Construction

Ballasted Roofs and Roof Gardens with Sika® Single Ply Membranes, loosely laid

New Construction and Refurbishment

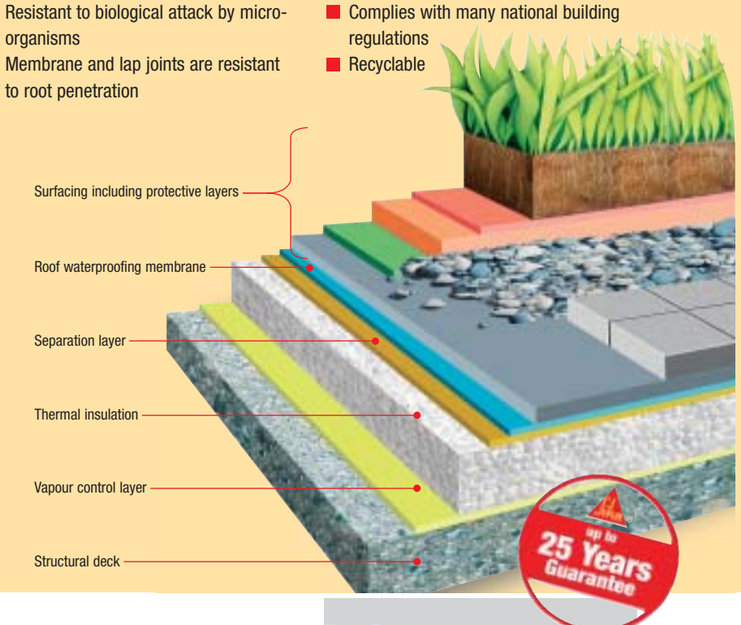
Ballasted Roofs and Roof Gardens with Sika® Single Ply Membranes, loosely laid

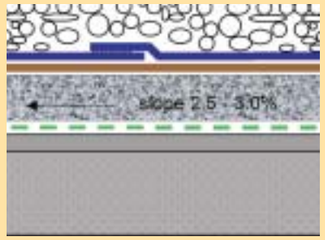
Roof Waterproofing Sheet Membranes for New Construction and Refurbishment

Trocal® SGmA is a specially designed roof waterproofing sheet for loose laying, which allows water vapour diffusion and is able to compensate for movement in the structure. It is used under gravel ballast for roof gardens and terraces in both new construction as well as for refurbishment. Dependent on the design and type of ballast, the roofs usually have limited accessibility for maintenance or, with suitable protection, are accessible for pedestrian traffic.

Trocal® SGmA roofing sheet membranes are produced from PVC by calendering; they consist of plasticized PVC with glass non-woven inlay incorporated in the centre of the sheet. The glass restraint is fully impregnated with the PVC for outstanding dimensional stability and long life expectancy.

Trocal® SGmA
- High dimensional stability
- High delamination and tear resistance
- Allows water vapour diffusion
- Self-extinguishing in fire
- Resistant to biological attack by micro-organisms
- Membrane and lap joints are resistant to root penetration
- Not permanently UV resistant
- Not bitumen resistant
- Complies with many national building regulations
- Recyclable





Application of Trocal® SGmA

Separation and Protection
In the roof buildup **Trocal® SGmA** must be separated from incompatible substrates, such as bitumen or EPS boards, and from rough substrates like concrete. The membrane is ballasted with gravel without protection. For roof gardens, the membrane surface must be protected from physical damage. Heavy loads of trafficable surfacing, e.g. concrete paving slabs, require appropriate **Sikaplan®** or **Trocal®** protective layers.

Loose Laying and Installation
The waterproofing sheet is unrolled and loosely laid on the continuous substrate with overlapping of the seam joints. The lap joints are hot air welded with automatic or manual equipment, or they can be cold welded with solvent. The welded seams are sealed with liquid PVC before the ballast is loaded (to resist wind uplift). Surfaces permanently exposed to UV light must be protected with a Sika UV resistant membrane.

Perimeter Fixing and Detailing
The loosely laid **Trocal® SGmA** must be mechanically fixed with individual fixings, metal profiles or laminated metal sheets at roof perimeters, penetrations and up-stands to compensate for horizontal forces developing in the membrane during service. **Sikaplan® G** is used for exposed junctions and terminations of the membrane. **Sikaplan® D** homogeneous roofing membrane is used to reinforce the details and to mould the membrane to the angles and shapes of the surface design.

Experience and Durability

Sika's PVC Experience
Sika has been involved with waterproofing in the construction industry since 1910. Sika also has more than 40 years of experience of producing PVC waterproofing membranes for use on roofs. This started with homogeneous polymer sheets in 1962, and the reinforced membrane technology of **Trocal® SGmA** was launched in 1977. **Trocal® SGmA** membranes now cover millions of square metres of roofs on many different types of structure around the world.

Appprovals
- ISO 9001: 2000
- ISO 14001
- Responsible Care

Product Design and Durability
The symmetrical design of **Trocal® SGmA** roofing sheets with fully impregnated glass non-woven inlay restraint results in outstanding dimensional stability without shrinkage. The additional properties of high delamination resistance and high tear resistance allow the membrane to be fixed at the roof perimeters and not to move from the up-stands. Biocide additives render the PVC sheets resistant to biological attack from micro-organisms providing maximum longevity in the harsh conditions of ballasted roofs.

Appprovals
- **Trocal® SGmA** sheets are CE-marked and comply with the national and international approvals of
- SIA V 280
- DIN 16735: External Monitoring
- prEN 13956
- UEAtc: UBAtc, BBA, Avis technique
- Komo, LNEC
- Plus other National Certification bodies

Fire Resistance

Trocal® SGmA membranes are self-extinguishing in fire and do not produce burning droplets. Additionally they have low ignition and fire loading characteristics reslting in low fire risks during application and in service. Sika also provides individual products for specific local market requirements, which are equally fully tested and approved for their behaviour in fire.

Trocal® SGmA
- Belgium: prEN 1187-1
- Germany: DIN 4102 part 1-B2
- Switzerland: SIA 183/2-Class 4.2

Trocal® FUTURA G
- Germany: DIN 4102 part 1-B2
- Germany: DIN 4107 part 7-ABP
- Switzerland: SIA 183/2-Class 5.3
- Scandinavia: NT Fire 006-Class T

Carisma® CI
- Germany: DIN 4102 part 1-B2
- Scandinavia: NT Fire 006-Class T for renovation
- UK: BS 476, part 3:1958-FAC

Multiple Applications

Under Gravel Ballast
- Not suitable for foot traffic
- If the gravel is washed, rounded gravel of 20 – 40 mm size without fines and sharps, no additional protection is required
- Minimum ballast requirement is 50 mm thickness and 80 kg per square metre
- Roof membrane must be protected for machine ballasting
- Care must be exercised when placing mass ballast so as not to overload the structure locally

In Roof Gardens
- The membrane surfaces must be protected from physical damage by gardening implements, etc.
- Provide control systems for water retention and drainage

In Terraces
- Suitable for foot traffic
- The membrane must be adequately protected
- The structure must be designed to take the loading of the roof buildup plus the installation and traffic
- Can be used to adapt ballasted roofs to increased wind load situations

Application and Design

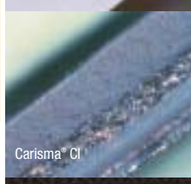
Ballast Design and Construction
Local building regulations usually detail requirements for ballast or local wind load calculations should be made. In general, the roof will be divided up into central, perimeter and corner zones, where the ballast load is calculated according to the respective wind force. This can be done by standard approximation or individual calculation. The structure must be capable of taking both static and dynamic loads. If the ballast cannot withstand the local wind loads, the type of ballast should be changed or mechanical fastening considered.

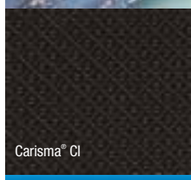
Sika MISTRAL
Sika's own MISTRAL software can provide a full service for planning, design and installation based on the specific site data and the local building regulations. On request the local wind loads will be determined with the relevant meteorological office to evaluate the roof design, and the best performing ballast design can be selected for the project.

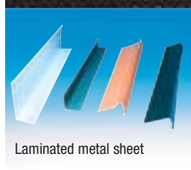
Special Systems

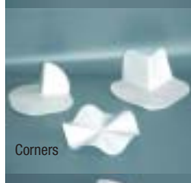
Trocal® FUTURA G: TPO/FPO Sheet Membranes
- Glass grid restrained TPO/FPO-based membranes
- PVC-free
- Plasticizer-free
- Halogen-free
- Bitumen resistant
- Natural resistance to micro-organisms
- Increased general chemical resistance

Carisma® CI: ECB Sheet Membranes
Carisma® CI is designed to be used in locations where the cold temperatures during winter drop below –30 °C. The bitumen resistant membrane can be directly installed onto surfaces to recover existing roofs. **Carisma®** is a sheet membrane with intermediate glass inlay and is based on ECB which provides outstanding chemical resistance. It can be installed on new structures or used to renovate roofs where chemical exposure and pollution will occur.









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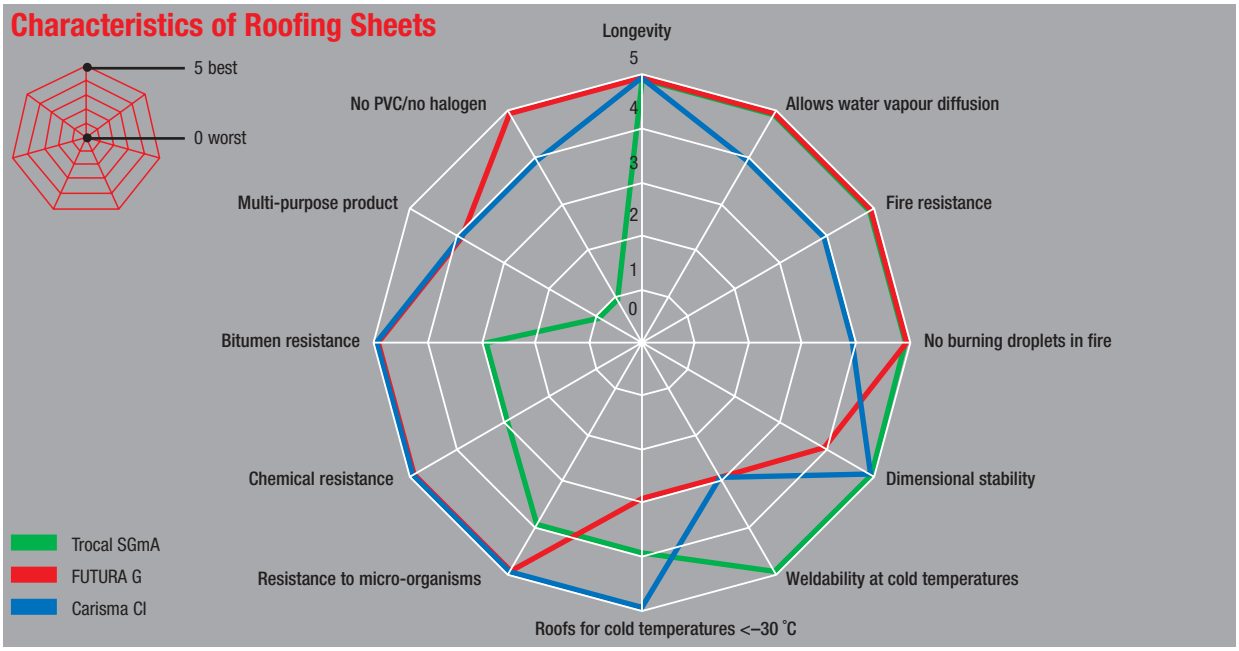
Characteristics of Roofing Sheets



Accessories for Trocal® SGmA

For Installation

Sikaplan® G/Trocal® SG
for surfaces permanently exposed to UV light

Sikaplan® 18 D/Trocal® S
for detailing

Sikaplan® prefabricated corners, angles and pipe flashings for detailing

Sika-Trocal® laminated metal sheet type S, type D for terminations and junctions

Sika-Trocal® C 733
contact adhesive for upstands and roof light terminations

Sika-Trocal® CV 705/733
thinners for contact adhesive

Sika-Trocal® Cleaner 2000
cleaner for hot air welding of seam overlaps

Sika-Trocal® Cleaner L100
cleaner for cold welding of seam overlaps

Sika-Trocal® welding solvent for cold welding of seam overlaps

Sika-Trocal® liquid PVC: PVC solution to seal cold welded seam overlaps

Sika-Trocal® metal profiles for perimeter fixing

For the Roof Buildup

Sikaplan® Protection
layer for protection of the waterproofing membrane

Sikaplan® Walkway
for protection and demarcation of service walkways

Sika-Trocal® DS-PE
water vapour control layer based on PE

Sika-Trocal® glass fleece: 120 g/m² glass fleece for separating non-compatible surfaces and fire protection

Sika-Trocal® polyester fleece: 300 g/m² polyester fleece for separating non-compatible surfaces

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Your local Sika Company

Responsible Care

Certified Quality System ISO 9001/EN 29001 since 1986

Certified Management System ISO 14001 since 1997

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