

MAINTENANCE
AND REPAIRING



ONDULINE® GUIDELINES



Onduline®
Lightweight roofing systems

INDEX

This document describes some recommendations and some instructions when a repainting operation is planned.

It is valid for all corrugated bitumen sheets and tiles coated or painted like ONDULINE® CLASSIC, ONDUVILLA®, ONDULINE® EASYLINE, ONDULINE® EASYFIX, ONDULINE® TILE, ONDULINE® DURO SX 35...

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1. SAFETY



CAUTION REGARDING PAINT

! KEEP OUT OF THE REACH OF CHILDREN!

- Do not take internally.
- Close container after each use.
- Use only with adequate ventilation.

FIRST AID

- In case of eye contact, flush thoroughly with large amount of water. Get medical attention if irritation persists. If swallowed, get medical attention immediately.

SAFETY TIP

- Previously to any repainting operations, check the painters will work safely and that they do not deteriorate the corrugated bituminous sheets/tiles. In particular, check the roof frame is able to support the extra weight of the painters. It is recommended to use a ladder or any other similar equipment to ensure the repartition of the weight.
- Do not walk directly on the corrugations or between two supporting battens or purlins.
- In case of high pitch roof, a safety harness is mandatory in order to ensure the safety of the workers. Also in some cases, an aerial lift might be necessary.

2. RECOMMENDED USES

- Repainting is especially recommended for difference of shades that may remain after the stabilization period in case of 2 sets of sheets/ tiles installed on a same roof.
- In case of loss of discoloration / erosion, the adhesion of the paint may be affected due to possible loss of primary layer. As a consequence, it is highly recommended to apply a primer prior to repainting.
- In case of doubt please contact your ONDULINE® sales office.

3. MATERIALS

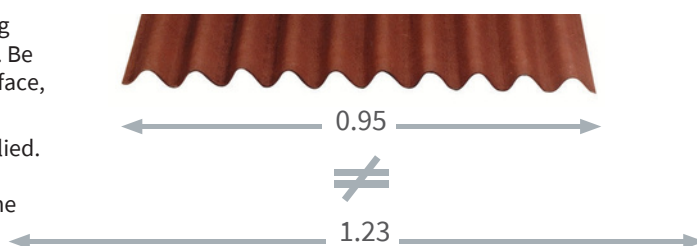
3.1 Type of paint

Use a specific water-based roofing paint, preferably an exterior grade latex acrylic paint or pure acrylic paint. ONDUPAINT is especially recommended for this application. For best results apply the same color as the original.

DO NOT USE SOLVENT OR OIL BASED PAINTS ON ONDULINE® MATERIALS

! KEEP OUT OF THE REACH OF CHILDREN!

- The optimum quantity is one liter of acrylic paint for 5 m², depending on the type of paint. Check the specification written on the paint tin. Be careful, the surface calculation must be based on the developed surface, not the net square meter of the roof.
- A corrective coefficient of 1.23 for ONDULINE® CLASSIC has to be applied. For instance, a roof surface of 10 m² represents a painted surface of $10 \times 1.23 = 12.3$ m². Below the corrective coefficient depending on the profile:



PRODUCT	Gross surface per sheet (m ²)	Net Surface per sheet (m ²) (at standard overlaps)	Corrective Coefficient	Surface to be painted for a roof surface of 10 m ²
ONDULINE® CLASSIC / HR / ONDALUX	1,9	1,56	1,23	12,3
ONDULINE® HR	1,94	1,62	1,25	12,5
ONDULINE® TILE	1,87	1,58	1,14	11,4
ONDULINE® STILO / STILO 3D / TILE G2	1,92	1,56	1,14	11,4
ONDULINE® SMART	1,85	1,56	1,25	12,5
ONDULINE® ZIGANA / ZIGANA TILE	1,78	1,5	1,01	10,1
ONDULINE® DURO 235	2,11	1,76	1,3	13
ONDULINE® EASYFIX / EASYSTYLE / DURO SX 35	1,64	1,34	0,98	9,8
ONDULINE® EASYFIX COMPACT	0,82	0,62	0,98	9,8
ONDULINE DIY / CLASSICA FIT / CLASSIC 8	1,48	1,22	1	10
ONDULINE® BASE / ONDULINE® 9S	1,71	1,37	0,98	9,8
ONDULINE® EASYLINE	0,76	0,53	1,11	11,1
ONDUCASA®	0,55	0,4	1,14	11,4
ONDUVILLA®	0,43	0,3	1,23	12,3

3.2 ONDULINE® renovation RUBBER paint

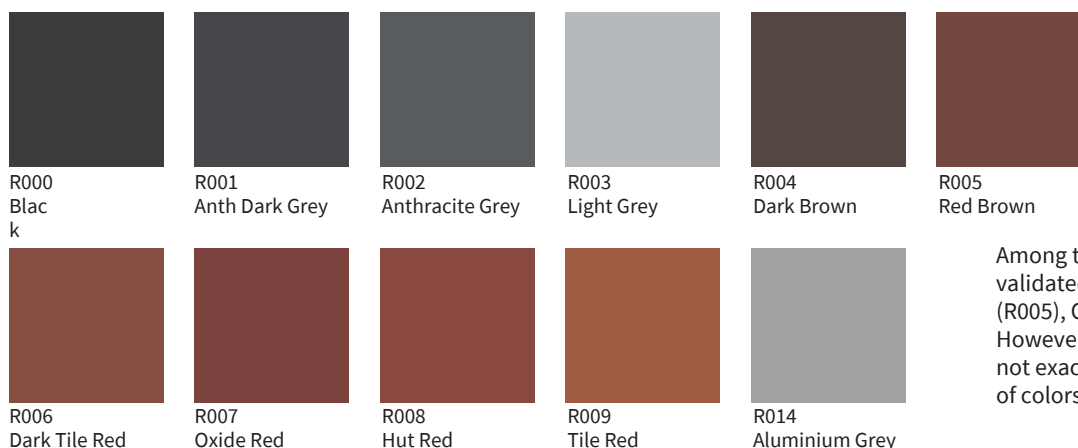
DESCRIPTION OF THE PROD

- RUBBER paint with a high content of binder.
- Application recommended: only with brush (too thick for an airless spray).
- The optimum quantity is one liter (1.25 kg) for 3 m² (net surface) in 2 layers.



COLOUR

- Rubber paint is available in different colors:



Among these colors, ONDULINE® has validated the performance of Red Brown (R005), Oxide Red (R007) and Black (R000). However, please note that these colors do not exactly match with the current references of colors from ONDULINE®.

3.3 RAL REFERENCES (informative – help to select a color)

- There is no link between the color codes RAL Design and RAL Classic. Some ONDULINE® colors do not match with these two charts. In this case, the RAL color code indicated in the table is the closest to the ONDULINE® color.
- RAL color codes are valid for new sheets ONDULINE® CLASSIC, PLUS, PRO (from the factory).

MATTE COLORS OF SHEETS AND TILES	RAL Design	RAL Classic	RAL Color
Classic Red	010 20 20	8015*	Chestnut brown
Classic Brown	050 20 10	8017*	Chocolate Brown
Classic Black	High	9005*	Jet Black
Classic Green	130 30 10	6007*	Bottle Green

PAINTED SHEETS AND TILES	RAL Design	RAL Classic	RAL color
Slate Grey	240 20 05	5008*	Grey Blue
Hazel Brown	040 20 19	8016	Mahogany Brown
Classic Red	040 30 40*	3011*	Brown Red
Terracotta	050 50 40	8023*	Orange Brown
Forest Green	140 30 10*	6003*	Olive Green

* Important colorimetric gap

3.3 Other materials



BUCKET FOR MIXING



WATER



PAINT



STICK FOR MIXING



BRUSH



FLEXIBLE BRISTLE BROOM

3.4 Preparation of the broom



4. PAINTING INSTRUCTIONS

4.1 Painting conditions

- Usually apply paint only when air and surface temperatures are above

10°C, above the dewpoint and relative humidity is below 85%. Avoid to paint the sheet if the outside temperature is over 35°C to guarantee the best quality. In any case, check the instructions on the paint tin.

- The coating must not be applied outdoors when it is raining, snowing, sleeting, etc. or when any form of precipitation is imminent. You must stop painting early enough in the day to allow the paint to dry before the sun goes down. Do not paint on windy days.
- In case of doubt contact your ONDULINE® sales office.

4.2 Paint preparation

- The paint must be thoroughly mixed before use.
- The paint may be thinned by adding small amounts of water (about 90:10) and mixing until correct consistency for spraying or brushing. This will assure good penetration into the surface structure.
- Some specific paints may need a higher dilution, up to 30% of water, check the instructions on the paint tin.

4.3 Surface preparation

- Coating integrity and service life will be reduced because of improperly prepared surfaces. The surface should be free of moisture, dirt, loose paint, etc. Any blisters, cracks or sharp edges should be first repaired, and all surface debris removed.
- Mold and mildew should be removed by scrubbing with a mixture of one quart household bleach to three quarts of water. Scrub well with a brush and allow the solution to remain on the surface for ten minutes before rinsing with clean water. WEAR PROTECTIVE GLASSES OR GOGGLES AND WATERPROOF GLOVES! All areas must be thoroughly dry prior to painting.

! DO NOT USE ABRASIVE OR HIGH PRESSURE WATER BLASTERS to clean sheets or tiles.
• Low-pressure water (80 psi / 5.5 bars or less) may be used.

- Badly weathered areas (bare spots with no paint) should be hand brushed with a coat of paint prior to spray coating. Failure to take this step can give poor results. After spot priming the bare areas, the entire roof should be painted.
- Primer can be used as undercoat. Use the same finish paint (ONDUPAINT for example) as self-priming coat: dilute the paint 50:50 with water and mix well. Apply by brush ensuring that the bristles' ends reach the valleys in the structure of the surface and deposit the paint. Allow to dry completely.

4.4 Painting application

- Start from the ridge part of the roof. For detailed area, use a brush.
- Keep mixing the paint preparation on a regular basis in order to avoid losing homogeneity.
- If use of an airless spray, we recommend a 0.026° (0.65 mm) or 0.031° (0.80 mm) spray tip, 600 psi-1200 psi (40 bars-80 bars), fluid pressure and a 60-mesh filter.
- If use of a broom with flexible bristles, immerse the broom in the paint and start the application without wringing. It is better to apply the paint in the direction of the slope. Spread the paint well avoiding over-deposition.
- Drying time is about 8 hours and may fluctuate according to the weather conditions.
- For best results apply two thin coats of paint instead of one heavy coat. Allow to dry completely between the two coats.



Two options are possible:

- Use of an airless spray (butnot with ONDULINE® renovation rubber paint that is too thick)
- Use of a broom.

NOTE:

Same recommendations applied for the back side of the sheets/tiles.

5. ROOFS MAINTENANCE

5.1 Roofs with lichens:

WHAT IS LICHEN AND HOW DOES IT AFFECT ONDU

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 alga and a fungus living symbiotically. The algae supply 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 bituminous sheets, metals, lead, and are known to damage the galvanization of steel components. Left untreated, lichen can cause damage to the color pigmentation and resin coating to bituminous sheets 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 be removed with a stiff bristled brush and the area treated as required.

HOW DO I TREAT THE ROOF SUR

The surface can be cleaned using proprietary cleaning detergents ranging from patio type cleaners applied by hand 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 algacide-based treatment can be applied to the lichen in accordance with the manufacturer's instructions. Garden centers 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.

We do not recommend additional treatment to the roof apart from regular cleaning of the sheet surface.



FIG 1 - Lichen on ONDULINE® sample

Fig 2 - Cleaning

Fig 3 - Finished surface

5.2 Roofs with moss:

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 must 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. 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 to retain more moisture.

HOW DO I TREAT THE ROOF SUR

The solution to moss on a ONDULINE® roof is simple, just brush it off the roof and clear the gutters, a coarse 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.



FIG 4 - Moss growing on leaf debris on shaded felted roof. Moss thrives in shaded damp conditions

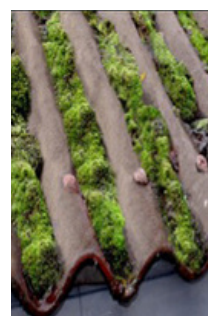


FIG 5 - Moss build up on a roof left unattended can significantly reduce the service life of a roof

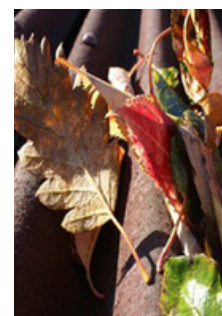


FIG 6 - Moss can be avoided by cleaning off leaf debris from the roof

NOTE:

We recommend to mandatory avoid the use of high-power jet washers that may damages bitumen sheets and tiles surface.

Specialist moss surface treatments are available for bituminous roofs (Algimouss – Boracol RH...). The use of these products will not adversely affect the ONDULINE® sheet, if they are used in accordance with the manufacturer's instructions that must be followed. Hereafter an example of anti-moss treatment.

<https://algimouss.com/produits/pro/nettoyage-pro/alginet-toitures/>

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).

5.3 Oblong holes maintenance:

After years and as for any organic materials the frame movements (combined to possible variations of the flexible sheets dimensions) may lead to the formation of an oblong hole at the place of fastening as illustrated below:



FIG 7 - Small oblong hole (less than 1cm²)



FIG 8 - Big oblong hole (more than 1cm²)

For a small oblong hole maintenance (Fig 7), properly fill the empty area with a nut of silicone or acrylic mastic – thus even in case of heavy rains, waterproofing is recovered.

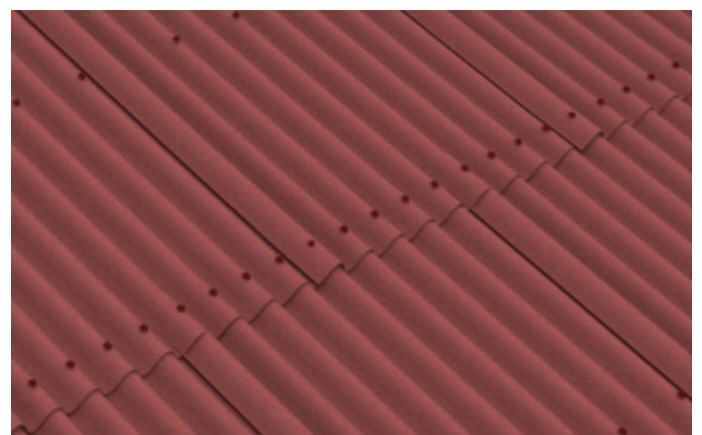
For big oblong hole maintenance (Fig 8), push down the fastener and recover the empty area with a patch of ONDUBAND or similar – overlap at least 5 cm all around the hole as represented below:



FIG 9 - ONDUBAND patch once applied

5.4 Lack of fasteners maintenance and fasteners maintenance :

A fastening out of installation instruction (lack of fasteners- blue ellipse) is recommended to complete the fastening by adding a fastener at each horizontal overlap may lead to deformations of flexible ONDULINE® sheets. Wrugation to diminish the space and therefore avoid possible water and, due to the gap between the sheets, generate a risk of leakage in case of penetration.
heavy rains facing the roof:



FASTENERS MAINTENANCE



- Any nails that would have gone up because of frame movement or vibrations should be hammered until the metal thread is not visible anymore (head base in contact with corrugation crest).
- Any screw that would have gone up because of vibrations or else is re-screwed until the metal thread is not visible anymore (washer base in contact with corrugation crest).

FASTENERS REPLACEMENT

In case of plastic head damage or unfortunate twist of the thread or any other situation it may be necessary to replace the fastener.

- With screw, unscrew the old one and screw a new one at the same place but 1 cm beside (for an optimal attachment).
- With nail proceed as illustrated below :



FIG 9 - Crowbar



- Hammer the crowbar to catch the head as represented hereafter on the left picture.
- Use the hammer as a support (in the neighboring corrugation) in order to protect the roofing material during tearing out operation
- Pull out the old nail
- Then hammer a new one at the same place but 1 cm beside (for an optimal attachment).

5.5 Roof usual maintenance:

Maintenance is the responsibility of the owner. For ONDULINE® sheets and Onduvilla tiles maintenance required includes following tasks that are mandatory to keep roofs in good order.

These tasks are reminded hereafter:

LEAF DEBRIS

Do not allow leaf debris to build up on the surface of the materials. Left unattended the debris will form leaf mold which by holding moisture in the corrugation bases will soften the materials and ultimately reduce their effective life.

TREE AND SHRUB BRANCHES

Check that overhanging branches are not in contact with the surface of the materials, as wind generated movement can result in mechanical damage.

GUTTERS

Clean all gutters, down-pipes and gullies regularly. If water collection systems are used, filter and circulate water in accordance with the instructions of the system manufacturer.

CONDENSATION

Always ensure high- and low-level ventilation channels are unrestricted. If a new concrete floor is laid condensation can result due to the high levels of moisture produced from the concrete curing process. We remand to wait concrete tab is dry before proceeding to ONDULINE® (Isoline range included) and Onduvilla layouts.

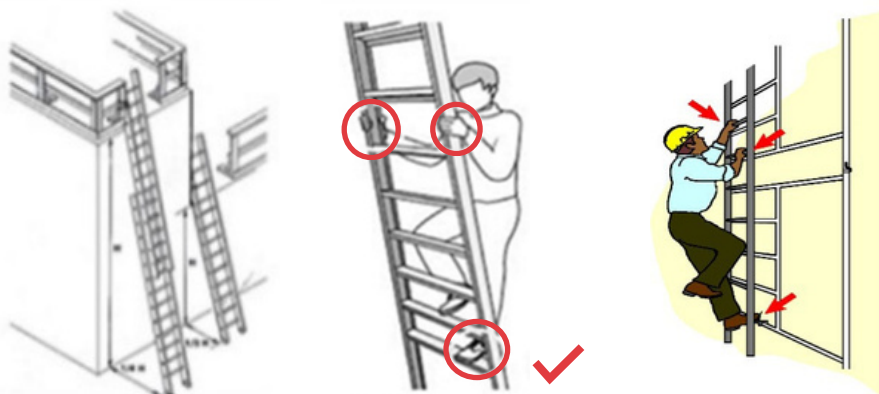
CAUTION: Working on roofs can be a hazardous operation. All work must be carried out with due regard to health and safety regulations (as set out HSG33 working at heights):
<https://www.hse.gov.uk/pubns/books/hsg33.htm>

TO CLIMB AND WALK ON A ROOF

Do not climb if fall protection is not insured.

• To climb:

Insure the ladder is placed making an angle of +/- 75° (/ ground) at a distance to the vertical wall equal at the quarter of the ladder 's length. Example: If the ladder 'length = 3,20 meters, position it at 80 cm from the wall.



- A ladder too far from the wall and there is a risk of sliding down.
- A ladder too close from the wall and there is a risk off swinging back.
- Always maintain 3 points (→) of contact when climbing.

• To walk:

To avoid damaging ONDULINE® sheets and tiles by feet punch loads place a device (wooden plank or similar) that distributes body weight as represented below. Without this device, cracks and crushes of the corrugations may occur under heavy feet punch loads.





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Onduline®
Lightweight roofing systems