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DATA DIGEST - PART 01 - LICHEN GROWTH ON SHEET SURFACE:

What is Lichen and how does it affect Onduline?
Where and when the air that we breathe is highly polluted, moss and lichen struggle to survive, but where the air is clean they will survive, accordingly as the clean air act takes effect the problem of Lichen on roof materials is increasing.
Lichen is one of the oldest life forms on earth. It consists of an algae and an fungi living symbiotically. The algae supplies the fungi with food and the fungi provides good shelter and moisture to the algae. All they need is sun and water. Algae have evolved to etch themselves onto rocks with the help of a weak organic acid. In doing so, they eroded enough rock to become a main contributor to the apparition of soil on the planet.

There is no issue with the erosion itself on a building, but the acidic releases will affect all natural and manmade roofing products including Onduline bituminous sheets, (Fig, 1) metals, Lead in particular, and are known to damage the galvanisation of steel components. In the case of Onduline left untreated Lichen can cause damage to the colour pigmentation and resin coating to the sheet causing degradation to the sheet structure, particularly in cases when moss is also allowed to build up in the corrugation bases which results in the high moisture content at this point and as a result softens and degrades the sheet structure and can reduce the service life of the roof covering, any Moss on the roof should should be removed with a stiff bristled brush and the area treated as required.

How do I treat the roof surface?
The surface can be cleaned using proprietary cleaning detergents ranging from patio type cleaners applied by hand (Fig 1, 2,) and rinsed off with clean water using a hose, we do not recommend the use of high pressure jet washers as they can damage the Onduline sheet surface.

Alternatively an algaecide based treatment can be applied to the lichen in accordance with the manufacturers instructions. Garden centres offer a range of products for this purpose and our testing has not indicated any detrimental effect on Onduline sheets although it would be advisable to test a trial area first. These treatments take time to act as the lichen forms a strong bond with the roof surface which takes time to weaken. Wet, dry and frosty changes in weather conditions will eventually clear the white patches left on roof surfaces.

Restoration of damaged surfaces.
We do not recommend additional treatment to the roof apart from regular cleaning of the sheet surface. Paints such as the bituminous types used to coat felted flat roofs can be applied to Onduline sheets, in accordance to the manufacturers instructures but as they are primarily designed to provide a solar reflective or increased fire resistant surface, they are often silver grey in colour. Should colour be an issue waterbased masonary paints can be applied, again in accordance with the manufacturers instructions. In both cases it is advisable to apply test areas to prove the effectiveness of the coating in service.
What is Moss and how does it affect Onduline?

Moss is a very simple plant form which does not have roots or means to collect or move water around inside its form. It therefore has to absorb the moisture directly from the roof surface, this is why it thrives in damp shady places, such as under tree cover or in gutters. There are in the region of 12,000 species of moss the most common on roofs is Bryophyte Andreaeaceae which grows in green humps, and has little lantern shaped spore capsules in place of flowers. As moss requires collected nutrients draining down the roof sheet in rainwater to exist, it is associated with wet conditions on north facing roofs, or shaded roofs under overhanging trees providing moist leaf mould on which moss thrives.

Generally whilst you find lichen growing on the exposed surfaces of roofs moss prefers damp sheltered areas. Gradually Moss feeding on nutrients present in the water draining down the roof will grow and in effect build a ‘dam’ in the sheet corrugations in order to retain more moisture.

Whilst Moss does not adversely affect the Onduline sheet structure directly, left unattended it creates the environment which could significantly reduce the service life of the Onduline sheets. It does this by retaining moisture in the corrugation bases which both ‘composts’ the leaf debris and also maintains a high moisture level at the base of the corrugations necessary for the moss to grow, whilst the peak of the corrugations dries in the sunlight exposure cycle. This conflict between damp and dry surfaces causes movement and restriction to ventilation. In time this will serve to soften and degrade the structure of the sheet causing it to lose strength being evident in sheet deformation and resultant accelerated ageing of the roof covering. Indeed in extreme cases the high moisture content can promote fungal attack to the sheet structure itself.

How do I treat the roof surface?

The solution to Moss on a Onduline roof is simple, just brush it off the roof and clear the gutters, a course bristled brush and trowel can be used for this purpose. The surfaces can then either be rinsed off with water using a hose; or by first treating the surface with a strong disinfectant such as Jeyes Fluid. Note: We do not recommend the use of high power jet washers. Specialist moss surface treatments are available from garden centres containing a mixture of Fungicide, bactericide and algicide, we do not under normal circumstances recommend the use of these products although they will not adversely effect the Onduline sheet, if they are used the manufacturers instructions must be followed.

Caution: Working on roofs can be a hazardous operation. All work must be carried out with due regard to health and safety regulations as set out HSG33 working at heights.
DATA DIGEST - PART 03 - MOULD / MILDEW GROWTH ON UNDERSIDE OF SHEET SURFACE

What is Mould and how does it affect Onduline?
Mold is ever-present in the environment it’s is spread by tiny spores which float in the air. It can establish and grow on almost any receptive surface that spores land and find moisture allied to a constant temperature, between 40 and 100 degrees F.

In theory this includes about every place in a domestic situation that a damp environment is maintained from shower rooms to damp fabrics left in an unventilated position.
You can easily spot the most visible type of mold called mildew, which begins as a grey coating, this forms into black spots which in turn grow to form larger colonies. This is normally the fungus you notice in grout lines in a badly maintained shower, or on damp walls, and outdoors on the surfaces such as decking and timber particularly if situated in damp and shady areas.
You can easily identify a mildewed surface by simply applying a few drops of household bleach on the blackened area. If it lightens after one a few minutes, you have mildew whilst if the area remains dark it is most probably due to unrelated staining or dirt.

If a high concentration of mold is present, you may smell a damp musty odour, the spores given off as the mold grows can also present an unhealthy living environment which can cause breathing difficulties and mild allergic reactions. It is for this reason we would recommend that mildew is always treated at the earliest opportunity.

As Mildew lives on the surface of materials it does not damage structures as such, but it is often an early sign of an environment which will sustain more virulent forms of Fungus which will cause rot and serious structural decay and related damage to building structures.
As a general guide if you use a knife or a screwdriver to probe the suspect area of timber should you notice the wood is unduly soft or crumbles, it is highly likely that a more potent form of fungi has established and rot has begun, in this case get specialist advice before proceeding.
Before starting the refurbishment of an effected area time should be taken to consider why the problem occurred to allow for renovating the cause of the problem. As mould is normally associated with damp conditions, consider the ventilation and insulation provision to the building’s roof area which should be provided at the ‘ridge’ high and ‘eaves’ low level. Consider the upgrading the roof specification with addition ventilation and boarding or a membrane to the underside of the roof to deny the environment mould can establish.

Fig. 07 - Typical example of Mildew / Mould formed on the underside of roof sheets and supporting roof structure, the result of restricted ventilation provision and high internal humidity levels maintained within the building.
Using Petri dishes after incubation we can observe mould colonies under magnification. From this we can determine that the mould is comprised of different culture tissues which combine to form the main mould micro-organism.

If allowed to establish the mould micro colonies can develop to attack the cellulosic base of the Onduline sheet structure, causing degradation and a general weakening of the sheet structure, which ultimately reduces the service life of the sheets.

Prevention and cleaning recommendations:

Preparation: Care must be exercised in preparing the Onduline sheets to be treated, ventilate the building and clear and prepare all surfaces in contact with the mildewed area. Next remove or protect goods or fitments below the area to be treated with a suitable tarpaulin. Finally isolate and protect any electrical goods adjoining the area to be cleaned, if in any doubt seek professional advice in making safe all electrical items.

In undertaking this work wear suitable protective long sleeved overalls or old clothes, which should be either cleaned or disposed of immediately after use, it is also advisable to wear work or old shoes. Always wear protective goggles and gloves and use a suitable disposable respirator.

Cleaning Process: Treat the underside of the Onduline sheets and timber surfaces in contact with the sheet with a diluted bleach solution (maximum recommended concentration of 1 part bleach to 8 parts water). Use a brush to apply this solution to the affected areas rinse off the solution with clean water after 30 minutes.

Onduline sheets held in exterior storage must be fully protected with tarpaulins from the elements at all times.

The risk as illustrated in the case a damaged wrapper has allowed rainwater ingress into the pallet prior to delivery or use of the product.

This can introduce the risk of mildew spores spreading between the sheets within the pallet. This would be evident by mildew formation on both sides of the sheet. If you note any mildew present on the sheet treat the sheets in order to remove any mildew spores prior to use and allow to dry in a well vented area.
Please note:
Onduline Data sheets provide additional general information on our products and related environment issues effecting roof coverings; they are based on the experience and views of our technical Managers. We therefore recommend that whilst you consider the views expressed you should undertake further independant research and seek professional assistance as required on your specific project.