

TATA STEEL

Colorcoat® for agricultural buildings

Metal building envelopes





TATA STEEL AND COLORCOAT®

About Tata Steel

Tata Steel is one of Europe's largest steel producers. We serve many different and demanding markets worldwide, including aerospace, automotive, construction, energy and power, and packaging. Our primary steelmaking operations in the UK and the Netherlands are supported by a global sales and distribution network.

Innovation and continuous improvement are at the heart of our performance culture. We aim to create value by offering a sustainable and value-added steel product range supported by unrivalled customer service. By working in partnership with you, we find the best solutions to meet your needs and help your business to perform.

We are able to offer a wide range of products, systems and services specifically developed for the construction market. These include Colorcoat® pre-finished steel products, roof and wall cladding systems for the building envelope, lintels and other ancillary construction components.

Colorcoat® Brand

We are able to offer a wide range of products and services specifically developed for the construction market, these include Colorcoat® pre-finished steel products.

Colorcoat® is the internationally recognised mark of quality and metal envelope expertise exclusively manufactured by Tata Steel at Shotton Works in North Wales. It covers a range of pre-finished steel products specifically developed for roof and wall cladding systems for the building envelope.

BES 6001 approved

Colorcoat® products made in the UK are certified to BES 6001 Responsible Sourcing standard, the first steel envelope products in the world to achieve this, reinforcing our commitment to sustainability.

We have been developing and manufacturing the Colorcoat® range of technically leading products since 1965. These products are supported by a range of services, including comprehensive guarantees and technical advice.





Pre-finished steel building envelopes

Easy to construct, strong, low cost and low maintenance, pre-finished steel is an ideal material for agricultural building envelopes. Manufactured off-site, into long length cladding systems that can cover ridge to eaves in one sheet, it is quick and easy to install, and is flexible in design to allow for extensions.

Why Colorcoat® pre-finished steel?

The Colorcoat® range provides high quality, cost effective pre-finished steel for long lasting agricultural buildings. Born and bred in the UK, cladding systems manufactured from Colorcoat® products are produced on state of the art manufacturing lines to the highest quality standards.

All Colorcoat® products are backed by over 50 years of innovation, extensive product testing and manufacturing excellence.

Colorcoat® products are fully REACH compliant and free of chromates.

As part of our commitment to the agriculture industry, we are a member of the Rural and Industrial Design and Building Association (RIDBA).



Which Colorcoat® products are suitable for agricultural buildings?

Colorcoat® products offer agricultural building manufacturers a range of cost-effective choices that meet modern day demands as well as future requirements. They range from those suitable for general storage to those for more demanding environments such as poultry housing. For advice on which Colorcoat® product to use, see our product selector on page 7.

Colorcoat® pre-finished steel products are light and easy to install, have excellent spanning performance, are robust, and are available in a variety of options to ensure a long building life.

At the end of the buildings life, cladding systems can be refurbished, reused or fully recycled in line with environmental legislation.

Benefits of Colorcoat® pre-finished steel cladding:

To ensure the best performance of Colorcoat® products, we recommend that buildings are constructed following the principles outlined in the latest edition of the UK RIDBA Farm Buildings Handbook. Local legislation and regulations should be followed regarding active/passive ventilation in relation to animal welfare and environmental emissions. Good building design and operation will support improved animal health and wellbeing and therefore improved growth and yield.

All aspects of agricultural buildings need to be considered, from planning through to fit-out of all types of buildings, buildings for livestock production, storage and other purposes and buildings for diversification. This also includes legislative requirements for animal welfare in certain geographic locations which may require the use of air washers.

The air wash installation must be installed according to the manufacturers recommendations. Service and maintenance for air washer units should be carried out to ensure the efficiency of such unit. Any deterioration in performance of the unit should be addressed immediately as it could affect the adjacent pre-finished steel.

The benefits of Colorcoat® pre-finished steel include:

- Cost effective.
- Easy to fix, fast construction.
- Available in long lengths from ridge to eaves in one sheet.
- Excellent spanning capability reducing the number of purlins required.
- Low maintenance and easy to repair.
- Adaptable.
- Fully recyclable.
- Range of Colorcoat® products to suit building requirements.
- Guaranteed quality, performance and service.
- Unrivalled colour choice for external.
- Easy to integrate renewable energy solutions.
- Colorcoat HPS200 Ultra® and Colorfarm® certified to EN 10169:2010 CPI5 resistance to humidity.
- Systems can be designed and tested to be non fragile and walkable.



What do I need to consider when choosing which Colorcoat® product to use?

When choosing which product to use you should consider where the building is, for example will it be prone to damage, how long will you want your building to last, any internal considerations such as resistance to specific chemicals and what the buildings use will be. Each Colorcoat® product is made up of a number of layers which perform different functions as detailed below.

External topcoat:

The topcoat provides the abrasion and UV resistance, and also the final appearance. In terms of abrasion resistance, the thicker the top coat the better, therefore of the prefinished steel products in table 1 Colorcoat HPS200 Ultra® and Colorcoat® LG are the most robust. The UV resistance is dependant on the product. Colorcoat HPS200 Ultra® has been designed to be the most resistant to UV light and will retain its colour and gloss for longer. The topcoat also provides the surface finish. Embosses such as the Scintilla® and leathergrain embosses are best for areas prone to damage as they tend to be better at 'hiding' scratches as opposed to smooth finishes.

Backing coat:

We use a high performance backing coat as standard for all of our Colorcoat® products which also provides some corrosion resistance. A double sided product should be used if extra protection is required.

Figure 1. Diagram of typical layers for a single sided Colorcoat® pre-finished steel

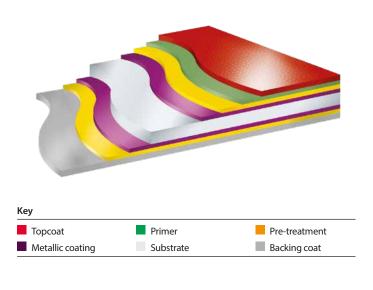
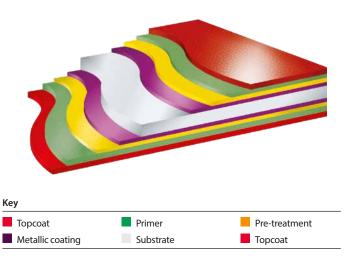


Figure 2: Diagram of typical layers for a double sided Colorcoat® pre-finished steel



Metallic coating:

The metallic coating plays an integral role in the corrosion protection of the cladding products. We use two types of metallic coating in the UK namely hot dip galv (HDG) with Zinc, and our unique Galvalloy® metallic coating which is a special mix of 95% Zinc and 5% Aluminium. Both provide sacrificial protection and the thicker the HDG, i.e. the higher coating weight, the more protection this offers. Galvalloy® offers a combination of increased barrier and sacrificial protection, which both inhibits and slows the rate of corrosion in comparison with conventional HDG coatings and provides unrivalled corrosion resistance protection.

Corrosion resistance:

The rating of corrosion resistance is a function of the whole pre-finished steel, and is a measure of the durability of the pre-finished steel.

Guarantee:

The guarantee covers the Colorcoat® product against unexpected coating failure. What is covered in the guarantee is dependant on the product used. The most comprehensive guarantee is the Confidex® Guarantee which covers the external surface of Colorcoat HPS200 Ultra® for standard cladding applications. Its benefits include the longest length of cover on the market, includes factory cut edges, no separate requirement other than routine building maintenance to maintain validity, and covers all rectification costs should a failure occur. The guarantee period for the Confidex® Guarantee is the period to first repaint. The functional guarantee period is the length of time the product is expected to last before perforation.

Table 1. Comparison of Colorcoat® products suitable for agricultural building envelopes

	Colorcoat HPS200 Ultra®	Colorcoat® LG	Colorfarm® 20 single sided (for internal environments)	Colorfarm® 20 double sided (for single skin applications)	Colorcoat® PE 25	Ruralclad®
Topcoat	200µm coating with Scintilla® emboss	200µm plastisol coating with leathergrain emboss	35µm high build smooth polyester coating	Colorcoat® PE 25 (for external)	25µm smooth polyester coating	18µm smooth polyester coating
Backing coat	High performance backing coat or 200µm coating with Scintilla® emboss	High performance backing coat or 200µm plastisol coating with leathergrain emboss	High performance backing coat	35µm high build smooth polyester coating (for internal)	High performance backing coat	High performance backing coat
Metallic coating	Galvalloy®	Galvanised	Galvalloy®	Galvalloy®	Galvanised	Galvanised
Guarantee	External Confidex® Guarantee for up to 40 years including factory cut edges	External Period to Repaint guarantee for up to 25 years including factory cut edges	20 year internal functional guarantee	20 year internal functional guarantee	Walls - 5 year external Period to Repaint guarantee Roof − T	8
No. of colours	40	20	8	8	On request	6

Notes: Health and datasheet for these products are available on request from the Colorcoat Connection® helpline.

☎ For more information on Colorcoat® products please contact the Colorcoat Connection® helpline on +44 (0) 1244 892434. This dedicated helpline offers immediate advice and guidance on a wide range of construction issues such as technical advice, meeting Building Regulations and where to source complementary products.

Choice of Colorcoat® product by building use

Table 2. Colorcoat® product selector

Building type	Uninsulated single skin	Insulated composite panels/built-up system
High levels of ammonia, high humidity e.g. livestock and poultry housing	Double sided Colorfarm® 20	External: Colorcoat HPS200 Ultra® Colorcoat® LG Internal: Colorfarm® 20
Low levels of ammonia, temperature controlled, high humidity e.g. Vegetable stores	Double sided Colorcoat HPS200 Ultra® Double sided Colorfarm® 20	External: Colorcoat HPS200 Ultra® Colorcoat® LG Internal: Colorfarm® 20
Low levels of ammonia, controlled low humidity, cool environments e.g. crop storage with no direct contact	Double sided Colorcoat HPS200 Ultra® Double sided Colorfarm® 20	External: Colorcoat HPS200 Ultra® Colorcoat® LG Internal: Colorfarm® 20
Relatively low pollutants, low humidity e.g machinery stores, general storage	Colorcoat HPS200 Ultra® (Single sided for use externally with standard backer for internal use or double sided available) Colorcoat® LG Colorcoat® PE 25 Ruralclad® Available with standard backer for internal application, selection depends on guarantee requirement.	External: Colorcoat HPS200 Ultra® Colorcoat® LG Colorcoat® PE 25 Ruralclad® Internal: Colorcoat® PE 15

Notes:

- 1. Colorfarm® 20 is the only product available that provides a standard guarantee for the interior of the building.
- 2. External product selection depends on guarantee duration requirement.
- 3. Single sided products are not recommended for canopies.
- 4. If a building has a food safe requirement Advantica® L Control and Advantica® CL Clean are fully tested and certified. Please refer to www.colorcoat-online.com for more information.

Figure 3. Single skin system e.g. Grain and vegetable stores

Figure 4. Insulated system e.g. Poultry housing

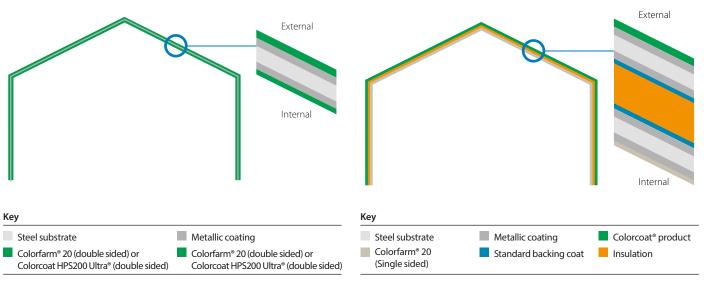




Table 3. Comparison of Colorcoat® products suitable for agricultural building envelopes

Test	Test standard	Colorcoat HPS200 Ultra®	Colorcoat® LG	Colorfarm® 20	Colorcoat® PE 25	Ruralclad [®]
Nominal organic coating thickness	EN 13523-1	200μm	200µm	35μm	25μm	18μm
Gloss (60°)	EN 13523-2	10 – 40%	15 - 35%	30 - 40%	30 - 50%	40 - 50%
Scratch resistance	EN 13523-12	> 5000g	> 3500g	> 3000g	> 2500g	> 2000g
Abrasion resistance (Taber, 250 rev, 1 kg)	EN 13523-16	< 12mg	< 12mg	< 15mg	< 30mg	< 20mg
Flexibility: Reverse impact Adhesion (cross hatch) Min. bend radius	EN 13523-5 EN 13523-6 EN 13523-7	≥ 18J 100% Pass 0T at 16°C 1T at 0°C	≥ 18J 100% Pass 0 T at 16°C	16J 100% Pass 4 T at 16°C	9J 100% Pass 3 T at 16℃	9J 100% Pass 6 T at 16℃
Corrosion resistance: Salt spray Humidity	EN 13523-8 EN 13523-26	1000 hours 1500 hours	1000 hours 1000 hours	1000 hours 1500 hours	360 hours 1000 hours	400 hours 500 hours
Max. continuous operating temp.	Tata Steel	60°C	60℃	100°C	100°C	100℃
Internal classification resistance to humidity.	EN 10169:2015	CPI5		CPI5		

Notes:

- 1. The figures contained in this table are typical properties and do not constitute a specification. These figures relate to the topcoat and solid colours. For details on test methods see www.colorcoat-online.com
- 2. The printed colours shown on the following pages are for guidance only. For true representation of colour and effect, please obtain product samples from the Colorcoat Connection® helpline.

Colorcoat HPS200 Ultra®

For farm buildings that are built to stand the test of time Colorcoat HPS200 Ultra® is the ideal choice. It provides dramatically improved colour stability and gloss retention. This allows us to provide our market-leading Confidex® Guarantee for up to 40 years for the weatherside of industrial and commercial buildings.

The standard colour range for Colorcoat HPS200 Ultra® is made up of 40 colours including matt finishes. These include natural colours and tonal shades that can help your farm buildings blend with their environment.



We recommend the use of double sided Colorcoat HPS200 Ultra® for single skin farm buildings to provide increased abrasion resistance and for humid environments. Colorcoat HPS200 Ultra® is used in all construction sectors due to its excellent corrosion protection in acidic, alkaline and salty environments, combined with its high robustness and excellent UV resistance. However when ammonia concentrates are high e.g. inside stables with the presence of livestock and manure, we would recommend Colorfarm® 20 for internal applications.

For availability of colour combinations please contact the Colorcoat Connection® helpline on +44 (0) 1244 892434.

Key attributes

- 200μm durable, abrasion-resistant topcoat.
- Colorcoat HPS200 Ultra® exceeds the requirements of Ruv4 and RC5 as per EN 10169:2010 proving outstanding colour retention and corrosion resistance for the whole colour range.

- Unique Scintilla® emboss so you can rest assured that your pre-finished steel has full traceablility and is protected with the highest quality from Tata Steel.
- Optimised Galvalloy® metallic coating to EN 10346:2015 for unrivalled corrosion resistance and cut edge protection.
- Confidex® Guarantee for up to 40 years with no maintenance or inspections required to maintain its validity.
- Standard sizes and colours are available on short production lead times.
- BBA certified for durability in excess of 40 years.
- Certified to EN 10169:2010 CPI5 resistance to humidity.
- Can be used under photovoltaic (PV) frame modules with no reduction in guarantee length ensuring all parts of the roof are covered for the same duration of the Confidex® Guarantee.

Colour range



Order the Colorcoat HPS200 Ultra® colour card from the Colorcoat Connection® helpline to see the complete colour range and emboss effect.

Colorcoat® LG

Colorcoat® LG is a leathergrain embossed plastisol product suitable for general storage, light industrial and agricultural buildings, where good corrosion resistance and a guaranteed life for up to 25 years is required. It consists of a 200µm durable, abrasion-resistant topcoat and a high performance backing coat applied to a galvanised substrate to EN 10346:2015.

Colorcoat® LG is available double sided for single skin buildings that need protection internally from abrasion.

The use of Colorcoat® LG in aggressive environments including roofs where a photovoltaic (PV) frame module might be installed is not recommended. For optimum levels of performance including roofs where PV modules might be installed, always specify Colorcoat HPS200 Ultra® supported by the Confidex® Guarantee.

Key attributes

- 200µm durable, abrasion-resistant topcoat.
- Standard leathergrain emboss.
- Available in 20 popular colours in standard sizes.
- Supplied with a galvanised substrate to EN 10346:2015 offering good corrosion resistance.
- Available with a performance guarantee up to 25 years including factory cut edges.
- High performance reverse side backing coat as standard.
- BBA certified for durability in excess of 25 years.



Colour range



Order the Colorcoat® LG colour card from the Colorcoat Connection® helpline to see the complete colour range and emboss effect.

Colorfarm® 20

Colorfarm® 20 has been designed specifically to meet the demands of agricultural buildings including a high resistance to ammonia and fertilisers, and is guaranteed to give 20 years functional performance. It suits any farming purpose, including livestock housing and crop storage and has been tested in contact with a number of chemicals commonly found in agricultural environments. During the tests Colorfarm® 20 was exposed to vapour, liquid, or paste, depending on the chemical being tested.

Double sided Colorfarm® 20 should be used for single skin buildings. Single sided can be used for the internal liner of insulated buildings, using built-up or composite panel systems.

Colour range



The printed colours shown for Colorfarm® 20 are for guidance only. For true representation of colour and effect, please obtain product samples from the Colorcoat Connection® helpline.

Note: For double sided option Chalk White is obligatory for the reverse side.

The backing coat should be installed facing the insulation. Here the exposed side of the internal cladding is protected by the high build Colorfarm® 20 pre-finished steel, whilst the unexposed side is supplied with our high performance backing coat. Colorfarm® 20 provides good levels of resistance against many chemicals found in internal agricultural environments, and with appropriate maintenance its overall life will be considerably extended.

Key attributes

- 35µm internal layer for good chemical resistance.
- Supplied with a Galvalloy® metallic coating to EN 10346:2015 for excellent corrosion resistance.
- Available in 8 colours, specifically developed to harmonise with the rural environment.
- 20 year internal functional performance guarantee.
- Certified to EN 10169:2010 CPI5 resistance to humidity.

Table 4. Exposure of Colorfarm® 20 to common chemicals after 1000 hours

	Performance		
Test reagent	Excellent resistance	Good resistance	Limited resistance
Fertiliser 10% Phosphate	*		
Fertiliser Amn. Phosphate	*		
Fertiliser NPK 25:5:5	*		
Fertiliser NPK 5:24:15	*		
Antiseptic drench	*		
Wood preservative	*		
Weed killer	*		
Hydrochloric Acid (10%)			*
Sulphuric Acid (10%)			*
Phosphoric acid (10%)			*
Acetic acid (10%)			*
Butyric Acid (10%)			*
Lactic acid (10%)		*	
Sodium Hydroxide pellets			*
Ammonia (High concentration 75%)		*	
Sodium Hypochlorite		*	
Ammonium Nitrate			*
Ammonium Phosphate	*		
Sodium Carbonate	*		
Sodium Chlorate	*		
Sodium Nitrate	*		
Formalin (40%)	*		
Urea	*		
Water	*		
Carbon Dioxide	*		

Notes

Colorfarm® 20 is available in a choice of 8 colours.

Single sided products have a standard high performance backing coat.

With double sided Colorfarm® 20 the external topcoat is Colorcoat® PE 25 which provides a colour range which will blend in with the external landscape and simulate those of traditional building materials. Double sided products have an obligatory Chalk White Colorfarm® 20 internal finish.

Colorcoat® PE 25



Colorcoat® PE 25 is an economic product suitable for undemanding roof and wall applications particularly in dry and nonaggressive climates where there are no high demands for corrosion protection.

Key attributes

- Smooth 25µm polyester coating.
- Supplied with a galvanised substrate produced to EN 10346:2015.
- Available in the most popular cladding colours.
- High performance reverse side backing coat specially formulated for use in construction applications.

Ruralclad®



Ruralclad® is a value driven pre-finished steel product, designed for agricultural buildings that would only be used for dry storage e.g. general storage sheds. Produced to the high quality standards expected from Tata Steel, it consists of a galvanised substrate with a nominal 18µm flexible paint system on the exterior side of the sheet and a standard high performance reverse side backing coat.

Key attributes

- Smooth 18µm polyester coating.
- Supplied with a galvanised substrate produced to EN 10346:2015.
- Available in 6 popular agricultural building colours.
- High performance reverse side backing coat specially formulated for use in construction applications.

Colour range



BS or Ral reference numbers shown represent the nearest colours and are not exact matches. For true representation of colour and effect, please obtain product samples from the Colorcoat Connection® helpline.

Technical advice on meeting building requirements

Designing to eliminate condensation

Condensation can be a problem in agricultural buildings, however it is essential to understand the cause and design accordingly.

Condensation occurs when moist air comes into contact with a surface which has a temperature below the dew point. When this happens the air is no longer able to hold as much water vapour and the water is released as condensation on the surface.

The main priority has to be to reduce the relative humidity of the air inside the building by good building design to ensure adequate ventilation. This is particularly important in animal housing as inadequate ventilation and associated warm damp air are a major contributor to animal respiratory infection with associated treatment costs and loss of yield.

The RIDBA farm handbook gives guidance on ventilation rates for different livestock and how to achieve this through correct design of ridge vents and wall cladding.

As well as having a negative impact on livestock, the condensation resulting from poor building design can lead to damage to the building structure and fabric.

For insulated buildings such as poultry housing, best practice should be observed to avoid cold bridging through the insulation layer which could lead to localised condensation spots.

Where timber purlins are used, a separation barrier such as a PVC strip should be used between the purlin and the pre-finished steel. This is to avoid contact with wood treatment chemicals, which can absorb condensation and create localised aggressive corrosion conditions.

Cleaning and maintenance

Avoid prolonged, direct contact with aggressive chemicals such as silage, slurry, fertilisers and animal waste.

Technical advice

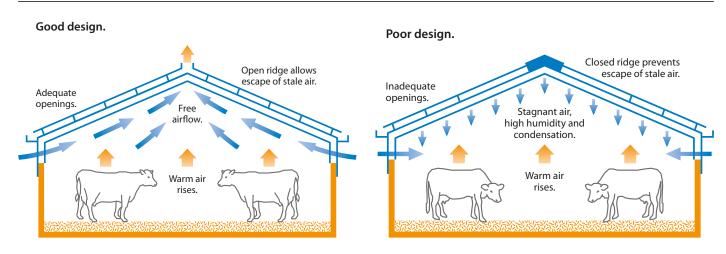
Keep the bottom edge of wall sheeting out of continuous contact with damp materials and soil including concrete.

The exposed cut edges of roof sheets must be protected with a suitable touch up paint if the building is subject to salt spray or if it is less than 2 Kilometres from the sea. In addition those areas of sheeting not exposed to the natural effects of washing by rain water e.g. under eaves, should be washed regularly with fresh water to prevent the accumulation of salt.

Use the system manufacturers recommended fasteners and fixings.

Refer to the storage and handling best practice guidelines as per the system manufacturer.

Figure 5. Good farm building design (BS Farm Building Guide)



Designing for fire performance Reaction to fire

All Colorcoat® products have a Class 1 surface spread of flame when tested in accordance with BS 476 part 7, and meet the requirements of Class 0 as defined in the Building Regulations for England and Wales 2006.

Resistance to fire

All Colorcoat® products when used as part of a roof cladding system, can achieve a Class AA performance rating when tested in accordance with BS 476 part 3.

Colorcoat® roof covering products covered by European Commission decision 2000/553/ EC are deemed to satisfy the requirements for external fire performance without the need for testing.

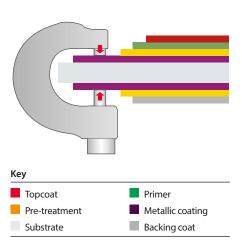
Designing to meet gauge specifications

The gauge of the pre-finished steel coil or sheet plays a vital role in the physical properties and performance of the wall or roof cladding that is manufactured from it. Incorrect specification may, in the worst cases, have safety implications such as roof fragility. The European standard EN 10143:2006 defines the tolerances for different grade, width and gauge material for normal and special tolerance categories.

Tata Steel are able to supply pre-finished steel to normal and special tolerances according to EN 10143:2006 and tighter tolerances, subject to commercial agreement, to ensure that the cladding performs as designed. Incorrectly specifying gauge or gauge tolerances can affect:

- Structural performance; including in-use loads and purlin spacings as well as safety implications during construction and maintenance.
- 2. A buildings visual appearance; lighter gauge material is more prone to damage during installation, and distortion of the profile around fasteners due to slight misalignment of the primary/secondary structure.

Figure 6. Measurement of gauge



Colorcoat® services

The Colorcoat® brand is recognised as the exclusive mark of quality and metal envelope expertise and is supported by a comprehensive range of services, technical advice and guidance

Colorcoat® Business Development Team

The team are readily available to advise you on the design, specification and construction of your metal building envelope. Call the Colorcoat Connection® helpline or visit www.colorcoat-online.com to find out who the representative is for your area.

Colorcoat Connection® helpline

This dedicated helpline offers immediate and easily accessible advice and guidance on a wide range of construction issues such as:

- Technical advice.
- Meeting Building Regulations.
- Where to source complementary products. Contact us on +44 (0)1244 892434.

Colorcoat® Technical Papers

We have produced a number of technical papers that can help you address key issues in building design and construction. Visit www.colorcoat-online.com/technical to view the full range.

Colorcoat® Accredited Distributors

Our Colorcoat® Accredited Distributors have been evaluated and approved for supply of Colorcoat® products. The storage, handling, processing and range of Colorcoat® prefinished steel products have been assessed and found to meet the highest standard of quality and service. They can provide you with any product from the Colorcoat® range in small quantities, with a 48 hour service. For further details visit www.colorcoat-online.com/distributors.



www.colorcoat-online.com

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