

Technical Bulletin 7

Annual Inspection and Maintenance



Safety / Working at heights

Inspection and maintenance of insulated panels often requires working at heights. Working at heights is dangerous and should only be done by competent persons who have assessed the risks. Ensure that all relevant safety precautions have been met before commencing any work. It is the responsibility of those doing the work and those who control the workplace to ensure that any inspection or maintenance is done safely

A. General Maintenance

Parts of a building on which Kingspan insulated panels have been used need to be inspected and where necessary, cleaned regularly. If any defects are found in the coating they should be repaired immediately, in order to ensure long life and appearance of the cladding. This will ensure the best possible building cladding performance using Kingspan insulated panel systems.

Building owners should record details of building inspections and maintenance. This is an important part of the documentation of any building and is an integral part of the Kingspan-issued manufacturer warranties, to ensure maximum life for the insulated panels.

This inspection and maintenance regime is based upon good practice, and should be carried out annually (or more frequently as necessary) throughout the life of the building. Those items marked with asterisks should be checked not only at every inspection but also soon after the building is erected.

What to check for during an inspection is provided in Table 1. Where necessary specialists should be engaged for further advice or for managing repairs to the coating.

Table 1. Maintenance actions and recommendations

Actions for review	Recommendation Action
Blocked gutters* Blockage may cause overflow into a building.	Clean and wash out any blockage.
Build-up of debris* A build-up of material can accelerate corrosion activity.	Remove debris and wash the area as outlined in 'Washing' below.
Dirt retention in areas of cladding not washed naturally by rainwater , e.g. overhangs This affects the appearance of the building and could, if left, cause breakdown of the coating.	Wash the area as outlined in 'Washing' below.
Mould growth This rarely occurs but can arise in extreme conditions and affect the appearance.	Wash down and treat as described under 'Mould Growth'.
Local damage* Breakthrough of protective paint coating could cause corrosion of steel substrate.	Assess extent and type of damage. Action may involve: 1. Metal coating repairs to the affected area. 2. Over-painting of affected area. 3. Replacement of damaged sheets.

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<p>Drilling swarf, rivet stems and other fixing debris (that may have occurred during installation or subsequently by other trades)* These can rust and cause staining.</p>	Remove debris.
<p>Condition of fasteners Faulty or inappropriate fasteners can cause leakage, or rust staining on the surface of the cladding, or both.</p>	Replace faulty fasteners and any missing caps.
<p>Corrosion of cut edges Corrosion of cut edges at sheet overlaps and at overhangs can, if neglected, spread up the sheet.</p>	Treat as described under 'Treatment of Edge Corrosion'.
<p>Condition of colour coating Peeling of coating, uneven fading, blistering and cracking and local scratching are all signs of the need for repairs to the coating.</p>	Follow the painting instructions of the recommended paint suppliers.
<p>Gutter Membrane Membrane shows signs of peeling or blistering</p>	Contact Kingspan Customer Services
<p>Roof Structure – Building Movement Roof shows signs of sagging or being out of plane. Gutter shows signs of water ponding</p>	Contact the panel installer
<p>Check with building owner Has there been any additional plant or equipment added to the building envelope since commissioning of the building. Have there been any reported leaks? If so when, where and what was done.</p>	Check any onsite repairs or modifications. Contact the original panel installer if any work has been carried out by others so that they may review the work
<p>Check Plant and Equipment If there is a plant deck, check if the area under the deck is clean and clear of debris. Check that water may flow around any penetration and the penetration is in good condition. Check for exposed treated timbers or uncovered dissimilar metals (such as copper pipes)</p>	Contact the panel installer for penetrations Follow washing procedures Contact the Services supplier to cover pipes etc

B. Washing

Rainfall alone is often sufficient to keep exterior surfaces looking clean and bright. However, to achieve maximum life from the Kingspan product, it is important that any accumulation of dirt and debris which is not removed by normal rain washing is removed regularly by cleaning. This reduces the risk of accelerated corrosion activity.

In sea spray zones a roof will require at least annual washing.

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Ideally, walls should be washed at a minimum of 6 monthly and in coastal areas 3 monthly.

Wall areas not accessible by rainwater washing should be inspected and washed as necessary. Areas of cladding that lie beneath overhanging building details, such as those beneath gutters or eaves, are particularly susceptible to a build-up of contaminants from the environment. Such accumulations may hold water and pollutants which can lead to corrosion, as there is infrequent washing (by natural rainfall) to remove the natural build-up of contaminants.

Washing may be carried out with a hose and a soft bristle brush, using fresh water. In areas where heavy industrial deposits dull the surface, a solution of fresh water and household detergent or proprietary cleaner may be applied to ensure thorough cleaning. For household detergents, use a 10% solution; for proprietary cleaners, follow the manufacturer's recommendations. A thorough rinse with clean potable water must follow the washing process.

In summary, when cleaning, the following points should be noted:

- Stronger concentrations of cleaners other than those recommended can damage coating surfaces.
- Rinse thoroughly to remove all detergents after cleaning.
- Organic solvents and abrasive cleaners should be avoided in cleaning any coated surface. Caulking components, tar and similar substances may be gently removed with mineral spirits but always test a small area first and wash the surfaces thoroughly with potable water afterwards.
- Over-cleaning and/or repeated scrubbing is detrimental to the painted finish.

C. Mould Growth

A wide range of building materials can support the growth of fungi, which originate from spores in the atmosphere settling onto surfaces. Although most spores are washed off by rainfall, some may adhere to the surface and grow, especially if conditions for growth are favourable. For growth they require moisture, heat and nutrients. So damp areas around air conditioners, ridge capping or under/near shade trees, in wooded areas or marsh lands are just some examples of where this can occur. In these areas, mould can grow even on inert materials such as glass, bricks and painted surfaces.

Therefore, almost any building material surface can be subject to fungal attack, including: steel, glass, roof and wall tiles and most painted surfaces. Kingspan panels are no exception to this.

Mould growth can be removed by treatment with a formulated solution containing the following ingredients, by weight, which should be readily available from a local store or hardware / chemical supplier. It is recommended to refer to the manufacturer's health and safety information, before handling any of these chemicals.

Table 2. Dilution guidelines for a solution to treat mould growth

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Ingredient	% By Weight
Household detergent or proprietary cleaner	0.5
5% sodium hypochlorite solution	24.5
Potable Water	75

Before applying this mixture, wash down the coated surface first as outlined under the section on 'Washing' then apply the mixture to all surfaces using a low-pressure spray or brush. All surfaces should then be rinsed with cold potable water within twenty-four hours.

D. Repairs to Painted Surfaces

If the painted surface has suffered (only) minor damage, it may be better not to treat the surface of the Kingspan product if it has been only slightly scuffed or lightly scratched (even if scratched down to the metal coating (zinc or zinc/aluminium)).

Kingspan does not recommend the use of touch up paints and does not have any recommend method to remove paint overspray onto panel surfaces.

If the painted surface is scratched through to the steel substrate, repair can be achieved by applying a specialist coating (refer to paint supplier documentation), after cleaning and pre-treating the area with a zinc-rich primer. In this case it is important to ensure that the applied paint is not much wider than the original scratch. In order to achieve this, the paint should be applied with an artist's medium to fine paint brush.

Touch-up paints are not normally recommended as a repair option for minor superficial scratches. Touch-up paints are, of necessity, air drying, and over the years they will change colour differentially from the original stoved coating. For this reason, if they are used, then it is good practice to keep the applied area as small as possible.

E. Treatment of Edge Corrosion

Corrosion at the edges of the profiled steel cladding should be rectified using the following steps

1. Cut and remove, or abrade, any loose organic coating back to a firm point. For abrading, use abrasive based materials such as carborundum or pot scrubber or similar (not stainless steel or metal based).
2. Remove all white and red rust by abrading to bright, firm metal, ensuring that the surface is not polished. Thoroughly clean and dry these surfaces before applying any treatment which must be applied as directed by the recommended paint system manufacturer.
3. Coat the prepared areas with the relevant anti-corrosive primer recommended by the materials supplier.
4. When the first primer coat has dried, apply a further primer coat in a neat band to the prepared areas so that the primer extends beyond the prepared area, covering the original surface.
5. Apply a top coat to the dry, primed area.

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6. Always paint a small sample area first to verify colour match.

F. Over-painting

Surface preparation and over-painting of cladding should be carried out by specialist contractors using approved maintenance paints. Kingspan coil coating systems have been designed for easy over-painting. When over-painting is deemed necessary, the panels should be cleaned as explained under 'Washing' (above) and painted using a brush, roller or spray for the undercoat and finish system.

Paint systems are continually improving and specific advice should be sort from reputable paint suppliers however typically water based acrylic paints are used. In marine areas it may be necessary to choose a paint system with enhanced corrosion resistance.

Air drying paints will have different weathering characteristics to oven cured paints therefore avoid trying to colour match to any adjacent Kingspan panels.

G. Care

Colour coated metal sheets used on the roofs and facades of buildings are exposed to many kinds of pollution from the environment. These together with water and increasing amounts of UV radiation can have an effect on paint coatings. These impurities may also cause internal stress in the coating and subsequent degradation, for example blistering or cracking. The effects are worst on those areas of the building where impurities are not washed away by rainwater.

In addition a number of the impurities deposited from the environment can absorb water, which keeps the damaged area wet longer and as a consequence the oxidation process is active longer.

The effect of the impurities in the air is greatest when close to polluted industrial areas and coastal areas. Impurities stress the coatings and reduce their useful life, so the regular cleaning of wall and roof surfaces is an important part of the servicing and maintenance of coatings.

Long term contact with dissimilar metals (or run-off from dissimilar metals) should be avoided, where the dissimilar metals are in close proximity to Kingspan insulated panels. Metal salts are often very soluble, and can accelerate corrosion of the Kingspan panels.

H. Removal of Debris

Rainwater is usually sufficient to keep painted surfaces clean. Leaves from trees and other debris are not always washed away by the rainwater and so should be removed annually, or more often as necessary. The roof valleys and rainwater drainage system components, such as gutters and sumps should also be cleaned at least annually or as per Kingspan warranty requirements.

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I. Recommended Panel Repair Solutions

Standard recommended repair solutions for panels are, in summary

- **Minor scuffing.** Where the external coating has only been scuffed or lightly scratched, it is not necessary to treat the affected area.
- **Heavy scratches.** Where the external coating has been scratched down to the (steel) substrate, the affected areas may be treated with standard touch-up paint after surface cleaning and application of a zinc-rich primer.
- **Minor dents.** Where the external steel sheet of the panel has been dented and the external coating has not been scratched or damaged, it is not necessary to treat the affected area. For aesthetic reasons it may be necessary to have the affected area repaired by a specialist contractor.
- **Heavy dents/weather sheet tearing.** The affected areas can be repaired by specialist repair companies or the panel should be replaced.

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