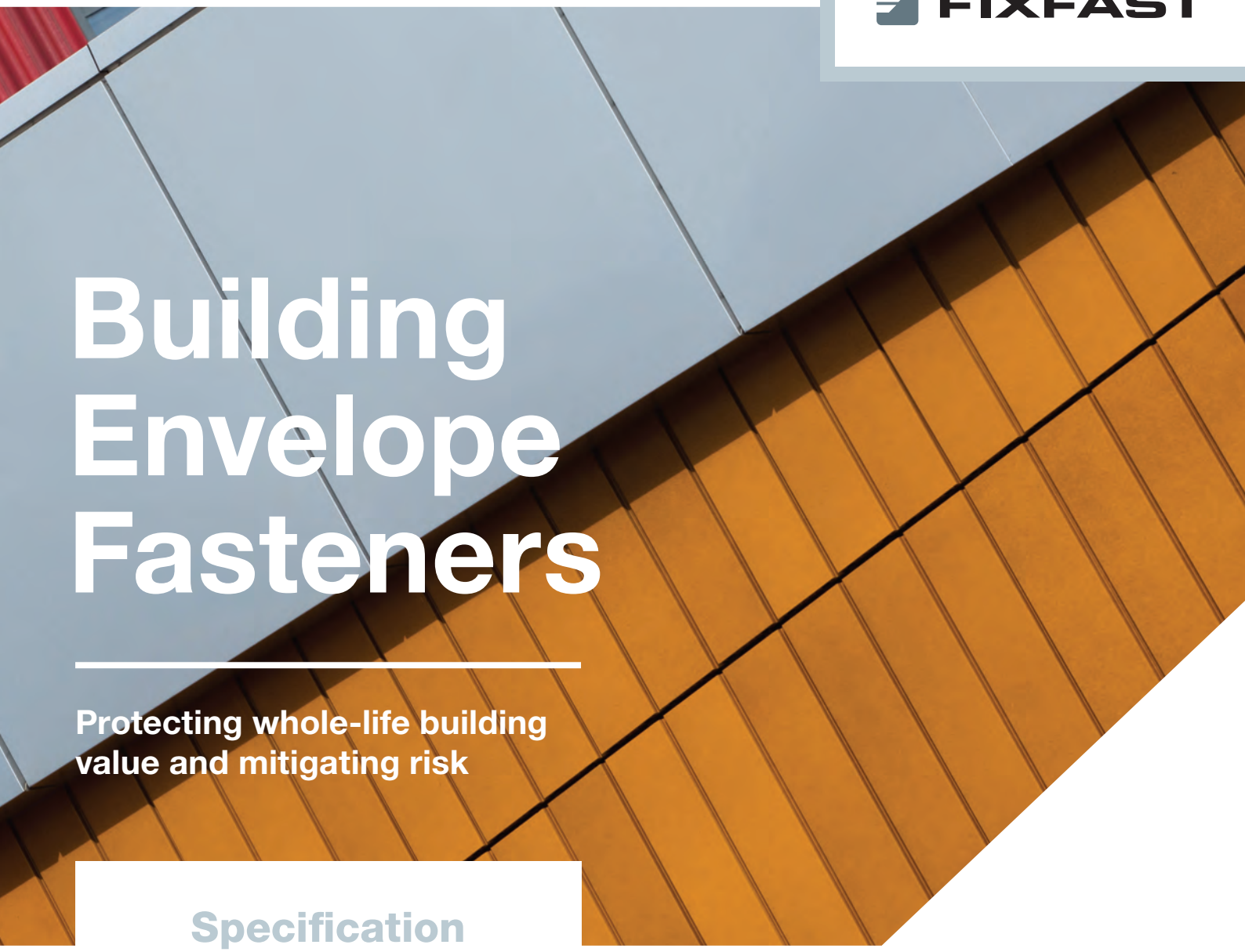
Maximum reliability. Minimum fuss.

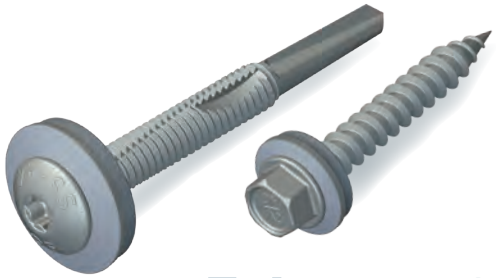
FIXFAST



Building Envelope Fasteners

Protecting whole-life building value and mitigating risk

Specification Guide



February 2020

Project:
First Street Manchester

Products Used:
DrillFast® Stainless, DrillFast® Lacquered

Contents

An introduction to Fixfast

About Fixfast

Fixfast designs, manufactures and supplies specialist building fasteners and components for the walls and roofs of industrial, commercial and larger residential buildings. Our product range includes solutions for flat roofs, rainscreens and façades, sheeting and cladding, living roofs and safe access.

Our aim is to be constantly evolving and always ready to respond to the changing demands of the roofing and cladding industry, and to meet the needs and expectations of architects, contractors and installers.

We have four decades of steady growth and innovation behind us, having developed numerous new product lines in collaboration with our customers and suppliers, such as our DrillFast® and MatchFast® ranges of self-drilling screws.

Quality

At Fixfast, we pride ourselves on supplying products only of the highest quality. Our core fastener ranges are designed in-house and manufactured to our specification - either at our facility in Sevenoaks UK, or at one of our approved manufacturing plants which are factory production controlled in accordance with CE marking and European Technical Approval. We have ISO 9001 2015, 14001 and 18001 certification.

Certificate number 10905
ISO 9001, ISO 14001
OHSAS 18001

Specification and technical support

Whether it's a new build at the design stage or a refurbishment project with a new roof or façades, we are able to assist with advice, training, technical calculations, or specific on-site tests. Our range of specification and technical services includes:

- Specification guidance
- Project-specific specifications
- CAD drawings and BIM objects
- CPDs and product demonstrations
- Pull-out tests
- Wind load calculations
- Rainwater flow rate calculations
- Fastener specifications for tapered insulation schemes
- Specific applications testing


THE
Laundrette


WOOD

The importance of correct fastener specification

A critical detail
Typically, fasteners make up just 3% of the construction cost of the average building envelope. While this is a small proportion, we believe the importance of this element of the building is too-often underestimated or overlooked.

Fasteners play an essential role in joining structural systems, but they can sometimes be both the 'missing link' and 'weakest link' in the construction value chain. This is because fasteners are often concealed and subject to deterioration, and tend to be the responsibility of different subcontractors. Thoughtful specification of fasteners is therefore critical at the design stage of a building's construction.

Protecting whole-life building value and mitigating risk
It stands to reason that, for a building that is expected to last 40 plus years (and with a mortgage lent on that basis), the fasteners holding that building together should be designed, manufactured and installed to also last at least 40 years.

Similarly, specifiers take great care in selecting well-made and high-performing systems for the building envelope that come with long manufacturer warranties that span the full life expectancy of the building. But such warranties only hold their value if the same consideration is given to how these systems are secured to the building.

Through our technical expertise and close collaboration with the manufacturers of building envelope systems, we have developed a deep understanding of the inherent design requirements placed on our fastening components. This means we can close the 'liability gap', by offering an industry-leading, 40-year warranty[1] that gives complete peace of mind to specifiers, contractors, and ultimately, the building owner.

Incorrect specification, or the substitution of quality fasteners with cheaper alternatives, increase the risk of the envelope or its sub-systems failing. In turn, this decreases the whole-life value of the building itself and introduces unnecessary risk.

Not all fasteners are created equal
For these reasons, Fixfast is committed to helping architects and specifiers choose the right fastener for the right application. So, in addition to producing fasteners of only the highest quality, we have created this Specification Guide to explain the basic principles of fastener performance and application requirements.

[1] Not all products or building applications covered. In line with BS 5427 (Code of practice for the use of profiled sheeting and cladding, section 5.9.2 Fasteners), the fastener material should be able to resist corrosion for a period comparable to the functional life of the sheeting.

Regulations and standards

For UK construction projects, there is a range of regulations and standards that apply to the proper selection and use of fasteners. The most relevant of these are listed below for reference, although we encourage specifiers to contact our Technical Team with any questions about the specific compliance requirements of individual projects. Key to the correct specification of appropriate fasteners is the availability of basic data to allow accurate load calculations.

Building Regulations
Practical guidance for achieving compliance with the Building Regulations is outlined in a series of 'Approved Documents' published by the Ministry of Housing, Communities and Local Government.

Approved Documents Part A
'Structural Safety' is the most relevant in this series as it concerns fasteners. The following sections are particularly noteworthy:

- Section 1 – Codes, standards and references for all building types
- Section 2A – Basic requirements for stability
- Section 3 – Wall cladding
- Section 4 – Roof covering

British Standards
British Standards are not enforced by law, but they are recognised as best practice and may be referenced in any legal case resulting from an accident or building failure. As such, the recommendations they contain should be followed. The following British Standards are relevant to the specification and use of fasteners:

- BS 8539:2012 – Selection and installation of post-installed anchors in concrete and masonry
- BS EN 9223:2012 – Corrosion of metals and alloys – Corrosivity of atmospheres – Classification, determination and estimation
- BS 5080-1:1993 – Structural Fixings in concrete and masonry. Method of test for tensile loading
- BS 5080-2:1986 – Structural Fixings in concrete and masonry. Method for determination of resistance to loading in shear
- BS EN 795:2012 – Protection against falls from a height – Anchor devices – Requirements and testing
- BS 7883:2005 – Design, selection, installation, use and maintenance of anchor devices conforming to BS EN795
- BS 5427:2016+A1:2017 – Use of profiled sheet for roof and wall cladding on buildings
- BS 7543:2016 – Guide to durability of buildings and building elements, products and components

European Standards
In 2010, the former British Standards relating to structural design were withdrawn and replaced with the UK versions of the European Standards for Structural Engineering, collectively known as 'Eurocodes'. The Eurocodes are recognised as the major European Standards concerning construction.

Eurocodes are a series of 10 European Technical Standards that provide a common approach to the structural design of buildings and other civil engineering works. Eurocodes are intended to help make European companies more competitive and increase safety in the construction industry.

While Brexit will change the UK's regulatory landscape, the British Standards Institute (BSI) is committed to remaining a full member of CEN (the European Committee for Standardisation) and advocates the continuing development of the Eurocodes as the basis for structural engineering in the UK.

For the purposes to which fasteners are used, the relevant Eurocodes are:

- BS EN 1990: Eurocodes – Basis of Structural Design
- BS EN 1992-4: Eurocodes 2 – Design of fastenings for use in concrete

- BS EN 1993: Eurocodes 3 – Design of Steel Structures
- BS EN 1993: Eurocodes 5 – Design of Timber Structures
- BS EN 1993: Eurocodes 9 – Design of Aluminium Structures

CE Marking

European in origin, the CE marking system is naturally embedded throughout the Eurocodes, and the technical aspects of CE marking and European Standards likewise draw on the Eurocodes.

The European system of CE Marking is the Europe-wide method of product certification, and it has been adopted into UK legislation in The Construction Products Regulations 2013, making it compulsory in the UK by law.

Although Brexit has raised challenges to ongoing use of CE Marking in the UK, many authorities are advocating that we should retain this ongoing as the system is now widely regarded and understood in the UK. At time of writing this has not been finalised either way.

ETA – European Technical Assessments

ETAs are the only pan-European means by which construction fasteners are independently assessed and compared. ETAs are awarded following comprehensive testing of fasteners in a wide range of site conditions. The following ETAs are relevant to the specification and use of fasteners:

- ETAG 001 – Metal anchors for use in concrete – Parts 1 – 5
- ETAG 001 – Metal anchors for use in concrete – Part 6
- ETAG 006 – Systems of mechanically fastened flexible roof membranes
- ETAG 014 – Plastic anchors for fixing of external thermal insulation composite systems with rendering
- ETAG 020 – Plastic anchors for multiple use in concrete or masonry for non-structural applications
- ETAG 029 – Metal injection anchors for use in masonry
- TR20 – Evaluation of Anchorages in Concrete concerning Resistance to Fire
- TR29 – Design of bonded anchors

Currently, under the Construction Products Regulation, product performance is declared against the requirements of the relevant harmonised standard(s); and the Construction Products Regulation provides an optional route for manufacturers to affix a marking to products that are not fully covered by a harmonised standard.

This is by applying for a technical assessment of their product based on a European Assessment Document (EAD). European Assessment Documents are devised by the group of technical assessment bodies known as the European Organisation for Technical Assessment (EOTA). Such products are then affixed with CE marking.

Essential Principles
Structural perfomance and durability

The structural performance and durability of a fastener can be significantly compromised by poor installation – e.g. drill holes not being cleaned or over-tightening of the fastener. However, while proper installation is important in protecting the expected durability and performance of fasteners, this guidance focuses on considerations most relevant to specifiers at the point of fastener selection. This section therefore explores the structural performance and durability of fasteners in terms of:

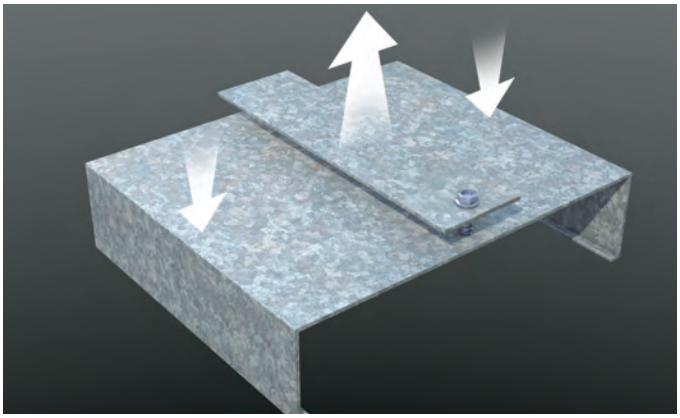
i) How fasteners need to perform – pull-out, pull-through, and shearing performance
ii) How fastener performance is compromised – understanding corrosion
iii) Ensuring fastener performance – metal types and grades
iv) Performance over time – design life requirements

Project:
First Street Manchester

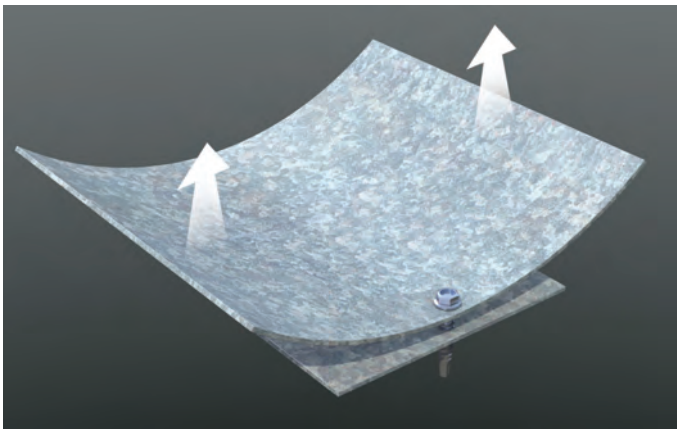
Products Used:
DrillFast® Stainless, DrillFast® Lacquered

i) How fasteners need to perform

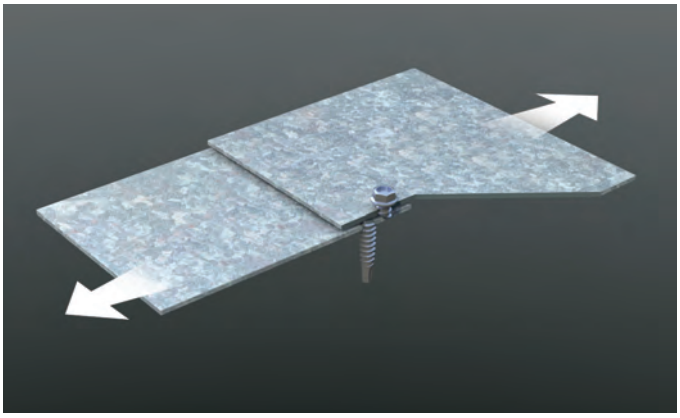
The fundamental job of a fastener is to securely connect one type of material to another. It must therefore be capable of withstanding the range of expected loading types for its given application. The three principal performance requirements for fasteners are:



Pullout resistance
The pull-out performance of a fastener describes its ability to withstand tensile loadings – i.e. its resistance to being 'pulled out' from the material it is supporting. These materials, or substrates, vary hugely in their differing resistance to pull-out, so the correct fastener should be selected to ensure its threaded connection remains intact.



Pull-through resistance
Pullover is the other tensile loading fasteners are subjected to. This describes the fastener's ability to resist a sheet material failing by being pulled over the head of the fastener.
The design and size of the fastener head and washer will determine its pullover resistance as does the material it's being fixed to.



Shear resistance
If the fastener is loaded in shear, failure of a connection may occur in either the fastener itself, in the steel sheets being connected or in the attachment of the fastener to the steel sheets. A fastener's shear resistance is particularly important in roofing and cladding applications where brackets and structural systems are subject to high shear loadings.

ii) How fastener performance is compromised

Understanding corrosion

The durability of a fastener is most affected by its potential to corrode. Corrosion can be defined as the deterioration of materials (usually metals) by electrochemical interaction with their environment. Put simply, the levels of moisture, salts and pollution (caused by smoke, industry and engines) will determine the rate at which a corrosive metal deteriorates.

British Standard EN ISO 9223:2012 includes an annex that summarises a range of typical internal and external environments in terms of their corrosivity level. Although quite general, this summary is a useful starting point for understanding how different atmospheric conditions should inform fastener material specification.

Category	Corrosivity level	Typical environments - examples
C1	Very low	Internal heated buildings, with low humidity and insignificant pollution wholly unaffected by the external location - *e.g. offices, schools, and museums.*
Semi-interior	Low	The atmosphere and conditions within the building, sufficiently sealed and insulated from the external environment so they would normally be expected to be unaffected by it - *e.g. fasteners installed beneath external waterproofing membrane.* **This does not apply to C5 & swimming pool environments, where the relevant conditions take precedence.**
C2/C3	Low/Medium	Rural and urban areas with low to moderate levels of pollution, unheated buildings with potential condensation or air pollution, but within the limits set for human work without protection - *e.g. food-processing plants, laundries, dairies.*
C4	High	Highly humid and polluted industrial areas or an aggressive environment with high frequency of condensation, between 2km and 10km from the sea and coastal regions - e.*g. wind-blown salt spray and atmospheres containing chlorides.*
C5	Very high	Marine areas up to 2km from the sea containing chlorides and very high levels of salinity, including highly polluted industrial areas near permanent condensation (outside the splash zone).
Swimming pools & chemical plants	Extremely high	Swimming pool areas or chemical plants that are exposed to chlorine vapour.

Note – This table is a Fixfast summary of the corrosion classes set out in BS EN ISO 9223:2012

Corrosion can affect either the head or shank of a fastener, or both:

A corroded head compromises the pull-through performance of the fastener, creates potential for leakage, and damages aesthetics through staining.

A corroded shank compromises the pull-out and shear performance of the fastener. This represents a major safety risk as the shank is often hidden within the building's structure, so if unidentified, could lead to complete failure of the system it is supporting.

iii) Ensuring fastener performance - metal types and grades

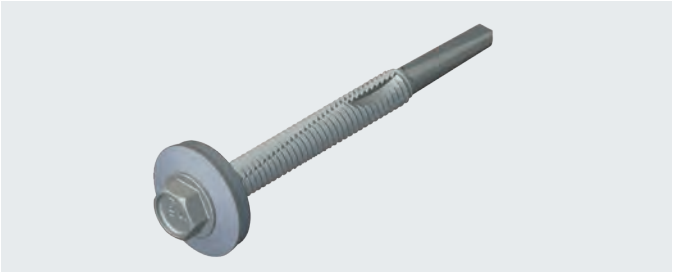
There are principally two types of steel fasteners; carbon steel (coated) and stainless steel (of various grades). Both of these materials have different levels of corrosion resistance and durability, depending on how they are used and the environment they are used in.

Carbon steel

Unprotected carbon steel fasteners will rapidly corrode when exposed to humidity and polluted environments, so tend to be surface coated. A coating is added to improve the durability of the fastener. In low-corrosion risk environments, the useful life of a carbon-coated fastener can be further extended with the addition of a moulded plastic head.

Stainless steel

Stainless steel does not stain, corrode or rust as easily as ordinary steel. Fasteners manufactured in stainless steel provide improved durability and corrosion resistance, and are available in various grades.



The grades of stainless steel are determined by their alloy content – predominantly chromium, nickel and molybdenum:

Chromium

- All stainless steels share a minimum percentage of 10.5% chromium
- The chromium reacts with oxygen to form a film of chromium oxide on the surface of the steel at a molecular level
- This passive film prevents surface corrosion and blocks corrosion from spreading into the metal's internal structure

Nickel

- When nickel is added to stainless steel in sufficient amounts the crystal structure changes to 'austenite'
- The basic composition of austenitic stainless steels is 18% chromium and 8% nickel
- This enhances corrosion resistance and modifies the structure from ferritic to austenitic

Molybdenum

- The addition of molybdenum gives increased corrosion resistance in offshore environments
- It also improves the durability of the stainless steel when exposed to chloride-containing solutions

With excellent corrosion resistance, austenitic grades are the most commonly used stainless steels, accounting for more than 70% of Fixfast's production, and used in all our structural stainless steel fasteners.

Although there are over 200 grades of stainless steel, stainless steel fasteners typically fall into three categories:

A2 stainless (or grade 304)

- An austenitic stainless steel containing 18% chromium and 8% nickel
- A particularly common grade due to its corrosion resistance, versatility, high hardness level and low levels of distortion

A4 stainless (or grade 316)

- An austenitic stainless steel containing 18% chromium, 8% nickel and 3% molybdenum
- Suitable for all the situations as A2 but has the added advantage of being suitable for marine solutions (often called Marine Grade stainless steel)

HCR stainless (or grade 1.4529)

- Also known as Super Austenitic Stainless Steel, and with a molybdenum content of 6-7%, this is the highest of all stainless, austenitic, high-grade steels
- This is one of only four grades of stainless steel suitable for swimming pools or other environments containing chlorine
- It offers exceptionally good resistance to chlorine-induced stress corrosion and to local signs of corrosion such as pitting or crevice corrosion

iv) Performance over time - design life requirements

British Standard 7543:2015 states that fasteners should not be considered as either 'replaceable' or 'maintainable', so should be selected on the basis that the fastener specification will be appropriate based on the intended lifespan of the building system or substrate in which they are being used.

The life expectancy of a roof or cladding system largely depends on local weather conditions, building design, material quality, and adequate maintenance. Hot climates and areas that experience severe weather, such as hail or hurricanes may also experience a shorter-than-normal lifespan overall or may incur isolated damage.

Therefore, the life expectancy of specific fasteners is very difficult to estimate as they too are affected by the same environmental conditions as the rest of the roofing or cladding system.

This should not however be confused with the warranty periods a manufacturer would be prepared to offer on a product.

The table below shows an indication provided by the NFRC for the expected lifespan of a fastener. This can be used as a guide when specifying the fasteners needed on a specific project.

Table 7.1: Recommended fastener material to suit EN 12944 exposure categories

		Years / Environment						
		Indoor no environmental stress	Rural or very low exposure	Urban & industrial light salinity	Coastal & industrial moderate salinity	Severe industrial environmental pollution	Severe marine environmental pollution	Aggressive chemical plants e.g. swimming pools
Corrosivity Category		**C1**	**C2**	**C3**	**C4**	**C5 - i**	**C5 - M**	**-**
Fastener Material	Stainless Steel Grade EN1.4547 or EN1.4529							✪ 35(25)
	Stainless Steel Grade 316 (EN1.4401)	✪ 60(40)	✪ 60(40)	✪ 50(40)	✪ 35(25)	✪ 30(20)	✪ 30(20)	✖
	Stainless Steel Grade 304 (EN1.4301)	✪ 50(25)	✪ 40(25)	✪ 35(25)	✔	✔	✖	✖
	Coating on Carbon Steel	✪ 40(10)	✪ 20(10)	✔	✖	✖	✖	✖

✪ Recommended ✔ Requires approval ✖ Unsuitable

BS ES 12944 gives guidance on various environmental exposures and associated corrosion risks.

There may be times and locations where the exposure category is higher than expected. For example a lighting column located by an elevated motorway, might be considered to be category C3, but when subjected to local conditions such as winter salt spray, might in fact be exposed to category C5-M.

The table above is reproduced from Table 7.1 in Part 7 of Profiled sheet roofing and cladding – The NFRC guide to design best practice (5th Edition) with permission from the National Federation of Roofing Contractors.

Project:
Minsthorpe Leisure Centre

Products Used:
TapFast® HCR, DrillFast® Stainless

Essential Principles
Weather perfomance

Beyond structural loads, there are a number of environmental factors that can impact the long-term performance of a fastener. The ability of the fastener to endure the weather will determine its own lifespan, but also contribute to the overall environmental performance of the building and its achievement of sustainability targets.

Project:
First Street Manchester

Products Used:
DrillFast® Stainless, DrillFast® Lacquered

The building's environment and use

Building projects in the UK are subject to a wide range of atmospheric conditions. Our warm temperate climate means potential exposure to wind, rain, and the sun - all year round. For fasteners, these factors can translate into additional and sudden increases in loading, water ingress and corrosive conditions.

Alongside the natural climate, the atmospheric conditions of a building's geographic location should also be considered when specifying fasteners:

External environment	Characteristics
Urban	Densely populated areas with high levels of atmospheric pollution (sulphur dioxide, nitrogen dioxide, and other particle matter) – e.g. large towns and cities
Rural	Less populated areas with low levels of atmospheric pollution – e.g. villages and small towns
Industrial	Areas with a concentration of industrial plants and with high levels of atmospheric pollution (sulphur dioxide, nitrogen dioxide, various acids and chlorine)
Coastal	Areas that are between 2km and 10km from the sea, with moderate levels of sodium chloride
Marine	Areas within 2km of the sea, with high levels of sodium chloride

When establishing the desired performance of a fastener, it is important to consider both the external and internal environment of its application. The majority of usage scenarios for UK buildings do not add to corrosion risk, provided adequate insulation and vapour control have been designed into their fabric.

There are however some industrial building uses that create aggressive atmospheric conditions and therefore increase the risk of corrosion to fasteners. Industrial facilities where machinery or processes create moisture and polluting emissions will add to the corrosive risk of the internal environment, so higher grade fasteners should be specified.

Note – Indoor swimming pools have been identified as requiring the highest possible grade of stainless steel fasteners (i.e. HCR stainless or grade 1.4529). The fasteners, nuts, bolts and metal ropes typically found in pool halls are exposed to very high levels of condensation and chlorine-rich atmospheres. These conditions mean fasteners in such environments are subject to Stress Corrosion Cracking – a form of corrosion that can lead to sudden and catastrophic failure of structures.

Airtightness

A fastener that isn't airtight will compromise the overall thermal performance of the building and have a negative effect on its ability to achieve U-values – and therefore, reach sustainability targets. Just as careful consideration is given to the building's insulation, due care is also needed in terms of fastener selection.

Changes to the Approved Documents for Part L of the Building Regulations, The Conservation of Fuel & Power, made it incumbent on specifiers to apply a whole-building calculation model in determining compliance with the EU Energy Performance of Buildings Directive (EPBD).

In recent years, the thermal performance of insulation material has advanced greatly, with only marginal incremental improvements now possible. As a result, building designers are turning to airtightness as the most economical way of improving the efficiency of the building envelope. Upon completion, many new buildings have to be physically tested for air leakage and faults rectified.

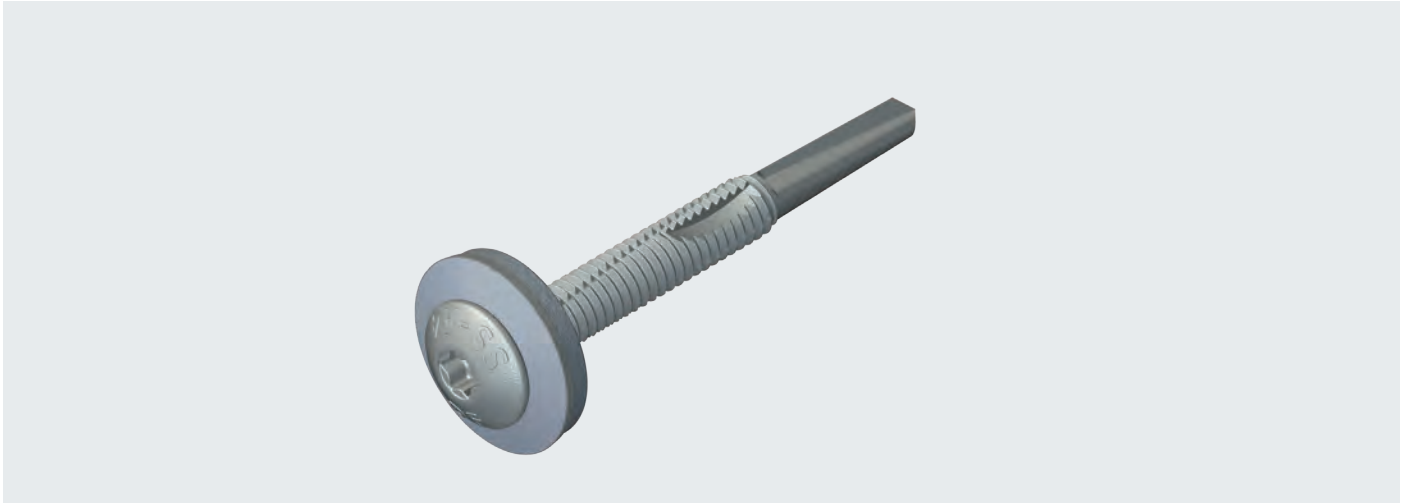
Key to achieving airtightness is the ability of the fastener to re-seal any holes made in the building envelope, thereby reducing air leakage.

Exposed fasteners should therefore be used with a suitable EPDM (ethylene-propylene-diene-monomer) bonded washer that will match the design-life of the associated cladding or roofing system.

Like the fastener, this sealing element should withstand the mechanical forces it will be subjected to, but also resist the atmospheric temperatures, water, acids, alkalis and UV rays it will encounter in its service life.

On certain fasteners, a thread-free zone below the fastener head allows the clamping of the sealant down to sealing material. This compression of the sealant ensures an airtight-clamped barrier along the sheet or panel edges.

The thickness and hardness of the EPDM should be relative to the application, fastener type and washer diameter. The diameter of the washer can typically range from 10mm to 32mm, depending on the degree of expected exposure and the sheet material the fastener is fixing.



EPDM (ethylene-propylene-diene-monomer) bonded washer

Wind loads

Wind can put considerable force on a structure. The degree and impact of that force is determined by the location, height, size and shape of the building, whether the openings are large or small, the topography of the surrounding landscape and more.

Changes in wind speed can create sudden and significant increases in pressure on the building and its components. When combined with the internal air pressure, the result can either be a net positive wind pressure or a net suction. Both of these forces cause bending effects in any roof or wall cladding - increasing the risk of fastener failure, and ultimately, failure of the roof, cladding or rainscreen components.

For specifiers, understanding the potential wind loads inherent in a building design should be considered essential due diligence, with the need for robust calculations applying across most external applications - including façades & rainscreen, sheeting & cladding, and flat roofing.

British Standard EN 1991-1-4:2005 + Amendment 1:2010 is part of the Eurocode series and the European standard for wind actions on structures. It outlines how to measure the impact of natural winds on loaded areas of buildings. This is a complex calculation as it needs to account for a wide range of factors specific to the size, shape and location of the construction.

The UK, as a collection of relatively small islands, has higher wind speeds than the majority of mainland Europe. A 'national annexe', specific to the UK, ensures this factor is taken into account.

The Fixfast Technical Team is experienced in making these calculations and ready to help architects and specifiers with this important exercise.

Failure due to incorrect fastener specification

Project:
Exeter College, Oxford

Products Used:
DuraMet® Shingle Cleats, DrillFast® Stainless, Rivets

Essential Principles
Aesthetics

While designers are principally concerned with the function of fasteners, their form also plays a role in the aesthetics of a building.

Project:
Thames Valley Science Park

Products Used:
DrillFast® Stainless

Colour to match

Coloured cladding and rainscreen has seen a huge increase in popularity in the UK as new products on the market enable ever increasing design possibilities for architects. The façades of office, industrial and high-rise residential buildings have made the UK's constructed landscape more colourful than ever before.

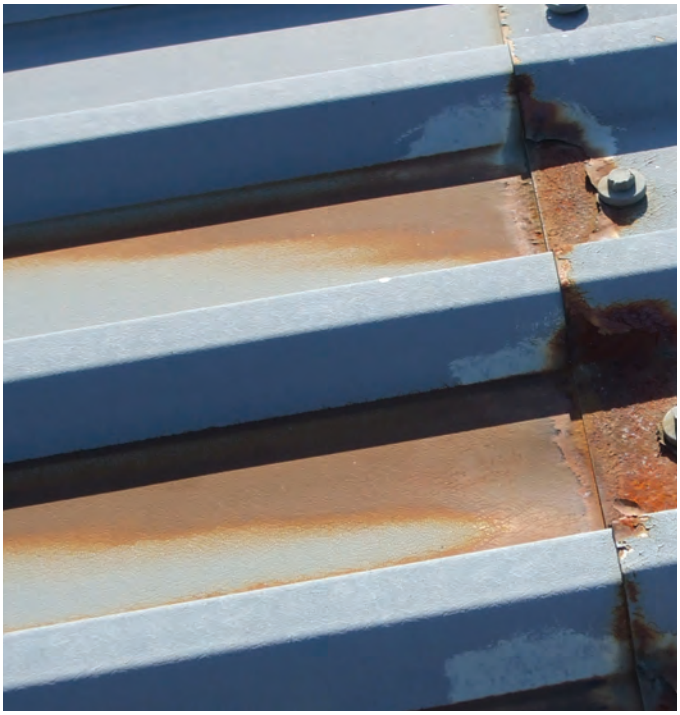
Where visible fasteners are used to fix these materials, they become an important design detail that can either complement or detract from the overall aesthetic of the building. For this reason, leading manufacturers now offer polyester powder-coated fasteners in a range of colours to support the design vision of architects. The baking process for powder coating prevents the paint from chipping during the installation process and resists abrasions after installation.

Fixfast can supply stainless steel fasteners that have lacquered or moulded heads in any RAL or BS colour.

For fasteners used on the external envelope, the type and grade of steel used is an important factor in protecting against corrosion and therefore preserving the useful life of the fixing.

Avoiding rust stains

But the specification of fastener material also impacts building aesthetics. By selecting carbon steel fasteners, an external façade is likely to be blighted by rust stains over time. Specifiers should therefore ensure A2 or A4 grade stainless steel fasteners are used to secure any external cladding systems.



Project:
Building 270, Cambridge

Products Used:
Facade support system, DrillFast® Stainless,
Insulation anchors, DrillFast® Lacquered, Rivets

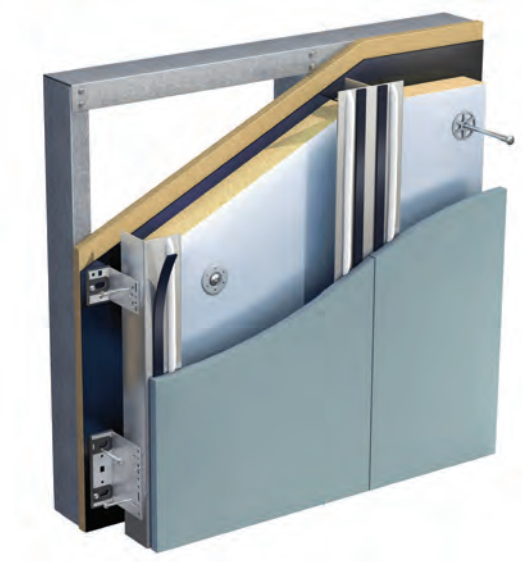
Project:
Friars Walk Shopping Centre, Newport

Products Used:
Stainless steel expanding anchors, Resin anchors, DrillFast® Lacquered, DrillFast® Stainless

Applications
Façade & Rainscreen

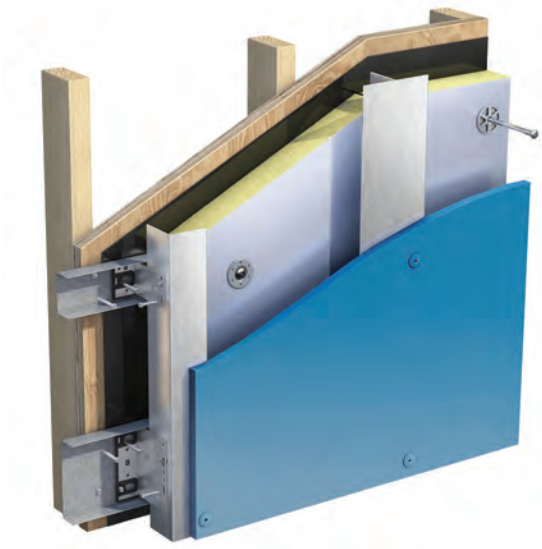
Fixfast fasteners for rainscreen applications are offered as part of a complete rainscreen support system for securely fixing rainscreens from substrate to skin.

Fixed through composite panel



Fixed to steel framing system

Fixed to masonry

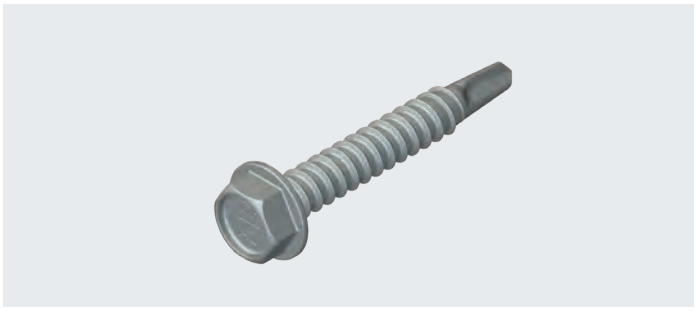


Fixed to timber

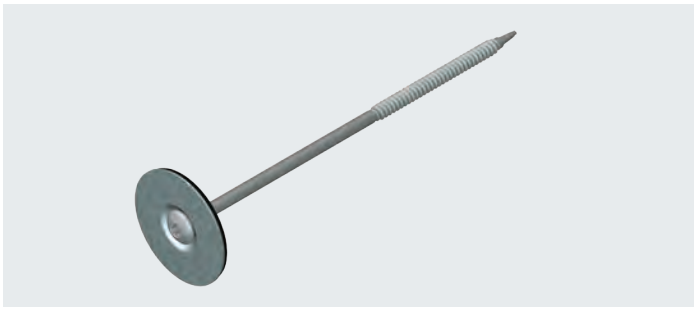
The Fixfast Engineered Rainscreen Support System

This fully engineered system is customised to meet the specific requirements of each installation, and includes all the components necessary to fix the specified rainscreen panel:

Substrate fixing

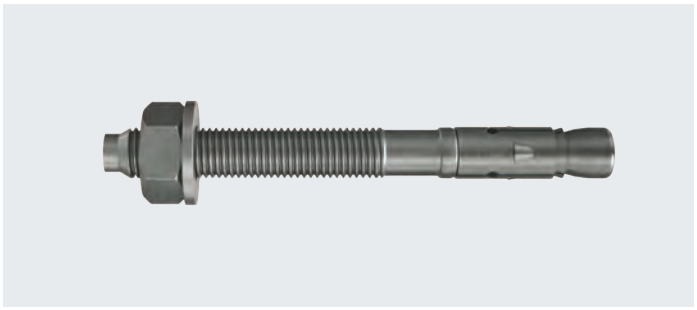


Fasteners for steel



Fasteners for composite panel

Fasteners for timber



Fasteners for masonry

Substructure Frame Fasteners

Single helping hand bracket

Double helping hand bracket

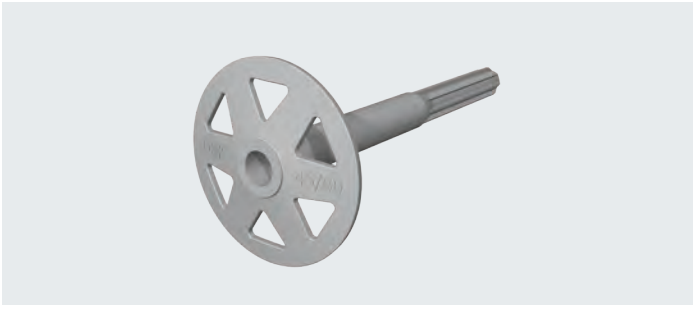
Substructure Structural aluminium framework

L bar

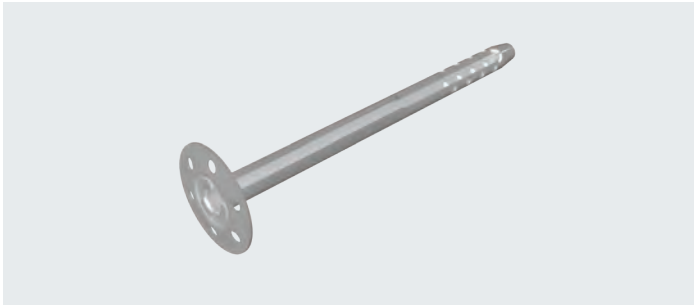
T bar

Substructure Essential components

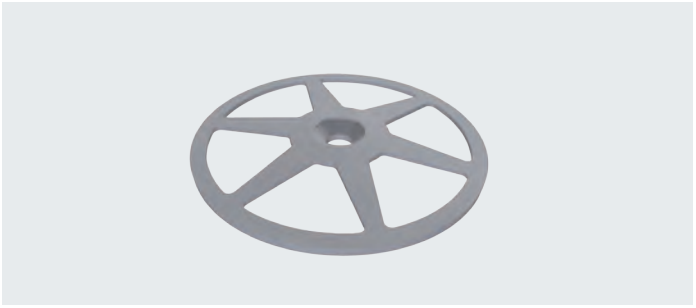
Polypropylene insulation anchor for soft insulation



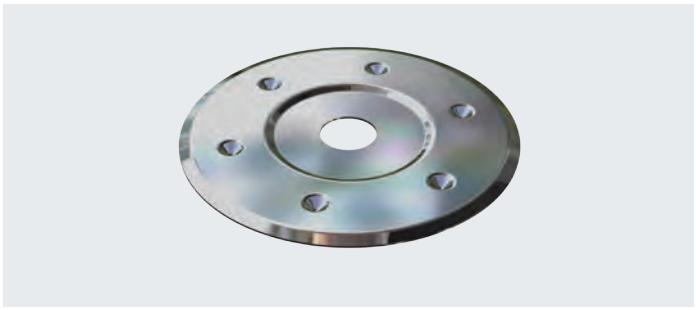
Polypropylene insulation anchor for rigid insulation



Metal insulation anchor

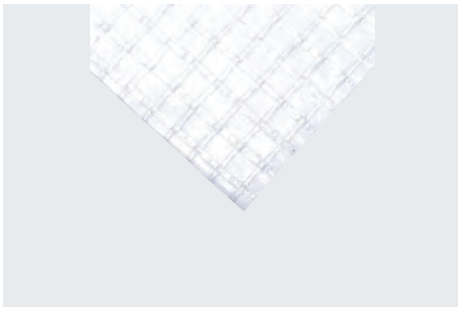


Polypropylene insulation plate

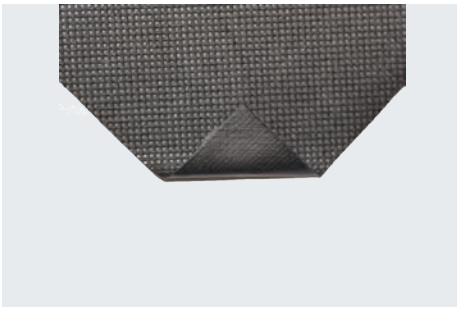


Metal insulation plate

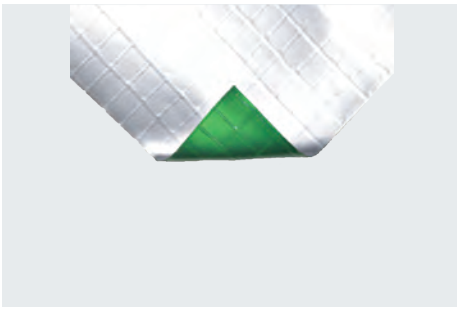
Substructure VCL and membranes



Air vapour control layer



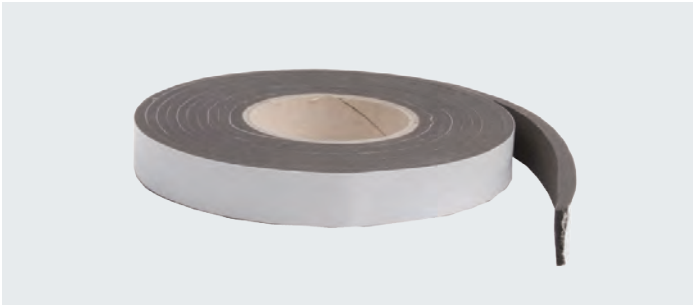
UV resistant membrane



Thermo reflective membrane

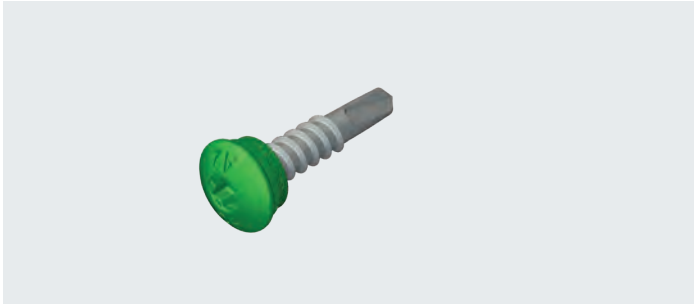
Substructure Ancillaries

Bubble Gasket



Expanding foam tape

Rainscreen fixing Face



Pan head lacquered fasteners

Large flange lacquered rivets

Rainscreen fixing Secret (recess)

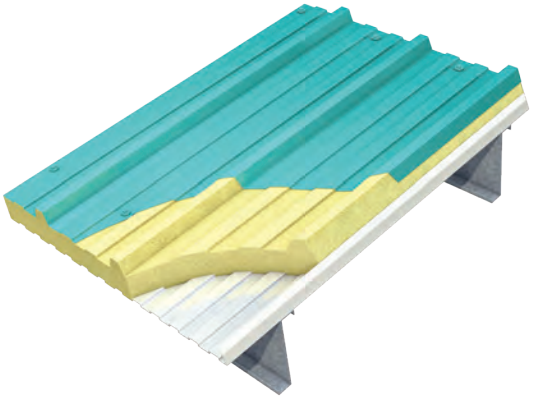
Panel adhesive system

Project:
Resorts World NEC Birmingham

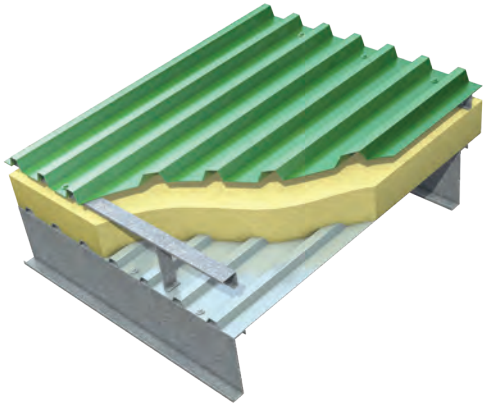
Products Used:
DrillFast® Stainless, DrillFast® Lacquered

Applications
Sheeting & Cladding

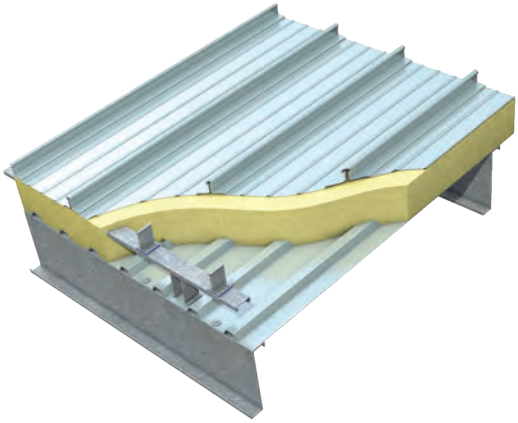
Fixfast's sheeting and cladding fastener systems are suitable for every type of build-up and application - in both internal and external environments.



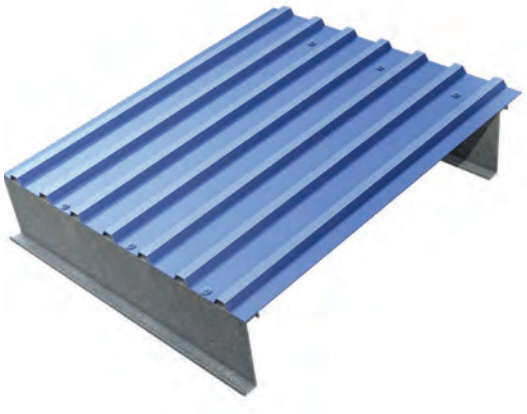
Composite panel



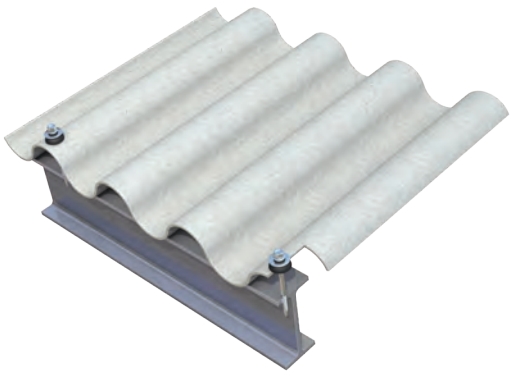
Built-up



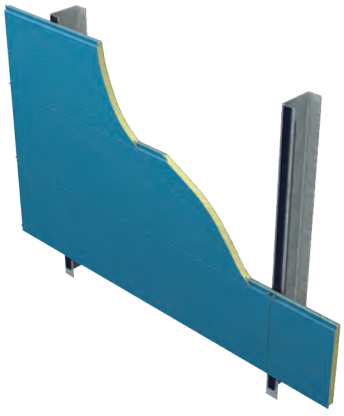
Standing seam



Single skin



Fibre cement

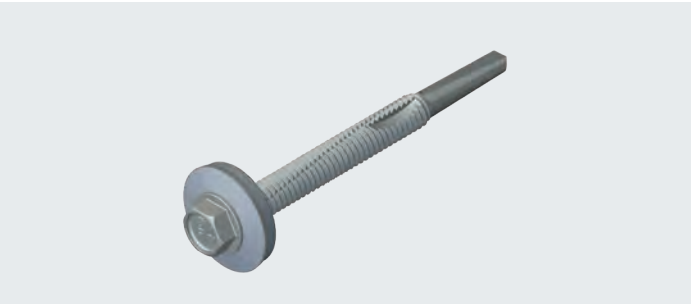


Architectural wall panel

Fixfast Fastener Systems

Every fastener system is designed in-house to exacting specifications. We work closely with OEMs to assess industry needs and design fasteners with a unique range of features to suit every environment, including marine, and for a wide range of specialist applications including cold stores and swimming pools. We have three principal fastener systems for sheeting and cladding applications:

DrillFast® self-drilling fasteners



- Coating for corrosion resistance
- Purpose-designed for easy and effective installation
- Stringent quality control for consistent reliability
- Optimized thread and point geometry for ultimate performance

MatchFast® self-drilling fasteners

- Precisely matched colour head
- A2 stainless steel for durability
- Purpose-designed for easy and effective installation
- Stringent quality control for consistent reliability

TapFast® self-tapping fasteners

- HCR High Corrosion Resistance (high molybdenum content)
- Proven resistance against stress corrosion cracking
- Approved material according to BS EN ISO 3506-4:2009 Annex C
- Specifically designed for use in safety critical structural applications

With one of the widest ranges of high grade A2, A4 and HCR stainless steel fasteners available on the market, Fixfast offers sheeting and cladding fastener systems that are suitable for use in all BS EN 9223:2012 corrosivity classes and achieve consistently high pull-out and shear values.

Project:
The Collective Old Oak

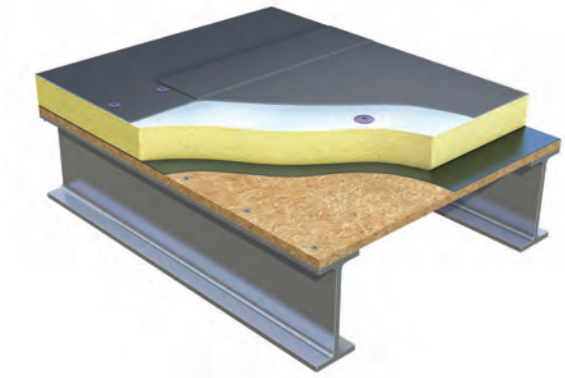
Products Used:
DrillFast® Lacquered

Project:
Ashford Outlet Shopping Centre

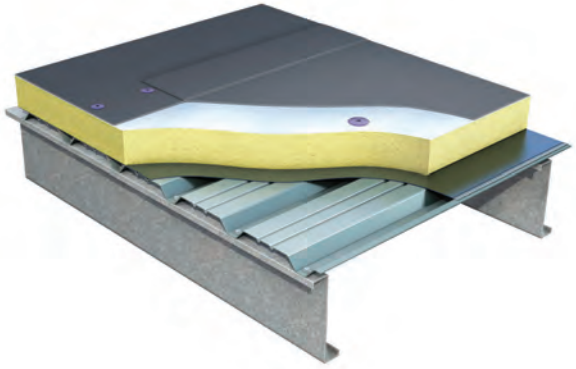
Products Used:
SureFast® flat roofing fasteners and tubes, DrillFast® Lacquered

Applications
Flat roofing

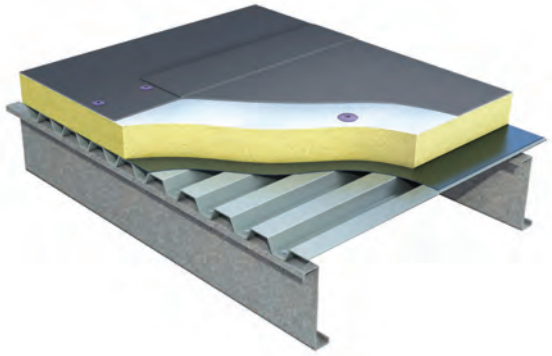
There are a variety of deck substrates in flat roofing construction. Whether fastening membrane or insulation to steel, aluminium, concrete or timber decks, we believe mechanical fastening is often the best option for a sure fix on a flat roof.



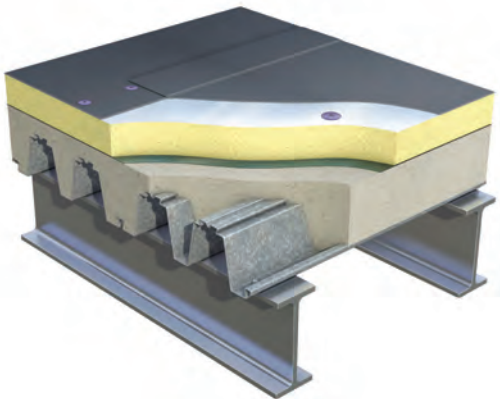
Timber deck



Steel deck



Aluminium deck



Concrete deck

The SureFast® mechanical fastening system

By using fasteners, labour costs are generally lower - especially where a tapered insulation build-up is being specified. Using the mechanically fixed system removes the need for hot works. And unlike adhesives, a mechanically-fastened roof can be installed in any weather. The SureFast® fastener system is a combination of a high-quality polypropylene tube washer, a SureFast® fastener or pressure plate and, if required, a termination bar:

The Fixfast Technical Team can provide wind load calculations and recommended fastener densities for the corner, perimeter and field zones for specific sites and buildings.

Part 1A - SureFast® tubes

Fixfast has designed a range of tube washers for both insulation and membrane attachment with a range of sizes to suit different thicknesses of insulation while also overcoming the cold-bridging effect of mechanical fastenings.

Part 1B – SureFast® pressure plates

For applications where SureFast® tubes cannot be used, Fixfast manufactures a range of pressure plates for insulation and membrane attachment to compliment the complete fastener range.

Part 2 – SureFast® fasteners

Fixfast has developed fasteners to suit most substrate applications. Careful design and specification of drillpoint, thread formation and other features ensure that the fastener will perform as specified. The range includes a variety of Carbon, Stainless A4 and HCR steel fasteners.

Part 3 – SureFast® termination bars

Where required, four profiles of termination bar are available covering the vast majority of applications. Typical applications include termination of membrane at parapet walls or penetrations.

By working closely with roof system manufacturers, and by understanding specifier needs, the SureFast® fastener system has been developed to provide simple, speedy and thermally efficient fastener solutions.

Project:
Battle of Britain Memorial, Folkestone

Products Used:
SureFast® tubes and fasteners

Fastener specification
The questions to ask

Specifiers of fasteners for the functional building envelope need to consider the following questions:

1. Does the specified fastener take into account the building use, its internal and external environment, the risk of corrosion, and its expected design life?
2. Will the fastener specification be easily understood by the contractor and installer?
3. Does the specification allow for competitive tender and clearly define the performance requirements of the fasteners?
4. Does the specification limit the potential for substitution with an inferior product?
5. Do the system warranties of associated systems comprehensively cover the fastener detail and provide sufficient recompense should the fastener fail (not merely replacement of the fasteners)?

Here to help

Choosing the correct fastener is crucial to the success and longevity of any construction project. While only a small detail, the consequences of a structural failure to the building owner, occupier, and the public could be huge.

Fixfast has over 40 years' experience in the design, manufacture and supply of high-quality fasteners for the building envelope. Our Technical Team is ready to help architects with the responsible specification of fasteners - a critical component of every construction project.

Contact our Technical Team today on:

T: 0800 059 0955
or
E: specsupport@fixfast.com

Project:
Mercedes Benz Dealership
Dartford

Products Used:
MatchFast® Stainless
DrillFast® Lacquered

FIXFAST

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February 2020

Certificate number 10905
ISO 9001, ISO 14001
ISO 45001