Lightweight Roofing Systems

in.onduline.com

Onduline®

GLOBAL LEADER IN LIGHTWEIGHT ROOFING SOLUTIONS

Created in France in the 40s, Onduline® started out as a pioneer in lightweight composite roofing and under-roofing materials. Since then, the group rapidly evolved into a **global leader,** achieving key innovations and acquisitions along the way. Today, Onduline® develops **high-performance products** and **award-winning** solutions to more than 120 countries worldwide, with a keen focus on **design, reliability, sustainability** and user-friendliness. With a robust international presence and close proximity to end-users, Onduline® has been able to maintain not only a strategic footprint but also a solid understanding of its customers' diverse **roofing needs**.
This is why Onduline® is able to deliver attractive, reliable, comfortable and **perfectly adapted** and **unique roofing solutions**.

- **Worldwide leader** in Light Weight Roofing
- **Over 150 million m²** of roofing solutions sold every year
- More than **70 years** of industry experience
- Above **1,600** **employees** and **43** nationalities
- **10 Plants** in **8** countries
- Present in over **120** **countries** through **45** **subsidiaries**

OUR VISION

Above all, we protect. For end-users, this means protecting people and their property with **high-quality** roofing solutions.

For the environment, it's about implementing **responsible processes** that help to protect our planet.

We also protect our partners and their growth by being veritable business maker and helping them nurture strong relationships with their own customers.

Above all
WE PROTECT

OUR MISSION

We believe end-users should **be able to enjoy** high-quality roofing systems in **any type of environment or climate**.

And we recognize that acquiring perfectly adapted solutions requires a reliable **worldwide network of distributors and installers**.

ONDULINE® has been fortifying this network for years and continues to advance, with the **aims of further developing** in key markets, on all continents.

OUR VALUES

Whether it concerns how we serve our customers and the way we function for them internally, we design, manufacture or ship our products, with always the same true values…

Simplicity

Paying the same attention to everyone is the essence of ONDULINE®.Our products are **simple, accessible** and **easy to install**, so all of our customers and end-users can enjoy the same experience and feel in harmony with them.

.

Reliability

Our systems have been successful around the world for over 70 years. The **reliability** of our materials and components is the result of our **unique expertise**. We're able to guarantee optimal technology, and this is largely thanks to the hard work of our dedicated employees who we constantly encourage to grow professionally.

Commitment

How do our actions impact the future? This is the question we carefully consider in everything we do. We focus on all aspects of **sustainability**, from **environmental friendliness** to **positive business practices** and to **social responsibility**.

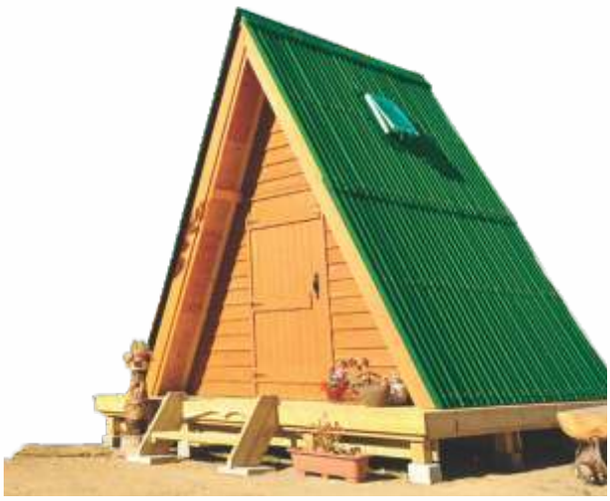
Residences

Collective Housing

Reference

Extensions

Reference



Resorts

Reference

Public Access Buildings

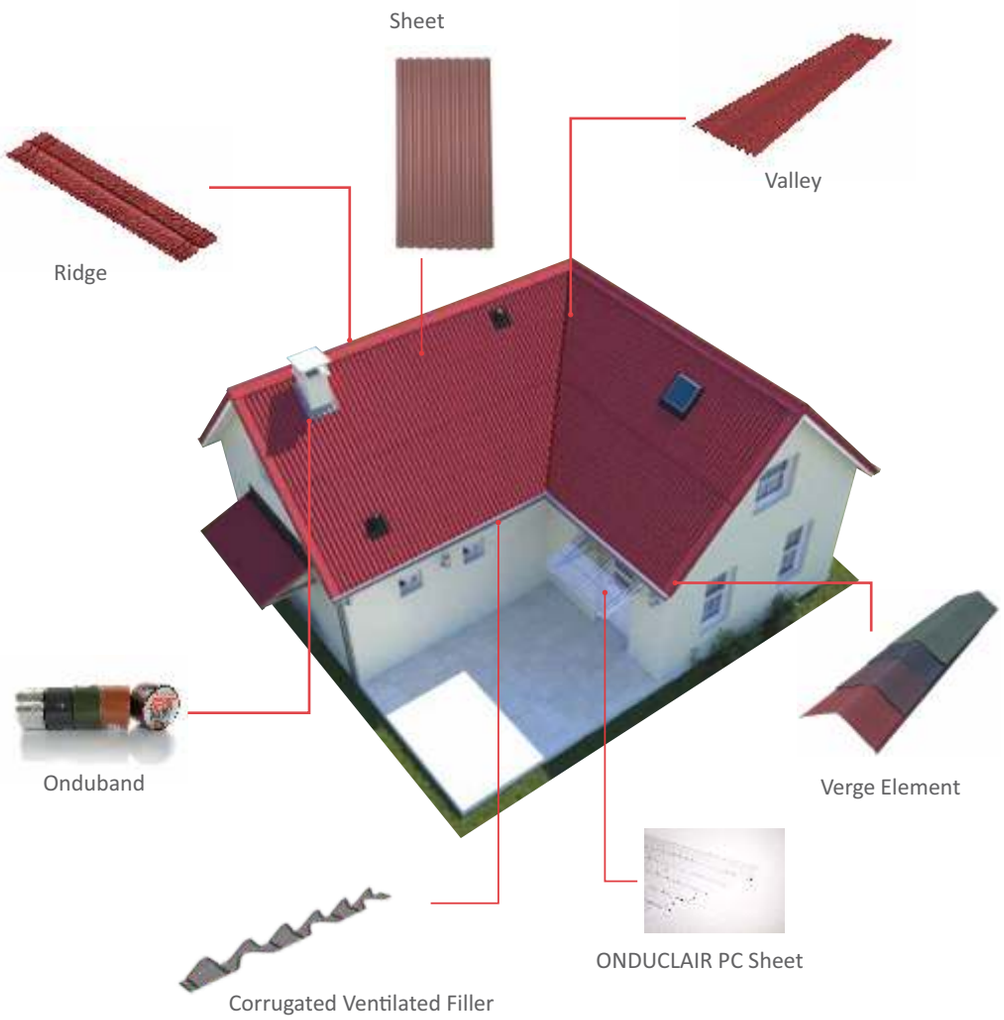
Reference

Agricultural Buildings

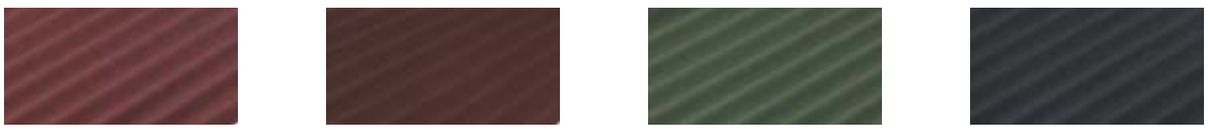
Reference

Renovations

ONDULINE® COMPLETE ROOFING SYSTEM



COLOURS



Red | Brown | Green | Black

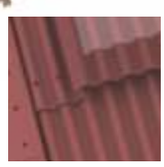
LIGHTWEIGHT | WATER PROOFING | REDUCES RAIN NOISE | HIGH WIND RESISTANT | NEVER RUST | ECO-RESPONSIBLE

Specifications

Material	Length	Width	Surface	Thickness	Width of corrugation	Height of corrugation	# of corrugations per sheet	Weight
Cellulose Bitumen	2000 mm	950 mm	1.90 m^2	3 mm	95 mm	38 mm	10	3.4 kg per m^2

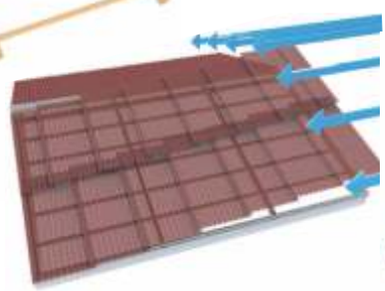
1. SUMMARY / GENERAL

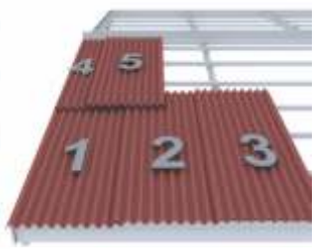
1.1 SHEET LAYOUT



GENERAL

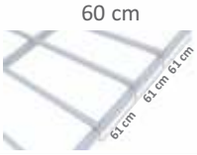
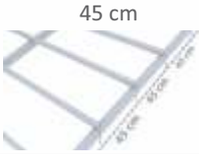
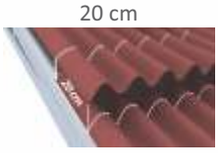
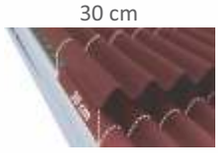
1 - Start fixing sheets at the opposite end of the roof from prevailing winds.
2 - Start every second raw with a sheet cut in half vertically in other to avoid side overlaps in the same line on all length of the roof, thus creating a broken bond pattern.
3 - Using a broken bond pattern reduces the overall thickness of the overlapping.





1.2 OVERLAPPING RULES

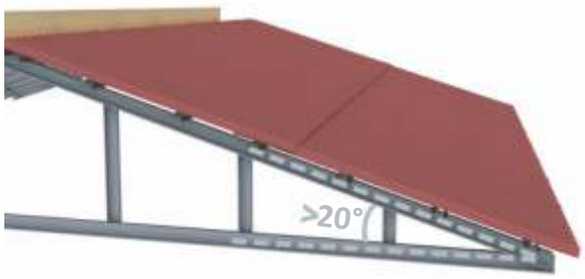
Following the overlapping rules is important to ensure a total waterproofing over time.
Side and end overlapping vary according to the roof pitches.

ROOF PITCHES	> 20°	10° - 15°	5° - 10°
Maximum purlin distance	60 cm 	45 cm 	Full deck or close batten 
Overhang at eaves	7 cm 	7 cm 	7 cm 
Minimum end overlap	17 cm 	20 cm 	30 cm 
Minimum side overlap	1 corrugation 	1 corrugation 	2 corrugations 

1.3 METAL FRAME WITH ROOF PITCHES OVER 20°

FRAME

For roof pitches over 20°, ONDULINE sheet shall be supported by purlins with maximum width distance of **60 cm.** In particularly high conditions of temperature and humidity please ask our technical service.



FIXING

11 screws should be drilled per sheet

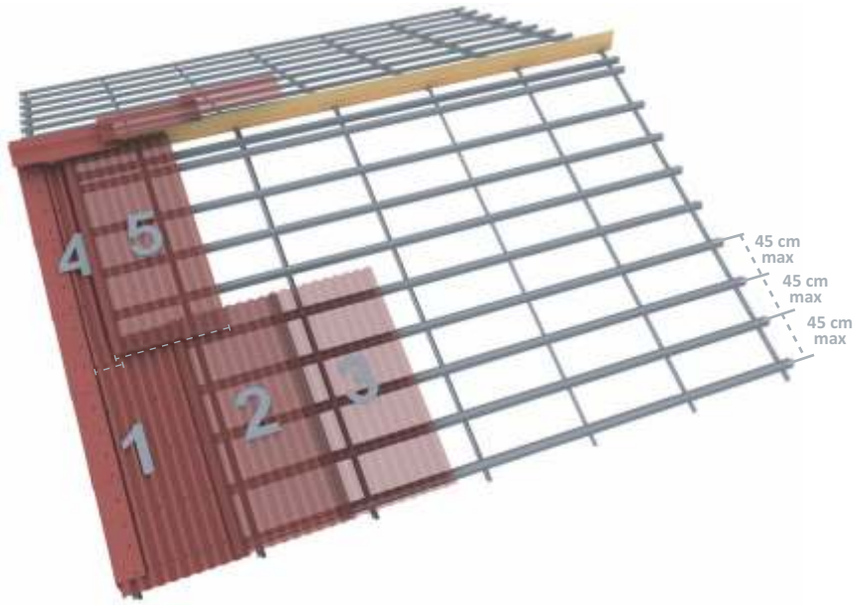
- 5 screws at each corrugation at the end overlap or eaves.
- 3 screws at first intermediate purlin of the sheet.
- 3 screws at second intermediate purlin of the sheet.

Screws should be drilled at each corrugation at the end overlap and side overlap.
To have a longlasting and garanted roof, it is mandatory to follow the nailing order and pattern.

OVERLAP

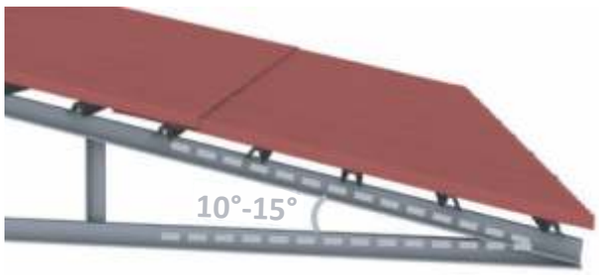
- For the end overlap, use minimum **17 cm.**
- For the side overlap, use minimum **1 corrugation.**

1.4 METAL FRAME WITH ROOF PITCHES 10° - 15°



FRAME

For roof pitches 10° to 15°, ONDULINE sheet shall be supported by purlins with maximum width distance of **45 cm.**



FIXING

14 screws should be drilled per sheet.

- 5 screws at each corrugation at the end overlap or eaves.
- 3 screws at first intermediate purlin of the sheet.
- 3 screws at second intermediate purlin of the sheet.
- 3 screws at third intermediate purlin of the sheet.

Screws should be drilled at each corrugation at the end overlap and side overlap.
To have a longlasting and garanted roof, it is mandatory to follow the nailing order and pattern.

OVERLAP

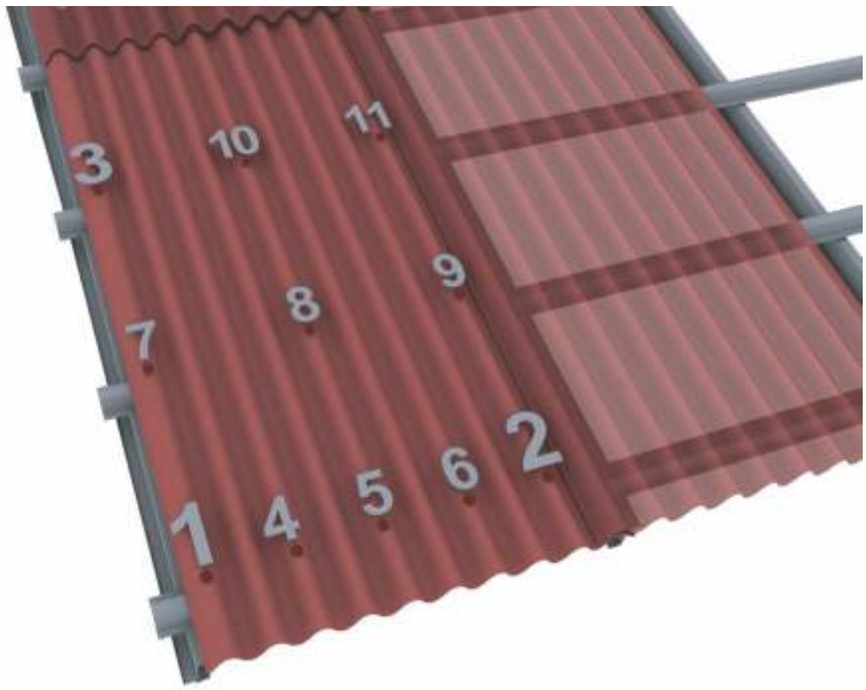
- For the end overlap, use minimum **20 cm.**
- For the side overlap, use minimum **1 corrugation.**

1.5 DETAIL FIXING STEPS

- To have a long lasting and garanted roof, it is mandatory to follow the fixing order and pattern.

! Use only ONDULINE recommended fasteners

- Fix every corrugation at eaves, sheets overlaps and either side of vertical joints.
- Fix every corrugation on intermediate purlins.
- Fastening must always be carried out at the top of corrugation.



1 - Select the correct type of drill screw to suit purlin type.

2 - Drive the drill screw through the top of the corrugation.

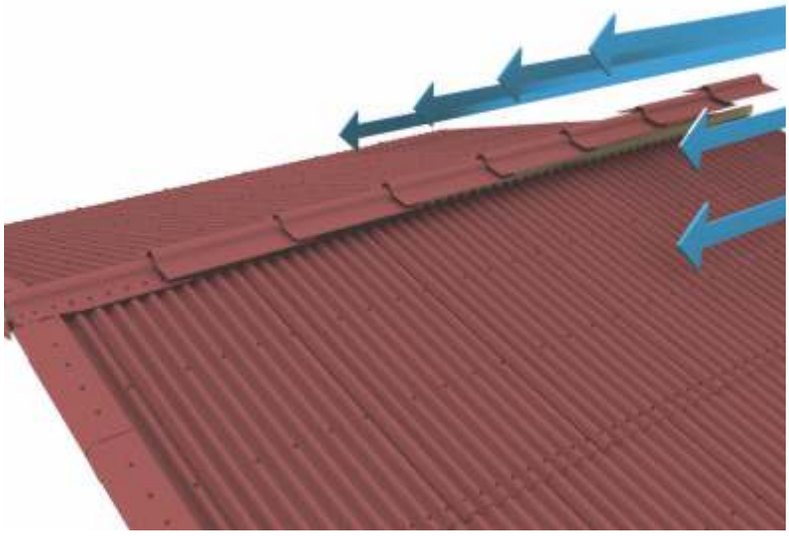
3 - Be careful to avoid over compressing of the corrugation.

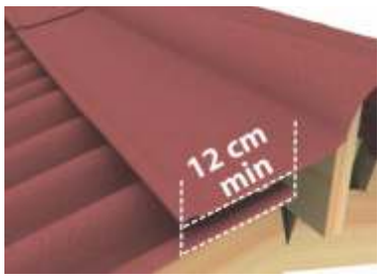
2. INSTALLATION DETAILS

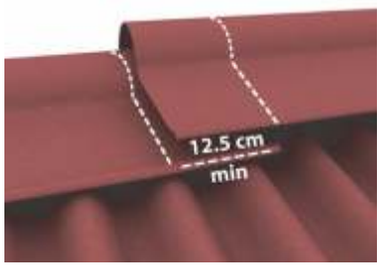
2.1 RIDGES

1 - Use a **ridge plank** to support the ridge.
2 - The ridge element should be fastened at each corrugation of the overlapped sheet.
3 - Add an **extra purlin** when necessary if the distance between the last purlin and the ridge is too wide.

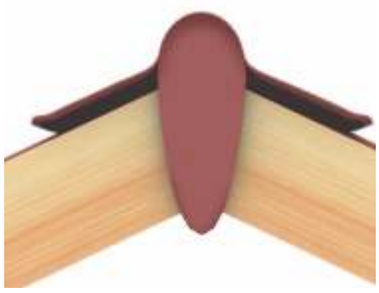
4 - Start fixing the ridge element at opposite to the prevailing winds end of the roof.
5 - The ridge element should overlap the ONDULINE® sheet minimum **12 cm.**
6 - Lay ridge elements with a minimum overlap of **12.5 cm.**







7 - A ridge cap can be cut out of the flat part of a ridge element.



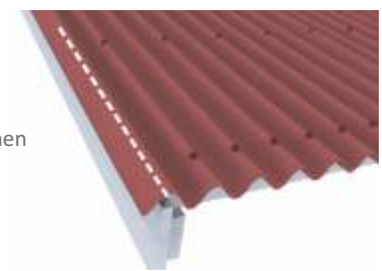
2.2 EDGES / VERGES

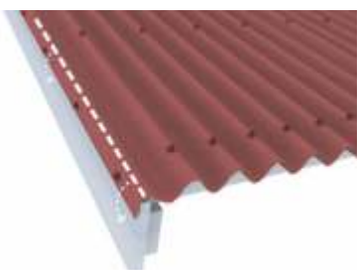
COVERING WITH AN ONDULINE VERGE ELEMENT

1 - Fasten bargeboard level with top of ONDULINE sheet.
2 - The ONDULINE verge is then overlaid and nailed into position.
3- It is possible to use a ridge element for this purpose.

COVERING WITH AN ONDULINE SHEET CORRUGATION

1 - Fasten bargeboard level with top of finished ONDULINE roof.
2 - Covering with the metal verge unit is then overlaid and nailed into position.



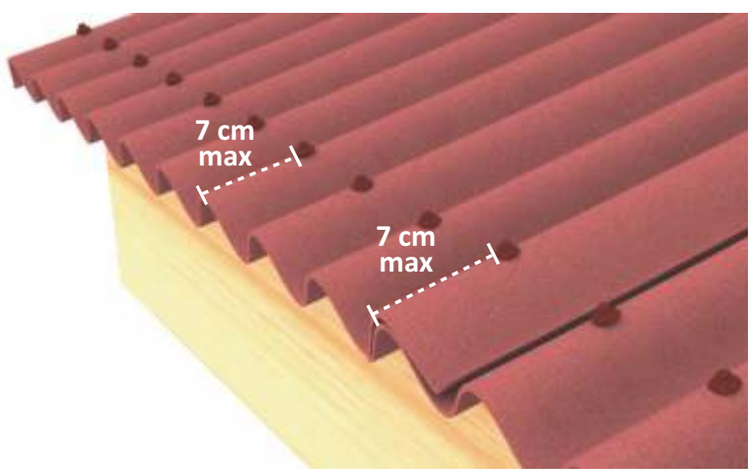


COVERING WITH A METAL FLASHING VERGE UNIT

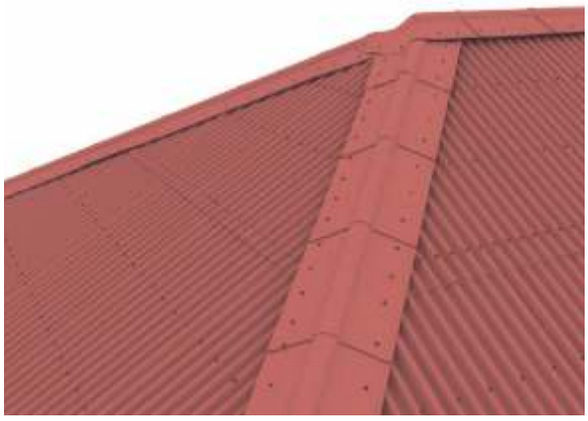
1 - Fasten bargeboard level with top of finished ONDULINE roof.
2 - Covering with the metal verge unit is then overlaid and nailed into position.

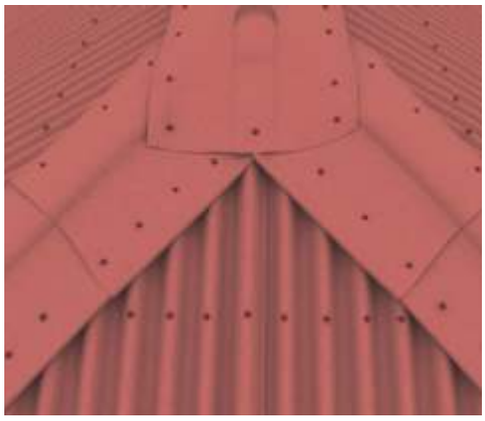
2.3 EAVES

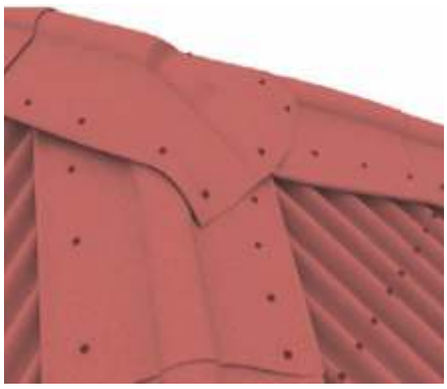
The sheets overhang at the eaves should not be more than 7 cm. Please set this distance while elaborating the roof project.



2.4 HIP DETAIL

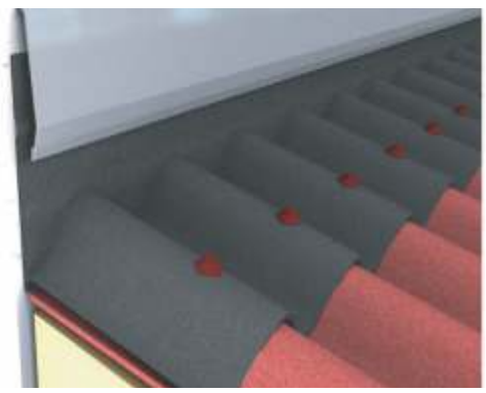






- Fix the hips before the ridge element.
- Overlay with the hip elements and fix it as shown on the picture.

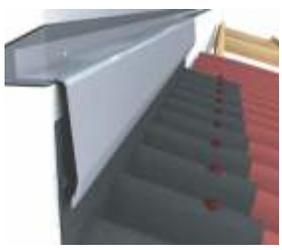
2.5 END WALL ABUTMENTS

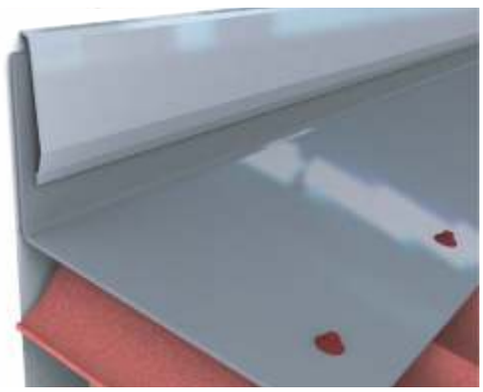


ONDULINE ABUTMENT APRON FLASHING

1 - Use ONDULINE pre-formed apron flashing to seal end the wall abutment enabling the ventilation.

2 - Use a separate cover flashing for the wall.



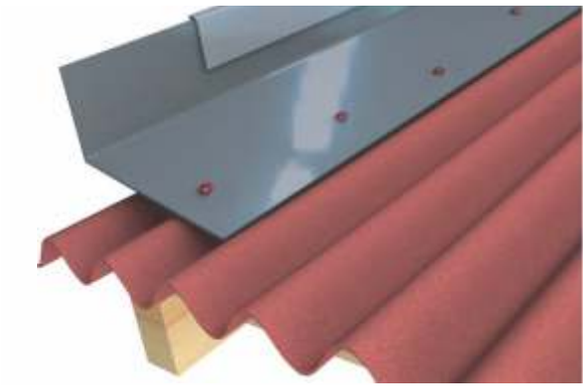


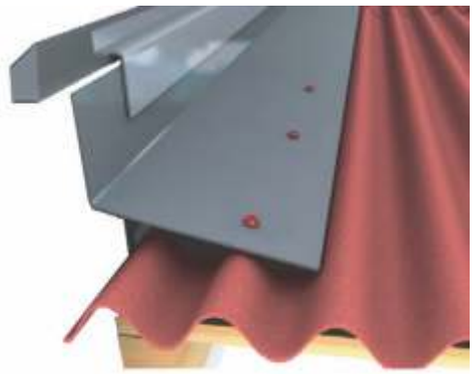
3RD PARTY FLASHING

1 - Use ONDULINE pre-formed plate of metal to seal end wall abutment enabling the ventilation.

2 - Use a separate cover flashing for the wall.

2.6 SIDE WALL ABUTMENTS

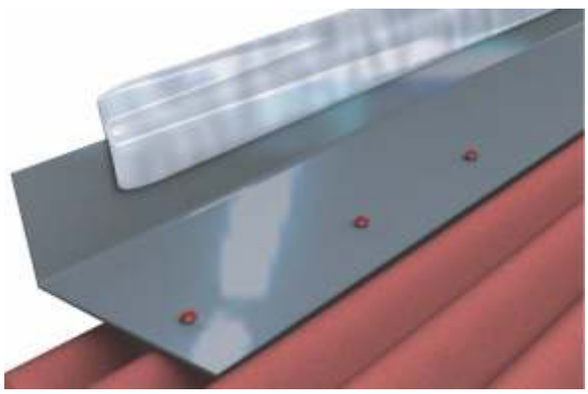




HARD COVER FLASHING TO WALL

1 - Use a pre-formed plate of metal flashing to seal side wall abutment. Take into consideration the possible dilation while drilling.

2 - Use separate cover flashing to the wall to allow for movement.



ONDULINE FLASHING TAPE TO WALL

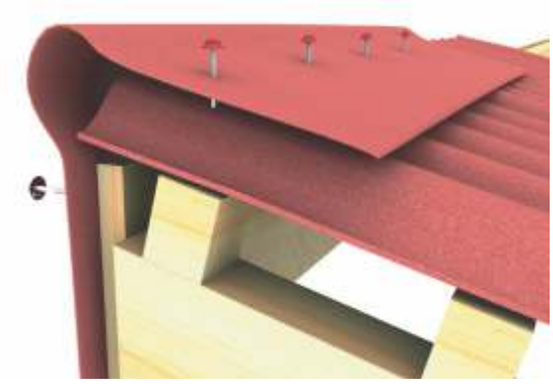
1 - Use a pre-formed plate of metal flashing to seal side wall abutment.
Take into consideration the possible dilation while drilling.

2 - Use ONDULINE flashing tape (ONDUBAND) as cover flashing to the wall.

2.7 END ROOF

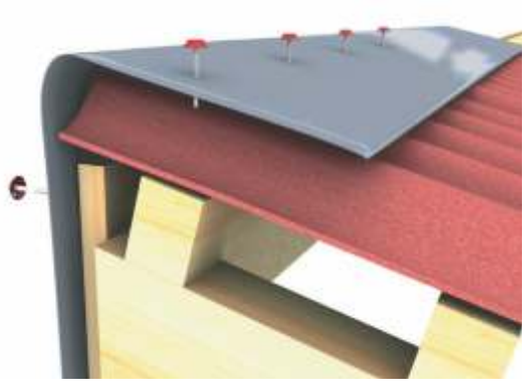
USING ONDULINE RIDGE UNIT

• Fit ridge board and purlin. The ONDULINE ridge unit is then overlaid and nailed or screwed into position.

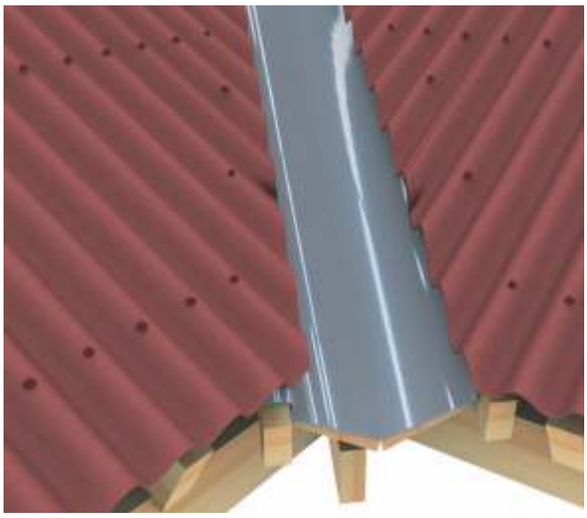


USING A PIECE OF METAL RIDGE ELEMENT

• Fit metal ridge element and purlin. The metal ridge element is then overlaid and nailed or screwed into.

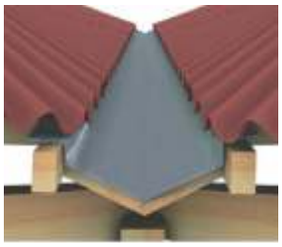


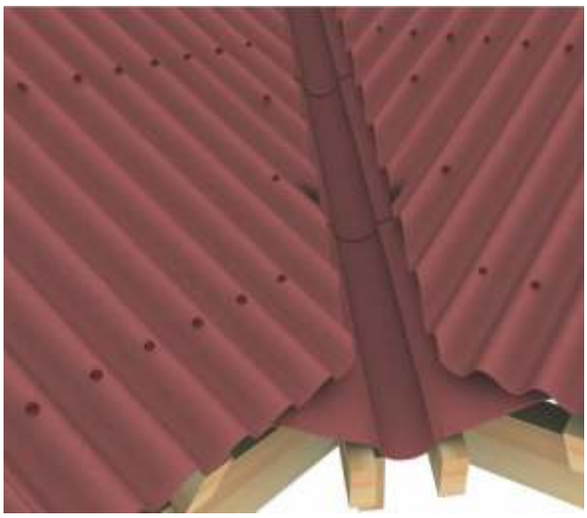
2.8 VALLEY



USING A PLATE OF METAL

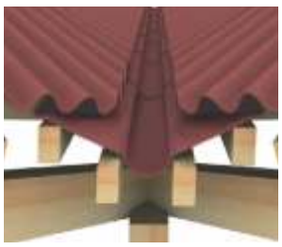
- Fix valley board / trim purlin and line with metal pre-formed unit.
- The vertical valley depth should be sufficient to allow the water to flow.
- The sheets are cut across (parallel to the valley line). The overhang is max 4 cm.





USING ONDULINE VALLEY

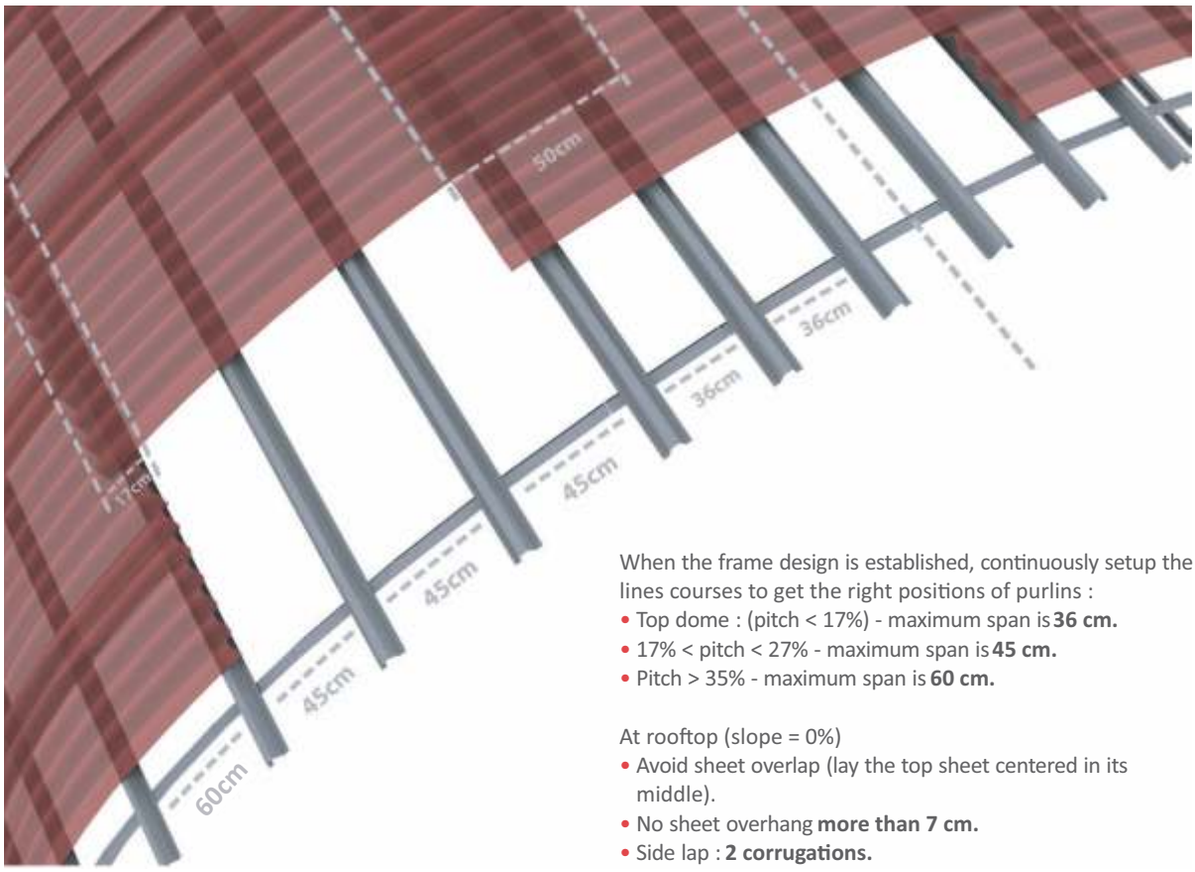
- Fix valley board / trim purlin and line with ONDULINE valley.
- The vertical valley depth should be sufficient to allow the water to flow.
- The sheets are cut across (parallel to the valley line). The overhang is max 4 cm.



2.9 SKYLIGHT - ONDUCLAIR PC

- Perfect complement to the ONDULINE corrugated sheet.

2.10 CURVED ROOFS / DOMES

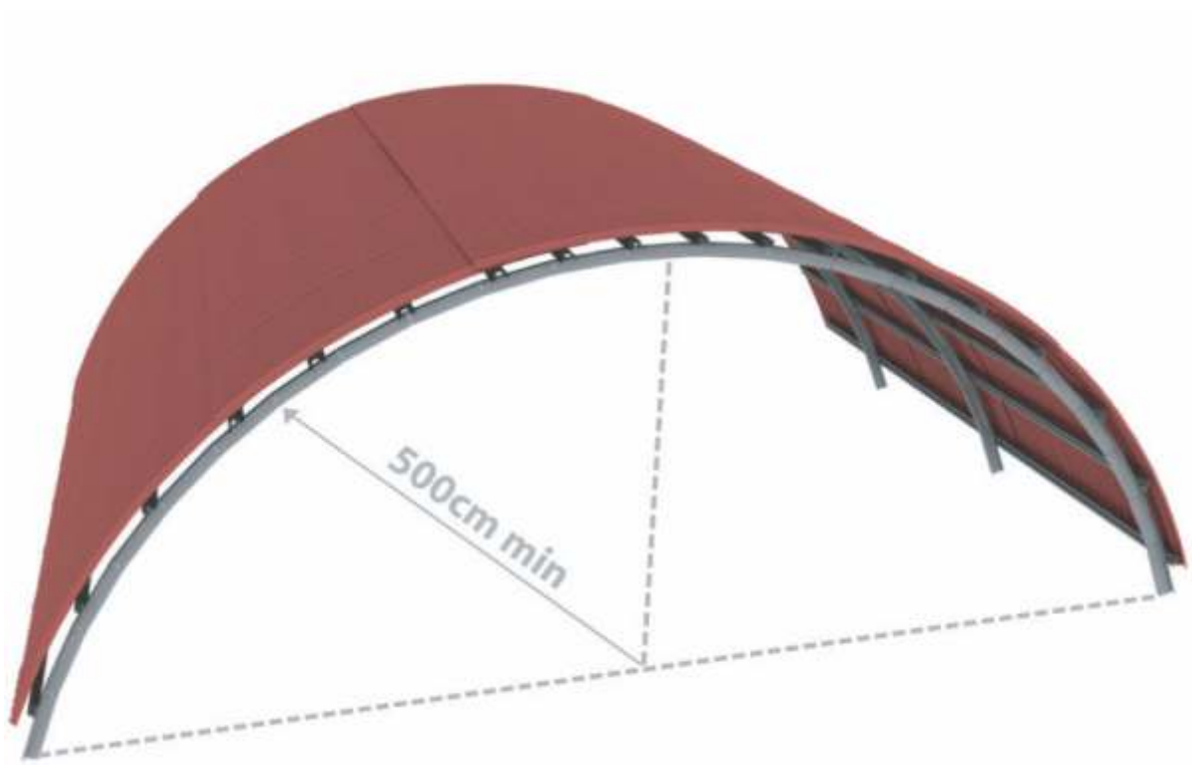


When the frame design is established, continuously setup the lines courses to get the right positions of purlins :

- Top dome : (pitch < 17%) - maximum span is **36 cm.**
- 17% < pitch < 27% - maximum span is **45 cm.**
- Pitch > 35% - maximum span is **60 cm.**

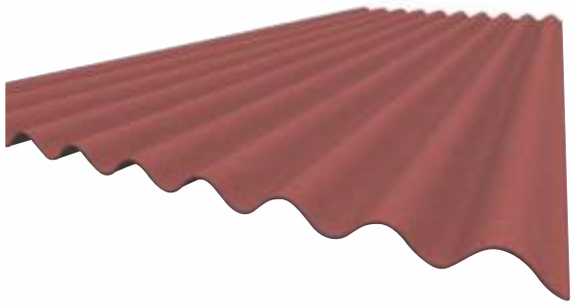
At rooftop (slope = 0%)

- Avoid sheet overlap (lay the top sheet centered in its middle).
- No sheet overhang **more than 7 cm.**
- Side lap : **2 corrugations.**

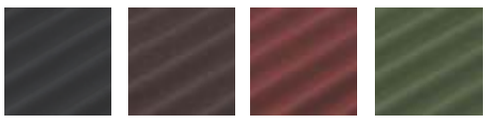


PRODUCT SPECIFICATIONS

ONDULINE CLASSIC SHEET

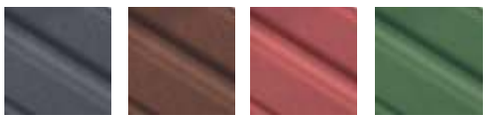


- The original bitumen-saturated corrugated roofing sheet with characteristics, versatility and benefits that are suitable and applicable for most types of building and others use such as undersheeting, oversheeting and wall-cladding.
- Available in Black, Brown, Red and Green.



ONDULINE RIDGE

- Manufactured from the same material and quality as ONDULINE® Classic. Flexible double wings accommodate a wide range of roof angles.
- Available in same 4 colors as the ONDULINE® Classic.



ONDULINE VERGE

- Designed to provide a weatherproof seal at the verge, this unit is made from the same quality material as ONDULINE® Classic.
- Available in same 4 colors as the ONDULINE®Classic.

ONDULINE SPEEDY SCREW

- ONDULINE® Screw can be fixed on wood or steel purlins using a power drill. It enables correct tension to be achieved avoiding over tightening and distortion
- Available in same color ranges as the sheets.

ONDUBAND®

Cold self-adhesive tape covered, with a polymer aluminium sheet (natural or colored) reinforced with a support polyester.

BENEFITS

- Easy and fast to fix: just use a cutter or shears
- Waterproofing: multipurpose use, flexible application
- Offers a large and design range
- Exists hose reel

TECHNICAL CHARACTERISTICS

- **Length:** 10 m
- **Width:** 0.15 m
- **Thickness:** 1.5 mm
- **Basic weight:** 1.55 kg/m²

COLOURS

Green, Red and Terra Cotta

USAGE

ONDUBAND® can be used for sealing connection work and small surfaces' repairs.

VALLEY

Used to collect rainwater flowing into the valley with 3 corrugated barriers on each side.

- Available in same 4 colors as the ONDULINE®Classic.

ONDUCLAIR® PC

Day lighting single skin polycarbonate system for roofing and cladding.

SUSTAINABLE FROM A TO Z

At Onduline®, our ongoing mission is to take serious sustainable acions at every level of our business, from our products and processes to our people and our planet. We're constantly striving to fundamentally improve the way we operate, providing our customers with truly sustainable roofing solutions at a reasonable price, improving people's lives as well as the neighborhoods they live in. And we'll coninue to make major strides in all of these areas...

Our products

All of our products and materials are **lightweight**, which makes for simpler, more efficient transportation as well as less waste at construcion sites.

They're also **asbestos-free**, composed of **recycled fibers** and use **natural pigments** for coloration.

Our processes

We achieve a **very low carbon footprint** as well as low energy consumption in our manufacturing processes (4 kwh per m²). Our plants are equipped with **high-performance treatment** systems for gas effluents and emit no liquid waste in any form.
Onduline has received a VAR Confirmation report (VAR 1016) by ICC-ES to precise the recycled content of its solutions.

Additionally, thanks to high-tech recycling processes, we've been able to achieve high content of post-consumer material (around 50%). We're currently **recycling some 200,000 tons of material** each year.

I am looking for real environmental opions to protect MY FAMILY

Our people

In addition to all the sustainable initiatives behind our products and processes, **Onduline® is quite simply a great company to work for** – one that values its workers.

We employ more than 1,600 people across the globe, representing dozens of nationalities, cultures and languages. Our people are young, dynamic and passionate about their experience.

They stay with us for seven years on average, well above the global median for private-sector workers.

Protection above all

Our proof

Onduline®'s achievements are regularly **recognized by leading standards and organizations**. For instance, we've earned the presigious **ISO 14021** and **VAR 1016** ceriicaions for **high-impact recycling**, as well as **LEED Gold** for **sustainable green building operaions** .

** Job site LEED Gold CENTRO DE CULTURA MAX FEFFER Pardinho (Brazil)*

VENTILATION

When designing a roof, you should ensure proper ventilation of the roof.

ROOF VENTILATION

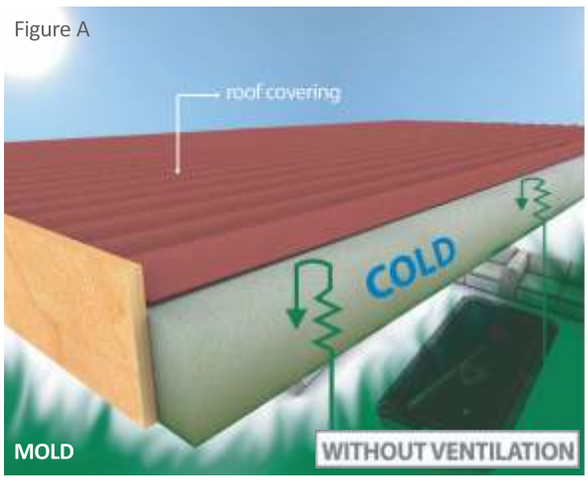
BEWARE OF THE RISK OF CONDENSATION AND ITS CONSEQUENCES

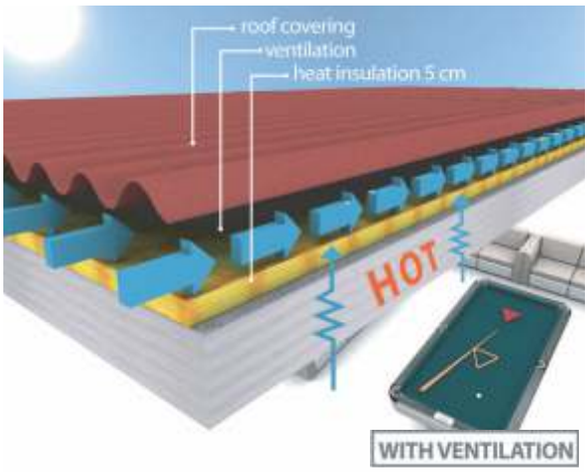
There is always water inside every heated space such as the kitchens and bathrooms of residences, indoor swimming pools, factories with lots of water usage, barns or poultry houses where a great number of animals discharge heat and moisture from their bodies.
Vapor condenses immediately if it comes in contact with cold surface of the building walls. If vapor condenses within building material of the roof construction, it can generate serious problems by causing damages such as blooming and mold on ceiling (fig. A).

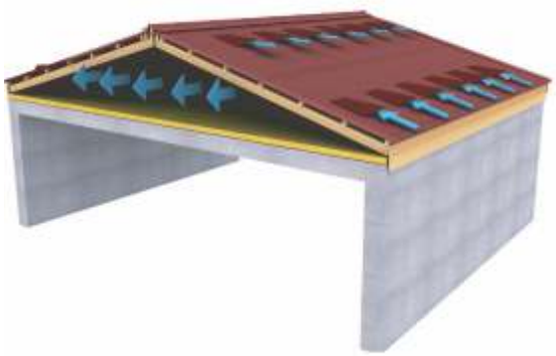
Ventilating the roof space prevent condensation and it affects the heat insulation positively as well. In most cases a difference of 10° C can be appreciated between the inside temperature of a non vertilated roof and a ventilated roof with insulation.
Furthermore, in regions with cold climate and high precipitation, snow accumulation on ventilated roofs is more homogeneous and excessive pilling on the eaves can be kept under control.

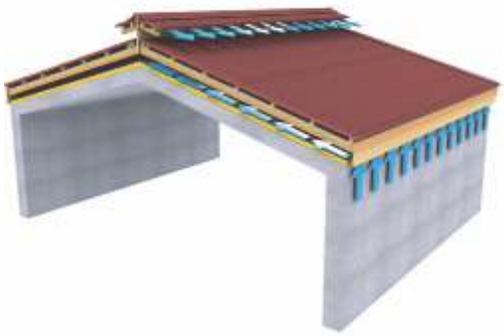
ROOF WITHOUT HEAT INSULATION AND VENTILATION

Figure A









In order to obtain desired efficiency from ventilation, air inlet and outlet locations should be adequately dimensioned and selected according to the roofs physical properties. In principle, air movement is upward, air inlets should be arranged at the eaves while the air outlets are at the ridge level : special attention should be paid that no elements block the air flow on the eaves and ridge line air.
If there is any unused space between the roof and the last slab, ventilation can be created by having air inlets and outlets being placed on the roof at intervals.

If ventilation is between the roof layers only, continuous air inlet and outlet locations should be established and unblocked.

Narrow buildings with high pitched roofs are better ventilated when compared with wide buildings with lowpitched roofs. That is why the horizontal distance between the eaves and ridges and the roof inclination must be taken into consideration when determining the space necessary for ventilation.

GENERAL INFORMATION

PRECAUTIONS ON ROOF USAGE

Roof traffic

Only walk on the roof if,this is necessary. To distribute the loads, planks or ladder should be laid flat and by the roof purlins to carry out maintenance and related work. All precautions should be taken and safety regulations must be observed and applied.

Roof maintenance

Maintenance of the roof is the responsibility of the owner. To ensure long life we recommend that the following maintenance procedures are carried out.

- Remove the debris. Do not allow leaf debris to build up on the surface of the corrugated roofing sheets, the debris will form leaf mould which can soften the material and reduce the effective life of the product.
- Check that branches are not in contact with the roof surface as wind generated movement can result in mechanical damage to the surface of the sheets.
- Clean all rainwater gutters, down-pipes and gullies regularly ensuring efficient water run-off from the roof.
- Maintain a good state of roof elements such as flashing, chimney stacks, etc.
- Maintain a good state of the roof and its ventilation.

SITE STORAGE

ONDULINE is delivered to site on pallets of 150 to 420 sheets (depending on means of transport and sheet specification) shrink wrapped. It is not recommended to stack pallets. Sheets must be stored flat and covered at all times to protect against weather and dust. In hot climates ONDULINE must be protected from direct sunlight.

HANDLING

ONDULINE may be stored in freezing temperatures but installation should not be attempted in these conditions. ONDULINE should be lifted from the pallet, not dragged across it. The material should then be handled using conventional techniques for corrugated sheeting.

TECHNICAL SERVICES

ONDULINE provide a comprehensive technical advice service for all applications of ONDULINE system. Please always refer to our specific technical guides for complete installation details.

RE-USE OF ONDULINE SHEETS

In the event of sheets having to be removed from a roof or side wall, the nails are extracted with an ordinary claw hammer levered against a piece of wood shaped to the corrugation. ONDULINE sheets thus recovered may be used again - an important economical aspect.

PRECAUTIONS

When using ONDULINE in conditions of high internal humidity,it is important to use a vapour barrier and adequate ventilation on the roof space.

CONDITIONS OF SALE

The color impregnation is long lasting, but weathering effects cannot be entirely discounted and will affect ONDULINE in the same way as they affect natural material roofs. The ONDULINE group assumes no responsibility for the effect of structural movement. Details are correct at the time of printing, but the manufacturers reserve the right to vary specifications and details at any time without notice. To avoid any possible misunderstandings, we require that a customer seeking advice on suitability or performance of goods or relating to the nature of services supplied should put such requirements to us in writing. Goods are not tested or sold as fit for any particular purpose unless,so agreed in writing. There might be slight variations in size, weight and color.

HEALTH AND SAFETY

The photographs and drawings in this brochure are of installations in many parts of the world; building practices shown may not therefore comply with the recommended safety standards in other countries.

Onduline®

Covering all your roofing needs