transition temperature.

#### Quality controls

Information about the material and finish by United Anodisers

The tightly controlled quality assurance in the anodising process can be followed up on site without damage to the anodised surface.

• Environmental benefits of pure anodised aluminium - 100% recyclable

One of the key advantages of aluminium over other materials is that it is can be recycled repeatedly through simple re-melting with minimal loss on each cycle. In Europe, more than 30% of aluminium consumption is satisfied with recycled aluminium and over 90% of the aluminium used in buildings is recycled at the end of the building's life.

The recycling process requires only 5% of the energy required for the production of primary aluminium - a significant contribution to environmental sustainability.



Fully recyclable, anodised aluminium answers all the environmental imperatives of today

Anodised aluminium is unique, comprising only pure aluminium, its alloying elements and oxygen. As pure aluminium, it is fully recyclable without intervening chemical processes and emissions. Because of this and the ready market for quality aluminium scrap, the anodised aluminium will have a cash value to offset the cost of demolition at the end of the useful life of the building.

Environmentally friendly production process in accordance with latest environmental standards

Modern architectural anodising plants are capable of responding to the most stringent environmental standards with full chemical recycling and a large recovery of waste water. Anodising does not require environmentally sensitive pre-treatment like chromating. The anodising process does not produce CO2 or solvent emissions.

#### · Long-term Guarantees

Guarantees are often considered by specifiers or building owners to provide reassurance about the long-term performance of a surface finish.

In recent years, there has been a trend of extending guarantees for longer and longer periods as a way of outbidding competing surface finishes.

But, guarantees have often been full of exclusions and reservations. Invoking guarantees, often years after the event, frequently involves costly litigation. Further, even if the guarantee is successfully invoked, replacement of defective parts may be impossible without partial demolition of the building.

Where this is not practical, the owner of the building will be simply left with the problem over the long term; legal recourse for aesthetic damage is notoriously difficult to assess. Surface failure may render a building impossible to sell or otherwise seriously blight its open market value.

Historically, quality claims against leading architectural anodisers have been negligible. In the highly unlikely event of a claim, the anodiser alone bears full responsibility for all properties of the anodic layer.

13A Pond Street

As a result of recent independent surveys of long term on-site performance of anodising - including in polluted and marine environments - a simple, straightforward, unequivocal design life guarantee, typically for at least 25 years, for anodising is available for the first time, exclusively from United Anodisers. Please contact us at the start of the project to discuss your particular project specifications and any warranty required.

Guarantees for organic coatings are not backed by the same site exposure history. For any organic coating, the responsibility for any failure is necessarily divided between the paint manufacturer and the paint applicator. The guarantees available from the manufacturers of polyester powder specifically exclude adhesion.

Guarantees are important, but only if they are simple, straightforward and long term - this is only possible when they can be given backed with the full confidence of proven, long-term, on-site performance.

## Summary

#### **Powder Coating**

Powder coating is being used on many major building projects as it is cheaper and thought to be the equivalent of architectural anodising.

#### IT ISN'T

Powder coating is softer, less durable, and unless done perfectly can peel. Neither can it exhibit the natural metallic lustre of anodising.

- 1. Softer Architectural anodising by UA is harder than glass which means it is less prone to damage, wear and tear and can be, if neglected, abrasively cleaned to restore it to its original lustre. PPC is soft, prone to scratching and cannot be abrasively cleaned.
- 2. Less durable Anolok™ anodising by UA is fade free and is offered with a lifetime guarantee. All organic coatings in time lose gloss and colour. Anodising has been used in architecture for more than 80 years; PPC was introduced in the late 1970's, much less than 40 years ago.
- 3. **Anodising** is a process where the coating is grown on the surface of the aluminium and cannot ever peel off. PPC is an applied paint that can peel in service.

#### Conclusion

If you want peace of mind and a building exterior that will really last, anodising is the only choice.

Information about the material and finish by United Anodisers

## The Advantages of Aluminium

Aluminium is a metal which allows endless opportunities for design and creativity but which, at the same time, responds fully to modern demands in terms of environment and sustainability.

The 10 key advantages of aluminium:

- 1. Elegant, modern, natural aspect
- 2. Numerous possibilities of textures, colours and surface finishes
- 3. Very durable over the long term
- 4. Requires minimal maintenance
- 5. Light weight
- 6. High strength-to-weight ratio
- 7. Does not burn and is not noxious in case of fire
- 8. Can be totally and repeatedly recycled through simple re-melting
- 9. Available in many different forms to suit a diverse range of applications
- 10. Aluminium creates an impermeable barrier to air, water and wind

Anodising further enhances the exceptional qualities of aluminium - see Benefits.





Information about the material and finish by United Anodisers

## Anolok™ Bronze Anodising



United Anodisers operates the Anolok™ process where the colour is developed electrolytically by depositing cobalt metal into the porous film. Increasing the amount of cobalt deposited gives shades of bronze from pale bronze right through to black.

Light scatter produces the colours and this method of production ensures that the colours obtained are completely fade free.

The majority of metals are unsuitable for electro-colouring, the choice being restricted to cobalt, tin or nickel.

Although perfectly satisfactory results can be obtained with tin, processing is more difficult to control, particularly in

the darker shades. Deposition can grow to the extent where the pores are difficult to seal and deterioration in a short space of time can result. The tin electrolyte is also highly acidic, which can lead to dissolution and increases the risk of poor abrasion resistance.

With a nickel based colouring solution production of dark bronze is difficult and black is impossible. Therefore Anolok $^{\text{TM}}$  colouring using cobalt is the safest of all the commercially available bronze anodising processes.

## History

Anolok<sup>™</sup> colouring was commercialized in the mid 1960's in Japan. United Anodisers was granted an ANOLOK<sup>™</sup> license in 1971 by Alcan International and has processed more Anolok<sup>™</sup> bronze anodising than any company in the world outside Japan. Anolok<sup>™</sup> is now a registered trademark of United Anodisers Limited.

In 1987 we introduced the Japanese "Unicol" colour matching technology into our colour anodising process. This dramatically improves the colour match piece to piece and is the only unit in Europe.

## Benefits

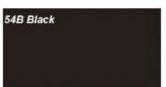
In addition to the general anodising benefits (see "Benefits") Bronze and black finishes produced by the Anolok™ method using Cobalt have the following advantages over the alternatives:











- · Cobalt deposits evenly with dark colours
- Cobalt deposits in the bottom 12 microns of the anodic pore
- pH of the colouring solution does not soften the film
- · QUALANOD specification admittance sealing values can be achieved with dark colours.

## Anolok™ Bronze Colour Swatch

The colours shown here are for reference purposes only. Due to different colour renditions on different monitors an accurate representation is impossible. For an accurate metal colour swatch please contact us using the samples request form.

## **Example Buildings**

Gracechurch Street Project
Rivermill House Project
Sanger Centre Project

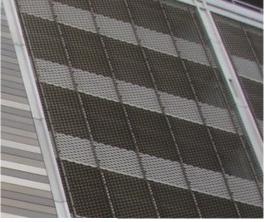
## Perforated Sheet & Mesh

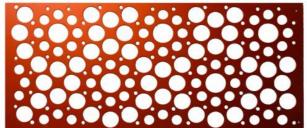
Perforated Sheet and Meshes in all their forms can be anodised either in coil form or pre-cut.

Applications include feature building panels and panels for car parks, ceilings and various forms of sound attenuation products.

As anodising is a dip process all surfaced are fully treated and therefore properly protected.







Information about the material and finish by United Anodisers

## **Quality Case Studies**

An independently certified audit of the long term on-site performance of batch anodised aluminium extrusions and panels on exterior architectural applications in the UK

In 2008, United Anodisers commissioned Dr. Laszlo Palffy, through his consultancy Straditec, to visit jointly with UA technical staff, a number of buildings where batch anodised extrusions and/or panels had been employed in the construction. Dr. Palffy has significant experience of the technology of anodising of aluminium.

In each case the original specifications of the metal and anodising used in the building had to be fully traceable. All buildings were to have already acquired a certain minimum service life. Dr. Palffy was mandated to certify the new on-site measurements of the anodic layer and other performance criteria of the buildings.

The purpose of this audit was to assess the real long-term on-site performance of batch anodised extrusions and panels, compared to accelerated laboratory testing on which earlier conclusions had been based.

United Anodisers believes that these results are conclusive evidence that high quality anodising, associated with a high quality metal substrate, together provide the optimum protection and longevity to aluminium for external applications.

Established in 1962, only United Anodisers, the world's largest architectural anodiser, is uniquely capable of demonstrating a long-term quality track record.

## **RBS Aldgate Building**

#### London E1

Date of independent November 2008 inspection

Use of building Bank Offices

Date of construction 1977

Environment High traffic density - financial district of London

Batch

Window frames - Canopy - Solid Panels

Anolok™I Dark Bronze - 547

Class 25 µm (AASC specifications)

Evidence of regular cleaning

or maintenance

External parts of building

which were anodised

Description of anodic colour

and treatment

Type of anodising

..

Anodiser United Anodisers, Uxbridge

Original anodic film layer on anodised parts (microns)

Anodic film layer on date of independent inspection

(microns)

Visible signs of corrosion or surface degradation

No.

No deterioration in anodic film protection after 31 years service life. No visible evidence of Conclusion corrosion notwithstanding high density polluted urban environment. No discernable colour

change.

28.6 µm





Information about the material and finish by United Anodisers

## Investec - RBS Building

#### 2 Gresham Street, London EC2

Date of independent

November 2008

inspection Use of building

Bank Offices

Date of construction

1996

Environment

London centre - High traffic density

Evidence of regular cleaning

or maintenance

External parts of building

which were anodised

Window frames

Description of anodic colour

and treatment

Anolok™I Dark Bronze - 547

Class 25 µm (AASC specifications)

Type of anodising

Anodiser

United Anodisers: Heywood Metal Finishers, Huddersfield

Original anodic film layer on anodised parts (microns)

Anodic film layer on date of independent inspection

(microns)

Visible signs of corrosion or

surface degradation

Conclusion

None

29 µm

No deterioration in anodic film protection after 12 years service life. No visible evidence of corrosion notwithstanding high density polluted urban environment. No discernable colour

change.



### The Panoramic-Rivermill House

#### 152 Grosvenor Road, London SW1

Date of independent

November 2008

inspection

Residential

Use of building Date of construction

1999

Environment

Window frames - Solid Panels

Class 25 µm (AASC specifications)

Not accessible for measurement

Adjacent to the river Thames - Centre of London

Anolok™I - Light bronze 541 and dark bronze 547

Evidence of regular cleaning or maintenance

External parts of building

which were anodised

Description of anodic colour

and treatment

Type of anodising

Anodiser

United Anodisers, Uxbridge

Original anodic film layer on

anodised parts (microns)

Anodic film layer on date of

independent inspection

(microns)

Conclusion

Visible signs of corrosion or surface degradation

None

No deterioration in anodic film protection after 9 years service life. No visible evidence of

corrosion notwithstanding high density polluted urban environment. No discernable colour

change.



Information about the material and finish by United Anodisers

## Premier Inn, London E1

Date of independent inspection

Use of building Date of construction

Environment Quiet street - Financial district of London

Evidence of regular cleaning or

maintenance

External parts of building which were

anodised

Description of anodic colour and

treatment

Type of anodising

Anodiser Original anodic film layer on anodised

parts (microns)

Anodic film layer on date of independent inspection (microns)

Visible signs of corrosion or surface

degradation

Conclusion

November 2008

Hotel

1988

Flat and curved panels

Anolok™I Light bronze 541 Anolok™II Dark blue-grey 717

United Anodisers, Uxbridge

Class 25 µm (AASC specifications)

30.5 µm (only measured on bronze)

None

No deterioration in anodic film protection after 19 years service life. No visible evidence of corrosion. No discernable colour change



## **Abbey National**

#### 21 Prescott St., London E1

Date of independent inspection

Use of building

Date of construction

Environment

Evidence of regular cleaning or

maintenance

External parts of building which were

anodised

Description of anodic colour and

treatment

Type of anodising

Anodiser

Original anodic film layer on anodised

parts (microns)

Anodic film layer on date of independent inspection (microns)

Visible signs of corrosion or surface

degradation

Conclusion

November 2008

Offices

1989

Quiet street - Financial district of London

Sheets (Bronze)

Windows frames (UA Organic Colour)

Anolok™ Light bronze 543 UA Organic Turquoise C 63/3

United Anodisers, Uxbridge

Class 25 µm (AASC specifications)

27.5 µm (bronze) 30.5 µm (turquoise)

No deterioration in anodic film protection after 19 years service life. No visible evidence of corrosion. No discernable colour change



Information about the material and finish by United Anodisers

## 12 Arthur Street, London EC4

November 2008 Date of independent inspection

Use of building

Date of construction

Urban - Centre of London Environment

Evidence of regular cleaning or

maintenance

External parts of building which were

anodised

Description of anodic colour and

treatment

Type of anodising

Anodiser

Original anodic film layer on anodised

parts (microns)

Anodic film layer on date of independent inspection (microns)

Visible signs of corrosion or surface

degradation

Conclusion

Prestigious office complex

2003

Window frames - Extrusion sections

Anolok™ Bronze 547

Batch

United Anodisers: Heywood Metal Finishers, Huddersfield

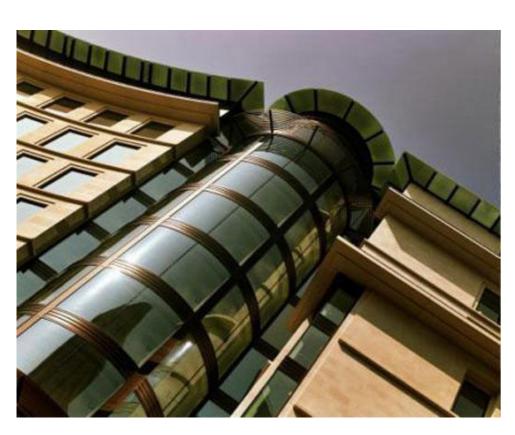
Class 25 µm (AASC specifications)

28.5 µm

None

No deterioration in anodic film protection after 5 years service life. No visible evidence

of corrosion. No discernable colour change.



## 60 Gracechurch Street, London EC3

#### Gracechurch Street, London.

Date of independent inspection Use of building Pharmacy + offices

Date of construction

Urban - Centre of London Environment

Evidence of regular cleaning or No

maintenance

External parts of building which were

anodised

Description of anodic colour and

treatment

Type of anodising

Anodiser

Original anodic film layer on anodised

parts (microns)

Anodic film layer on date of independent inspection (microns)

Visible signs of corrosion or surface

degradation

Conclusion

November 2008

2007

Window frames - Extrusion sections

Anolok™I Bronze 545

United Anodisers, Uxbridge

Class 25 µm (AASC specifications)

27.4 µm

No deterioration in anodic film protection after 11 years service life. No visible

evidence of corrosion. No discernable colour change.



# In terms of functionality and maintenance, are there concerns that a lot of debris will get caught within the material?

GBA completed the Light House in Notting Hill in 2005. The facade is composed by Stainless Steel Corrugated Perforated panels. The detail is very similar to the one proposed for the Pond Street project. There have never been issues with debris getting caught within or behind the metal screen. Here below are some 2018 photographs of how the building looks like.









13A Pond Street Gianni Botsford Architects