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POLYDAN® MEMBRANES

BITUMINOUS WATERPROOFING SYSTEMS

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BUILDING TOGETHER

WHO WE ARE

For over 50 years **DANOSA**® has been protecting buildings around the globe. During that time we have come to appreciate that each market has its own demands and its own standards and nuances that we must respect.

Despite the cultural differences, the key similarity is the demand for quality of product, and of service.

We made a commitment to produce the highest quality products and partner this with our passion to educate our clients and customers to ensure that we all specify responsibly.

By **Building Together** in partnership, we are with you every step of the way, engineering value without compromising quality.

DANOSA HEADQUARTERS · Fontanar (Spain)

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POLYDAN® MEMBRANES

BITUMINOUS SYSTEMS

Reinforced bitumen membranes (RBM), commonly known as roofing felts, are specially formulated polymer modified bitumen sheets used for roofing and waterproofing applications. Whilst traditionally, RBM systems are applied with a gas torch (flame), our POLYDAN family of products hosts a variety of self-adhered and thermo-adhered membranes, wich are applied flame-free.

POLYDAN membranes are comprised of 3 key components: a polymer modified bitumen compound, a reinforcement layer and a variety of upper and lower surface finishes. Varying any of these components changes the characteristics of the membranes and this allows for a variety of performance specifications and applications to be accommodated with the system range.

Our POLYDAN ELAST+ range of products are modified with a unique elastomeric styrene-butadiene -styrene (SBS) polymer formula which provides our POLYDAN membranes with superior flexibility and durability, self-healing properties and a wide application temperature window. Each POLYDAN membrane is reinforced internally with a heavy polyester layer, providing additional strength and resistance to potential damage.

For living roof applications, our POLYDAN 50/GP ELAST+ GARDEN capsheet contains an additional anti-root modification to the bitumen compound for additional assurance and resistance to root penetration throughout its service life.

The choice of membranes and attachment choices available opens a range of specification options which can be incorporated into a full system specification for Warm, Cold and Inverted roof applications. Your system can then be customised to achieve a number of performance requirements such as thermal efficiency and reduction of external sound.

To date, over 50,000,00m^2 of POLYDAN membranes are waterproofing buildings worldwide.

POLYDAN PRODUCTION FACILITY · Fontanar (Spain)

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POLYDAN® MEMBRANES

Thermo-Adhered System

Our range of POLYDAN system thermos-adhesive underlays are manufactured with a specially formulated self-adhesive compound which fully activates during the installation of the subsequent system capsheet. Unlike other traditional systems, this removes the need to apply flame directly onto the underlying structural deck or insulation and reduces the volume of gas required for the system installation.

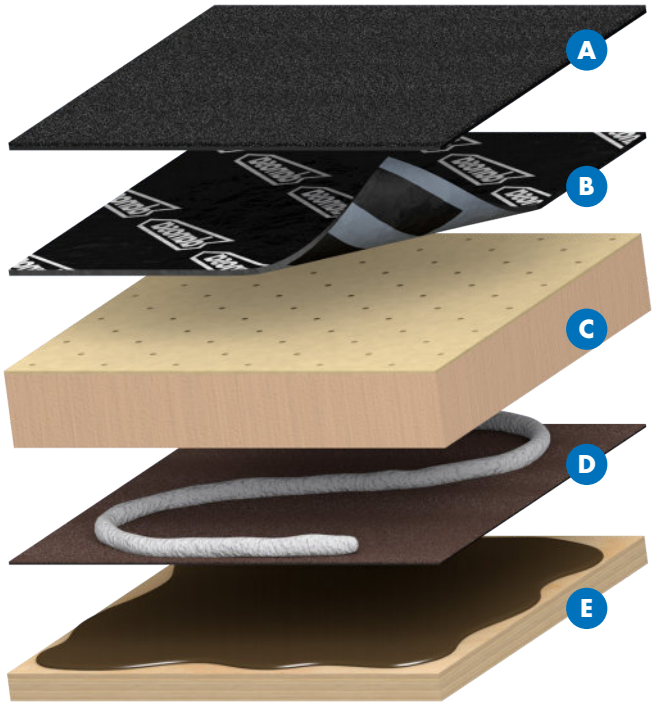
Our ESTERDAN 30 P SEMIADHESIVO underlay is manufactured with strips of our thermo-adhesive compound, allowing a partial bond. This partial bond facilitates system ventilation whilst retaining high resistance to wind uplift forces, removing the need for a separate perforated membrane required in traditional systems.

For detail applications and for projects subject to high windloads, our ESTERDAN 30 P AUTOADHESIVO underlay membrane is fully coated with the thermo-adhesive compound, providing a full bond to the underlying substrate.

A wide variety of specification options and structural decks may be accommodated with a POLYDAN thermo -adhered system, utilising more economical insulation boards which do not have to be manufactured with special facings to receive a direct torch (flame).

COMPONENT GUIDE

- POLYDAN 180-60/GP ELAST+ CAPSHEET — A
- ESTERDAN 30 P SEMIADHESIVO UNDERLAY — B
- DANOSA PIR INSULATION warm roof only — C
- VAPOUR CONTROL LAYER warm roof only — D
- STRUCTURAL DECK — E



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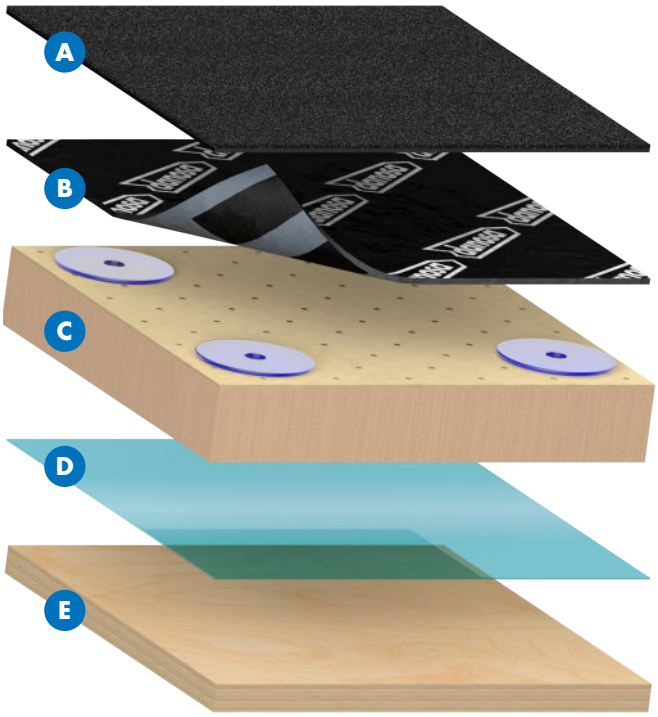
✱ The illustrated system describes a typical specification and is not representative of all available system combinations. For example, a fully bonded underlay may be specified, or there may be no thermal performance required (cold roof).

POLYDAN® MEMBRANES

Hybrid+ System

COMPONENT GUIDE

- **A** POLYDAN 180-60/GP ELAST+ CAPSHEET
- **B** ESTERDAN 30 P SEMIADHESIVO UNDERLAY
- **C** DANOSA PIR INSULATION warm roof only
- **D** VAPOUR CONTROL LAYER warm roof only
- **E** STRUCTURAL DECK



Our POLYDAN Hybrid+ system is specially suited to lightweight structural deck applications such as timber or profiled steel. Economical and quick to install, the system is highly versatile and may be customised to suit a variety of performance and specification requirements.

Unlike traditional systems, the insulation is mechanically fastened to the structural deck, all in accordance with a project-specific windload calculation provided by our Technical Team. This provides a secure and level platform ready to receive the POLYDAN waterproofing.

Where appropriate, this allows the specification of a loose-laid vapour control layer rather than a traditional fully bonded option, which is secured in place with the same mechanical fasteners used to secure the insulation.

For added benefit, each mechanical fastener is installed in conjunction with our specially designed tube washer system which prevents heat from being transferred via the metal fastener. This not only improves the performance of the system, but it may reduce the insulation thickness by 10mm or more.

✱ The illustrated system describes a typical specification and is not representative of all available system combinations. For example, a fully bonded underlay or fully bonded bituminous vapour control layer may be specified.

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Terrace or Balcony System

(Inverted Roof)

Flat roof systems may be covered with stone ballast, paving or other surface finishes to offer further protection against UV radiation and foot traffic - potentially increasing the service life of your roof.

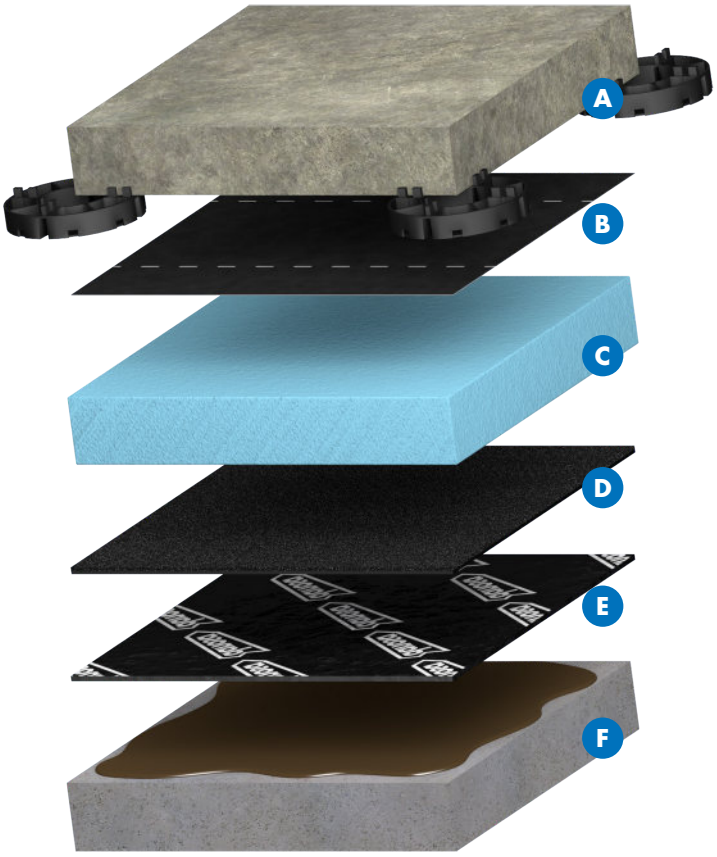
Once your waterproofing system has been installed and independently tested, a suitable protection layer (and drainage layer if required) may be installed onto the completed system. After this the subsequent surface finishes are added, bespoke to your own requirements.

Enjoyable roof spaces are growing increasingly popular and whatever your space may be used for, it is important to ensure that the correct specification is used. Your POLYDAN system specification can be customised to suit a variety of applications.

For roof spaces restricted to single family access, DANOSA PIR (polyisocyanurate) insulation within a warm roof construction provides an economical solution. However, for more intensively accessed roof spaces our DANOPREN TR XPS high-density insulation which provides stronger support and additional protection for the roof waterproofing.

COMPONENT GUIDE

- PAVING SLABS ON SUPPORTS **A**
- WATER FLOW REDUCING LAYER warm roof only **B**
- DANOPREN TR XPS INSULATION warm roof only **C**
- POLYDAN 180-60/GP ELAST+ CAPSHEET **D**
- ESTERDAN 30 P AUTOADHESIVO UNDERLAY **E**
- STRUCTURAL DECK **F**



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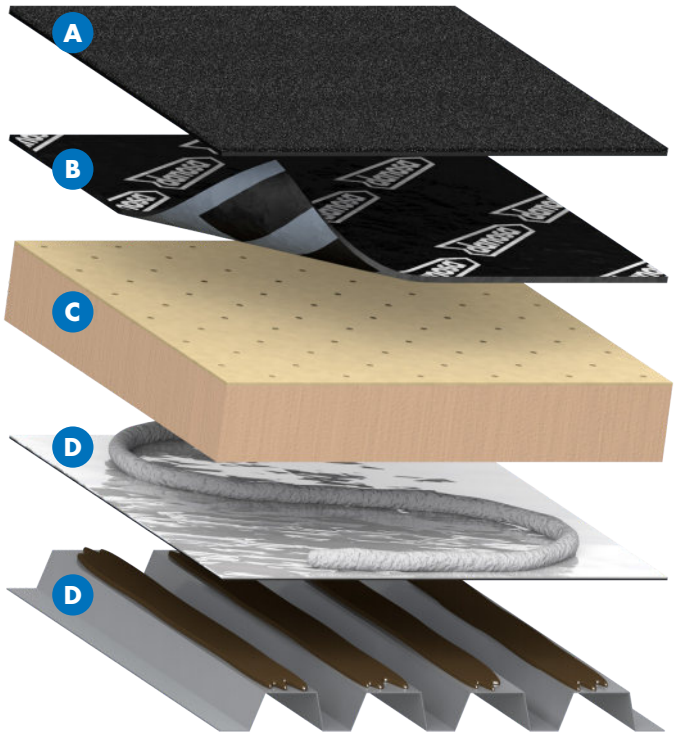
* The illustrated system describes a typical specification based on an inverted roof application and is not representative of all available system combinations. For example, a traditional warm roof system (limited to single family access) may be preferred or there may be no thermal performance required (cold roof).

POLYDAN® MEMBRANES

High Humidity System

COMPONENT GUIDE

- **A** POLYDAN 180-60/GP ELAST+ CAPSHEET
- **B** ESTERDAN 30 P SEMIADHESIVO UNDERLAY
- **C** DANOSA PIR INSULATION warm roof only
- **D** HIGH PERFORMANCE VAPOUR CONTROL LAYER
- **E** STRUCTURAL DECK



For more specialist applications, your POLYDAN system specification may be customised to accommodate some of the most challenging conditions, such as swimming pools and sports halls. In these areas there is a high concentration of moisture in the air which may rise and corrode vulnerable building components.

In these instances it is important to consider an appropriate specification and include a high performance vapour control layer. DANOSA have developed a range of bitumen based vapour control products which fully adhere to the structural deck, providing an air-tight seal. An integral aluminium upper surface provides the waterproofing system with superior resistance to moisture vapour.

* The illustrated system describes a typical specification and is not representative of all available system combinations. For example, a fully bonded underlay may be specified or there may be no thermal performance required (cold roof).

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Refurbishment

At some point your waterproofing system may reach the end of its serviceable life and it will be time to consider a refurbishment. Signs of water ingress or troublesome condensation issues usually are the first clues that your roof system is no longer functioning as it should. However, this may not be the only time to consider renewing your roof. Upgrading the existing insulation may result in significant savings in heating (and cooling) costs, making it a worthwhile investment to consider.

If your roof is showing signs that it needs to be replaced, a detailed survey can usually pinpoint the cause(s) of the problem and determine the most appropriate route of refurbishment.

Typically, your refurbishment will fall into one of the below categories:

Overlay

Preferred option when the existing structural deck and waterproofing system is in a good condition. The existing waterproofing will be suitably prepared to receive new waterproofing and insulation (if required).

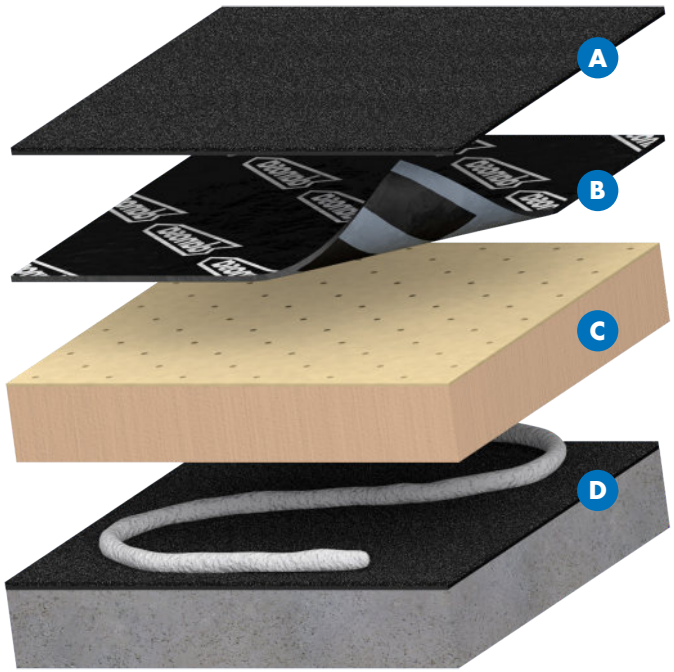
Full Replacement

Required if the existing structural deck needs to be replaced and/or there is significant water ingress into the existing waterproofing system.

Our Technical Team can provide you with a detailed roof survey report and recommendations, along with thermal, condensation, windload and rainwater flow calculations, all in accordance with the latest applicable building standard and industry recommendations.

COMPONENT GUIDE

- POLYDAN 180-60/GP ELAST+ CAPSHEET — A
- ESTERDAN 30 P SEMIADHESIVO UNDERLAY — B
- DANOSA PIR INSULATION warm roof only — C
- EXISTING WATERPROOFING SYSTEM — D



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✱ The illustrated system describes a typical specification and is not representative of all available system combinations. For D example, a fully bonded underlay may be specified, insulation may not be required (cold roof) or may be mechanically fastened.

POLYDAN 180-60/GP ELAST+ MEMBRANE · Ditton Park Academy (UK)

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Acoustic Solutions

Your POLYDAN roof system specification can be customised so that it contributes towards the overall acoustic performance of the building, either by reducing the external noise heard internally, or in the cases of buildings such as sports halls, by reducing the internal noise escaping.

On structural profiled decks, rain drumming noise also needs to be considered. DANOSA can provide a variety of solutions using both STONEWOOL and PIR (polyisocyanurate) insulation products in combination with acoustic matting and fillers to suit the profiles of most common structural metal deck profiles.

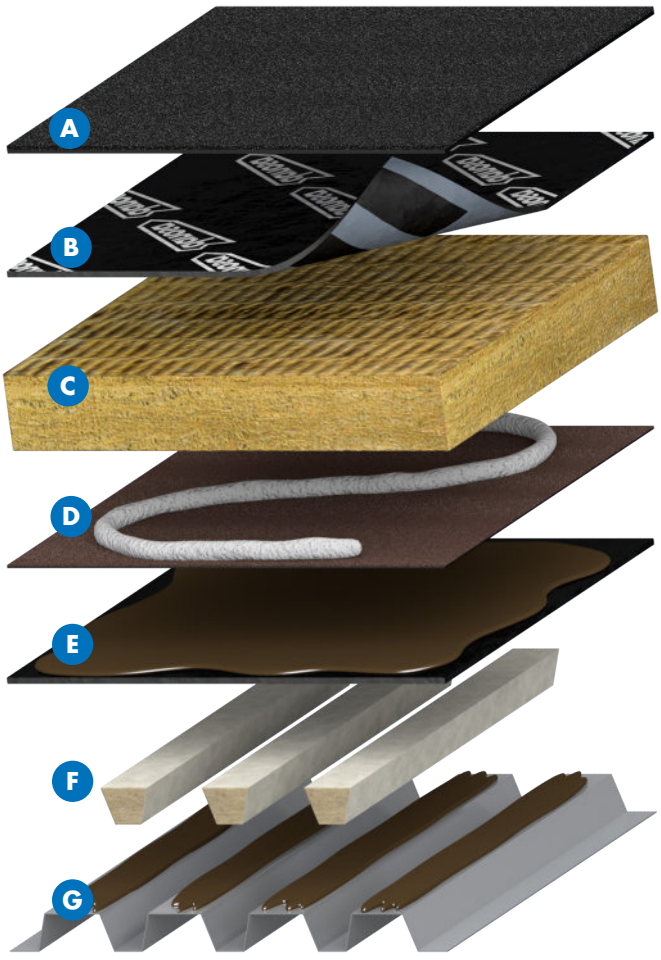
A number of acoustic standards currently outline building standards for acoustic design within UK construction projects.

Building Bulletin 93 (BB93) republished in 2015 outlines the acoustic specification standards for schools and education environments. Within the Healthcare sector, Health Technical Memorandum 08-01 (HTM 08-01) currently applies.

DANOSA can provide you with specifications and calculations to achieve a specific Airborne Sound Reduction (dB) rating or predicted A-Weighted Rain Noise Sound Intensity level to meet these standards or to meet your project-specific design requirements.

COMPONENT GUIDE

- **A** POLYDAN 180-60/GP ELAST+ CAPSHEET
- **B** ESTERDAN 30 P SEMIADHESIVO UNDERLAY
- **C** DANOSA STONEWOOL INSULATION
- **D** VAPOUR CONTROL LAYER
- **E** DANOSA ACOUSTIC MEMBRANE
- **F** STONEWOOL TROUGH FILLERS
- **G** STRUCTURAL DECK



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✱ The illustrated system describes a typical specification based on an adhesive bonded application and is not representative of all available system combinations. For example, a mechanically fastened system may be the preferred method of attachment. Additional layers of DANOSA stonewool insulation or acoustic membrane may be required to achieve the required acoustic performance.

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Living Roof Systems

Current market reports show a very healthy year on year growth for the green roof sector in the UK and it is not hard to see why. In addition to the obvious environmental and aesthetic benefits, there are many additional benefits which local authorities and specifiers are noticing, especially in more built up areas.

Living roof systems can be designed to retain a certain amount of water at roof level, reducing the pressure on existing drainage systems during periods of heavy rain, whilst also nourishing the organisms and planting. Arguably, living roots provide a reduced external fire risk as most of the components are inert and inorganic (when in accordance with the latest GRO Code). Additionally, a stone ballast vegatation and fire break is included around all perimeters and penetrations.

But there are also less measurable, but instantly noticeable benefits to be enjoyed. Adding a living roof to your building may reduce rain drumming noise, may improve its thermal efficiency and may improve its acoustic performance. These added benefits make living roofs highly desirable not only for commercial properties, but also for residential outbuildings and home extensions.

Depending on your project requirements, your living roof system is likely to fall into one of the 3 categories:

Type 1: Extensive

The most common living roof system, comprising of relatively low maintenance planting, such as low growing varieties and sedum blankets.

Relatively lightweight and versatile.

Type 2: Intensive

Designed to replicate a ground-level garden. Likely to include very specific planting requirements, possibly lawns and other amenity spaces for various uses.

Purpose built rooftop landscaping.

Type 3: Biodiverse

Replaces pre-existing ground-level ecosystem(s) to encourage biodiversity, wildlife and positive ecology. Often allowed to self-colonise, with little maintenance.

Recreating natural habitats.

COMPONENT GUIDE

PLANTING and GROWING MEDIUM **A**

DRAINAGE / WATER RETENTION LAYER **B**

DANOFELT PY 300 FLEECE PROTECTION **C**

POLYDAN 50/GP ELAST+ GARDEN CAPSHEET **D**

ESTERDAN 30 P SEMIADHESIVO UNDERLAY **E**

DANOSA PIR INSULATION **F**

VAPOUR CONTROL LAYER **G**

STRUCTURAL DECK **H**

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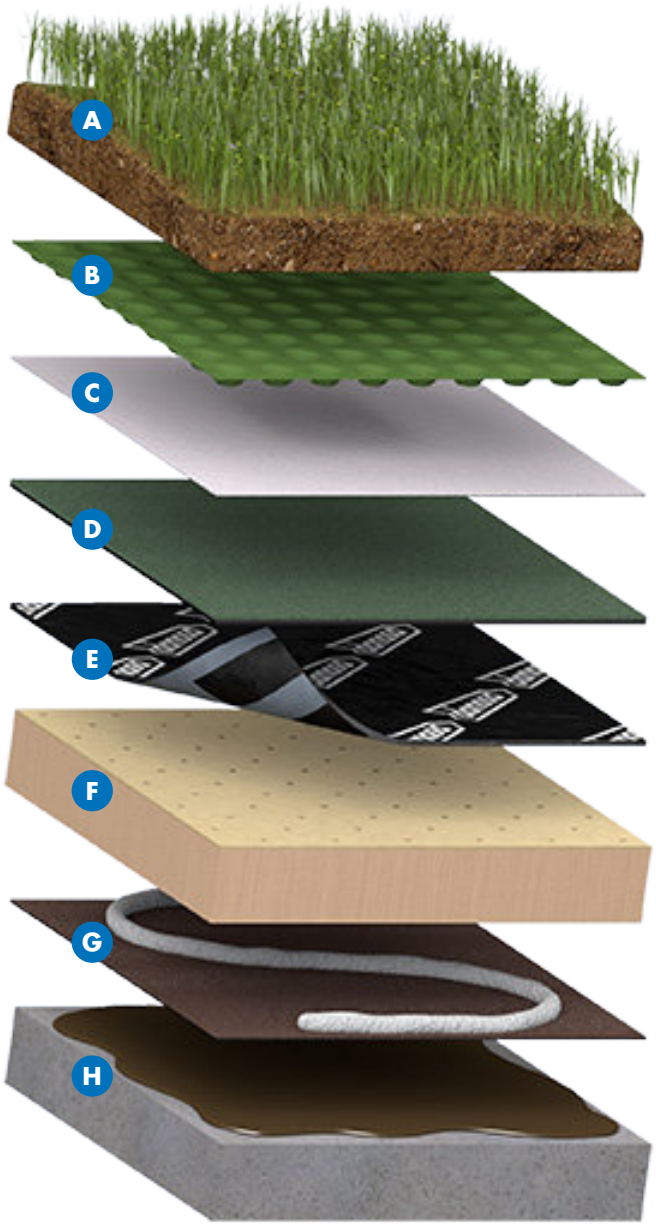
DANOSA UK ARE MEMBERS OF
THE GREEN ROOF ORGANIZATION



PRE-ESTABLISHED MODULAR
LIVING ROOF SYSTEMS

Traditional living roof systems are built up on site from their component parts and are likely to need additional care and maintenance during their establishment phase, which may be anything up to 2 years after installation.

Pre-established modular systems are becoming increasingly popular as the components are grown in trays in a nursey until they are ready to be placed onto a roof system. Complete with integral water retention and drainage components, our DIY modular systems can be simply lifted to roof level and interlocked into place for an instant established finish with minimal aftercare. As an additional benefit the DIY modular systems can be easily moved or cut to suit, making them an ideal choice for retro-fit applications.

A traditional sedum planted system as well as a sedum and wildflower mixed system is available as standard. For more bespoke requirements, a non-established wildflower option is also available which contains wildflower seeds which will flower seasonally.

* The illustrated system describes a typical specification and is not representative of all available system combinations. For example, there may be no thermal performance required (cold roof). Planting and drainage specifications may vary depending on the living roof performance specification and local authority planning requirements.

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RAINWATER GOODS

Managing the flow of rainwater is critical to ensuring a functioning roof system. If the flow rate capacity is too low, your roof could begin to function like a tank, increasing the load (weight) onto the structural deck which may deform (deflect) over time. In the event of a problem, or at the end of the roofs service life this could increase the amount of water that finds its way into your building.

On the other hand, designing for a significantly higher flow rate than required may incur to additional unnecessary costs and delays to the programme.

DANOSA provide bespoke Rainwater (Flow Rate) calculations, specific to the design particulars and location of your project. Within the calculation and report, we will recommend downpipe sizes as well as any gutter or sump depths required to achieve the most efficient flow rate.

We have also conducted testing on an extensive range of complementary leaf guards, for all applications, which when used in conjunction with our standard range of rainwater outlets, can significantly improve the flow rate performance.

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ROOFLIGHTS & ACCESS HATCHES

As part of our system range, DANOSA offer a range of Rooflights for Access Hatches for a variety of roof buildups and applications, to meet most performance requirements.

For your safety all of our units are at least Class B Non-Fragile to ACR [M]001 2003.

Our rooflights are suitable for warm, cold and inverted roofing systems and can be supplied as domes with an adaptor to fit onto a pre-constructed kerb.

Domes are glazed with a triple skin of polycarbonate as standard which can be produced in either a dome or pyramid shape with clear, opal, diffused or bronze colouring.

Glass glazing options are also available on request.

All kerbs are manufactured from rigid PVC or aluminium which can be PPC coated to any standard RAL. For efficient thermal performance, all of our kerbs are either insulated or thermally broken. Ventilation can also be added to your rooflight kerb with either hit & miss, passive, rotary or manual wormgear modifications available as standard.

For specialist ventilation requirements, our rooflights can be manufactured with manually operated or automatic opening mechanisms so that the rooflight will function as an OV or AOV as required by the design strategy.

DANOSA ROOFLIGHT PRODUCTION FACILITY · Fontanar (Spain)

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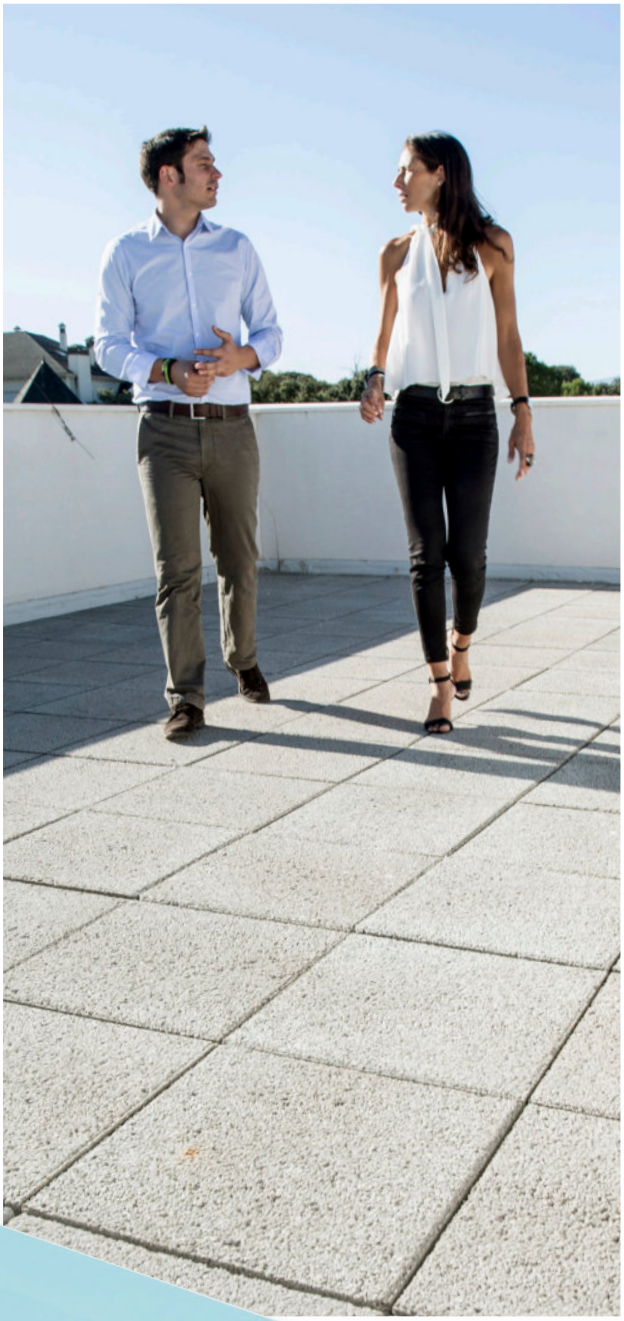
DANOPREN XPS

DANOPREN thermal insulation is made from hard extruded polystyrene foam (XPS), free of CFC, HCFC and HFC compounds and suitable for use in a variety of applications, especially within inverted flat roof waterproofing systems.

The panels are manufactured by an extrusion process giving the product a closed cell structure, minimising water absorption by diffusion.

DANOPREN TR is manufactured with a half-lap perimeter joint and is resistant to mechanical loads up to 300kPa. For applications that require resistance to a much greater anticipated load, our DANOPREN 500 offers an excellent option, resisting loads of up to 500 kPa.

DANOLOSA XPS insulated paving slabs are supplied with a factory bonded 35mm concrete topping (opposite picture) is an easy retro-fit solution for turning your roof into an accessible, usable area.



DRONE SURVEYS

Drone technology offers a variety of benefits for construction projects. Whether they are used to photograph progression or final completion of a project, or for accessing difficult to reach or unsafe roof areas, remotely piloted drones are a perfect solution.

Our drone footage is captured in 4K/UHD resolution, all backed by the very latest Intel® RealsenseTM Technology. For the clearest images, our drones are fitted with additional stabilisers for operation during high wind conditions - perfect for surveying and promotional photography.

In addition to crystal-clear roof photography and surveying, our drones are equipped with the latest thermal imaging cameras which can highlight areas of interest prior to surveying. This allows us to check these areas to see if there is an absence of sufficient thermal insulation or within a refurbishment, whether there is water trapped within the system.

DANOSA is fully insured for commercial drone operations and we are proud to have received permission from the Civil Aviation Authority (CAA) for commercial operations within and around building sites and construction works.

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TECHNICAL SUPPORT & SPECIFICATION

We have a dedicated in-house Technical Team to support your project specification. From concept, design and specification through to delivery of the project and completion on site, we are building together every step of the way.

Our Technical Team can provide you with a number of services which include:

- Tapered Insulation Scheme Design
- U-Value and Condensation Risk Calculations
- Wind Uplift Calculations
- Rainwater (Flow Rate) Calculations
- Predicted Airborne Sound Reduction Calculations
- Bespoke NBS Format Specifications (J42)
- Standard CAD Design Details

Call our Technical Team on 0845 074 0553 (option 3)
or E-mail: uktechnical@danosa.com

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ON-SITE TECHNICAL SERVICES

Whilst most manufacturers host an array of standard installation instructions we are often faced with challenges on site where unavoidable restrictions may require an alternative solution. DANOSA has a team of Field Technicians who are on hand to offer support and guidance on a variety of Technical issues, offer our guidance on good practise and share our experience of how to respect (and protect) our products after installation.

Drawing on our 50 years of experience, our team frequently attends design coordination meetings in the initial stages to offer any assistance and advice on sequencing with other trades.

Whether it's a new build project where a new detail or low-risk solution needs to be formulated to accommodate the design or if it is a refurbishment project where you would like specification options, our team will produce a full Technical Report detailing the visit and any subsequent recommendations.

As part of our Quality Management Systems, all DANOSA projects over 100m^2 are inspected by our Field Technicians and documented along with all registered installer ID numbers in a Project Inspection Report.

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PREMIER CONTRACTOR NETWORK

DANOSA products and services are available nationwide through our network of Premier Contractor partners. Only Premier Contractors registered with DANOSA are able to supply and install our range of specialist waterproofing systems and provide you with a DANOSA ASSURED system warranty.

Installers too must be registered with DANOSA by passing a specialist training programme and accompanying examination.

To ensure that our Premier Contractor and Registered Installer Network continue to deliver in accordance with our standards, as part of our quality management systems registered Installers are each allocated a unique installer ID number by DANOSA. These ID numbers are then recorded by our Field Technicians and noted and monitored for conformity on all applicable Project Inspection Reports.

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DANOSA UK WARRANTIES

Building together is a defining part of our philosophy and it is a statement of our commitment to deliver long- term assurance to building projects around the globe. That's why unlike other manufacturers, your DANOSA Warranty covers all the system components supplied by DANOSA, for single-point system responsibility.

For over 50 years DANOSA has been providing Waterproofing, Thermal and Acoustic Insulation for building and civil works. During this time, we have come to appreciate that whilst warranties can protect you against failure of the materials to perform their function, in and of themselves warranties cannot protect you against incorrect design and specification. For this reason DANOSA has invested in our Technical and support teams and support for our Premier Contractor network to provide the resources you and our partners need to promote best practise by way of CAD design details, product datasheets, literature and site support teams.

YOUR DANOSA WARRANTY INCLUDES

- An individual warranty certificate issued for every project, complete with a list of the components supplied by DANOSA UK.
- Insurance backing to cover payment for the cost of repairing and/or replacing failed waterproofing products.
- Insurance backing to cover workmanship (labour) to repair and/or replace failed waterproofing products.
- Payment for consequential damage as a direct result of a product failure.
- Transferrable title to any new Warranty Holder (building owner).

CERTIFICATIONS

PRODUCING EXCELLENCE

Servicing a global market can be a challenge at times, but by developing products to an array of internationally recognised standards and commitments such as the European Harmonised Standard (CE Mark), our clients are assured that when partnering with DANOSA the performance of your specification is not compromised.

Whilst independent testing and certification (such as British Board of Agrément Certification) is required to confirm that products meet certain production or country standards, we made a commitment to ensure that our products are monitored and tested continuously.

To deliver on this commitment DANOSA invested in a dedicated in-house testing and product development facility in Fontanar (Spain). As part of our Quality Management systems, we ensure that each product line is continually monitored and that batch samples are regularly obtained and tested by our technician and technical teams.

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QUALITY CONTROL AND TESTING LABORATORY · Fontanar (Spain)

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SUSTAINABILITY

DANOSA prides itself in its approach towards green issues and the environment. We recognise that every business has an effect on the local, regional and global environment.

We are committed to making continuous improvements by seeking advice from leading experts to reduce our footprint and improve our systems of operation and sourcing.

GREEN BUILDING CERTIFICATIONS

Green building certifications look to promote more sustainable construction with the subsequent financial, environmental, and social benefits for all the building agents. Based on different scoring criteria, buildings receive a certain classification indicating their environmental performance. Used widely around the world, these certificates contain information on the environmental performance of the products contained in the building throughout their useful life. Our Environmental Product Declarations (EPDs) contain this information.

ENVIRONMENTAL PRODUCT DECLARATIONS (EPD)

As we care deeply about the environment, we have a responsibility as a manufacturer to provide detailed environmental data on our products. This includes data on the design, production, construction and maintenance of the system. This has led to the introduction of the European environmental regulation known as Environmental Product Declarations. An Environmental Product Declaration (EPD) is a standardised document, verified by an independent agent, which provides quantified and verifiable information about the environmental impact of a product. The purpose of these tools is to assess the life-cycle environmental impact of products in accordance with the international standard EN ISO 14025. In this sense an EPD provides objective, transparent, comparable, and additional information on the environmental impact of DANOSA products, through lifecycle analysis (LCA) from raw material extraction through manufacturing to the end of their useful life in buildings. This information enables all the building's agents to have environmental information on the products, previously unavailable during decision making. In addition, it enables us to introduce new eco-design criteria as manufacturers of building materials.

THE INTERNATIONAL EPD® SYSTEM

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PROJECT SHOWCASE

SUTTON CARE HOME DEVELOPMENT

TREE'S COURT REFURBISHMENT

FACTORY AND PRODUCTION FACILITY

DITTON PARK ACADEMY TEACHING BLOCKS

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WATERPROOFING, THERMAL & ACOUSTIC INSULATION FOR BUILDING AND CIVIL WORKS

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D.L. GU 103-2017

We are proud members
of the following Organisations

SPRA Single Ply Roofing Association

NFRC THE NATIONAL FEDERATION OF ROOFING CONTRACTORS LIMITED

gro

Safe2Torch