

# MINERAL *Design* 15 POLYESTER

# MINERAL *Design* 10 POLYESTER

WATERPROOFING MEMBRANE SELF-PROTECTED WITH CERAMIC MINERAL GRANULES IN VARIOUS COLOURS AND WITH SEVERAL TYPES OF DESIGN FOR THE DECORATION AND DEVELOPMENT OF THE "DESIGN" ROOFS

GRANTS *LEED* CREDITS

## 1 PROBLEM



## HOW TO MAKE ROOFING MATERIAL FIT IN WITH THE ENVIRONMENT WITH A NICER APPEARANCE

In cases where the waterproofing layer forms the final visible surface of a roof, problems such as the impact on the environment or meeting the aesthetic requirements of the structure may arise. To solve these problems it is now possible to use a product which, in addition to guaranteeing good waterproofing qualities, makes it possible to decorate the roof itself.



Waterproofing membranes

M

CATEGORY	CHARACTERISTICS			ENVIRONMENTAL						METHOD OF USE			
													
SPECIAL ELASTOPLASTOMERIC FOR SPECIFIC USES	WATERPROOF	DECORATIVE	REACTION TO FIRE	ECO GREEN	ASBESTOS FREE	TAR FREE	CHLORINE FREE	RECYCLABLE	NON DANGEROUS WASTE	EXHAUSTED OIL FREE	TORCH APPLICATION	HOT AIR APPLICATION	NAILING

## 2 SOLUTION



**MINERAL DESIGN** is the new generation Index membrane which is self-protected with a mineral finish. The mineral finish is no longer in just one colour but is now supplied in various colours in accordance with exclusive INDEX designs.

The **MINERAL DESIGN** membranes are made up of distilled bitumen, selected for industrial use, with a high content of elastomeric and plastomeric polymer additives to obtain a phase inversion compound whose continuous phase is formed by polymers in which the bitumen is dispersed, where the characteristics are determined by the polymeric matrix and not by the bitumen even if this is the most consistent ingredient. The performance of the bitumen is therefore incremented along with the durability and the resistance to high and low temperatures while the already optimum adhesive and impermeable qualities of the bitumen remain unchanged.

**MINERAL DESIGN**, as well as the new decorative effects, represents as always, a valid technical instrument for long lasting waterproofing systems. It is of an advanced technical design with a new composite reinforcement which resolves the problems of dimensional stability.

The incorrect storage of rolls, leaving the membranes exposed to the sun under the polythene cover, or the uneven torching of the membrane during application and the application on insulation with a high grade of thermal resistance may result in the warping and deformation of membranes reinforced only with "non woven" polyester fabric, which, due to its properties, is more sensitive to temperature than mineral fibre reinforcement.

The traditional coupling with fibreglass, resolves the problem of stability but during the application phase the bending of the membrane causes microfractures in the fibreglass which can damage the bituminous mass which coats it.

**MINERAL DESIGN** is reinforced with a "non-woven" polyester fabric stabilized with fibreglass mat which guarantees stability in hot conditions, while in cold conditions it behaves like a sheet reinforced with pure polyester.

The composite reinforcement has a resistance to nail tearing much higher than one of common membranes.

**MINERAL DESIGN** is produced in two versions:  
- **MINERAL DESIGN 15 POLYESTER**  
- **MINERAL DESIGN 10 POLYESTER**

The first has a flexibility rating at low temperatures of  $-15^{\circ}\text{C}$  and additionally resistant reinforcement, for which it is preferred in colder

climates, whereas the second, with flexibility rating at low temperatures of  $-10^{\circ}\text{C}$  is for warmer climates.

The top face of **MINERAL DESIGN** is self-protected with hot bonded and pressed ceramic mineral granules, with the exception of an overlapping side strip, protected by a strip of Flamina film which is torch bonded to weld the joints. The film which melts, with a high retraction, coats the underside of the membrane guaranteeing a fast and reliable installation.

### APPLICATION FIELDS

**MINERAL DESIGN** represents the evolution of mineral self-protected membranes. Now designers have a new instrument at their disposal and the special designs of the membranes open up new (and until now), unforeseen possibilities for the decoration of roofs. With **MINERAL DESIGN**, now the pitched roof of a school, a church or a block of flats may be covered in a colourful way, with a choice of many colours.

### METHOD OF USE AND PRECAUTIONS

The substrate must be clean, dry, smooth enough and free of any roughness or dips. Generally the membrane is applied by torch

### ADVANTAGES

- **MINERAL DESIGN** is a waterproofing membrane which combines, with its high water tightness performance, a decorative effect better than that offered by ordinary self-protected membranes. This adds value to the waterproofing work and solves environmental impact problems.
- **MINERAL DESIGN's** light weight makes it possible to obtain the decorative aspect of shingles, curved tiles and flooring even on light roofing.
- It is quicker to lay than traditional tiles and bituminous tiles.
- Unlike tiles of any kind, it can be applied vertically and on gentle pitches to create a seamless covering with perfectly sealed and lasting overlaps.



**INTENDED USE OF "CE" MARKING SPECIFIED ACCORDING TO THE AISPEC-MBP GUIDLINES**

**EN 13707 - REINFORCED BITUMEN SHEETS FOR ROOF WATERPROOFING**

- Upper layer in multi-layer systems without permanent heavy surface protection
- MINERAL DESIGN 15 POLYESTER
- MINERAL DESIGN 10 POLYESTER

bonding. Depending on the different construction typologies, the sheets can be full bonded or spot bonded. For the choice of the most appropriate installation system we refer the reader to our handbooks.

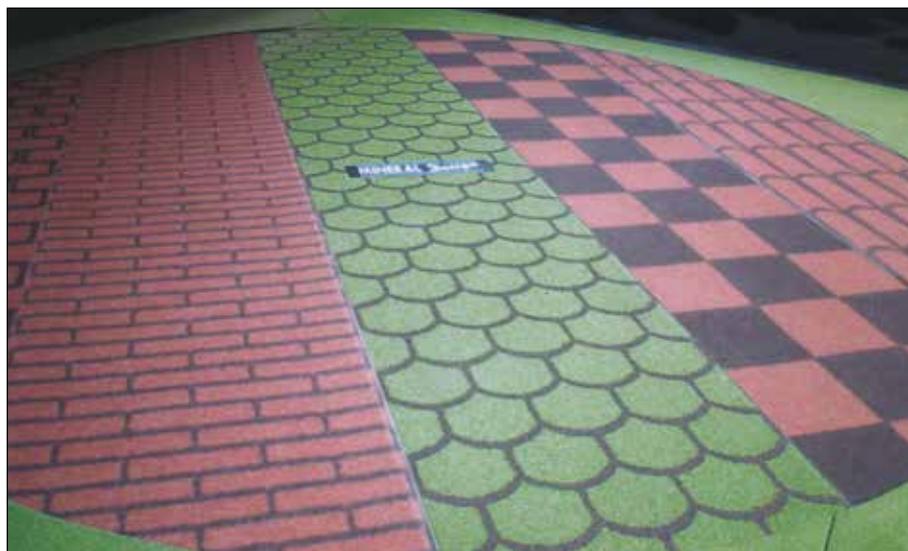
Cast concrete surfaces must be left to set and be completely dry before the sheet is applied. The time it takes for the concrete to be completely dry depends on the weather and may take from 8 to 24 days.

To protect timber substrates from the flame, sheets of ROLLBASE or bituminised paper-felt should be nailed down before applying the membrane. Torch bonding should be carried out with a suitable torch connected to a propane gas cylinder. To bond the sheet to the substrate and on the overlaps, use the torch flame to fuse the Flamina lining on the underside of the membrane while it is being unrolled.

To spot bond the membranes, use the flame only on points which are evenly distributed across the membrane or by applying the membrane on the PERFOBASE perforated sheets.

The sheets should be overlapped by roughly 10cm, paying particular attention to align the design with the previous sheet. The head joint laps should not be less than about 15 cm, paying attention to align the design with the previous sheet. If the membrane is spot bonded, it should be full bonded for at least one metre on each side of the head laps.

The overlaps are torch bonded and the correct bonding is indicated by a continuous bead of bitumen which flows out of the overlaps. Avoid filling or going back over the overlaps with a hot trowel which could damage the heat sensitive



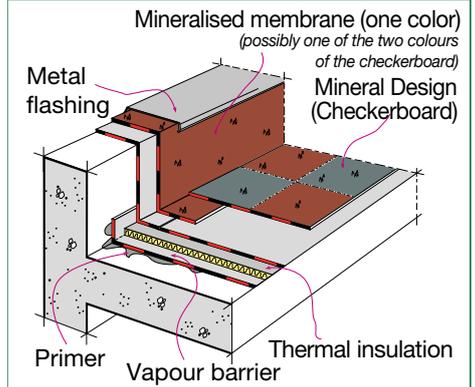
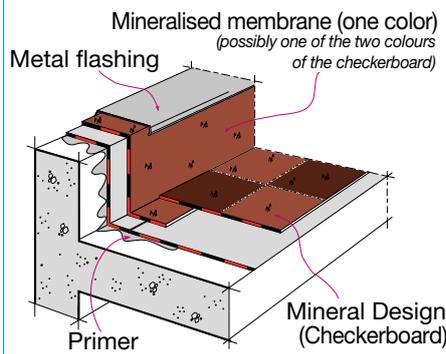
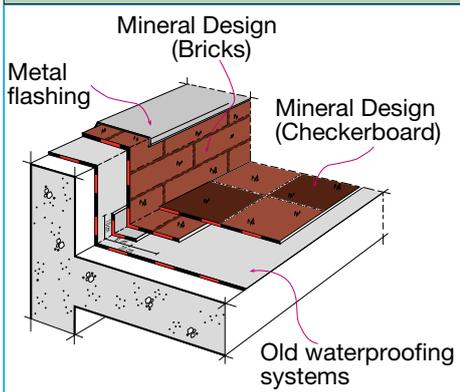
reinforcement and the design. In the head laps, the mineral coated surface should be heated in order to embed the slate granules in the joints. The correct temperature for bonding the membrane on the substrate and the overlaps is indicated, for the surfaces protected by Flamina film, when this same protective film burns off followed by the appearance of a shiny surface. However, the membrane must not be overheated and a further sign of the correct bonding temperature is checking that the bead of compound which flows out of the overlaps is not excessively large. During the application, bear in mind that the

compound of the membrane is a thermoplastic material which becomes adhesive when torched, hardening and setting when it cools quickly. The cooling speed and therefore the setting time, depend on the method of heating, the type and condition of the substrate and the weather conditions when the membrane is applied. The installer must therefore take the above-mentioned factors into due consideration while applying the membranes, in order to avoid putting the bonded parts, especially the overlaps, under stress before they are ready. When applying membranes on vertical surfaces, the installer must support the membrane until it has

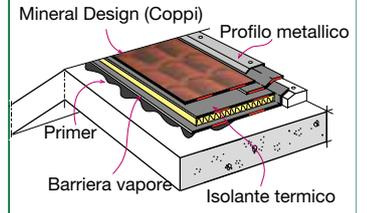
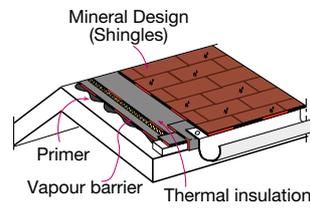
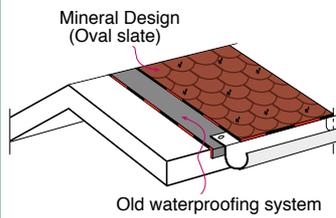
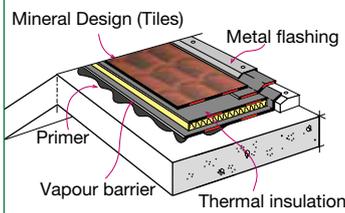
cooled sufficiently to be able to bear its own weight. In summer, using a plastic or cardboard tube to unroll the membranes being bonded to a vertical surface will make the job much easier. The thermoplastic properties of the membrane must be taken into consideration when working on metal roofing, on compressible insulating materials and on substrates which are not flat, etc. to avoid putting the bonds of the overlaps under stress with loads or by walking on them, before they have cooled sufficiently. In order to obtain a gradual and continuous effect, it is necessary to apply the product by following a precise layout depending on the type of design (see table).

## DETAILS

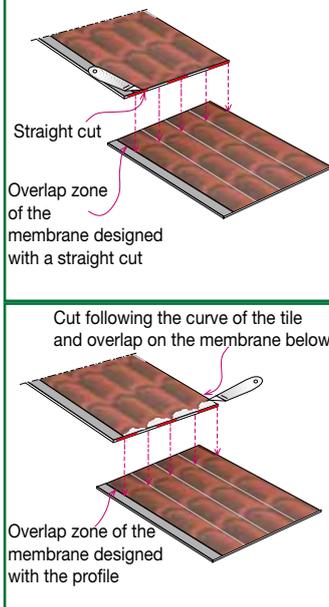
### FLAT ROOFS



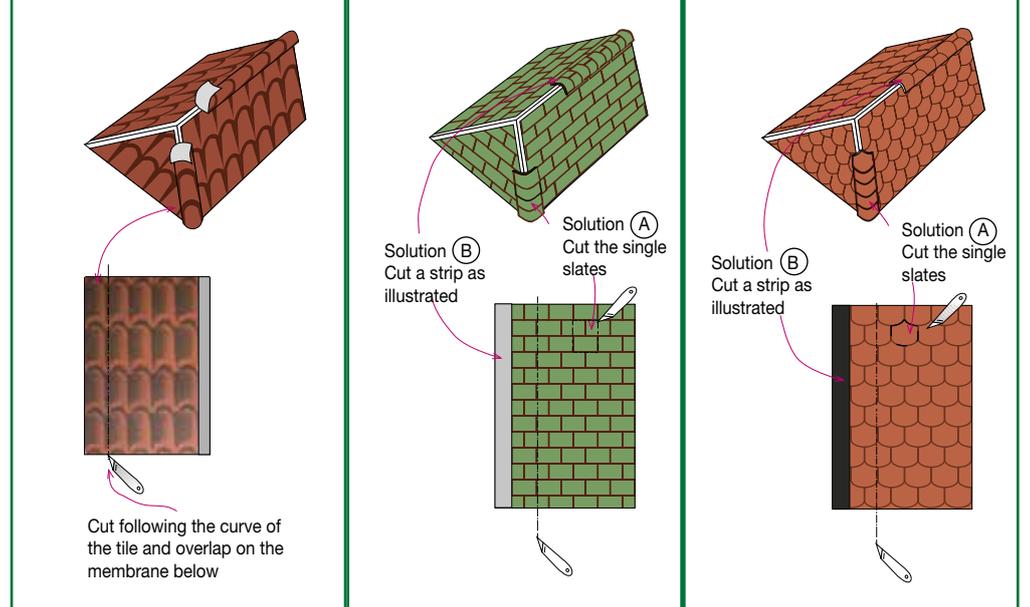
### SLOOPING ROOFS



### Head laps



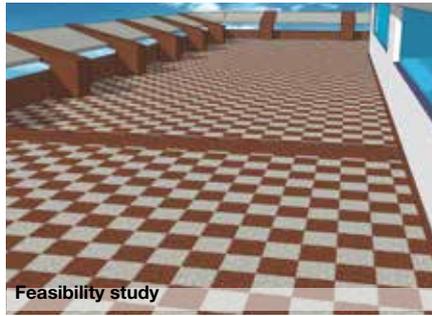
### Ridges and Hips



# REFERENCES



Existing situation before intervention



Feasibility study



Implementation



Existing situation before intervention



Implementation - Oval slates (previous version)



Existing situation before intervention



Implementation - Oval slates (previous version)



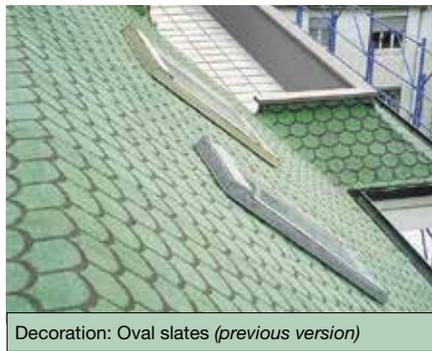
Existing situation before intervention



Implementation - Oval slates (previous version)



Decoration: Shingles



Decoration: Oval slates (previous version)



Decoration: Shingles and Checkerboard (previous version)



Decoration: Shingles



Decoration: Checkerboard



Decoration: Tiles (previous version)

## DECORATION TABLE

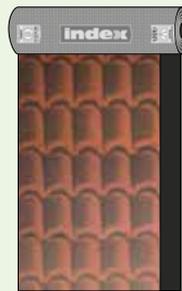
The colour combinations shown in the table are the only possible ones.



3D  
EFFECT

## Three-Dimensional

### TILES



### OVAL SLATES

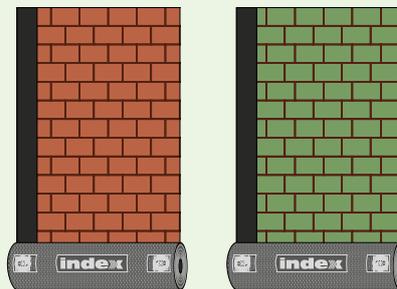


## Traditional decoration

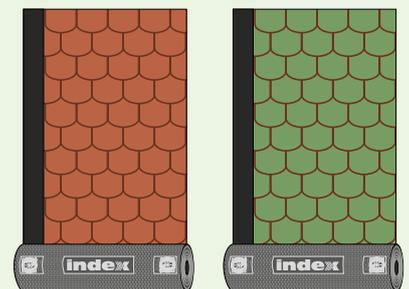
### CHECKERBOARD



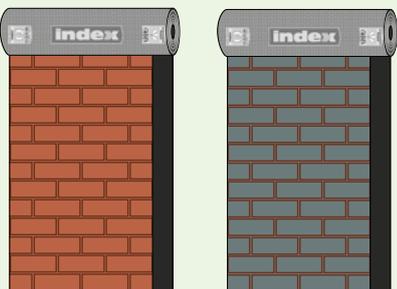
### SHINGLES



### OVAL SLATES



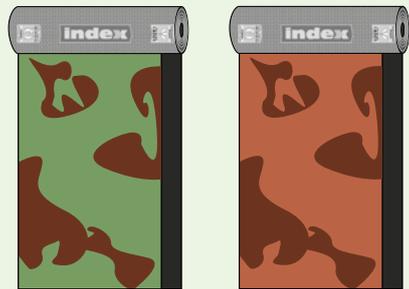
### BRICKS



### RHOMBUS



### MILITARY CAMOUFLAGE



Minimum order: 500 m<sup>2</sup>.



When waterproofing heat-sensitive supports, please also consult the data sheet of **MINERAL DESIGN SELF-ADHESIVE**

# MINERAL *Design* SELF-ADHESIVE

Packaging



## HOW TO WATERPROOF AND IMPROVE THE APPEARANCE OF ROOFS, ALSO ON HEAT-SENSITIVE LAYING SURFACES

**MINERAL DESIGN SELF-ADHESIVE** is the new version of MINERAL DESIGN which is applied cold. It is the same membrane but its lower face is spread with a special elastomeric self-adhesive mix by simple pressure at room temperature, made up of a special mixture of select Venezuelan bitumen, tackifying resins and radial and linear thermoplastic elastomeric polymers, with long-lasting adhesive properties over time.

**MINERAL DESIGN SELF-ADHESIVE** is available in two versions:

- **MINERAL DESIGN SELF-ADHESIVE EP OVERLAPS POLYESTER:** devised to obtain a long-lasting seal on overlaps, the same as that of traditional polymer bitumen membranes. It is indeed possible to bond the overlaps using a torch or hot air blower.
- **MINERAL DESIGN SELF-ADHESIVE EP SELFFLAPS POLYESTER:** the selvage for the overlaps is self-adhesive and can be bonded without using a torch. It is designed exclusively for laying on wooden boards and on surfaces of limited proportions, smaller than 200 m<sup>2</sup>.

## TECHNICAL CHARACTERISTICS

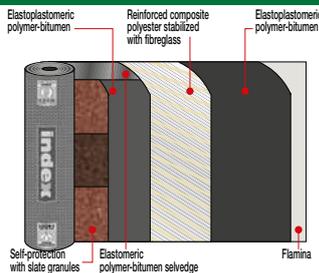
	Standard	T	MINERAL DESIGN 15 POLYESTER	MINERAL DESIGN 10 POLYESTER
Reinforcement			"Non-woven" composite polyester stabilized with fibreglass	"Non-woven" composite polyester stabilized with fibreglass
Weight	EN 1849-1	±15%	4.5 kg/m <sup>2</sup>	4.5 kg/m <sup>2</sup>
Roll size	EN 1848-1	-1%	1x10 m	1x10 m
Watertightness	EN 1928 - B	≥	60 kPa	60 kPa
Maximum tensile force L/T	EN 12311-1	-20%	700/500 N/50 mm	450/400 N/50 mm
Elongation L/T	EN 12311-1	-15% V.A.	40/45%	45/45%
Resistance to impact	EN 12691 - A		1 250 mm	1 000 mm
Resistance to static loading	EN 12730 - A		15 kg	10 kg
Resistance to tearing (nail shank) L/T	EN 12310-1	-30%	200/200 N	140/140 N
Dimensional stability L/T	EN 1107-1	≤	-0.30/+0.10%	-0.25/+0.10%
Flexibility to low temperature	EN 1109	≤	-15°C	-10°C
Flow resist. at high temp. • after ageing	EN 1110 EN 1296-1110	≥ -10°C	120°C 110°C	120°C 110°C
UV ageing	EN 1297		NPD	NPD
Reaction to fire Euroclass	EN 13501-1		E	E
External fire performance	EN 13501-5		F roof	F roof
Thermal specifications				
Thermal conductivity			0.2 W/mK	0.2 W/mK
Heat capacity			5.40 KJ/K	5.40 KJ/K

Compliant with EN 13707 in terms of the resistance factor to steam penetration for reinforced polymer-bitumen membranes, the value of  $\mu = 20\,000$  may be considered, unless declared otherwise.

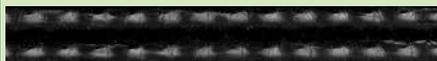
The numerous possible uses and the possible interference of conditions or elements beyond our control, we assume no responsibility regarding the results which are obtained. The purchasers, of their own accord and under their own responsibility, must establish the suitability of the product for the envisaged use.

### COMPOSITION OF THE MEMBRANE

#### MINERAL DESIGN 15 POLYESTER - MINERAL DESIGN 10 POLYESTER



### PRODUCT FINISHING



**EMBOSSING FLAMINA.** The embossing on the lower surfaces of the membranes finished with Flamina film makes it possible to lay the product precisely and quickly, forming a smooth surface when melted with the torch. It indicates the correct melting temperature and lets the film retract faster. The embossing also enables optimal vapour diffusion; in spot bonded and loose laid installation, in the points where it remains intact, preventing blisters and swelling.



**CERAMIC-COATED MINERAL GRANULES.** On the visible face of the membrane, a protective coating made up of ceramic-coated granules of various colours is hot bonded. This mineral shield protects the membrane from ageing caused by UV rays.

The figures shown are average indicative figures relevant to current production and may be changed or updated by INDEX at any time without previous warning. The advice and technical information provided, is what results from our best knowledge regarding the properties and the use of the product. Considering

• FOR ANY FURTHER INFORMATION OR ADVICE ON PARTICULAR APPLICATIONS, CONTACT OUR TECHNICAL OFFICE • IN ORDER TO CORRECTLY USE OUR PRODUCTS, REFER TO INDEX TECHNICAL SPECIFICATIONS •

**index**  
Construction Systems and Products

Via G. Rossini, 22 - 37060 Castel D'Azzano (VR) - Italy - C.P.67  
T. +39 045 8546201 - F. +39 045 518390

Internet: [www.index-spa.com](http://www.index-spa.com)  
Informazioni Tecniche Commerciali  
[tecom@indexspa.it](mailto:tecom@indexspa.it)  
Amministrazione e Segreteria  
[index@indexspa.it](mailto:index@indexspa.it)  
Index Export Dept.  
[index.export@indexspa.it](mailto:index.export@indexspa.it)

