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September 2002

Kalzip

Kalzip Ltd

Colour your thinking

Kalzip® colour planning

Think aluminium think colour

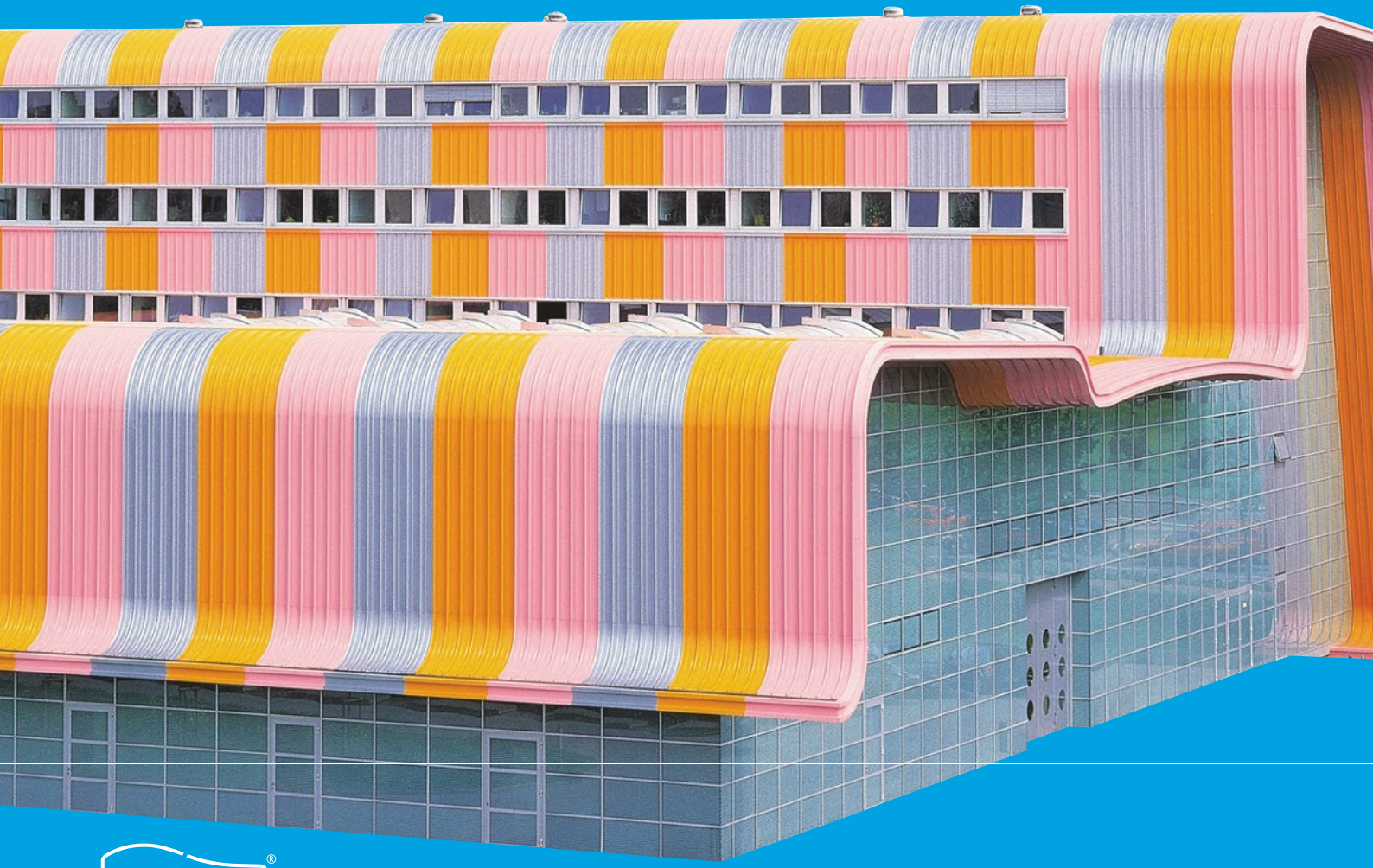
In recent years there has been greater awareness of colour in the built environment with clients, architects and planners alike all being more adventurous and creative in the use of colour-coated materials.

Contents

In the past Kalzip has employed differing systems for colour notation across its worldwide operations, such as NCS, BS and RAL.

To simplify the specification of colour we have now standardised on the RAL system which is internationally recognised by most industries.

In addition, the four digit RAL Classic range is available with RAL Digital - a special software system, available in various languages and in either PC or Mac formats. RAL Digital allows architects to introduce colour at the design concept stage and visualise the impact of colour options from across the spectrum.



The perfect partnership

The maintenance free life of uncoated aluminium far exceeds that of other coated materials - a minimum of 25 years even in the most aggressive industrial or marine environments.

However, the great paradox of aluminium is that, although coating is not necessary as a protective measure, as a metal it does in fact provide the perfect substrate for colour coating because it is chemically inert - the paint looks superb and it offers outstanding performance with very low maintenance.

The use of 'colour' in the built environment is driven by various factors - sometimes it is used to make a bold artistic statement or to emphasise a design feature; sometimes it presents the corporate identity of a client. In other instances colour may be used with great sensitivity and subtlety - to help a building fit comfortably or unobtrusively into its surroundings and, of course, colour is often selected to complement and enhance the natural hues of traditional building materials.

Colour-coated aluminium will last for the lifetime of the building:

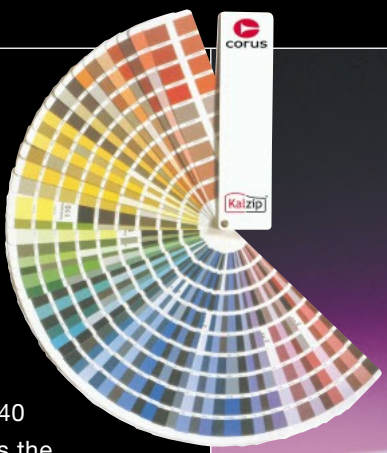
- Long decorative life and low maintenance
- Freedom from paint flaking and edge creep corrosion
- Extensive colour choice including metallics and weathered effects
- Full British Board of Agrément approval
- The surface of rolled aluminium is ideally suited to receiving a wide range of different organic coatings so giving a decorative material that has a longer aesthetic life and lower maintenance costs than any other comparative product.
- Any change in appearance caused by prolonged exposure to the elements will be uniform throughout an elevation.
- The product is 100% recyclable*

*Detailed information about the recyclability/reusability of Kalzip aluminium products; and also technical information about the performance of aluminium as a building material, is available from Kalzip technical department.

A colourful life

Brilliant colours

Introducing RAL



RAL is the umbrella organisation of the German Quality Labelling agency which also manages the 'Blue Angel' badging of environmentally friendly products.

The RAL CLASSIC colour collection was established 75 years ago with a range of 40 colours and today is in general use across the roofing and cladding industry offering in excess of 200 colours with a four figure notation.

RAL Digital helps architects to import accurate colour into CAD design programmes and allows Kalzip roofs and walls to be 'coloured up' with flashings and other accessories picked out in matching or contrasting shades.

For more information about RAL Digital, supported programmes and technical specifications please contact either Marketing on 01925 825100 or speak to your regional Kalzip sales manager.

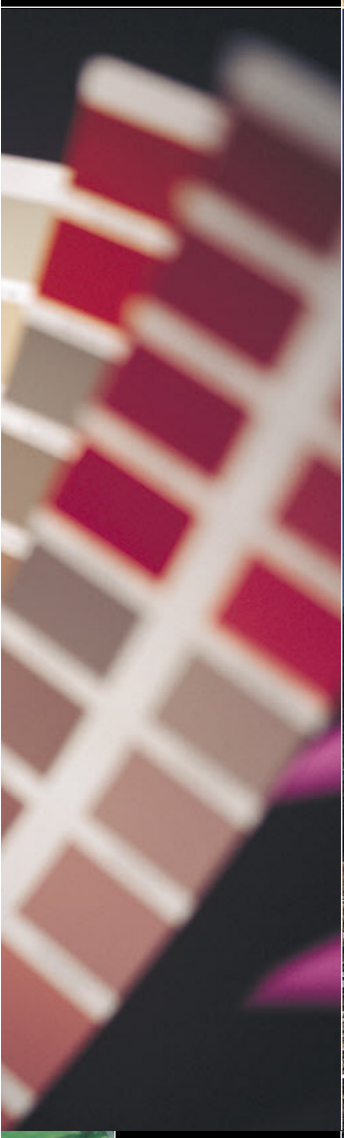
What is colour coating?

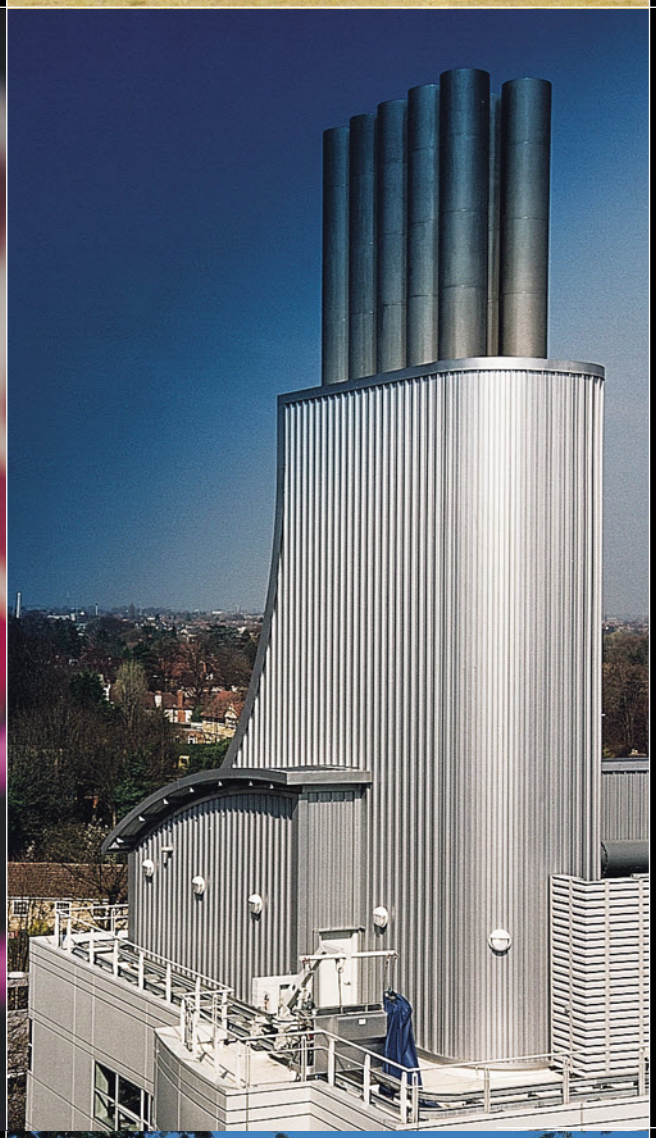
The coating of aluminium is a complex, multi-layer process. The integrity and long term performance of the coating depends on the proper selection of each component part, usually comprising:

- Substrate
- Pre-treatment
- Backing coat
- Primer
- Top coat

What choice is available?

Kalzip can be supplied in many of the 200 RAL Classic colours – but see your favourites on page 9 first.





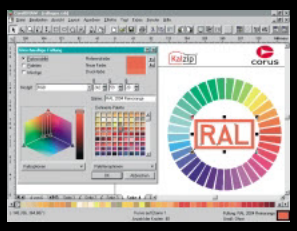
A coating system can consist of a single layer of decorative coating but some colours and finishes may comprise two or more layers. Each coat is applied, in liquid form, by rollers and the coil is then passed through an oven to cure the coating.

For certain bright finishes, where a metallic appearance is desired, it may be necessary to apply a further lacquer to give added protection.

We recommend that colour decisions are based on coated metal samples. Please be aware that if a colour has not actually been run in production then it may not be possible to provide a physical sample.

Metallic and duotone finishes exhibit directionality which should be taken into account.

Flashings are fabricated from the same coated coil as Kalzip to ensure consistency of colour performance. Quantities must therefore be accurately calculated to avoid inadequate or excessive quantities of coated material.



At this point it is important to look closely at the process of choosing the most appropriate colour and finish for the project in hand.

Adjustments need to be made when certain colours and finishes are chosen. This may affect the cost according to any multi-coating that may be required. It should also be noted that the coil coating line below requires a minimum of 1,000 square metres of any given colour for an economically viable production run.

It is critical, at the specification stage, to seek advice from our technical department on colours and finishes that are outside the standards shown.

To provide a little more understanding of the technical issues involved; we now look briefly at the elements of the coating and the effect of certain external conditions on their performance.

Colour pigments
Pigments give colour to the organic coating and can also contribute significantly to the paint's durability by either reflecting or absorbing ultra violet radiation. They also give opacity to the coating.

Pigments may be organic or inorganic. Inorganic pigments generally have better resistance to ultra violet radiation and are recommended for long life coatings for external use. However, some inorganic pigments for strong colours do not respond well to exposure to acidic pollutants such as SO_2. Examples of these include lead molybdate (red), lead chromate (yellow) and ultramarine (blue). This restricts parts of the colour range and is the reason why there is a limited choice of reds and yellows for long life products.

Binders
The binder is the resin, or combination of resins, which determines the characteristics of the paint film - flexibility, adhesion, weatherability, etc.

The coating system is usually described by reference to the type of binder, e.g. PVdF (PVF2), polyester, polyurethane, etc.

PVdF
The ultimate in coating performance with outstanding weathering properties. This system has been used on aluminium in the UK for over 25 years with millions of square metres continuing to perform as well now as when the product was first installed. Minimum decorative life is in excess of 20 years. This, combined with the virtually unlimited range of colours, including metallic, has led to acceptance of PVdF as the best available coil coated material

ARS - Abrasion Resistant System
This is a high durability coating with exceptionally good handling characteristics. It has an external decorative life expectancy of up to 20 years achieved through its extremely tough construction based on polyester or polyurethane resins reinforced with polyamide (nylon). This gives a coating combining excellent formability, corrosion resistance and weathering properties.

Polyester
This is one of the most cost effective and versatile systems available and is used for a variety of both internal and external cladding systems. It is available in gloss levels from 8% (matt) through to 80% (full gloss).

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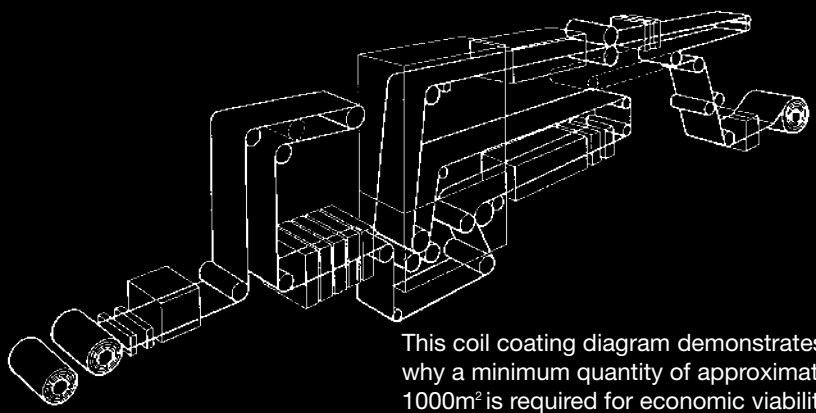


This coil coating diagram demonstrates why a minimum quantity of approximately 1000m² is required for economic viability.

- Small quantities of special colours can be achieved by post powder coating.
- Small quantity coils from larger projects may satisfy your need.
- On the issue of small quantities or unusual colours please contact us.
- Coated metal samples are usually available for all frequently specified colours.

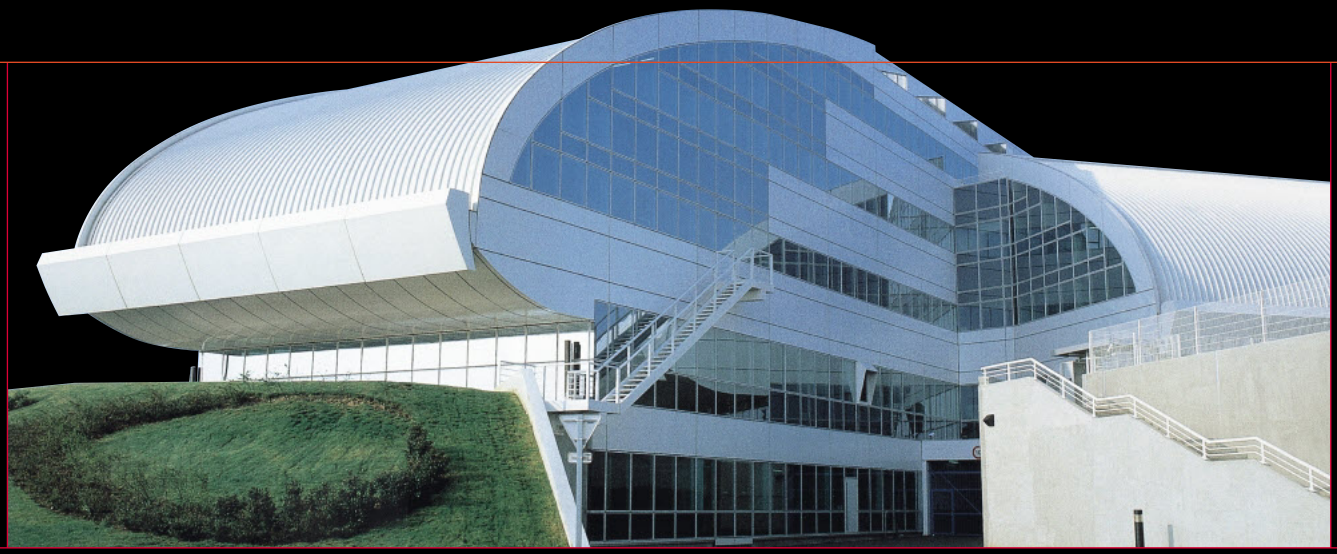
Favourites

Frequently specified RAL colours

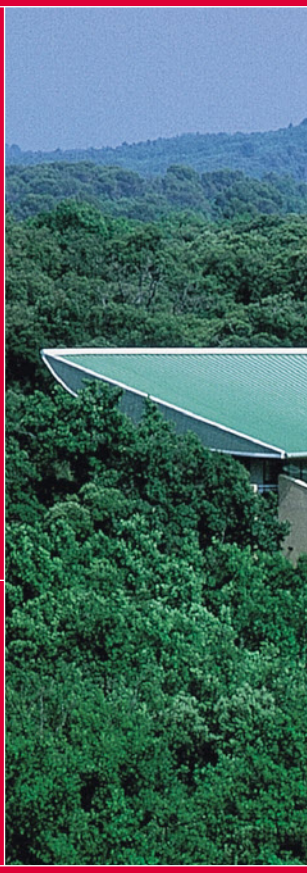
RAL 1013	RAL 3002	RAL 5009	RAL 5024
RAL 6003	RAL 6021	RAL 6027	RAL 7000
RAL 7012	RAL 7016	RAL 7024	RAL 7035
RAL 7037	RAL 7043	RAL 8014	RAL 8023
RAL 8025	RAL 9006 White aluminium Metallic	Various shades of white are available.	

British Standard (BS) referenced colours are also available e.g. BS00A05, BS18B25, BS10A05, BS18C37

Due to the limitations of the printing process it is not possible to accurately reproduce the RAL colours
We recommend actual samples are seen before ordering.



Proven performance



Performance

Comparative performance

The table below gives a simple comparison between the different systems when applied on smooth aluminium.
E = excellent, G = good, M = moderate

	PVdF	ARS	Polyester
Scratch resistance	G	E	G
Stain resistance	E	G	G
Colour fastness	E	G	G
Weathering	E	G	G
Chalking resistance	E	G	M

External conditions

The two most important external influences on coating performance are ultra violet radiation and chemical pollution. Chemical pollution may be from very local sources or may arise from a major industrial conurbation.

Ultra violet is high energy radiation which may ultimately destroy any organic products. It has three important effects on coating systems: it causes loss of gloss, chalking and loss of colour.

Chemical pollutants occur mainly in the atmosphere as acidic gases such as sulphur dioxide, nitrogen oxides and chlorides.

The pollutant which gives greatest concern is sulphur dioxide; it is both common and aggressive. Its main source is the burning of sulphur containing fossil fuels in power stations and in large industrial/urban conurbations. The sulphur dioxide is taken in solution by the moisture laden atmosphere to form initially sulphurous and, ultimately, sulphuric acid. These in turn give rise to the formation of ‘acid rain’.

Sulphuric acid is very aggressive to certain pigments and can result in major colour changes.

Internal environment

The environmental conditions inside a building can be more varied than those outside and attention must always be given to these conditions when choosing a suitable coating system for the internal liner sheet, structural decking sheet or tray system.

Guaranteed performance indicator

The guarantee applied to colour coated Kalzip material begins with the delivery date of the material and ends with the agreed date in accordance with the table below.

Where a guarantee has been approved and applied to colour-coated Kalzip material it is guaranteed that:

1. The physical properties of the base material will be maintained.
2. The coating will not flake, blister or crack due to weathering.
3. Chalking, colour and gloss changes will neither lead to failure of the function of the product nor considerably reduce the decorative properties within the duration of the period.

	Period in years		
	PVdF	ARS	Polyester
Rural	25	20	15
Marine	22	18	12
Industrial	20	15	10

With all paint finishes there is a risk of colour variation from batch to batch and batches should therefore not be mixed on any one elevation. Good practice in coating selection is important to ensure a long term trouble-free life.

The aluminium coil is pre-coated before the roll-forming of profiled sheets. All accessories are fabricated by Kalzip from the same coil to ensure continuity of finish across all architectural details. As it is not possible to guarantee a perfect match with post coating, it is important that all accessories are specified and ordered at the outset.

Quality control/testing and certification

On line inspection and quality control confirm the properties of individual project materials whilst accelerated testing assesses long term performance.

On line tests include:

- Film thickness
- Colour
- Rapid deformation
- Resistance to cracking on bending
- Specular gloss
- Pencil hardness
- Adhesion after indentation

Accelerated and other long term tests include:

- Resistance to salt spray fog
- Water soak
- Resistance to accelerated weathering using UV lamps

What's new

Kalzip has the very latest surface finishing and processing technology.

Our aluminium roofing and cladding systems offer the following special finishes:

TitanColour

TitanColour - a special metallic finish that looks like a titanium surface. Samples are available from Marketing or from the Kalzip regional sales managers.

The new TitanColor palette is a stylish and high quality addition to the diverse range of finishes available for Kalzip roof and walling systems. TitanColor features a special, unbrushed aluminium base with a tough, UV-resistant, single-layer polyurethane/polyamide coating, which effectively gives the appearance of high quality titanium. TitanColor has a stylishly elegant metallic finish and provides the ideal finishing touches for state-of-the-art building design.

- Coating thickness approx. 20µm. Minimum quantities apply.

SoftColour

SoftColour - a new range of colour with a very special texture and visual appeal. Shades include gentian blue, graphite grey, light grey, copper brown and white aluminium. Again, samples are available.

The new SoftColor range provides an ideal solution for creating a subtle finish on roofs and walls. This coating has a soft textured appearance, which reduces reflection and provides the architectural design with a distinctive appearance. SoftColor contains a special polyester lacquer that is added during a separate pre-treatment process.

- Coating thickness approx. 25-30 µm. Minimum quantities apply.
- SoftColor is available in the colours shown opposite:

AntiGraffiti

AntiGraffiti - a specially developed highly durable surface finish that allows for the easy removal of graffiti 'art' with the use of approved cleaners.

For protection against the increased disfiguration of facades and walls by graffiti, Kalzip are now offering a new and reliable coating for Kalzip and Kalbau products, which guarantees the removal of graffiti. The multi-layer AntiGraffiti system is designed to remove graffiti using specially approved cleaning agents and the associated cleaning technology. When correctly used, the system will remove all traces of graffiti. The colour structure is not affected. The AntiGraffiti coating provides a combined colour structure of PVdF and CTFE, and has similar properties to Teflon. Kalzip facades protected with anti-graffiti coating safeguard the value of private and public property, and help to maintain the original appearance of the building. The test report, certified by an accredited test institute, is available on request.

- Coating thickness approx. 35-40 µm. Minimum quantities apply.
- AntiGraffiti is available in RAL 9006, RAL 9007 and gold metallic.

Titan

SoftColour RAL5010

SoftColour RAL7024

SoftColour RAL7035

SoftColour RAL7046

SoftColour RAL8004

SoftColour RAL9006 Metallic

SoftColour RAL9007 Metallic

AntiGraffiti RAL9007

AntiGraffiti RAL9006

AntiGraffiti Gold Metallic

Due to the limitations of the printing process it is not possible to accurately reproduce the SoftColour and TitanColour finishes.

We recommend actual samples are seen before ordering.

Stucco-embossed finish

Kalzip and Kalbau profile sheets are available as standard in a stucco finish and non-colour coatings. Stucco natural metallic finish is achieved through an additional embossing process. The extremely robust surface structure is very durable. Furthermore, the surface diffuses reflection and reduces the risk of glare. For some Kalzip alloys the core material is additionally protected by means of a rolled protective plating. The beneficial effects of this layer known as clad-alloy have been confirmed in various studies by the Federal Institute for Material Research and Testing (BAM).

Summary of the advantages:

- Reduced surface reflection in comparison to natural aluminium
- Smooth metallic appearance
- Uniform ‘dulling’ of the surface over time
- Resistant to weathering, including severe environmental conditions

Kalzip AluPlusZinc®

Kalzip AluPlusZinc is a classic but technically advanced product. It has a matt zinc-patinated finish, which is brought to life through the interplay of the different shades and depths of the zinc patina. The timeless appearance of the pre-weathered zinc finish makes it ideal for use in a wide range of prestigious buildings. The aluminium core is coated with a zinc-patinated finish in accordance with the patented PEGAL method. Additional surface treatment stabilises the zinc patina and provides exceptional resistance to the effects of weathering.

Kalzip AluPlusZinc is supplied with a self-adhesive protective film as standard.

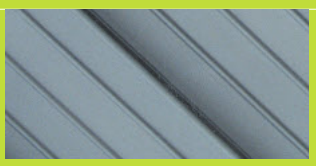
Summary of the advantages:

- Zinc-patinated finish with surface protection
- Classic, traditional appearance
- Highly attractive surface finish
- Aluminium core ensures long life

Lustre finish

A tinted lacquer to simulate the natural weathered appearance of aluminium from day one.

Stucco-embossed finish



Kalzip AluPlusZinc*

Lustre finish

*Colour variations can occur in the zinc

Kalzip. Where to find us

For further information about Kalzip, please contact us (full address details are shown on the back cover) and visit our web sites:
www.kalzip.co.uk
www.natureroof.com
www.kalzip.com

Or contact: 01925 825100 for literature

Technical literature

A range of in-depth technical documents covering every aspect of our products and systems is available.

Kalzip®

www.kalzip.com

Kalzip Ltd
Haydock Lane
Haydock
St Helens
Merseyside WA11 9TY
T: +44 (0) 1942 295500
F: +44 (0) 1942 295508
E: enquiries.uk@kalzip.com

English