Corus Bausysteme

Kalzip NaturRoof®

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Good reasons for green roofs

Man needs protection and safety. It is a prerequisite condition to meet his neccessary requirements whilst not interfering with natural cycles and the law of nature.

The eco-friendly, lightweight Kalzip[®] aluminium building system featuring a very effectice thermal insulation which helps to conserve our natural ressources is per se an important contribution to the preservation of our habitat.

A new and most effective way of relieving the strain on our environment is the landscaping of roofs using the unique Kalzip NatureRoof[®]. It ensures a natural balance of sealed built-up land and landscaped areas.

In addition to that it provides valuable water retention- and evaporation areas.







Kalzip NatureRoof[®] provides an extensive lightweight roof planting requiring only very little care and maintenance

The low-growing, self-regenerating sedum-plants are part of the complete NatureRoof package. They survive droughts, require nearly no care and maintenace at all and are resistant to smoke, exhaust gas pollution, frost and wind. The lightweight, thin layer of planting substrate required by the sedum plants is an ideal completion of the light Kalzip[®] roofing-system.

Even, in spite of the substrate and the plants on top, the Kalzip NatureRoof[®] still remains a lightweight roofing allowing wide spanning roof constructions without the need of supports within the building or extensive redesigning.

Architectural and ecological demands complement each other to make the building a showpiece

The plants on the roof can be integrated in the architectural design so that they will not be regarded as an alien element but as a most agreeable feature of the whole building.

Well planned and perfectly designed a Kalzip® roof garden becomes an outstanding characteristic of modern architecture.

Kalzip NatureRoof[®] produces an almost completely closed homogenous vegetation – sort of a fine natural carpet changing its colours with the seasons.

Offering a wide scope of structural and functional accessories the Kalzip® aluminium building system offers a sound, thorougly tested, technically mature basis for designing roofs of all kinds.

Landscaped roofs benefit from discounts in water costs offered by the local communities

In Germany cities and communities offer financial incentives for landscaped roofs by granting considerable discounts on the costs of surface water and rainwater as well. As means of an ecological balancing of the water cycle green roofs are more and more often being taken into consideration in development plans. In the field of commercial buildings they are more and more becoming a neccessity and a standard feature as well. Please, ask your local water-supplier for details about a possible discount on water fees. Roofs on industrial premises, sports centres and other large buildings are ideal applications for the Kalzip NatureRoof®. Flat roofs featuring a low angle of inclination stand out by a especially high rate of water retained by the green roof. Kalzip NatureRoof® means an enrichment of the environment for plants, animals and human beings. Transforming roofs into biotopes is no doubt a growing market.

Kalzip NatureRoof®

The Kalzip NatureRoof® meets high ecological, structural and formal requirements

- The Kalzip NatureRoof[®] is directly installed on top of the Kalzip[®] profiles and does not require any additional sealing measures.
- The aluminium surface provides an effective protection against the penetration of both roots and moisture.
- The complete modular package guarantees a quick and easy installation and excels by its high economical efficiency.

- NatureRoof offers you the same planning security, easy handling characteristics and guaranteed functionality you are accustomed to from the Kalzip[®] building system.
- Anti-slip devices allow a safe roof landscaping even on sloped or arched roof sections.
- The lightning protection properties are maintained.
- All components are ecologically harmless and fully recycable.
- The planning of the complete roof follows identical rules, even if the roof will only partially be landscaped.

- Any Kalzip[®] roof may be turned into a NatureRoof, if its structure meets the corresponding static requirements.
- Once the plants have been removed the Kalzip NatureRoof[®] becomes a fully adeaqute attractive standard Kalzip[®] roof again.
- The Kalzip[®] aluminium profiles offer a high resistance to the tools used when applying and dispersing the substrate on the roof.
- Kalzip[®] by nature features a high resistance against flying sparks and heat radiation. These properties are maintained if the corresponding installation rules and local construction regulations are followed.
- The installation of a Kalzip NatureRoof[®] is trouble-free and time-saving. And all the materials required will be supplied by your local partner.



The Kalzip NatureRoof[®] is unique both in its constellation and technical design features

Kalzip[®] sedum plants. They are low growing, self-regenerating and resist both drought and frost

- Kalzip® plant substrate. It consists of quality controlled natural soil testified by official certificate (German FFL)
- Kalzip[®] drainage mat with an integral woven fabric filter supplied in rolls

Kalzip® 65/333 – the aluminium panel is completely resistent to moisture and root penetration

- The thermal insulation can be perfectly adapted to the individual requirements of each and every building or climate
- Vapour controal layer provides protection from condensation from both above and below

The trapezoidal sheet provides a walkable, non fragile superstructure for trussed and purlin roof constructions. Wooden lining may be used, too.



A building system without "ifs and buts"

- Kalzip[®] is a lightweight modular, economical building system saving natural resources. It allows to span large distance constructions. In addition to that it also offers an ideal instrument for roof refurbishments.
- As ventilated and non-ventilated roof design it may be used for all roof shapes and pitches from 1.5 degrees, fitting to all substructures and supporting structures.
- It offers a very high flexibilty to make it fit nearly any shape of the building.
- The roof design can easily adapted to the requirements and architectural design of industrial
 or public buildings as well as to those of private homes, whatever their ground plan, size
 and shape may look like.
- High thermal insulating requirements can be easily met. The roof design may be easily
 adapted to match the individual requirements of the building precisely by selecting insulating
 panels of just the appropriate thickness.
- An insulated Kalzip[®] roof significantly reduces emissions by saving both heating and cooling energy and thus helps to retain our environment.
- An efficient noise absorption can be easily achieved by an appropriate roof design.
- High strength, corrosion resistent aluminium alloy.
- High resistance to acid rain and indsutrial emissions due to protective plating.
- Resistant to UV radiation, microorganisms and aging.
- Biological neutral and non-toxic.
- Low maintenance throughout the whole useful life.
- · Easy installation saves time and money.
- The aluminium profile sheets are fastened by means of special flanged clips which do not penetrate the roofing skin and do not obstruct longitudinal expansion or contraction of the panels, either.
- The mechanical seaming provides a durable connection.
- Forces from positive and negative loads are safely transmitted.
- Mature detailed design solutions for roof penetrations as well as for interior or exterior drainage.
- Non-combustible and resistant against flying sparks and heat radiation.
- Aluminium, once generated, may be recycled again and again to provide products for
- generations.
- The Kalzip® is fully recycable.

The additional features of the Kalzip NatureRoof® will surely convince You, too:

- Significant reduction in the load placed on the drainage system and retarded release of excess rainwater into the local and public drainage systems.
- Reduced load placed on the drain culverts, storage basins, cleaning plants and rivers.
- Considerable reduction of waste water and sewage costs.
- About 50 % of the rainwater is being stored.
- Approximately 30 % of the rainwater retained by Kalzip[®] NatureRoof is returned to the natural cycle by evaporation.
- Increased content of oxygen in the air, improved micro-climate and humidity in the sorrounding area of the building.
- Absorption of dust and pollution such as CO2.
- Thermal and mechanical protection against the effects of temperature, wheather and radiation.
- Improved noise protection. Both interior and exterior noise are efficiently damped.
- Improved thermal insulation and room climate throughout the year.
- Peak temperatures are levelled off and changing room temperatures due to changes in the outside temperatures are reduced.
- Increased quality of housing due to higher comfortableness and well-being.
- Reduced temperature-dependent distortion of structural components of the building.
- Increase in value of the building.
- The landscaping of the roof areas balances the negative effects of the increased coverage of the ground by buildings, roads etc.

The Kalzip NatureRoof[®] package and its components Planning data

Kalzip® profiled aluminium sheets 65/333

Thickness: 1.0 mm Surface weight: approx. 4.0 kg/m²

Kalzip NatureRoof® design

Surface load: approx. 90 kg/m² when saturated with water Drainge coefficient for roof slopes up to 5 %: $\Psi = 0.5$ Drainage rate at a percipitation of 0.03 l/sec/m² and a pitch of 3 %: 2.41 l/sec/m²

Kalzip[®] drainage mat with integrated woven filter

Width: 30 cm Thickness: approx. 2.5 cm Surface load: 4.5 kg/m²

Drainage mat Expanded polystyrene with a compressive strength of 383 kN/m²

Drainage capacity: 4 l/sec/m²

Water retention: 3.2 l/m²

Woven filter

Polypropylene woven staple fibres Puncturing force (CBR test): 1400 N Pore opening width (Dw): 0.14 mm

Kalzip® plant substrate, pH = 5.7

Glazed clay slate

Loose material shipped per truck or bulk goods vehicle: 1 load is sufficient top cover 400 m²

Surface load of 6 cm thick coverage: approx. 75 kg/m²

Lava and pumice stones Supplied in big-bag of 1000 litres to cover 14 m² Surface load of 6 cm thick coverage: approx. 75 kg/m²

Kalzip® sedum flat ball plants

Nine common types of plants/varieties depending on the season. Each bag contains 50 plants per tray.

Kalzip® sedum seedlings

5-7 common plant types/varieties, depending on the season. Each bag contains 2-10 kg.

Kalzip® mulch erosion protection

(to be used in combination with seedlings) Supplied in 10 kg bags. Each bag covers 25 m² which is equivalent to 0.4 kg/m^2 .



Sedum acre Biting Stonecrop 5 cm high In blossom: June to August



Sedum album Coral carpet 5 cm high In blossom: June to August

Sedum floriferum Weihenstephaner Gold 15 cm high In blossom: June to August

Sedum hybridum Evergreen stonecrop 10 cm high In blossom: June to August

Sedum reflexum Tripmadam, reflexed stonecrop 15 cm high In blossom: June to August

Sedum reflexum Subspecies rupestre Blue spruce stonecrop 10 cm high In blossom: June to August

Sedum spurium 'Album superbum' 10 cm high In blossom: July to August

Sedum spurium Fulda glow 10 cm high In blossom: July to August

Sedum sexangulare Mild wallpepper 5 cm high In blossom: June to August















The water retention capacity is 50 %. About 33 % of the rainwater trapped will be fed back into the ecological cycle by evaporation.

The Kalzip NatureRoof[®] is a valuable contribution to rainwater management and to improving the air quality

Depending on the roof design and pitch, up to 50 % of rain water is stored in the system.

Studies carried out at the "Schule für Technik und Architektur at Bern (Switzerland)" proved, that a roof with an extensive landscaping returns 33 % of the rainwater to the natural cycle by means of absorption, transpiration and evaporation. On hot summer days about 0.5 litres of moisture per square meter of a landscaped roof evaporate. Smaller quantities of water are completely held back and will be fully fed back into the natural water cycle (figures based on continental mideuropean clima).

Renaturalization as a counterbalance to the urbanization of the environment is a significant contribution to the preservation of our habitat and to the improvement of our living conditions. Landscaped roofs are an efficient remedy to cure the negative effects of the typical climate of our cities facing low humidity, high concentrations of dust, pollution and overheating.

The Kalzip NatureRoof[®] reduces the contents of harmful substances in the rain



Pollution of the air in the form of undissolved substances and particles such as "acid rain" and soot are to a large extent decomposed within the roots of the plants when the rainwater is trickling through the NatureRoof structure.



Kalzip NatureRoof[®] means extensive roof landscaping at reasonable construction costs and with a minimum of maintenance



The Kalzip® drainage mat with integrated woven filter is supplied in rolls. It is laid out between the crimped webs of the Kalzip® aluminium profiled sheets.

The components of the Kalzip NatureDach[®] arrive separately at the site

The functional layers of Kalzip NaturRoof[®] are designed to form an interacting system. Together they represent a constructional unit conforming to the German Standard DIN 4095 as well as to the roof landscaping rules of the FLL (Forschungsgesellschaft Landschaftsentwicklung, Landschaftsbau i.e. The German Landscape Development and Landscasping Research Society).

Due to its low weight, the extensive thin-layered landscaping with sedum plants is an ideal solution for all kinds and shapes of roofs as well as for any kind and size of buildings.





The Kalzip® plant substrate is applied in a 7 cm thick layer or can be blown onto the roof by hoses feeding the substrate from the bulk goods truck directly to the roof.

The Kalzip[®] drainage mat embedded in a woven fabric filter is supplied in easy to handle rolls

Its width matches that of the Kalzip® 65/333 aluminium profile panels forming the roof envelope. Each strip is 30.5 m long.

The drainage mat is a linear draining system according to DIN 4095 fitted with drainage holes and cavities to retain water. Made of expanded polystyrene it is biologically neutral, resistant to weathering and can be recycled.

The Kalzip® drainage mat absorbs water while excess precipitation water is being drained off. In addition to that the mat also supports the neccessary aeration of the plant substrate. The water storage cavities can retain 3.2 l/m² of the rainwater reaching the roof. This water provides a food reserve for the plants and also serves as a valuable evaporation reservoir for the natural water cycle.

The woven filter keeps finer particles of soil and substrate from draining out of the vegetation layer and from blocking the drainage system.



Flat ball Kalzip[®] sedum plants are supplied on trays. The may be planted at any time of the year, while sedum seedlings must be planted in the period from April to October.

Kalzip[®] plant substrates are quality controlled natural products with test certificates

Kalzip® plant substrates may consist of glazed clay slate, lava or pumice stones. Their pH-value is perfectly adjusted in order not to affect the aluminium structure of the roofing system. The substrate is applied as a 7 cm thick layer dispersed on top of the drainage mat. Due to settling, the height of this layer will shrink by 10 to 15 % to a final thickness of approx. 6 cm. Kalzip® plant substrates comply with the requirements granting a growth of the plants which is appropriate to their species in accordance with the FLL-guidelines. A controlled size of the granules guarantees that water cannot freeze inside the substrate and that standing water is strictly excluded in periods of frost, rain or melting snow. The substrate stores and controls both water and food for the plants. The substrate contains only very little lime so that the water drains will not be blocked by sintered lime. It is fairly light and both its structural stability as well as its stability under load are sufficient to conform to the FLL guidelines.



The extensive landscaping of roofs is not only an important contribution to the preservation of our habitat by means of good water-retention and evaporation properties. Extensive roof landscaping also provides both thermal and mechanical protection against high or low temperatures, radiation and weathering. In addition to that it also acts as a noise barrier and improves air quality. Each and every landscaped roof helps to maintain the biological and ecological balance in the environment around the building.

Kalzip[®] sedum plants are a mixture of low-growing mosses, succulents and herbs

The plants are generally planted and cared for by a specialized gardening and landscaping company. Sedum flat ball plants are planted by hand in the substrate.

Sedum seedings are also distributed by hand. The immediate covering of the seedings with mulch provides an instant protection against erosion, intensively networks the substrate and secures a long-time food supply. The organic fertilizer contained in the mulch and several substances that improve the ground quality supply the plants with food. They also promote the life of useful microorganisms and the creation of humus. The mulch layer is evenly distributed all over the roof using a garden rake.

It is absolutely neccessary to saturate the plants with water immediately after planting and, depending on the weather, to keep them wet during their entire growth phase.

The amount of work required to plant, maintain and check the functionality of the landscaped roof is comparatively low

The basic rules for planting, maintaining and checking are to be found in the FLL roof landscaping guidelines. The sedum plants selected for the Kalzip NatureRoof® are flat-rooted, regenerative plants. Once the projected coverage of the roof area has been attained (i.e. approx. 60 % coverage after two vegetation periods) the plants will live of what nature supplies them with. The development and maintenance of extensively landscaped roofs have to be individually planned for each building. The practical carrying out can be subject to a maintenance contract. The maintenance required to remove undesirable plants and to keep the drainage working properly is generally limited to one or two inspections per year.

Accident prevention regulations must be carefully observed when working on roofs. The Kalzip® fall arest system provides you with the neccessary protection. Elegant drainage systems – borders and joints can be tailor-made to match the architectural design of the building



Drainage systems, joints and borders can be individually styled to match the design of the building. The relevant details are described in our technical manuals.

The malleability of aluminium offers universal opportunities for tailor-made solutions. Any technical requirements concerning the landscaping of roofs will be answered by our technical department.

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