A Root Resistant Waterproofing is necessary

A professionally waterproofed roof surface with bituminous or high polymer membrane is a precondition for a durable long-lived green roof.

The waterproofing should be root resistant, since installing an additional root barrier especially on pitched roofs requires high effort.

It is very important to take the green roof upkeep and maintenance into account as early as the planning stage of the project. At roof penetrations it is important that the waterproofing extends a min. 0f 10cm above substrate surface.

Green roof systems can also be bordered with stainless steel eave profiles. Skylights can be installed as access for later upkeep and maintenance.

BITUNIL Green Roofs Product Range

BITUGARDEN is an anti root membrane specially designed for roof garden waterproofing and under ground structures which are going to be covered with green areas.

The root resistance feature has been achieved by adding a special chemical additive to the bitumen compound. The final product resists root penetration with out compromising its main waterproofing characteristics.

Even in direct contact with soil, BITUGARDEN does not transfer any polluting elements or present any algaecide or bactericide effects.

BITUGARDEN Anti root property complies with international EN standards, and the product is available in two types:

BITUGARDEN SBS
BITUGARDEN APP

The first is an Elastomeric SBS modified anti root bituminous membrane with composite polyester reinforcement. Its premium quality bitumen compound enhances the resistance to chemicals, results in superior performance with temperature fluctuations, and significant compound elastic behavior, which closely suits the green roofs application. The second type is APP polymer modified anti root membrane.

For both types of Garden products, the SBS/APP polymers and the anti-root additives enhance the thermal, aging, and root resistance properties of membrane compound, while the isotropic mechanical properties of the membrane are established by the composite carrier of polyester armored with fiberglass filaments.

BITUGARDEN SBS, BITUGARDEN APP

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An Image is better than a Thousand Words

International CODES Requirements for Green Roofs

- The standard building codes ***IBC*** and ***Building construction code*** are largely silent on the topic of green roof systems. The only direct statement in ***IBC*** related to green roofs is specifying uniform design live loads in the landscaped area (for maintenance related foot traffic and for regulated pedestrian access), and it requires that the «wet weight» of the green roof be treated as an additional dead load.

However, at present, the only accepted guidelines for green roof construction are those developed by FLL, in Germany ***(Guide lines for planning, installation, and maintenance of green roofs.)***

About Our Organization...

The Nile Waterproofing Materials Company S.A.E., ***BITUNIL***, is the product of experience, prudence and knowledge.

The BITUNIL plant is built over an area of 20,000 square meters in Al Max Alexandria Port. The production plant is state of the art for manufacturing of modified bitumen membranes, and is fully equipped to manufacture quality products that comply with internationally recognized standards.

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BituNil Highlights

News from Egypt's leading Modified Bitumen Waterproofing Manufacturer-Bitunil S.A.E.

Special Interest Articles:

- The mineralized MBM, A great roof top finish.
- Green Roofs, Our solution to an ailing urban environment.

Individual Highlights:

Mineral product range

Garden product range

Mineral Surfaced Modified Bitumen Membranes: A Great Roof Top Finish

As you pass by many of the new north coast resorts, you can not help but notice the pattern of clay roof tile finished roofs. The waterproofing underneath the tiles, if any, is either bituminous coatings or waterproofing membranes.

A great alternative for such, non-accessible roofs would be the mineralized modified bitumen water proofing membranes.

Besides the fact that it saves home owners a bundle, its ease of application, attractive aesthetical effect, and reliability as a water tight, UV ray resistant, and weathering resistant waterproofing membrane makes it a perfect alternative to the clay roof tiles.

The variety of mineral slate colors gives you the option of blending harmoniously with the surroundings or standing out.

Pitched Roof

Flat Roof

Mineral Surfaced Products Range, And Major Features

BITUNIL carries a wide range of self-protected, mineralized modified bitumen membranes.

APP modified bitumen membranes with polyester / composite polyester reinforcement such as BITUNIL P Mineral, BITUPLAST Mineral, and BITUTER Mineral.

SBS modified bitumen membranes with composite polyester reinforcement such as BITUFLEX Mineral.

The surface finish of the mineralized products is torch-able Polyethylene film on the lower surface, and mineral slate chips on the upper surfaces, available in the following colors: Gray, Green, Red, and White.

The products are characterized with their;

- Enhanced surface characteristics.
- Enhanced resistance to chemicals.
- High U V resistance.
- Fire retarding properties.
- Good performance under wide range of temperature fluctuation.

Mineral Surfaced Modified Bitumen Membrane Systems

Exposed, Insulated Flat Roof System

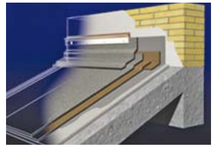
System installation:

1. A vapor barrier is applied fully bonded to the roof perimeter and verticals.
2. Insulation boards shall be laid in a staggered manner with ship lapped edges. To guarantee system stability, mechanically fix along perimeters.
3. A polyethylene separation layer shall be loose laid on top of the thermal insulation boards with 150mm overlaps.
4. Light weight concrete shall be produced on the job site and applied to slopes on the separation layer.
5. Waterproofing base layer shall be fully adhered to LWC.
6. Top, self-protected main layer shall be fully adhered to base layer.

   A,B. Membrane base flashing shall be fully bonded to the primed perimeters and vertical surfaces.

   C. Membrane flashings shall extend vertically up to a minimum of 10cm above the finished roof level. A metal counter flashing shall be installed over the top edge of the self-protected membrane, fastened at 25cm intervals, and pointed with a compatible sealant.

Exposed, Non-Insulated Pitched Roof System



System installation:

1. A leveling screed is applied, if needed, to fill all surface irregularities.
2. Surfaces shall be coated with a primer, and left to dry totally prior to waterproofing application.
3. Membrane base flashing shall be fully bonded to the perimeters and vertical surfaces.
4. Waterproofing base layer shall be fully adhered to concrete substrate.
5. Top, self-protected main layer shall be fully adhered to base layer.
6. Side laps shall be 8-12 cm, and end laps 12- 15cm. Using a torch flame, the operation is carried out by gently pressing the edges so that some of the bitumen mass flows out. Overheating could damage the integrity of the membrane.
7. Membrane flashings shall extend vertically up to a minimum of 10cm above the finished roof level. A metal counter flashing shall be installed over the top edge of the self-protected membrane, fastened at 25cm intervals, and pointed with a compatible sealant.

Green Roofs, Our solution to an ailing environment

Vegetated roofing is one of the most exciting developments in building design. Depending on load capabilities and other application-driven needs, green roofs can be planted with herbs, grasses, flowers, even trees, in an exciting variety of colors, textures scents and heights. Today it is well known that green roofs offer many social, environmental and economic benefits.

- It is one way of addressing the problem of ailing urban environment. It helps rid the air of pollution, raise oxygen levels, and cool the surroundings, giving the residents a unique healthy space of their own.
- Green roofs limit heat reflection, allow better control of rain water runoff, and help fix dust and fine powder.
- They also offer technical and economical advantages to the building itself, by increasing roof thermal insulation, increasing noise deadening property, protecting roof system against thermal cycles, UV rays and mechanical damage by humans and wind-blown dust and debris.
- Roof tops can be transformed into mini-kitchen gardens that produce veggies and fruits free of hormones and pesticides. This shall have positive effect on the nutrition of the poorest sector of urban society, improving its overall standard of living.
- Green roof tops can yield high quality vegetables, encourage efficient use of water in an agricultural context, and generate incomes.

A green roof is a city lung

Green Roofs System Components

A successful roof garden design must ensure both impermeability and proper drainage.
The principal components are:

- **Structural support,** mainly, the concrete roof deck.
- **Waterproofing membrane**, which must satisfy the following requirements:

  1.Absolute resilience to root penetration.

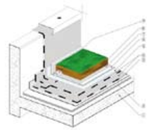
  2.Resistance to chemical aggressions by acids, alkaline solutions, salts and fertilizers.

  3.Resistance to micro organism attack (fungi, bacteria, and molds) World wide, Polymer modified bituminous membranes and PVCs are the most commonly used in combination with green roof installation.
- **Drainage layers**, are designed to both maintain optimum growing conditions in the growth medium and drain excess water It may consist of drainage boards (drainage composites), fabric or synthetic mats, or granular mineral layers (gravel).
- **Filter layer**, usually polyester geotextile to separate growing media from drainage layer.
- **Growing media** (Engineered soil). Its choice and characteristics depend on plantation type.

"The correct system build-up … Allows for low upkeep costs, and results in a high life expectancy of the green roof."

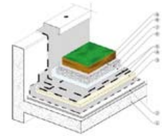
Green Roofs Systems- Flat Roofs

"Our extensive green roofs systems, are for low growing plants, low maintenance and low water requirements."



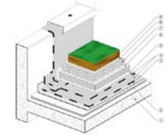
A. Non-Insulated W/ Drainage Composite Layer

1. Structural support.
2. Screed/ LWC to slopes.
3. Separation layer (optional).
4. Double layer w.p. w/optional base sheet and BITUGARDEN anti root top sheet.
5. Protective// separation layer.
6. Drainage composite.
7. Moisture retention mat.
8. Growing medium.
9. Drainage pipe.



B. Insulated Conventional Built-Up

1. Structural support,
2. Screed/ LWC to slopes,
3. Vapor barrier,
4. Insulation Panels,
5. Double layer w.p. w/optional base sheet and BITUGARDEN anti root top sheet.
6. Protective layer,
7. Drainage layer (gravel or clay),
8. Filtering layer,
9. Growing medium.



C. Insulated Inverted Built-up

1. Structural support.
2. Screed/ LWC to slopes.
3. Separation layer (optional).
4. Double layer w.p. w/optional base sheet and BITUGARDEN anti root top sheet.
5. Insulaion Panels.
6. Protective Geotextile.
7. Drainage layer.
8. Filtering layer.Growing medium.

Features of an Extensive Green Roof

Minimal maintenance needs:

- Inspection 1-2 times/ year.
- Supply of water and nutrients is mostly by natural processes.

Adapted Plant communities:

- Undemanding close growing.

Little weight and shallow build-up height:

- Mainly mineral substrate in layers of up to 120mm. Load approx. 50- 150 Kg/m2.

Low Cost:

- Installation
- Maintenance.

The Correct System Build-up For Green Roofs

1. Must be adjusted to the roof construction.
2. Ensures permanent drainage even under heavy loads and with little slope.
3. .Provides a well- balanced water/ air supply.
4. Changes with desired vegetation type.
5. Allows for low upkeep and maintenance cost.
6. Results in a high life expectancy of the green roof.