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DANOPOL® MEMBRANES SYNTHETIC 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.

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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.



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DANOSA HEADQUARTERS · Fontanar (Spain)

DANOPOL® MEMBRANES SYNTHETIC SYSTEMS

Single ply membranes are synthetic polymer membranes which have been developed for roofing and waterproofing applications.

DANOSA DANOPOL (Light Grey) and DANOPOL+ (Dark Grey) membranes are PVC-p (polyvinyl chloride), a flexible form of PVC which may either be hot-air or solvent welded.

DANOPOL membranes are reinforced with either glass fibres or polyester nets (depending on application) and offer many

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advantages when compared to traditional roofing materials. Our membranes retain incredible resistance against tear whilst remaining highly flexible and very lightweight (typically 1.60 to 2.60kg per m²).

Another key advantage when compared to traditional roofing systems is that DANOPOL membranes are UV-resistant. UV stabilisers are added to the formula during the manufacturing process, removing the need to maintain, paint or treat during the service life of the system. DANOPOL membranes are installed without the need for a gas torch or naked flame. They are hot-air welded using specialist welding tools or using a specialist formulated welding solvent. Once welded, the sheets become homogenised to form a single, continuous waterproof covering.

Flexibility of attachment by means of either Mechanical Fastening or Adhesion opens a range of specification options which can be incorporated into a full system specification for Warm, Cold and Inverted roof applications. Your system may then be customised to achieve a number of performance requirements such as thermal efficiency and reduction of external sound.

To date, over 15,000,000m² of DANOPOL and DANOPOL+ membranes are waterproofing buildings worldwide.



DANOPOL PRODUCTION FACILITY · Fontanar (Spain)

Mechanically Fastened System

Perfect for lightweight structural deck applications such as timber or profiled metal, our mechanically fastened DANOPOL system provides an economical, quick and versatile solution for most flat roofing applications throughout the year.

Within these systems, our DANOPOL HS membrane and any underlying insulation boards, are mechanically fastened in accordance with a project-specific windload calculation provided by our Technical Team. This calculation determines the number of mechanical fasteners required to resist the wind uplift forces that the roof system will be subjected to during its service life, based on the roofs shape, design and its location.

All membrane fasteners are concealed within the DANOPOL membrane seams (overlaps). As one sheet of DANOPOL is mechanically fastened, another is welded over the fasteners to provide a weathertight seal and obscuring them from view. This provides a continuous waterproofing covering over the entire roof.

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

COMPONENT GUIDE







The illustrated system describes a typical specification based on a mechanically fastened application and is not representative of all available system combinations. For example, there may be a preference to adhesive bond the insulation or there may be no thermal performance required (cold roof).

Adhered System

COMPONENT GUIDE

A DANOPOL HSF MEMBRANE

- B DANOSA PIR INSULATION warm roof only
- C VAPOUR CONTROL LAYER warm roof only
- D STRUCTURAL DECK



Quick and simple to install, our adhered DANOPOL membrane system remains the solution of choice, especially within refurbishment where the integral 0.9mm geotextile fleece backing on our DANOPOL HSF membrane provides separation and protection from any underlying contaminants.

An adhered DANOPOL membrane system may also be considered where mechanical fastening is either not practical (such as structural concrete decks) or not desirable (such as swimming pool roofs).

Applied using our leading range of high-performance spray-applied adhesives, our adhered DANOPOL system can be installed onto most substrates, achieving high-resistance to wind uplift forces.

Where excessive wind forces are predicted (by way of a site-specific windload calculation), the insulation may be mechanically fastened for additional windload resistance.

Whilst mechanical attachment of components is required around perimeters in accordance with industry standards, DANOPOL HSF membranes are adhered to the upper surface of the structural deck (or insulation if applicable). DANOPOL membrane seams (overlaps) are then welded together to provide a continuous waterproof covering.

The illustrated system describes a typical specification based on an adhesive bonded application and is not representative of all available system combinations. For example, there may be a preference to mechanically fastened the insulation or there may be no thermal performance required (cold roof).



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 DANOPOL 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.



- PAVING SLABS ON SUPPORTS A WATER FLOW REDUCING LAYER warm roof only
- DANOPREN TR XPS INSULATION c warm roof only
 - DANOFELT PY 300 FLEECE PROTECTION
 - DANOPOL HSF MEMBRANE
 - STRUCTURAL DECK





The illustrated system describes a typical specification based on an inverted roof with an adhesive bonded 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).

High Humidity System

COMPONENT GUIDE

- DANOPOL HSF MEMBRANE
 DANOSA PIR INSULATION warm roof only
- C HIGH PERFORMANCE VAPOUR CONTROL LAYER
- D STRUCTURAL DECK



For more specialist applications, your DANOPOL 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 based on an adhesive bonded application and is not representative of all available system combinations. For example, a mechanically fastened system (with stainless steel fasteners) may be the preferred method of attachment (depending on the level of humidity) or there may be no thermal performance required (cold roof).



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 may be 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





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 or there may be no thermal performance required (cold roof).

DANOPOL+ MEMBRANE REFURBISHMENT Netherwood Road, London (UK)



Acoustic Solutions

Your DANOPOL 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.





- DANOSA ACOUSTIC MEMBRANE
 - STONEWOOL TROUGH FILLERS
 - STRUCTURAL DECK





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.



Alpha Profiles

Simply to install and highly customisable, DANOSA ALPHA PROFILES are pre-formed PVC standing seams, with a special DANOPOL membrane formula which may be hot-air welded to the surface of any completed DANOPOL waterproofing system.

Once the waterproofing has been completed, our ALPHA PROFILES are installed in accordance with the underlying DANOPOL membrane overlaps, obscuring them from view to give a visually striking and seamless appearance.

ALPHA PROFILES are a sustainable alternative to traditional metal roofing systems and at under 3.00 kg per m², a DANOPOL membrane alternative imposes less load onto the underlying roof deck and supporting structure.

Taking this into consideration early in the design stage can result in significant cost savings for your building.

Demonstrating the flexibility and versatility of design options with DANOPOL membrane systems, our ALPHA PROFILES remain an economical and impactful way of making your roof stand out on low-pitches, mansards, vertical works and circular roof designs. Perfect for both commercial developments and residential properties.

COMPONENT GUIDE



VAPOUR CONTROL LAYER warm roof only

STRUCTURAL DECK





The illustrated system describes a typical specification based on a mechanically fastened application and is not representative of all available system combinations. For example, an adhesive bonded system may be the preferred method of attachment and there may be no thermal performance required (cold roof).

DANOPOL+ ALPHA PROFILE SYSTEM · The Royal Russell School, Croydon (UK)

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Integrated Fixing Points

Redefining the boundaries of Flat Roofing design is our Integrated Fixing Point (IFP) system which provides a secure system for the attachment of a variety of products directly to the roof system and structural deck. It does this whilst retaining an entirely watertight seal, avoiding the need for complex details and reliance on rooftop sealants (which often need to be reapplied throughout the roofs service life).

The IFP is a low profile stainless steel pattress which presents 2nr M10 bolt holes allowing brackets, rails and support systems to be bolted directly to it. The underlying base plate is mechanically fastened directly to the roof deck after the waterproofing has been completed, at centres to suit any engineering requirements and specifications. Once attached to the roof, the integral DANOPOL membrane flange is then heat welded to the roof system, completing the watertight seal.

Whilst common applications with our IFP include the attachment of solar panels, rooftop services, cable trays and other rooftop equipment, using IFPs to encapsulate buildings is becoming increasingly popular.









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 and there may be no thermal performance required (cold roof). DANOPOL MEMBRANE AND IFP SYSTEM • Oat Errish Farm (UK)



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). Addittionally, 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 🛕
- DRAINAGE / WATER RETENTION LAYER
- DANOFELT PY 300 FLEECE PROTECTION
 - DANOPOL HSF MEMBRANE
 - DANOSA PIR INSULATION
 - VAPOUR CONTROL LAYER
 - STRUCTURAL DECK G



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 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 and 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.



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.







ROOFLIGHTS & ACESS 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)



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 (pictured opposite) 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.



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



ON-SITE TECNHICAL 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 100m² are inspected by our Field Technicians and documented along with all registered installer ID numbers in a Project Inspection Report.





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 our specialist training programme and accompanying examination. For extra added benefit our programme, which has been approved by the Single Ply Roofing Association (SPRA), has also been mapped to the Basic Competency Programme (BCP) which starts all successful candidates on their course towards an NVQ Level 2. 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.



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).

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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 technicalt eams.









QUALITY CONTROL AND TESTING LABORATORY · Fontanar (Spain)



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.

PROJECT SHOWCASE









WATERPROOFING, THERMAL & ACOUSTIC INSULATION FOR BUILDING AND CIVIL WORKS

Discover a World of Solutions. www.danosa.co.uk

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