

BARDOLINE

SISTEM BARDOLINE/ING/01/2010/3.000/005

**Onduline**  
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Onduline Avrasya A.Ş., bu broşürde yer alan ürün, bilgi ve hizmetleri önceden herhangi bir ihbarda bulunmaksızın her zaman değiştirme, sunumdan kaldırma veya düzeltme hakkına sahiptir.

System  
**BARDOLINE**<sup>®</sup>

Asphalt Shingle



- Longevity
- High Quality
- Aesthetic
- Elasticity
- Lightweight



**Onduline**  
AVRASYA A.Ş.

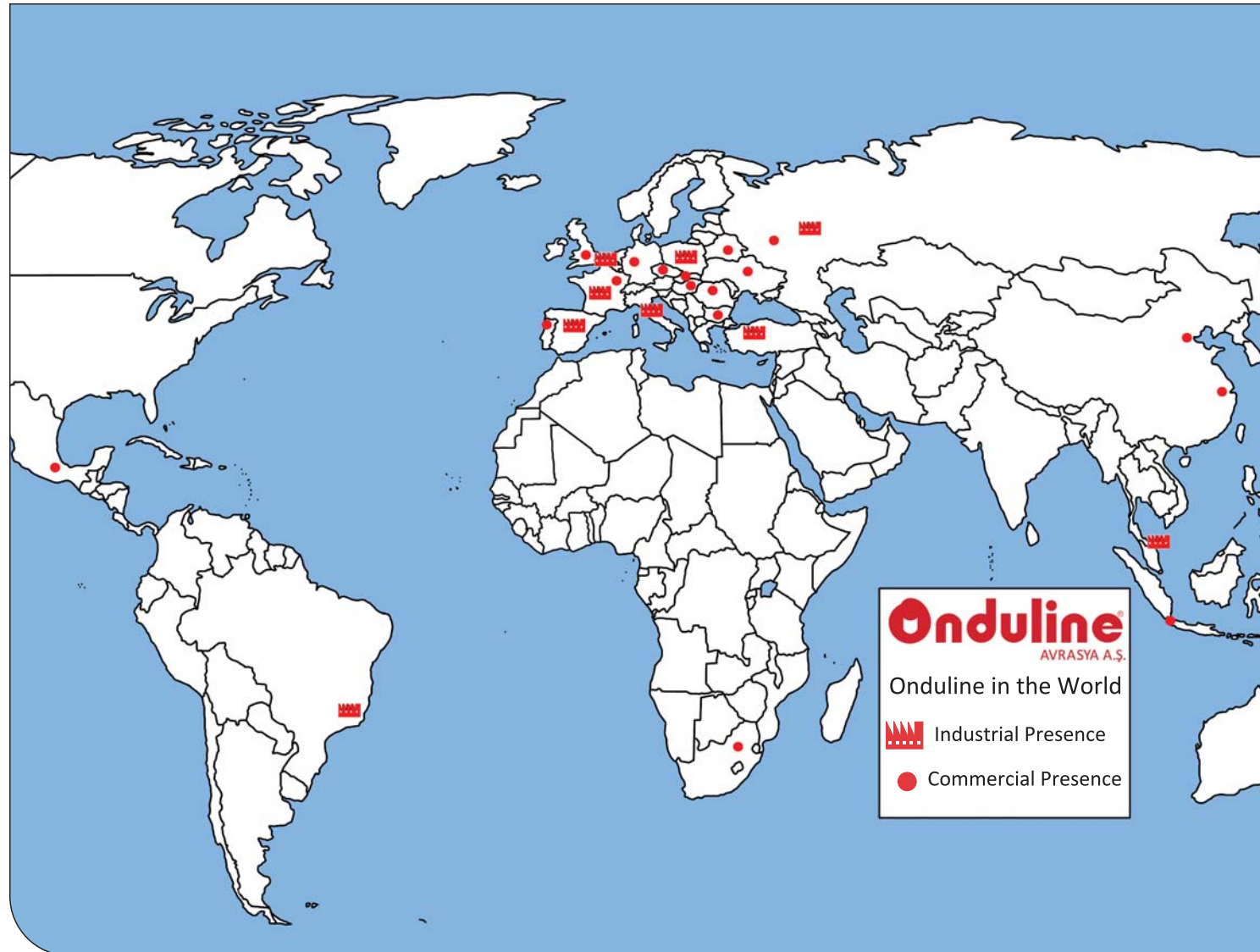
www.onduline.com.tr

## ONDULINE GROUP - ONDULINE AVRASYA

Onduline Group, the world leader in cellulo-mineral and bitumen based roofing and siding sheets, while pursuing activities in Eurasia since many years, decided in 1994 to directly invest in Turkey and Onduline Avrasya was established as a subsidiary of the Group in Istanbul in August of the same year.

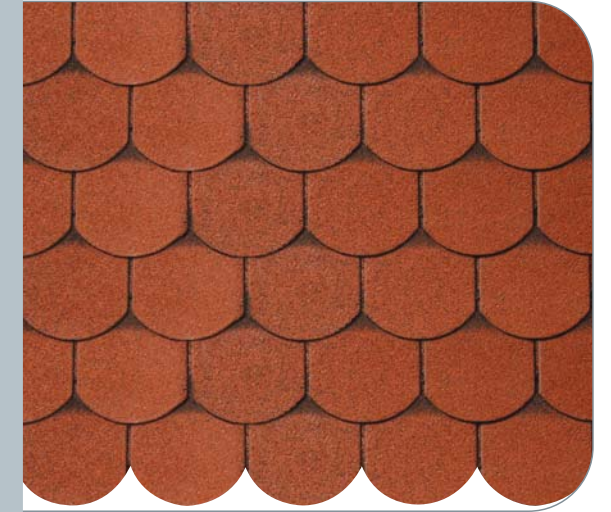
Beginning from its foundation, the product range which was limited to Onduline roofing sheets only, was intensively developed resulting today in a range inclusive of those for the roofs and foundations, in a way to meet all the requirements of the end users, with related products and systems.

As a result of continuous research and development activities, Onduline Avrasya keeps the principle of serving the market by offering a large but innovative range, made of complementary products in compliance with each other. With especially innovative products developed for undertile insulation, like specially profiled undertile sheets and lastly the ardoise system with Isoline, versatile roofing systems are supplied. The headquarter being situated in Istanbul, the production units of Onduline Avrasya are located on 120.000 sqm total area, in Sapanca/Adapazarı, where roofing & siding sheets and membranes are produced according to world standards. Apart from ISO 9001 and ISO 14001 Quality standards Onduline Avrasya figures among the first companies in the sector possessing CE marking for all the product range. Onduline Avrasya beyond keeping its leader position in the local market since 15 years is pursuing the goal of becoming the leader in the 25 countries of Eurasia...

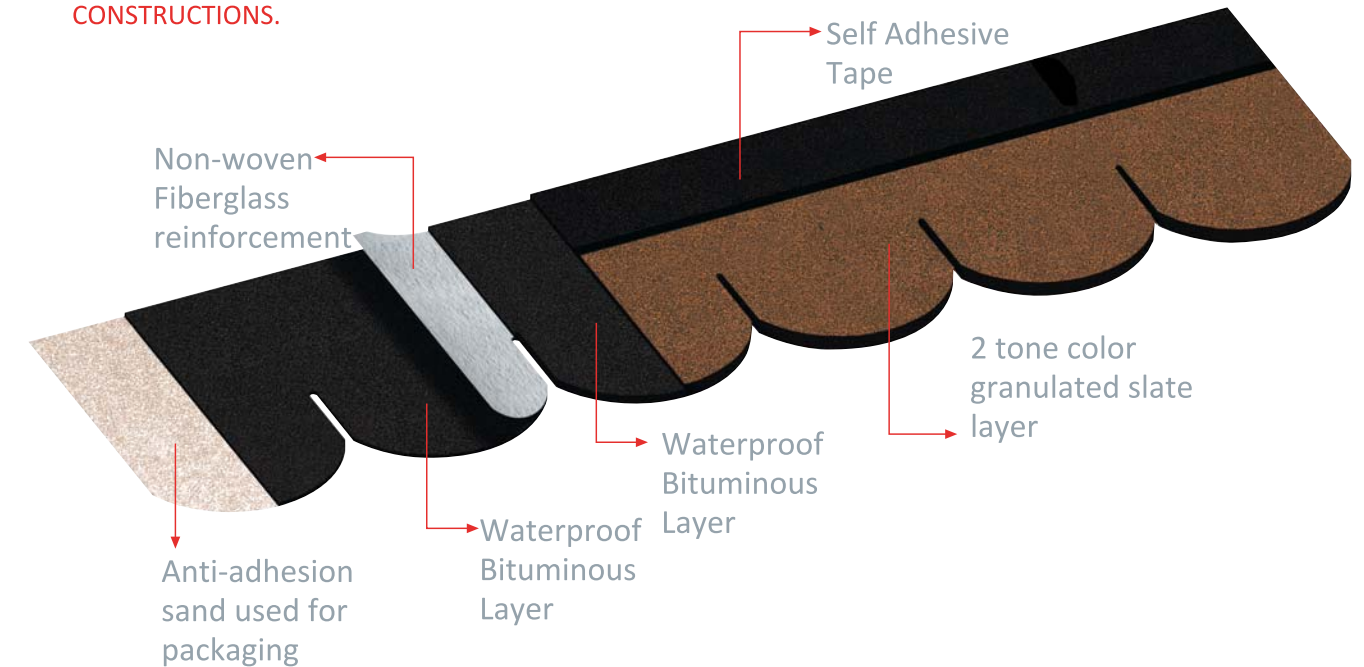


## System BARDOLINE®

Bardoline is a shingle type roofing material manufactured from glass fiber reinforced base saturated in high quality Bitumen, covered with various colors of granulated minerals (slate). It is ideal for 30° or more pitched roofs. However, it can be used on low pitched roofs and vertical surfaces when required.



SYSTEM BARDOLINE PROVIDES A WIDE RANGE OF EXCELLENT OPTIONS TO CREATE WATERPROOF, RELIABLE, DURABLE, LIGHTWEIGHT AND AESTHETIC ROOFS AND IT IS EASY TO APPLY ON ALL TYPES OF CONSTRUCTIONS.



### Avantages

- Bardoline is easily applicable on all types of roofs including surfaces which are very difficult or even impossible to cover with other materials.
- It is aesthetic with its patched texture and attractive choice of colors.
- It provides easy and fast application.
- It is waterproof, its patched and flexible construction prevents cracking during extreme temperature variations and it is long lasting.
- It is safe to walk ON THE MATERIAL.
- It does not require different material for details as ridge, pitched gutter, wall-chimney, the roof appearance is completed with a single material.
- It is a very light material with approximately 10 KG/SQM weight, very small weight on the roof.



## AVAILABLE TYPES AND STANDARD PROPERTIES



Bardoline Shingles are manufactured in three types - Bardoline S, Bardoline and Bardoline Cambridge



### Bardoline S and Bardoline

Bardoline S and Bardoline are manufactured and tested according to EN 544, a standard used in all countries of European Union. Bardoline shingles conform to Class 1 “meeting all the European climatic requirements by its properties and performance”, as specified by this standard. Bardoline Cambridge is produced in accordance with the following standards: ASTM D3462, ASTM D3018, ASTM D3161, ASTM E108, Class A. All Bardoline shingles have “TSE Quality Conformity Certificate”.

### Bardoline S

Bardoline S is a particular type of shingle subject to a different adhesive method. The self-adhesive bitumen strip that makes the sheets stick one onto another, which is normally on the upper surface, is on the back of Bardoline.S shingles which makes that they cover a large surface protected with polyethylene film. During the application, the polyethylene film is detached and by so doing the whole surface of shingles range contacting one with another are stuck with a special bitumen staying soft at any environment. That is the reason why Bardoline.S shingles can be easily applied even at cold climate, furthermore the probability that the sheets get detached under strong wind is prevented at maximum. Bardoline.S shingles are produced in “Traditional” and “Nova” types.



POLYETHYLENE PROTECTOR

SPECIAL ALL WEATHER ADHESIVE TYPE

**BARDOLINE<sup>®</sup>**  
NOVA



### Bardoline Cambridge

Bardoline Cambridge is a thick double-layer shingle. The nuances of colour, depth, texture, and dimensional appearance have been created to express nature accents. The Cambridge shingles are applied easily thanks to the warm sealing stripes on the back side of the sheets.

Bardoline S and Bardoline are manufactured and tested according to EN 544. Shingles conform to the Class 1 products, which are specified in the reference standard as “having properties and performance suitable for use under all climatic conditions in all countries of European Union”.

Bardoline Cambridge is produced in accordance with the following standards: ASTM D3462, ASTM D3018, ASTM D3161, ASTM E108, Class A

**BARDOLINE<sup>®</sup>**  
STANDARD

**BARDOLINE<sup>®</sup>**  
TRADITIONAL

**BARDOLINE<sup>®</sup>** **S**  
TRADITIONAL

**BARDOLINE<sup>®</sup>** **S**  
NOVA

**BARDOLINE<sup>®</sup>**  
CAMBRIDGE

TS EN 544





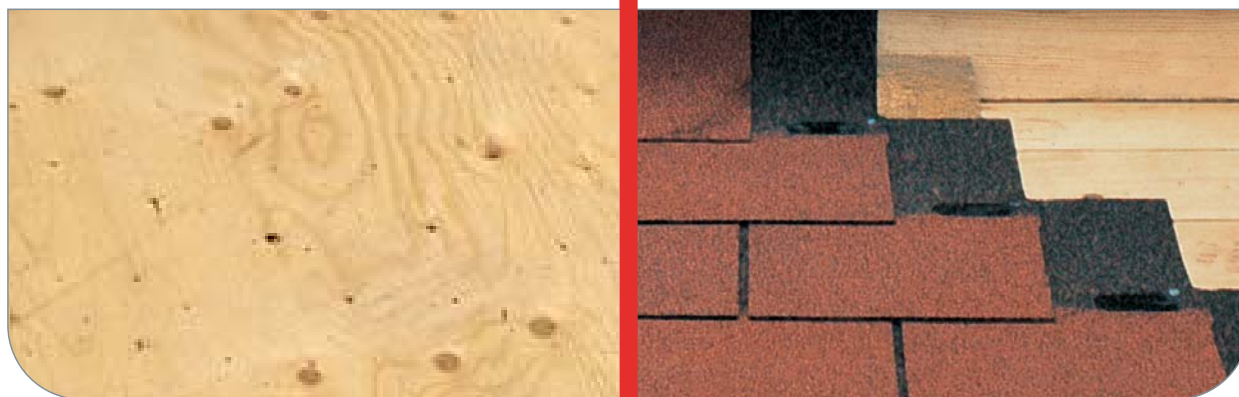
## SUBSTRUCTURE



Bardoline type shingles can be applied by fixing with nail or torching on. when applied with the use of nails, special, galvanized large-headed Bardoline nails are used. The wooden substructure can be battens with smooth surface, preferably plained and tonque and groove connected, as OSB or plywood.



If concrete roofs are needed to be covered directly with Bardoline, the torching method is employed. in such case the concrete surface is first coated with a layer of polymerized bituminous membrane through fusion welding, and then shingle are torched on the membrane. For such applications, the use of Bituline PG300 membrane is recommended. Torching method is necessary for low pitched wooden roofs (For detailed information please see: Application Guidelines).



## ONDUPLAK - HIGH QUALITY OSB3

OSB (Oriented Strand Board) is a modern type of woodboard most frequently used in roofing. The type of OSB which does not deteriorate in humid environments and can be recommended for all permanent structures is OSB3. Onduplak is produced in Westers Europe as Superior Quality OSB3 and has the EN 300 Quality Conformity Certificate. Onduplak is an ideal substructure material for shingles as well as for many other roofing materials.



When placing the boards the short side of the boards must be parallel to the rafters and 3 cm expansion gap must be provided between the boards and the longitudinal connections must meet on the rafters. Should there be any obstruction around the total roofing surface which may impede the movement of the woodwork, an expansion to erance of 2 mm for every meter of length covered, but at least 10 mm peripheral expansion tolerance in any case is necessary. In applications directly exposed to normal roof loads, use of 11mm thick boards, a maximum 2440 mm / 5 = 488 mm interspace between the rafters is recommended.

The boards must be fixed with nails of 5cm and 3 mm diameter, and the nails must be spaced at least 9 mm from the edge of the boards.

### TECHNICAL SPECIFICATIONS

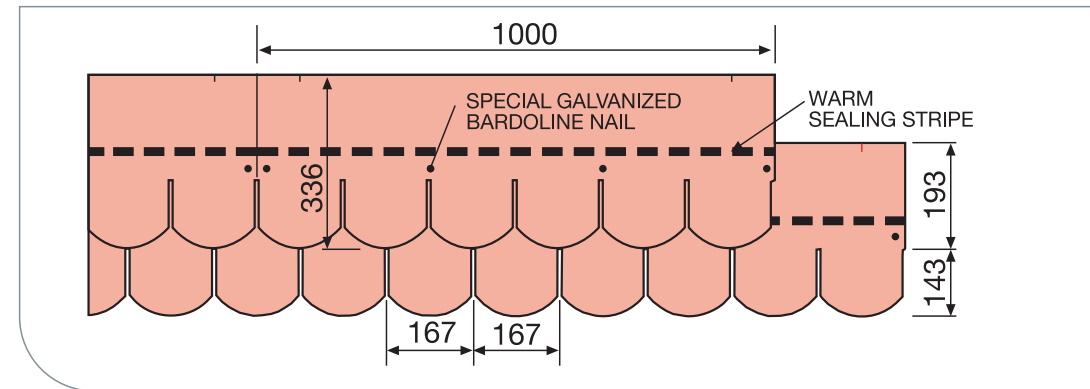
Width	1220 mm
Length	2440 mm
Thickness	11 mm
Density	620/640 kg/m <sup>3</sup>
Length / Width Tolerance	+0 / -2 mm
Thickness Tolerance	+ - 0.8 mm
Angular Deviation 3 mm	3 mm
Accuracy	0.6 mm/m
Liendar Expansion (at 65-85% RH)	% 0.15



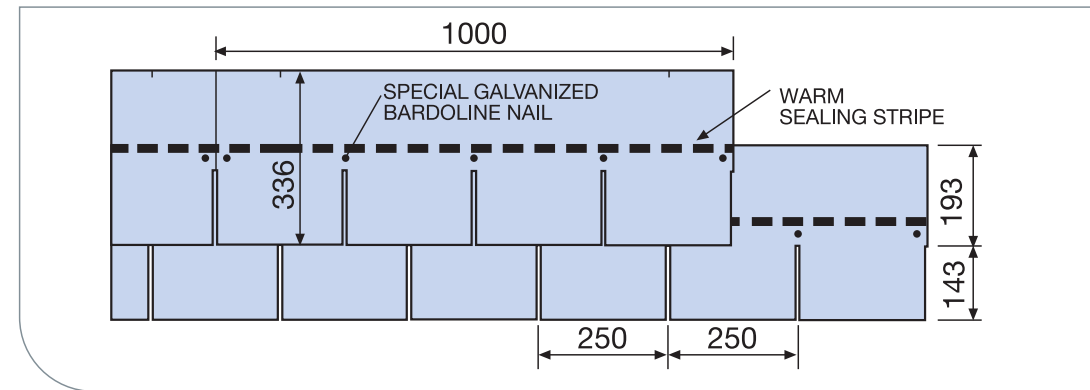
# TECHNICAL SPECIFICATIONS



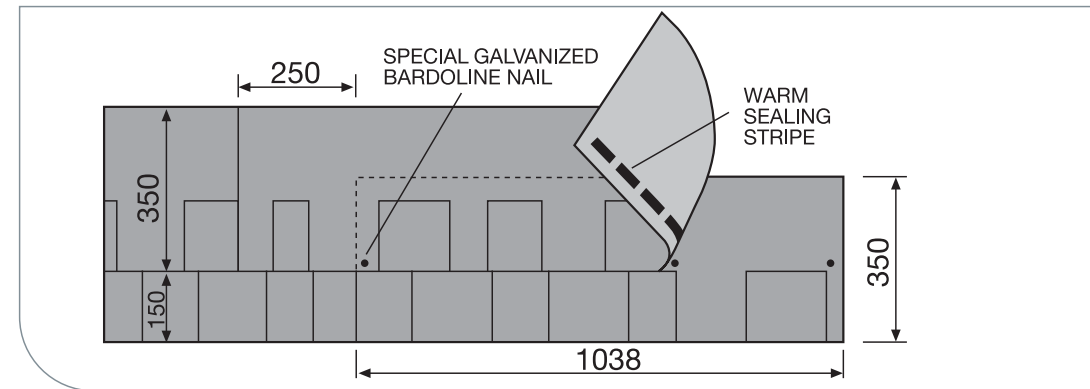
Bardoline shingles are produced in "Standard" and "Traditional" types. "Nova" is a specific type of Bardoline.S series. Traditional type shingles can also be supplied as Bardoline.S.



**BARDOLINE**  
TRADITIONAL

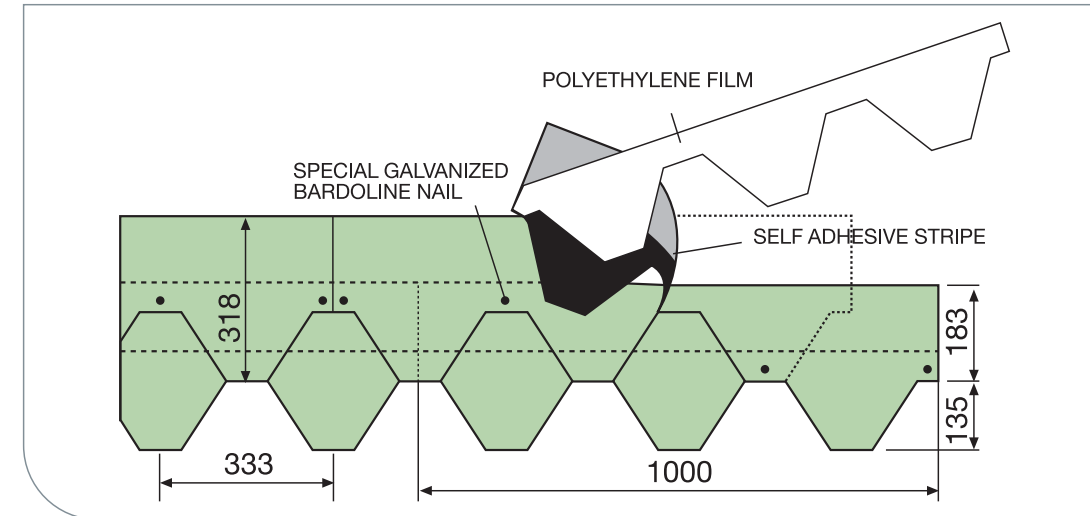


**BARDOLINE**  
STANDARD

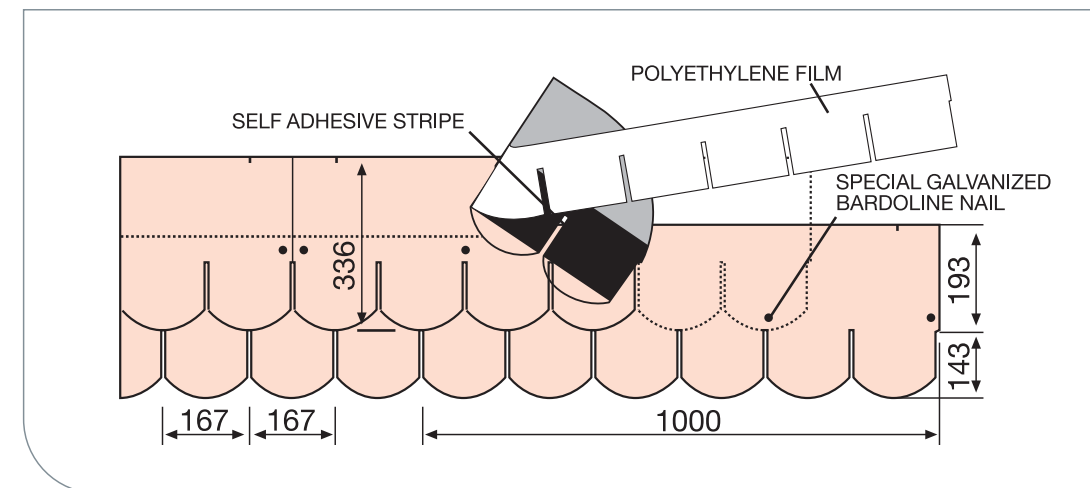


**BARDOLINE**  
CAMBRIDGE

Bardoline Cambridge is a thick double-layer shingle. The nuances of colour, depth, texture, and dimensional appearance have been created to express Nature Accents.



**BARDOLINE**  
NOVA



**BARDOLINE**  
TRADITIONAL

TECHNICAL SPECIFICATIONS	BARDOLINE TRADITIONAL	BARDOLINE STANDARD	BARDOLINE S TRADITIONAL	BARDOLINE S NOVA	BARDOLINE CAMBRIDGE
STANDARD	TS EN 544 4 X 2	TS EN 544 4 X 2	TS EN 544 4 X 2	TS EN 544 4 X 2	ASTM - ETA-08/0137
WEIGHT OF THE FIBERGLASS	110 g/m <sup>2</sup>	110 g/m <sup>2</sup>	110 g/m <sup>2</sup>	110 g/m <sup>2</sup>	95 g/m <sup>2</sup>
ADHESIVE STRIP	ADHESIVE AT HOT ENVIRONMENT		ADHESIVE AT ANY ENVIRONMENT		Warm sealing strip on the back-side
WIDTH	336 mm.	336 mm.	336 mm.	318 mm.	349 mm.
LENGTH	1000 mm.	1000 mm.	1000 mm.	1000 mm.	1038 mm.
TENSILE STRENGTH (LONGITUDINAL)	600 / 850 N/5 cm.	600 / 850 N/5 cm.	600 / 850 N/5 cm.	600 / 850 N/5 cm.	700 N/5 cm.
TENSILE STRENGTH (TRANSVERSAL)	600 / 700 / N/5 cm.	600 / 700 / N/5 cm.	600 / 700 / N/5 cm.	600 / 700 / N/5 cm.	600 N/5 cm.
TEAR RESISTANCE (TRANSVERSAL)	100 / 130 N	100 / 130 N	100 / 130 N	100 / 130 N	130 N
WEIGHT	10,5 kg./m <sup>2</sup>	10,9 kg./m <sup>2</sup>	12,1 kg./m <sup>2</sup>	9,2 kg./m <sup>2</sup>	12,1 kg./m <sup>2</sup>
PACKAGE NET COVERAGE AREA	3 m <sup>2</sup>	3 m <sup>2</sup>	2,72 m <sup>2</sup>	3 m <sup>2</sup>	3,1 m <sup>2</sup>
PALETTE NET COVERAGE AREA	135 m <sup>2</sup>	135 m <sup>2</sup>	122,4 m <sup>2</sup>	126 m <sup>2</sup>	136,4
PACKING	PERFORATED , POLYETHYLENE COATED PACKAGES				
SHEETS PER PACKAGE	21	21	19	22	20
PACKAGE PER PALLETTE	45	45	45	42	44
PACKAGE WEIGHT	31,5 kg.	32,8 kg.	33 kg.	27,7 kg.	37,51 kg.
PALETTE WEIGHT	1438 kg.	1496 kg.	1370 kg.	1267 kg.	1666 kg.
PALLET DIMANSIYON	101 x 102 x 100 cm (±5)	101 x 102 x 103 cm (±5)	101 x 102 x 100 cm (±5)	101 x 102 x 105 cm (±5)	102 x 135 x 90 cm (±5)





8 System  
**BARDOLINE®**

Bardoline is an aesthetic, durable and lightweight roofing material which can be used on all types of roofs and pitches with color and technical specification options

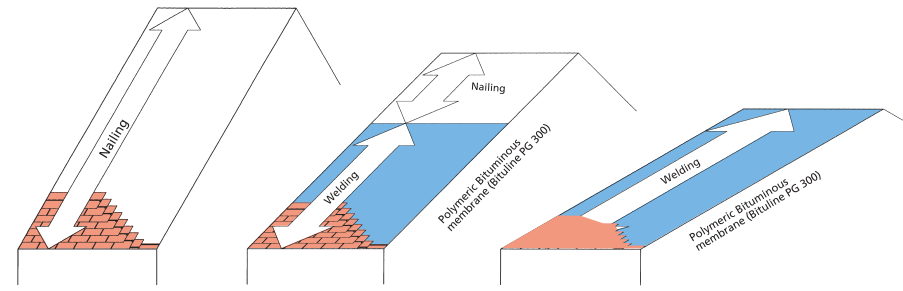




# APPLICATION GUIDELINES\*

## 1. Pitch

Minimum 30 % pitch is required for application with nails. For lower pitches, the whole roof must be covered with polymeric bituminous membrane of at least 33mm thick by fusion welding; the shingles must be torched on without using nails. At pitches between 30 % and 40 %, if the distance between eaves and the ridge exceeds 10 m, then welding method must be used for the first 7 m from the eaves. Bituline PG 300 type membranes produced by Onduline Avrasya have the optimum characteristics for shingle underlayers.

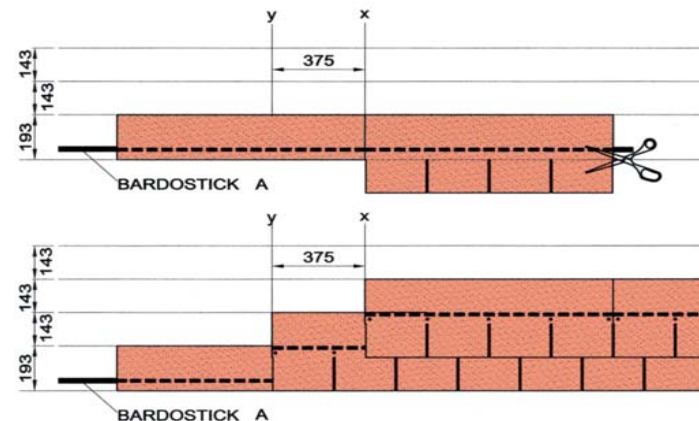


- For all roofs with pitch higher than 40% or pitches between 30% and 40% where eaves-ridge distance is < 10 m.
- For all roofs with pitches between 30% and 40% and where eaves-ridge distance is > 10 m.
- For pitches below 30%.



## 2. Setting and Fixing

One layer of Bardostick mastic is applied on the edge of the eaves. Bardolines are cut as shown in the figure to form an underlay for the first row of visible shingles and bonded to the eaves with Bardostick. When the second row is laid, the joints are deviated sideways to center each other. The slots on the sides of the boards enables to achieve issues such as maintaining correct distance between the rows, correct side deviation.



\* This catalogue contains principal details. For more information please use the "Technical Details and Application Guidelines" of Onduline Avrasya.

Shingles must be fixed on the substructure with galvanized and large headed Bardoline nails. The number of nails to be used is increased by 50 % at roofs steeper than 160 % and on vertical surfaces. Sticking to each other for Bardoline type shingles occurs naturally by the pressure of its own weight when application is made on sunny and hot weather conditions. If, self sticking is not sufficient due to cloudy, cold weather conditions the overlapping sections must be heated first and then pressed lightly. Since environmental conditions such as dirt, dust and humidity affect the sticking, the work should not be finished without properly checking it. Due to the extremely adhesive surface of Bardoline.S, shingles are able to stick to each other at any temperature, higher than 10°C. The PE-film which covers the self adhesive part must be removed in order to activate the sticking. Shingles can be nailed to the substructure after being stuck to each other, but it is also possible to remove the PE-film after nailing through the overlaps of the shingles.

## 3. Ventilation

Bardoline covered roofs must be ventilated pursuing the cold roof construction principles on buildings where heat insulation is applied and vapor barrier is not used. AT buildings with sufficient air circulation under the roof, a further measure is not required. However, at roof systems where ventilation is provided through the space between the rafters it is necessary to establish proper air inlets and outlets. The air inlets, set along the eaves, must provide minimum 4 cm space and throughout the whole eaves. Air exit must be provided through the ridge. Ridge ventilation element especially produced for this purpose can be used for hips and ridges. A membrane is torched on the ridge piece, to be covered by standard type shingles.



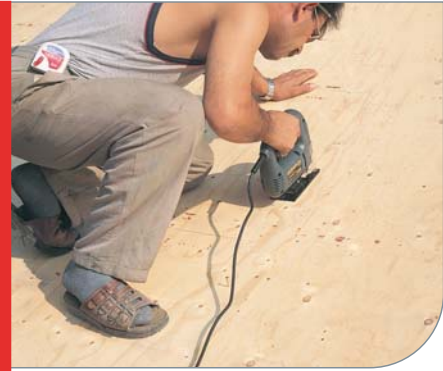
When required it is possible to obtain satisfactory ventilation by using sufficient number of standard of special type ventilation elements. These elements are set on holes opened on the cover plane with fretsaw and fixed in place with Bardoline nails whereas trims are covered with shingles bonded with Bardostick. Equalizing the volume of airflow provided by each element with the volume of air required for the roof gives the number of elements to be used. The air shaft enables leakproof discharge of all installation shafts and air vents from the roof except smoke chimneys. Its application is similar to ventilation elements. In heavy snow regions air shafts can be used as ventilation elements.



Air entrance at the eaves

Air exit at the ridge





1 Application stages of standard and special ventilation elements and air shaft.



2



3 Standard ventilation element



2



3 3 Special ventilation element



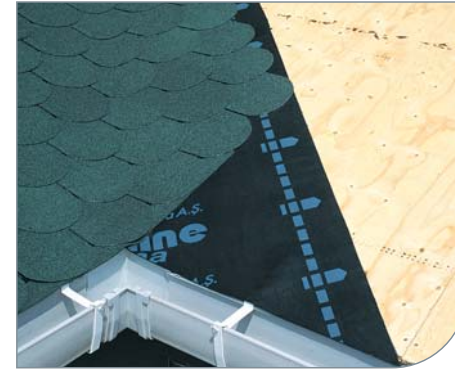
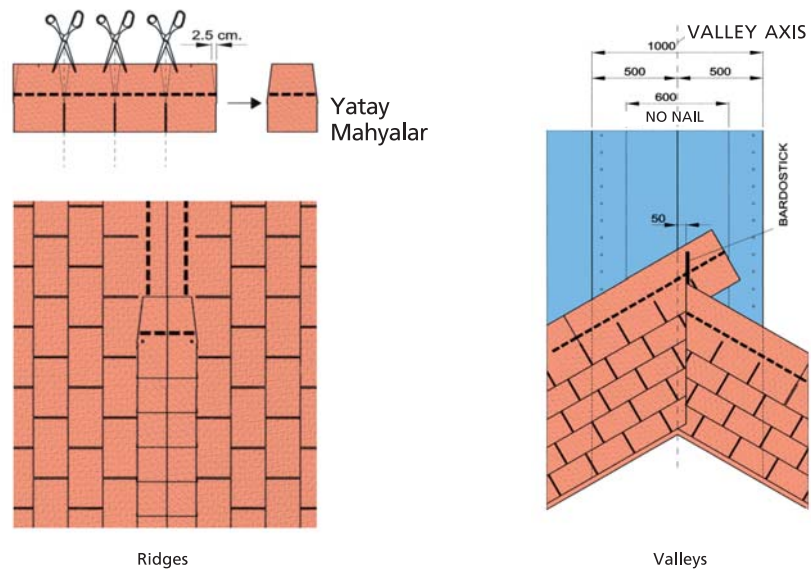
2



3 Air Shaft

4. Ridge and Valleys

For ridges not requiring ventilation, the standard shingles are cut into four pieces, and each piece is fixed with nails as ridge part. For the roofs covered with traditional type shingles, the ridges are also recommended to be made with standard type shingles. It is required to use polymeric bituminous membrane (Bituline PG 300) as underlay for the valleys. Membrane is torched on by fusion welding and it is also necessary to employ bonding method and avoid nails when fixing the shingles.



On valleys, shingles coming from one side should pass to the other side by exceeding the axis of the valley about 30 cm. Shingles coming from the other side are cut parallel to the axis of the valley. All cut shingles are bonded using Bardostick. A particular care must be employed to ensure that there are no nails at the right and left side of the valley within a distance of 30 cm.

5. Wall Flashing, Chimney Flashing, Roof Ends

Flexible structure of shingles provides ease in forming the wall and chimney flashings. Use of polymerized bituminous membrane as an underlay for flashings ensures waterproofing. Wall flashings are provided by means of Aluminum Z-profile laths. It is recommended to use triangular lath at the ends of the roofs at the gable ends to guide the rainwater to the center. Furthermore, Isoband which is a self adhesive elastomeric membrane coated with aluminum provides opportunities as a complementary material for miscellaneous detail solutions.



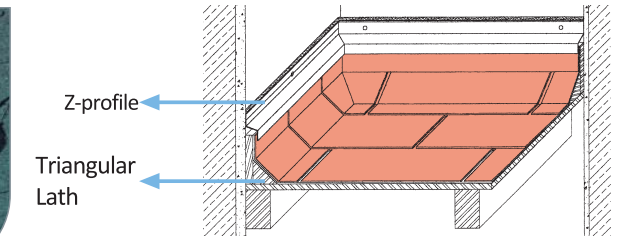
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2



3



6. Roof Window

Trims of the roof window is made suitable for shingle covering. The transparent lid fixed at various positions provides light as well as ventilation for the roof space. Application guidelines defined for ventilation elements apply also for roof windows.



1



2

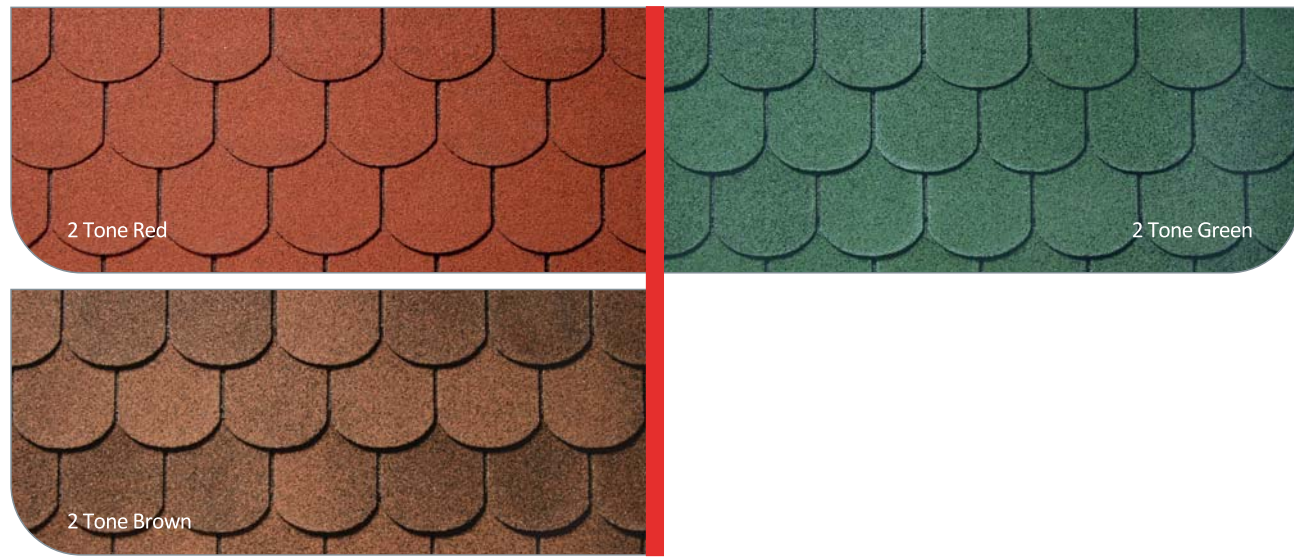


COLORS

BARDOLINE<sup>®</sup>  
STANDARD



BARDOLINE<sup>®</sup>  
TRADITIONAL



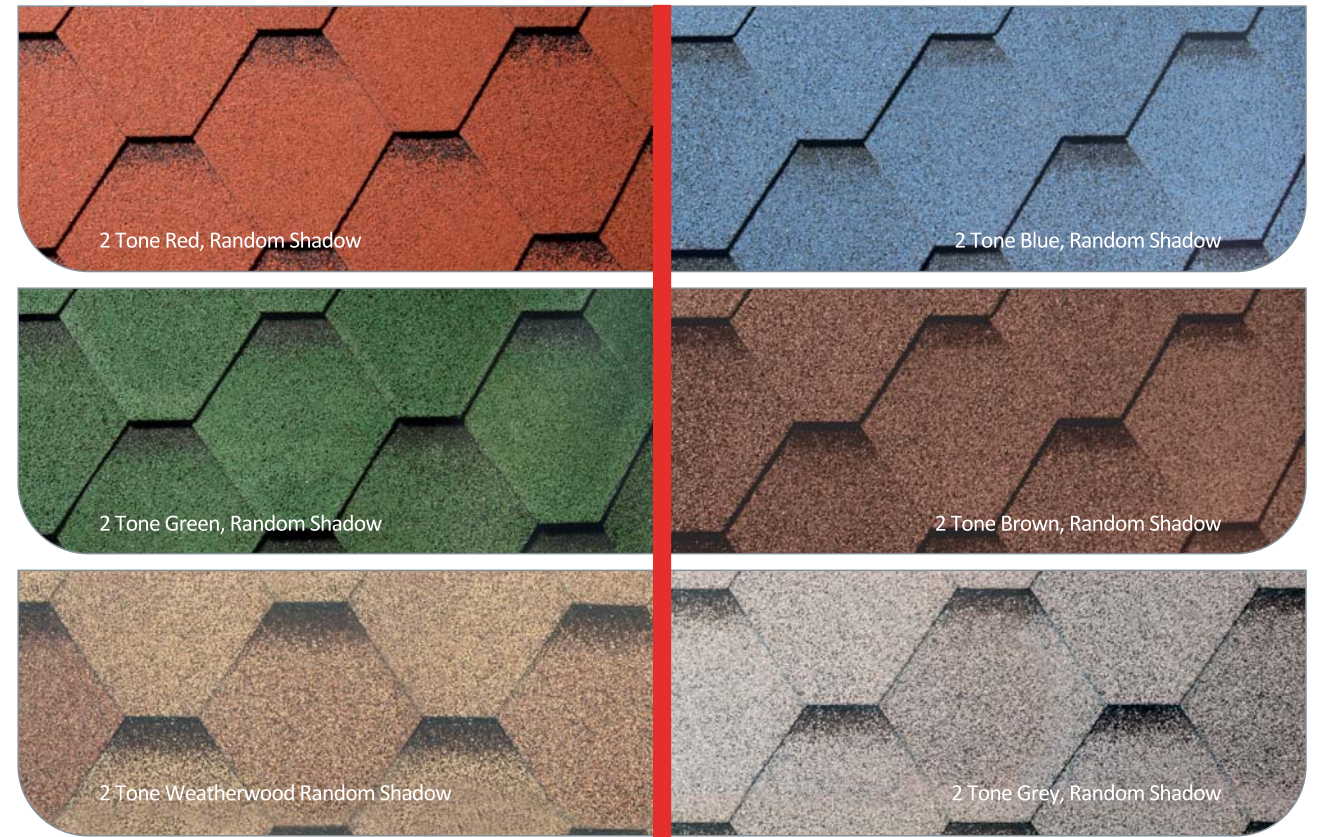
BARDOLINE<sup>®</sup>  
CAMBRIDGE



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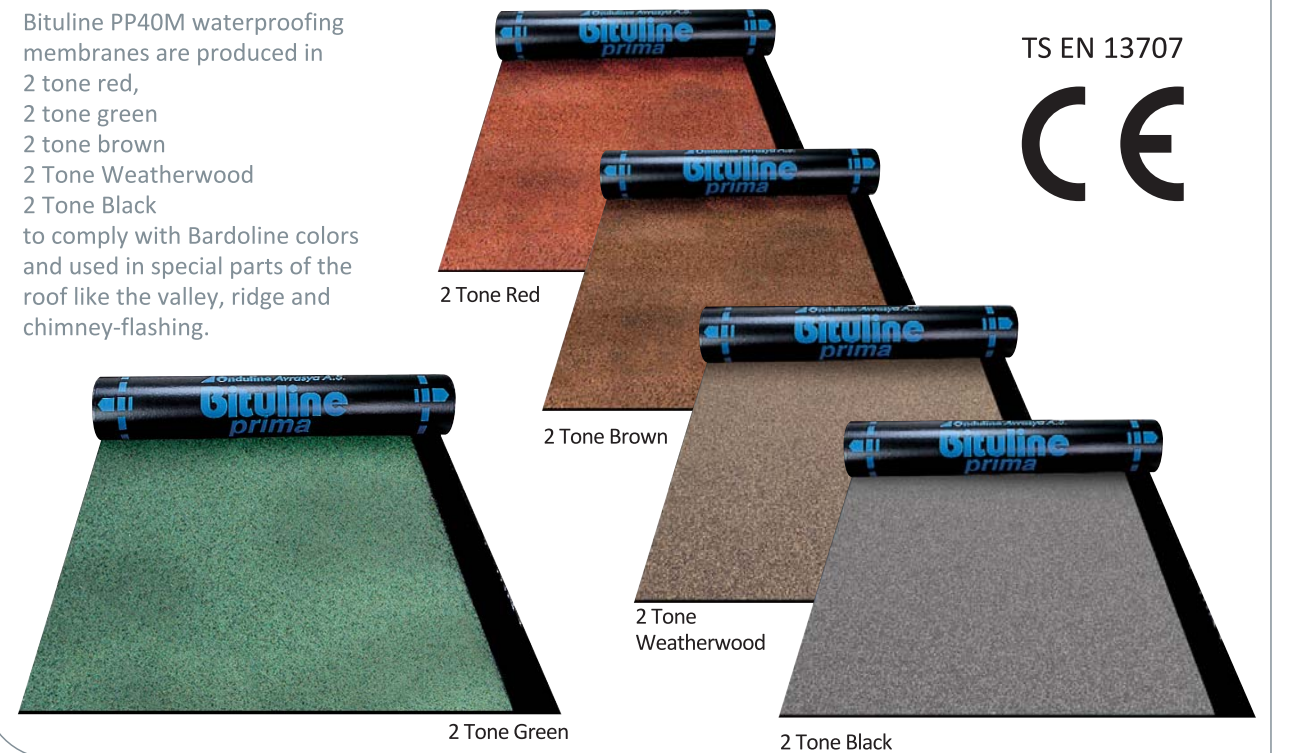


BARDOLINE<sup>®</sup>  
NOVA



BARDOLINE<sup>®</sup>  
TRADITIONAL

Bituline PP40M waterproofing membranes are produced in 2 tone red, 2 tone green, 2 tone brown, 2 Tone Weatherwood, 2 Tone Black to comply with Bardoline colors and used in special parts of the roof like the valley, ridge and chimney-flashing.





## SYSTEM ACCESSORIES



**Bardoline Nail**  
For wooden roofs, galvanized, large headed

Diameter: 3 mm  
Length: 2cm, 2.5 cm  
Package: 5kg per box

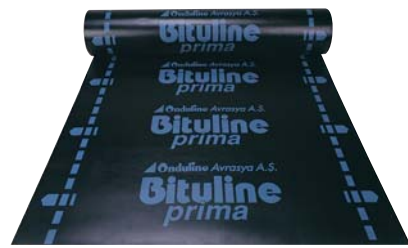
Code : 2 cm: 05420002000  
2.5 cm: 05420002500



**Bituline PG 300**  
Polymerized bituminous membrane  
for use as underlay for shingles

Thickness: 3 mm  
Width: 100 cm  
Length: 10 m

Code : 03201002000



**Granulated mineral waterproofing membrane**  
**Bituline PP 40M for valley and detail solutions**  
Width x Length: 10 m x 1 m  
Thickness: 3.5 mm  
Package :23 rolls/pallet (230m<sup>2</sup>)

2 tone red : 03201060021  
2 tone brown : 03201060061  
2 tone green : 03201060031  
2 tone weatherwood :  
2 tone black :



**Onduband (aluminium or copper coated self-adhesive membrane for gutters and detail solutions)**

Colours : Natural Aluminium, Aluminium Embossed, Aluminium Copper, Lead, Brick Red, Onduline Red, Terracotta, Onduline Green  
Package Dimensions: 17 cm x 17 cm x 61 cm

Width	5 cm	7.5 cm	10 cm	15 cm	20 cm	30 cm	60 cm
Length	10 m	10 m	10 m	10 m	10 m	10 m	10 m
Package	12	8	6	4	3	2	1



**Bardostick**  
Bituminous mastic

Package: 350 ml/cartridge  
Packing: 25 cartridge / box

Code : 04500500035



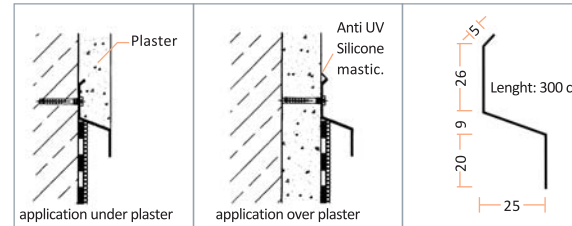
**Roof Skylight**

Width: 66.5 cm  
Length: 82.5 cm  
Renk: Black  
Package: 5 pieces per package

Code : 05500608051

**Z-Profile - For finishing details, Aluminium**

Length: 100 cm  
Package: 10 pieces per package



Code : 05502630000



Code : 04500630100

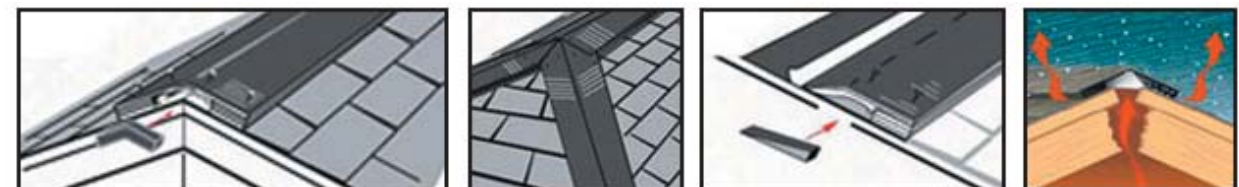
**Flexible pipe adaptor for air shaft**

Length: 410 mm

**Ridge ventilation stripe**

Width: 228 mm  
Length: 6 m  
Height: 15 mm  
Applicable roof slope: 15° - 60°  
Ventilation space: 275 sqcm/m

Code :  
kirmizi: 04500642008





**Onduplak  
(OSB3 Roofing Board)**

Width: 122 cm  
Length: 244 cm  
Thickness: 11 mm

Code : 04500311100



Ø 100 vertical rain drain pipe for Bituline or Isoband coated gutters

For other rain drain pipes available, please see "System Bituline" brochure

Code : 04500705000

**Air shaft**

Diameter: 110 mm  
Height: 450 mm  
Colors: Black, brown

Code :  
red: 04500630001  
black: 04500630002



**Standard ventilation element**

Space size:  
Width: 300 mm  
Length: 120 mm  
Height: 61 mm  
Colors: Black, brown

Code : black: 04500630301  
brown: 04500630302

**Special ventilation element**

Space size:  
Width: 102 mm  
Length: 210 mm  
Height: 115 mm  
Colors: Black, brown

Code :  
black: 04500630201  
brown: 04500630202



**REFERANCES**





