

# Commercial buildings

Over time, the effects of weathering mean that even the most well designed buildings and commercial structures will degrade. As a result, they will require refurbishment in order to extend their design life or improve their appearance.



These problems are not just limited to older buildings and there are often structural challenges to overcome with new build projects. Whether it's down to design complexity, poor workmanship or other environmental factors, it's equally important to protect new structures in order to avoid a reduction in the anticipated service life.

## Ensuring structural integrity

Factors such as carbonation, water penetration, chemical attack, freeze/thaw cycling and chloride attack can all lead to significant deterioration of precast and in-situ concrete. This in turn can cause steel reinforcement to quickly corrode and compromise the overall structural integrity of the building.

The costly threat of structural issues such as this makes it essential to carry out periodic maintenance in order to guarantee the original design life of buildings and, above all, keep the people and contents within them safe.

## Solutions for today's structures

Our technical expertise lies in the concrete repair and protection of all types of buildings and structures. We have a vast range of specialist products designed to solve complex structural problems whilst causing the minimum of disruption during application.

The **Intercrete®** range includes structural repair mortars with exceptional high-build qualities, fast-setting repair solutions for heavily trafficked areas, and technically advanced cementitious coatings designed to reinstate low concrete cover. For a decorative finish, the **Intercrete 4890** series of weatherproof anti-carbonation coatings provides the ultimate protection against the ingress of carbon dioxide, oxygen and water.

**Intercrete** systems deliver reliable solutions to typical concrete repair problems. Structural integrity and the original design life can be restored, and the overall aesthetic appearance of ageing concrete structures can be significantly improved.

## New build and refurbishment

**Intercrete** products can be found on some of the world's most iconic buildings, and are trusted to perform by engineers and clients alike. They utilise state-of-the-art cementitious and polymer technology to provide many important benefits:

- Excellent low sag properties enabling high build application in vertical, horizontal and overhead situations
- Exceptionally high bond and tensile strength
- Low permeability to water, even at 10 bar negative pressure
- Quick to install and non-toxic when cured



Intercrete solutions provide versatile protection for buildings and commercial construction

# Concrete repair and protection challenges for buildings

Intercrete products have been used successfully for over 30 years to solve structural problems experienced by buildings and commercial construction.

## Refurbishment of carbonated concrete

**Problem:** Carbonation is a problem that causes localised corrosion of steel reinforcement, leading to spalling of the surrounding concrete cover. If left untreated, the design life of the structure can be severely compromised.



Intercrete 4800 can be applied up to 80mm thick in a single layer

**Solution:** Following surface preparation, any missing concrete can be reinstated using **Intercrete 4801**, a high build structural repair mortar. **Intercrete 4822** can then be applied to achieve a fair-faced finish. The complete structure is then treated with **Intercrete 4891**, a coating with outstanding anti-carbonation properties. This highly aesthetic coating also has excellent weathering and UV resistance and a serviceable life of at least 15 years.

## Rendering and profiling of concrete

**Problem:** Building movement and the effects of ageing can cause decorative cladding and rendering to crack and delaminate. Careful removal and replacement of the damaged areas is therefore essential.



Intercrete 4823 cures rapidly to produce a waterproof, fair-faced render

**Solution:** **Intercrete 4823**, a polymer modified, fibre reinforced cementitious render is perfect for achieving a high quality finish. It has low sag qualities, excellent tensile and impact strength and effectively protects against the ingress of moisture, gases and chlorides. Elsewhere, **Intercrete 4800**, a low density, high strength structural repair mortar can be used to reinstate and match the original concrete profile on detail areas such as lintels.

## Clear anti-carbonation protection

**Problem:** Harmful weathering can affect all types of buildings, and sometimes an anti-carbonation solution is required that will also enable the original surface appearance of the concrete substrate to be maintained.



Intercrete 4893 has an equivalent air layer resistance to CO<sub>2</sub> diffusion of 81m

**Solution:** Any minor defects can be repaired using **Intercrete 4822**, available in grey or white to match the parent concrete. **Intercrete 4893**, a transparent anti-carbonation coating can then be used to effectively prevent the ingress of chlorides, whilst also allowing the release of moisture from the substrate. **Intercrete 4893** is ideal for decorative concrete finishes, exposed aggregate panels and textured or coloured concrete.

## Reinstatement of soffits and balconies

**Problem:** Concrete soffits and balconies can decay badly over time, allowing water to seep through and cause corrosion. A highly decorative solution is required that also bonds effectively to the existing substrate.

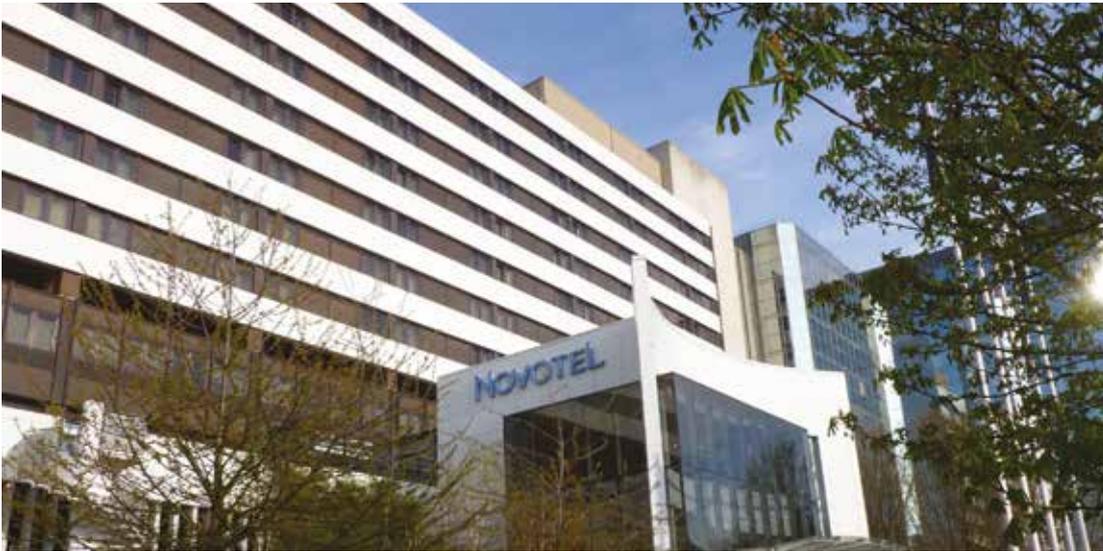


Intercrete 4892 is ideal for waterproofing surfaces with a rough, uneven finish

**Solution:** Following preparation, areas requiring concrete repair can be treated with **Intercrete 4871** and **Intercrete 4803** repair mortar. **Intercrete 4824**, a fine grade cementitious fairing coat, can then be used to level out the surface of the balconies and soffits and provide an even surface. Following this, **Intercrete 4811** can be applied to seal the substrate prior to the application of one of the **Intercrete 4890** range of anti-carbonation coatings.

# Concrete weatherproofing

The Intercrete® 4890 series of weatherproof, anti-carbonation coatings provides outstanding protection against the ingress of carbon dioxide, oxygen and water, whilst allowing damp substrates to breathe without blistering.



**Reinforced concrete is not as durable as once anticipated and further protection is often necessary in order to achieve the desired design life. Drab concrete can also be revitalised using imaginative colour schemes to improve the aesthetics and add value to the building.**

## Market leading performance

With water-based, high build formulations, **Intercrete 4890** coatings are ultra-fast drying, enabling two coat applications on the same day even in inclement weather conditions. They also incorporate an active in-film fungicide which inhibits the growth of mould, fungi and lichens and with an elastomeric formulation, are able to cover static cracks and bridge dynamic cracks.

Able to withstand extremes of temperature without deterioration, **Intercrete 4890** coatings remain unaffected by exposure to direct sunlight, even in the most aggressive of climates. Designed to last for

up to 15 years, **Intercrete 4890** coatings considerably extend the life expectancy of new, existing and repaired concrete and masonry structures. They are available in a variety of attractive colours and the product range also includes **Intercrete 4893**, a transparent, water-based anti-carbonation coating which demonstrates exceptional resistance to carbon dioxide diffusion.

## The highest quality products

**Intercrete 4890** coatings are environmentally friendly products, formulated with minimal VOC contents and the latest encapsulated biocide technology. They are manufactured in accordance with the strictest international quality, environmental and safety standards, including ISO 9001, ISO 14001 and OHSAS 18001.

All **Intercrete** products are also backed by independent testing and accreditation making them the preferred choice globally for their unparalleled reliability and durability.

## Class-leading results

The **Intercrete 4890** series of products offer unique characteristics, but also share a number of key benefits:

- Outstanding protection against carbonation and the effects of weathering
- Long-lasting, reliable performance
- Fast-drying and simple application
- Environmentally friendly formulations
- Suitable for a range of building substrates
- Manufactured in the UK in accordance with BS EN 9001 and BS EN 14001 standards



Intercrete 4890 coatings are used to protect buildings and structures all around the world

# Intercrete 4890 series specification options



The Intercrete 4890 product family offers a number of solutions to meet specific project requirements;

## Intercrete 4890

A technically advanced, minimal VOC, water-based decorative coating which protects against carbonation and water ingress without entrapping moisture. It is fast drying for year round use externally and offers excellent fire performance characteristics for internal use. **Intercrete 4890** prevents water ingress and resists the growth of mould and fungi, making it the ideal low cost coating for both new build and maintenance projects.



Intercrete 4890 has a matt finish and is available in a range of colours

## Intercrete 4891

A high performance, water based, elastomeric, high build decorative coating which provides protection against carbonation and water ingress, yet allows damp substrates to breathe. **Intercrete 4891** is ultra-fast drying which enables two coat applications to take place on the same day and facilitates year round usage. It resists the growth of mould and fungi and is ideal both for new construction and refurbishment projects.



Intercrete 4891 features advanced polymer resin for excellent adhesion

## Intercrete 4892

A highly engineered, acrylic-based decorative wall coating with an attractive textured finish. Due to its high build, textured composition, **Intercrete 4892** is ideal for use on buildings and structures that have a rough, uneven finish with surface defects and imperfections. This product will effectively disguise any defects and provide walls with a uniform appearance, vastly improving the aesthetic appearance of buildings.



Intercrete 4892 has encapsulated in-film biocides to resist mould and lichens

## Intercrete 4893

A transparent, elastomeric coating, ideal for maintaining the surface appearance of the concrete substrate, whilst still providing excellent anti-carbonation and weatherproof protection. Designed for application to external walls and facades, **Intercrete 4893** is ideal for decorative concrete finishes, exposed aggregate panels, textured concrete, heritage applications, coloured concrete and other cementitious substrates.



Intercrete 4893 has a clear, satin gloss finish that sheds dirt and retains clarity

## Performance characteristics

**Intercrete 4890** coatings offer class-leading performance and deliver long-term weatherproofing protection:

Product name	Coverage rate (2 coats)	Curing time (through cure)	Equivalent air layer thickness		Artificial weathering
			Permeability to CO <sub>2</sub>	Water vapour transmission	
Intercrete 4890	0.2 litres/m <sup>2</sup> /coat	2-24 hours	547m	1.09m	20,000 hours
Intercrete 4891	0.2 litres/m <sup>2</sup> /coat	2-24 hours	320m	0.48m	20,000 hours
Intercrete 4892	0.5 litres/m <sup>2</sup> /coat	6 hours @ 20°C	n/a	1.71m	12,500 hours
Intercrete 4893	0.2 litres/m <sup>2</sup> /coat	2-12 hours	83m	0.42m	2,500 hours

# New build construction

Defects not only affect older buildings and structures. New build construction schemes can also experience problems, caused by a variety of factors such as design complexity, variations to specification or simply poor workmanship.



The structural challenges facing new build projects are an important consideration for designers, engineers and contractors alike. Grout loss and damage when removing formwork can result in unacceptable blemishes and poor compaction causes honeycombing.

Concrete, often considered as an aesthetic finish in its own right, must meet the required standards if durability is to be assured. The Intercrete® range therefore includes all of the necessary reinstatement and finishing materials needed in new construction.

## Repairing the defects

Defects to concrete structures need to be rectified using materials that are visually and structurally compatible. We offer a range of materials to suit all applications from structural mortars for reinstating large areas of honeycombing to colour-matched, fine grade mortars for producing a fair-faced finish.

The **Intercrete** range also includes waterproof tie hole fillers and a range of high performance coatings to ensure that a watertight seal is achieved in basements and other water retaining structures.

## Reinstatement of cover

Inadequate concrete cover adversely affects the durability of reinforced concrete. Careless fixing of the formwork or incorrect use of spacers can lead to low cover. This undermines the protection of the steel reinforcement, ultimately leading to spalling of the concrete and expensive maintenance.

**Intercrete** cementitious coatings are engineered so that just a 2mm application provides equivalent protection to a minimum of 100mm of additional good quality concrete cover. Rapidly and easily applied by brush or spray, these high performance coatings offer unparalleled resistance to water, carbon dioxide and chlorides and never need replacing during the design life of the structure.

## Trusted Intercrete protection

There are many reasons why **Intercrete** products have become the preferred choice on new build construction:

- High quality repair and protection solutions for the entire building envelope
- CE marked in accordance with BS EN 1504
- Environmentally friendly formulations
- Proven technology with a 30 year international track record
- Manufactured in the UK in accordance with BS EN 9001 and BS EN 14001 standards



Intercrete products protect many of the world's most iconic new build projects.

# Typical problems and challenges in new construction

Whether it's waterproofing, reinstating inadequate cover or simply to fast-track the construction cycle, Intercrete has the ideal solution;

## Reinstating surface defects

**Problem:** Areas of honeycombing, blow-holes and surface voids caused by poor compaction or defects in the formwork placing resulting in grout loss. The surface requires filling to achieve the specified quality of finish.



Intercrete 4822 colours can be blended to match the shade of concrete

**Solution:** A fine, formed finish can be achieved with **Intercrete 4822**, applied using a simple bag-rubbing technique. Available in white and grey formulations, the shades can be blended to match the colour of the parent concrete, resulting in a uniform finish. If any areas need to be cut out, reinstatement can be easily achieved using **Intercrete 4800**, and minor surface defects can be filled using **Intercrete 4825** to give a super-fine finish.

## Low concrete cover

**Problem:** Incorrect positioning of shutters or reinforcement and spacers, as well as problems with compaction often results in low cover to the steel, which can compromise long-term durability and design life of the structure.



Intercrete 4841 exhibits excellent adhesion to both concrete and steel

**Solution:** **Intercrete 4822** or **Intercrete 4800** can be used to reinstate the profile of the concrete, whilst applying two 1mm coats of **Intercrete 4841** by brush or spray provides the equivalent protection to 100mm of good quality concrete cover. **Intercrete 4841** is also an effective barrier to chloride ions and is impermeable to water under 10 bar hydrostatic pressure, making it ideal for demanding applications.

## Waterproofing of tie holes

**Problem:** Tie holes left on removal of formwork in new construction must be filled to provide an integral, even finish. In water retaining structures the tie hole must also be made waterproof to prevent leakage.



Intercrete 4807 is a fast curing, high strength waterproofing solution

**Solution:** Voids can be filled with **Intercrete 4807**, a rapid setting, non-shrink repair mortar. The product has WRAS Approval and is totally waterproof, enabling it to be used in water tanks, even those containing potable water. **Intercrete 4807** can also be used to seal grout holes and voids around fixings in pre-cast elements. It is supplied as a single component system requiring only the addition of clean water to give a durable high strength mortar.

## Waterproofing concrete decks

**Problem:** New build projects need to waterproof and protect freshly cast, green concrete with environmentally friendly products in order to fast track the construction process and achieve significant cost and time savings.



Intercrete water-based coatings for concrete decks are engineered to last

**Solution:** The **Intercrete** range of water based cementitious coatings can be applied to green concrete and are totally waterproof even under a 100m head of water. Incorporating unique epoxy and polymer technology, the **Intercrete 4851** and **Intercrete 4840** systems hydrate rapidly to form highly durable coatings with outstanding abrasion and chemical resistance that are designed to last the life of the structure.