Thermically Activated and Torch On Systems
for Multi-Layer Bitumen Waterproofing
Technical Service and Project Support

Specifying a roof waterproofing system that delivers a combination of assured high performance and best value is a tremendous responsibility. The financial impact of the wrong decisions can be considerable. At Icopal, we are dedicated to working with you to eliminate all levels of risk from the design and specification process, the construction process and the long-term guarantee of performance from your roof.

Confidence Starts Here

Icopal offers a quality and time unique solution with a range of multi material possibilities to perfectly suit the individual needs and budget of each roof condition. Each proposal is supported by a comprehensive service from Icopal’s Technical Services Department to ensure the highest standards of specification, product quality and project support.

As the global leader in roof systems, Icopal offers comprehensive beginning-to-end project support to provide the strongest possible foundation for your project. Icopal is dedicated to providing the right balance of system performance, reliability and cost to help you meet the challenge of delivering best value. The Icopal Secure 5-Step Process ensures that we meet these objectives.

Our technical service offers comprehensive project support throughout the whole design and consultation process, our team of Technical Managers are committed to providing the most appropriate solution for the project at hand which is both practical and cost effective.

Icopal Secure 5-Step Process

1. Consultation and Roof Survey

We understand that each project is different and it is vital for us to understand your requirements and expectations right from the outset. Refurbishment projects start with a comprehensive site survey including detailed analysis of the existing roof build up and condition. This information is critical to the correct specification and products being recommended.

Our experienced team of Area Technical Managers are on hand to offer professional advice:
- The appropriate design for roof build-up and building use and recommendation of the correct waterproofing system and interface detailing
- Detailed existing site surveys, including photographic record
- Core samples and moisture content readings
- Rooflight replacement programme

2. Design and Specification

We provide a full design service including specifications, drawings and calculations, prepared in line with the Building Regulations and Codes of Practice. The quality of our products and comprehensive guarantees safeguard your project while our extensive knowledge and expertise means we can advise you on the correct system for your project. As a multi material supplier we can specify the most appropriate solution without bias, ensuring that it is the best fit for your specific project requirements.

The following services form our detailed specification service:
- Detailed refurbishment specifications
- NBS Specifications
- Bespoke detail drawings
- Tapered insulation designs
- Thermal & condensation analysis, wind uplift and fixing calculations
Installation

Our Guaranteed Roofing Systems are installed by Team Icopal approved roofing contractors providing national coverage. Team Icopal contractors are trained in all disciplines and vetted and monitored by Icopal to ensure the highest level of quality and service are maintained.

Team Icopal Approved Roofing Contractors:

- Vetted and monitored by Icopal
- Provided training at one of Icopal’s training centres
- Process includes a pre-commencement briefing with your contractor
- Icopal Technical Manager will provide full overview of the specific requirements and features of the roof detailing

Site Support and Project Monitoring

Our site technicians are regularly on site to closely monitor progress and ensure the project runs smoothly, focusing on any potential drift from specification, quality of workmanship and aesthetic condition. Through their expertise and practical approach they offer technical advice and support throughout the project and beyond, with detailed site reports issued following each visit and a final inspection to confirm your satisfaction and sign-off.

Our site technicians will visit projects during installation to monitor progress and ensure compliance to specification along with:

- Providing site support / trouble shooting
- Operative training & monitoring
- Preparation of intermediate site reports
- Final inspection and project sign off for guarantee
- Maintenance recommendations

System Guarantee

Our guarantees are reputedly the most comprehensive in the flat roofing market. They are supported by a series of insurance policies arranged with first class security in the London Insurance Market. Several different levels of guarantee are available dependant upon the specific circumstances of the project, the clients requirements, product choice and period of cover.

Icopal guarantees can include the following elements:

- Product failure - including full roof replacement
- Icopal design
- Workmanship
- Contractor insolvency
- Consequential damage
- Financial loss
Advances in Waterproofing Technology

Self-Adhesive Bitumen – Roofing with Safety

The development of Anderson thermically activated and self-adhesive bitumen has been a significant development in bitumen membrane technology, allowing combustible and sensitive substrates and details to be covered "cold" keeping all surfaces free from fire risk during application. These innovative TorchSafe™ membranes are manufactured from dual compounds of proven SBS-modified elastomeric bitumen to the upper surface combined with a high tack, low activation self-adhesive compounds to the lower surface. Anderson T.A. membranes meet the requirements of modern construction and provide safe, fast and versatile installation methods.

Benefits

- Excellent adhesion to all surfaces including plywood, OSB, metal, concrete and thermal insulation.
- High peel strength and pull off values to meet wind uplift requirement.
- Fully waterproof and safe overlaps.
- Improved granule adhesion.
- Long lasting and durable due to reduced heat required during installation.
- Improved installation times; roof is watertight quicker.

Grooves

Icopal patented groove technology was introduced in 1993. Used in conjunction with specially formulated low-melt bitumen resin blends, only a minimal heat application is required to activate the unique adhesive properties of the membrane, as the heat is channelled quickly along the grooves and disperses rapidly along the roll. This form of application ensures maximum adhesion between layers with the minimum use of energy and providing an instant 100% secure bond.

The groove profile increases the surface area of the bitumen by 40% and contact of the film across the peaks allows it to disperse 30% faster.

The groove shape was further refined and optimised in 2000. This enhancement improved the liquefying of the welding bitumen with much reduced torching required.

Close up of cross section of a grooved bitumen membrane.
As a manufacturer, Icopal recognises its responsibilities and is committed to advocating safety best practice principles through our products and their application and, to promote safe installation methodology with our approved contractors.

Icopal TorchSafe systems comprise a range of thermally activated (T.A.) products designed to give you the technology you need to complete a quality roof system quickly, making big energy savings and keeping the entire roof structure safe from fire.

TorchSafe systems are suitable for new build or refurbishment projects and offer the durability and flexibility of traditional reinforced built-up bitumen waterproofing with the benefit of safer application and speed of installation. Utilising the latest development in bitumen technology, T.A. systems combine the use of self-adhesive bitumen, hot-air welding and solvent-free adhesives to create flame-free application methods to satisfy the most stringent site safety conditions.

Safe2Torch
Icopal have pledged support to the National Federation of Roofing Contractors (NFRC) “Safe2Torch” campaign. “Safe2Torch” is an NFRC initiative, developed in partnership with contractor and manufacturer members of the NFRC, which seeks to significantly reduce the risk of roof fires when using gas torches, either to dry out roofs or when used to install torch-on membranes.
FireSmart®

Anderson FireSmart membranes offer the highest combination of waterproofing and fire resistance performance. FireSmart membranes were the first reinforced bitumen membranes to be approved by the Loss Prevention Certification Board (LPCB), whose standards are used by many Insurance Companies when assessing potential fire risks in buildings. FireSmart was also the first fire protection built up roofing system to be listed in the BRE’s Red Book “List of Approved Fire and Security Products and Services”.

Anderson capsheets with FireSmart provide a fire protection layer, shielding the roof from both spread of flame and fire penetration. FireSmart membranes are formulated using finely ground volcanic silicone rock which has withstood temperatures in excess of 5,000 degrees Celsius.

How FireSmart Roofing Systems protect against flame spread and fire penetration

When a flame comes into contact with the surface of the FireSmart capsheet, the presence of volcanic rock brings about an endothermic reaction within the membrane. Heat is actually drawn from the flame to support a process of carbonisation in the capsheet, so reducing the burn temperature. The resulting unbroken carbonised ‘shell’ then seals off combustible material beneath, denying the already-weakened flame further fuel and preventing any further combustion.

FireSmart systems have been tested and accredited by both the LPCB and BBA, and exceed the existing UK fire standard BS 476: Part 3. All lcopal FireSmart membranes achieve an EXT.F.AA fire rating in accordance with BS 476: Part 3, and will enable a roof to be ‘unrestricted’ under the national Building Regulations.
Fire Tests
Tests were carried out to assess Anderson FireSmart roofing systems to act as a protective barrier against fire from the outside of a building. FireSmart products have been tested against either BS476: Part 3 External Fire Exposure Roof Test or TS/ENV 1187 European test method for external fire to roofs.

The two stage test method represents burning brands falling onto the external roof surface supported by acting wind speeds of (~6.7 m/s) along with imposed radiant heat which represents the most stringent of European fire tests.

**Test One - Flame Spread:**
The capsheet was exposed to a 400 °C radiant heat source, and a pilot flame was applied in an attempt to ignite the FireSmart® capsheet and measure spread of flame.

**Result:** Zero spread of flame was recorded, and classification ‘A’ awarded.

**Test Two - Fire Penetration:**
A FireSmart® system incorporating PIR insulation was built to test for fire penetration. The system surface was inclined at 15° and on it was placed a metal cage containing highly combustible material.

This was ignited and fed with oxygen to increase the burn intensity, and the fire left to burn itself out. Penetration into the roofing system was then measured.

**Result:** Zero penetration of fire was recorded, and classification ‘A’ awarded.
The highly innovative Noxite® mineral capsheets provide architects and specifiers with a versatile and sustainable solution.

By working actively with nature, Noxite helps reduce air pollution, cut CO₂ emissions and improve energy efficiency, thereby enabling new-build and refurbishment projects to meet the increasingly challenging environmental targets specified by evolving Building Regulations.

A Noxite waterproofing membrane not only deliver a high quality roof, but also uses sun, wind and rain to transform harmful nitrogen oxides into harmless nitrates. The key is the granular titanium dioxide finish which, when activated by UV radiation from the sun, converts nitrogen oxide particles (carried by polluted air) into nitrates, which are then washed away by rainfall.

The result is a highly effective means of reducing a building’s environmental impact, with Noxite continuing to work for the entire life of the roofing membrane, annually neutralising up to 52 million m³ of polluted air per 1000m² of roofing surface.

Noxite® website

Please visit the Noxite website where you can find information about Noxite’s performance, including useful images and presentations to provide further detail.

www.icopal-noxite.co.uk
Ultraviolet radiation causes a catalytic reaction in the noxite mineral.

Harmful nitrogen oxide particles in the air pass over the Noxite mineral and are turned into nitrates.

The nitrates are then washed away during rainfall.
Vapour Control Layers

The Critical Layer

The Vapour Control Layer (VCL) is the first layer of attachment to the substrate and represents a critical layer in any warm roof waterproofing system. Installation of the VCL is paramount to resist wind uplift forces and to keep the whole system attached to the structure with its primary function of preventing moisture vapour from within the building affecting the thermal insulation through condensation.

Condensation Control

In a warm roof system a vapour control layer should be used beneath the insulation to reduce the diffusion of water vapour into the warm roof system, and reduce the risk of condensation.

Choice of Vapour Control Layer

Icopal supply a range of vapour control layers to suit project requirements, and it is essential to choose a suitable product for the roof substrate and application method.

Anderson bitumen systems offer vapour control layers for both torch-on or self-adhesive installation methods, each with a version which allows secure attachment of thermal insulation by bonding to bitumen adhesive stripes, or a plain, sand surfaced version which can be used when bonding with insulation adhesive or mechanically fastening. Since these membranes are adhered, they can provide a weatherproof temporary finish to the roof structure prior to the application of the insulation and final waterproofing system.
Combustible Substrates
For substrates such as plywood, OSB and other combustible surfaces, it is essential that a TorchSafe T.A. vapour control layer is used. Manufactured with a self-adhesive elastomeric bitumen formulation, the membranes are laid cold into the specially formulated Icopal S.A. Primer which reacts with the bitumen to provide a secure initial bond to the substrate. Laps are then secured safely with hot-air welding techniques.

Self-adhesive/Thermically Activated VCL
TorchSafe T.A. VCLs are manufactured with an extra strong glass fibre fleece combined with a PET/ aluminium core. The self-adhesive bitumen underside is protected with a pull-off sheet. In cooler weather, hot-air can be used on the underside to increase surface temperature and ensure the correct level of attachment is achieved.

TorchSafe T.A. VCL - Stripes
TorchSafe VCLs are available with thermically activated bitumen stripes on the upper surface which are torch heated to activate the low-melt bitumen resin stripes and allow the insulation board to be bonded without additional adhesive. Alternatively, a version with a fine granular sand upper surface allows the use of Icopal Insulation Adhesive, providing a completely cold method of installation protecting combustible surfaces from naked flames. Both membranes have a 75 mm wide self-adhesive selvedge finished with a release film allowing a safe watertight overlap to be formed separately by hot-air welding.

Non-combustible Substrates
Torch-on VCL membranes are permissible and appropriate for application to non-combustible substrates, eg masonry, concrete and existing system overlays; where the application method is preferred and safe for that type of substrate. For other substrates or conditions, such as potentially flammable substrates, e.g. timber kerbs or refurbishment works, where it is considered that they pose a fire risk, the use of TorchSafe T.A. VCL membranes should be considered for these areas.

Insulation Attachment
Thermal insulation can be secured to the VCL in a number of ways.

Bonding In Stripes
Once installed, full activation and bond strength of the VCL to the substrate is achieved by torch heating the upper surface of the membrane to activate the specially designed low-melt bitumen resin stripes and allow the insulation board to be bonded without additional adhesive.

Bonding In Adhesive
For the plain sanded VCL, the insulation boards are secured using a roofing insulation adhesive. The adhesive should be applied in accordance with the manufacturer's current instructions, typically by applying beads of adhesive at the required centres, paying particular attention to the wind uplift requirements for the location of the project and the relevant bonding pattern for the adhesive. The insulation boards are then placed firmly into the adhesive, in readiness to receive the waterproofing.

Mechanically Fastened
Alternatively, insulation boards may be mechanically fixed and secured to the structural deck using the appropriate type and length of screw fastener and tube washer/stress plate, in accordance with BS 6339: Part 2, or a wind uplift calculation.
Thermal Insulation Solutions

Thermal Insulation

The Thermazone range of insulation boards has been specifically designed to complement Icopal’s roofing systems. These boards are available as a uniformed flat board, or can be supplied in a tapered board to offer a cost effective solution to providing positive falls, even on the most complicated of projects.

Thermazone rigid PIR thermal insulation boards are CFC/HCFC free, have a zero Ozone Depletion Potential (ODP), and have a Global Warming Potential (GWP) of less than 5. They have excellent thermal performance, dimensional stability and are resistant to mould and microbial growth.

U-Value and Condensation Risk Analysis

U-Value and condensation risk analysis can be carried out to ascertain the potential threat to the system of interstitial condensation. Should such a threat exist, Icopal’s Technical Services team will be able to advise and recommend an appropriate solution.

Cut to Falls Insulation

Icopal’s in-house design service offers the most cost effective and user efficient solutions to providing positive drainage falls on even the most complicated of projects. From initial design to installation, Icopal’s Technical Services will ensure the designed insulation scheme provides a combined solution of insulation value and effective roof drainage.

Xtra-Fall

The fall on a flat roof should be smooth and steep enough to prevent the formation of rainwater ponds. To ensure adequate drainage, ‘BS 6229: 2003 (Flat roofs with continuously supported coverings. Code of practice)’ recommends uniform gradients of not less than 1 in 80. The fall on a flat roof constructed using Thermazone insulation boards is normally provided by the supporting structure being directed towards the rainwater outlets. It should be noted that where bi-directional falls intersect, the resulting fall along the line of the mitre is less than that of the main area, and may produce ponding water. To account for inaccuracies and any deflection in the deck, the falls assumed for design should, therefore, be steeper than the recommended finished falls. Falls can be provided by utilising a Thermazone ‘Xtra-Fall’ Tapered Roofing System.

A Thermazone XtraFall® Taper System provides the designer and contractor with a precise, technically excellent solution to providing thermal insulation and bespoke drainage on a flat roof. A Thermazone XtraFall® Taper System comprises factory laminated boards and factory cut hip and valley pieces which allow for the creation of mitres without on-site cutting thereby reducing installation times, cutting errors and the associated labour and waste costs. Each component is clearly identified by board type and the direction of fall.

*Thermal conductivity is dependent on facings and product thickness.
The Range of Thermazone Insulation

**Thermazone PureFoil SA**
For TorchSafe Systems

*Thermazone PureFoil SA insulation* is a rigid PIR insulation board with a stucco textured foil facings and offering excellent thermal performance. The insulation is specifically designed for use with Icopal thermically activated bitumen membranes, and is compatible with the Icopal T.P.I. Insulation Adhesive in bonded applications.

**Board Size:** 1200 mm x 1200 mm  
**Conductivity:** 0.021 W/(m·K)

**Thermazone Roofboard**
For TorchSafe Systems

*Thermazone Roofboard insulation* is a rigid PIR insulation board for use with Icopal thermically activated bitumen membranes. The upper and lower surfaces are finished with a mineralised glass tissue which is auto-adhesively bonded to the insulation core during manufacture. The glass tissue aids adhesion with the underlay membrane. It is compatible with the range of Icopal insulation adhesives.

**Board Size:** 1200 mm x 600 mm  
**Conductivity:** 0.024 - 0.026 W/(m·K)

**Thermazone Torch On**
For Total Torch Systems

*Thermazone Torch On insulation* is a rigid PIR insulation board which has been specifically designed to be used with Icopal bitumen partial bond torch-on membranes. The top surface is finished with a bitumen-coated glass tissue finished with a thermofusible polypropylene fleece to aid adhesion with the membrane. The underside is finished with a mineralised glass tissue.

**Board Size:** 1200 mm x 600 mm  
**Conductivity:** 0.024 - 0.026 W/(m·K)

**Thermazone Rok**
For Warm Roof Systems

*Thermazone Rok Insulation* is manufactured from non-combustible stone wool fibres, compressed and bound together to form an insulation board with exceptional fire resistance, thermal performance and dimensional stability. The top surface is finished with a mineral glass fibre fleece specifically designed to aid adhesion with Icopal bituminous roof systems.

**Board Size:** 1200 mm x 1000 mm  
**Conductivity:** 0.039 W/(m·K)

**Thermazone IVR Insulation**
For Inverted Warm Roofs

*Thermazone Inverted IVR insulation* is a high performance insulation board intended for use in warm inverted roofs, where the insulation sits above the waterproofing system. It is used in conjunction with a water reducing layer, and is secured in place by installation of a ballast system, such as pebbles or concrete paving slabs, to protect against wind uplift or floatation of the insulation boards.

**Board Size:** 1200 mm x 590 mm  
**Conductivity:** 0.038 W/(m·K)

**Thermazone Insulation Fillets**

*Thermazone Insulation Fillets* are available in both Thermazone Torch On and Thermazone Roofboard versions, for use with torch-on and thermically activated detailing membranes, respectively.

The fillet provides a gradual transition at corner interfaces, such as upstands or change in levels, allowing the membranes to be correctly sealed.

**Size:** 50 mm x 50 mm  
**Length:** 1200 mm

Please see product sheets for further information.
Waterproofing Layers

The Underlay

Uniquely engineered roofing membranes designed to tackle the crucial elements of roofing physics providing excellent attachment whilst eliminating blistering associated to moisture vapour pressure.

Vapour Dispersion Stripes – Eliminate The Risk Of Blistering
Striped membranes are a key component within the TorchSafe T.A. and Total Torch system build ups. Combining the function of a traditional venting base layer and underlay into a single membrane, a partial bond first layer of waterproofing ensures appropriate connection to the substrate while minimising the risk of blistering.

Critical Engineering
The engineered stripe pattern is designed to dissipate any build up of moisture vapour pressure within the roof construction. Between the stripes is a fine quartz sand which creates a series of unbonded channels allowing any vapour pressure to move freely and not to develop into a blister which can happen when moisture vapour becomes trapped and concentrated in one area. The volume expansion of water from liquid to vapour state is very large (~1250 times), and a minute amount of water in a small void can produce sufficient vapour pressure to force the void to grow into a blister. The presence of water is especially serious at high temperatures when the bitumen becomes soft and the pressure in the blister is high.

This unique feature ensures the maximum performance and life expectancy and gives Anderson striped membranes significant advantages over other systems.
Partial Bond / Venting Underlays
Anderson partial bond underlays combine the function of a traditional venting base layer and underlay into a single membrane. Available for torch-on or self-adhesive application, a partial bond first layer of waterproofing ensures appropriate connection to the substrate while minimising the risk of blistering caused by trapped moisture.

Total Torch Vapour Dispersion Layer is a torch-applied glass reinforced SBS bitumen membrane providing strength and dimensional stability. Constructed with torch activated partial bond bitumen stripes to the underside. These stripes play a special role within the system by allowing any trapped water vapour to disperse through the system whilst providing the required attachment to the substrate.

TorchSafe T.A. Underlay is a glass reinforced SBS bitumen membrane with thermically activated self-adhesive partial bond stripes on the underside. The upper surface is finished with a thermofusible film. Enhanced adhesion is obtained while torching the capsheat above.

Full Bond / Detailing Underlays
For maximum waterproofing security at details, such as upstands and gutters, Anderson full bond underlayers are specified and installed.

For non-combustible substrates and other ‘Safe2Torch’ details, Total Torch Premium SBS Underlay may be used. For details where an identified fire risk or flammable substrate exists, Torchsafe T.A. Detailing Underlay should be used.

Total Torch Premium SBS Underlay has been developed to provide excellent all round performance and application characteristics.

The combination of high membrane strength and total flexibility make this underlay easy to handle and still provide improved speed of application through rapid dispersion of the underside film.

TorchSafe T.A. Detailing Underlay uses a unique combination of thermically activated bitumen, strong reinforcement and a syntan acrylic surface coating to make this underlay the perfect membrane for safe detailing in vulnerable areas.

Removal of the release film on the underside exposes a high tack adhesive bitumen coating ideal for hot-air welding to the substrate. The red syntan surface ensures an ideal surface to receive the capsheat.

Cold Roof Substrates
On cold roofs, for substrates such as plywood, OSB and other combustible surfaces, it is essential that a TorchSafe T.A. Underlays are used. Manufactured with a self-adhesive elastomeric bitumen formulation, the membrane is laid cold into the specially formulated Icopal S.A. Primer which reacts with the bitumen to provide a secure initial bond to the substrate. Laps are then secured safely with hot-air welding techniques.

Enhanced adhesion is achieved by heating from above as the capsheat is torch-applied.

See page 19 for flame-free detailing options.
High Performance SBS-modified Capsheets
Styrene-butadiene-styrene (SBS) modified bitumen is the backbone of our high performance waterproofing membranes. Modifying bitumen with SBS polymer produces a highly durable and elastomeric blend with exceptional elongation and recovery properties over a wide temperature range. This technology is the base formulation of our engineered reinforced bitumen membrane (RBM) products.

SBS-modified bitumen is well proven to be the most versatile and reliable solution to construction waterproofing design, facing the challenges of structural stresses, thermal movement and shock, heat load and joint movement.

Every project is unique, that is why Icopal offer three families of Anderson SBS-modified capsheets, with varying combinations of blend, thickness, carrier, and surfacing. This variety enables the specifier to select the Anderson Waterproofing System that perfectly matches their requirements.

Anderson capsheets are available with the following features:
- 4.0 mm - 5.2 mm thickness
- Cold bend flexibility down to -20 °C
- BBA certification
- Grooves technology
- FireSmart technology
- Noxite Eco-Activ mineral surfacing

Mineral Surfacing
The capsheets are self-finished with slate granules which provide a decorative and solar reflective finish, and are supplied in the following colours:

- Green
- Brown
- Blue-Grey
- Charcoal
- Noxite

A comprehensive range of high performance robust capsheets ensure the highest levels of installed performance with fast and energy efficient application, superb adhesion and sealing qualities, making the Anderson SBS Capsheet range the first choice for any project however complex.
**Anderson Capsheet Options**

**Thermaweld SBS**
A top quality, extremely durable elastomeric bitumen membrane which features a tough 250 gsm polyester reinforcement and SBS coating bitumen including groove technology for efficient installation and a life expectancy in excess of 30 years.

**Product Overview**
- Superior Performance
- Capsheet for multi-layer systems
- Torch applied
- Mineral finished
- Choice of colours
- FireSmart® version available
- Noxite® Eco-Activ option
- BBA approval Cert No 07/4409

**Specification**

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**Tecnatorch SBS**
As an industry leading reinforced bitumen waterproofing membrane, Tecnatorch with groove technology is tried and tested. It has been installed on a wide range of building types, and suitable for use on flat, curved and sloped roof structures.

**Product Overview**
- High Performance
- Capsheet for multi-layer systems
- Torch applied
- Mineral finished
- Choice of colours
- FireSmart® version available
- BBA approval Cert No 07/4409

**Specification**

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**Total Torch SBS**
Total Torch SBS balances quality, performance and cost efficiency in a very durable and popular reinforced elastomeric bitumen membrane with a life expectancy in excess of 20 years.

**Product Overview**
- High Performance
- Capsheet for multi-layer systems
- Torch applied
- Mineral finished
- Choice of colours
- BBA approval Cert No 07/4409

**Specification**

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<td>8 m x 1 m</td>
<td>4.0 mm</td>
<td>40 kg</td>
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Rootbar SBS Capsheet
A high performance, heavy duty SBS-modified, polyester reinforced membrane which combines elastomeric properties with a high level of durability and high waterproofing capability. Incorporating specially formulated root inhibitors, Anderson Rootbar provides superior root resistance, and is manufactured to meet FLL guidelines.

Product Overview
- High Performance
- Root Resistant
- Capsheet for multi-layer systems
- SBS elastomeric bitumen
- Torch applied
- Mineral or sand surfaced
- BBA approval Cert No 05/4269

Specification

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<td>40 kg</td>
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Project: Heathfield School
Twickenham, Middlesex
Anderson T.A. Capsheet Option for Detailing

Anderson T.A. Detailing Capsheet
A high performance SBS-modified Thermally Activated detailing sheet containing FireSmart technology. The membrane creates a fully bonded waterproofing detail by hot-air welding and Icopal SFT adhesive. A thermically activated selvedge with release film ensures a secure watertight overlap.

**Product Overview**
- High Performance
- Flame-free installation
- Thermically activated application
- Mineral finished
- FireSmart® enhanced
- BBA approval Cert No 09/44645

**Specification**

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**Flame-Free Detailing**

A torch-free exclusion zone should be created a minimum 900 mm from all areas considered at risk due to being constructed from combustible materials, or adjacent to details where there is a risk of fire due to debris or other flammable hazards.

Within the exclusion zone, detailing work can be completed using a combination of Thermically Activated membranes which are fully bonded using hot-air welding techniques to encapsulate and protect the combustible materials to then enable risk-free application of torch on membranes.

In situations where the risk is still present, for example next to existing pitched tiled roof areas or wall cladding, a completely TorchSafe™ flame-free application is available, utilising T.A. membranes for the VCL, underlay and capsheet, and using hot-air welding and solvent-free waterproof adhesive to form secure and watertight flashings which are quick and clean to install while keeping the structure safe from fire risk.

![Diagram of Combustible Risk Zone and 'Safe2Torch' Zone]

**Example: Refurbishment at existing pitched roof abutment**
System Examples

TorchSafe™ Systems

TorchSafe™ is a range of thermically activated products designed to give you the technology you need to complete a quality roof system quickly, making big energy savings and keeping the entire roof structure safe from fire.

TorchSafe T.A. systems are suitable for new build or refurbishment projects and offer the durability and flexibility of traditional reinforced built up bitumen waterproofing with the benefit of safer application and speed of installation. Utilising the latest development in bitumen technology, T.A. systems combine the use of self-adhesive, hot-air welding and solvent-free adhesives to create flame free application methods to satisfy the most stringent site safety conditions.
Project: Huddersfield New College
Huddersfield, West Yorkshire
**TorchSafe**

**Thermically Activated - Plywood/OSB**

**New Build/Refurbishment : Warm Roof**
This system is based on a thermically activated VCL applied to the combustible ply/osb substrate. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. During application of the torch-on capsheet, the underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the insulation.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Thermazone PureFoil SA Insulation
4. Bonded To Bitumen Stripes
5. TorchSafe T.A. VCL – Stripes
6. Icopal S.A. Primer
7. Plywood/OSB Substrate

A. Anderson T.A. or T.O. Capsheet, at detail
B. Anderson T.A. Detailing Underlay

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
**Thermically Activated - Profiled Metal**

**New Build/Refurbishment : Warm Roof**
This system is based on a thermically activated VCL applied to the metal deck. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. During application of the torch-on capsheet, the underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the insulation.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Thermazone PureFoil SA Insulation
4. Bonded To Bitumen Stripes
5. TorchSafe T.A. VCL - Stripes
6. Icopal S.A. Primer
7. Profiled Metal Deck

**A** Anderson T.A. or T.O. Capsheet, at detail  
**B** Anderson T.A. Detailing Underlay

**New Build/Refurbishment : Warm Roof**
This system is based on a thermically activated VCL applied to the metal deck. The insulation is bonded in appropriate insulation adhesive or mechanically fixed. During application of the capsheet, the underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the insulation.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Thermazone PureFoil SA Insulation
4. Bonded To Bitumen Stripes
5. TorchSafe T.A. VCL - Sanded
6. Icopal S.A. Primer
7. Profiled Metal Deck

**A** Anderson T.A. or T.O. Capsheet, at detail  
**B** Anderson T.A. Detailing Underlay

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
TorchSafe

Thermically Activated - Cementitious

New Build/Refurbishment: Warm Roof
This system is based on a thermically activated VCL applied to the cementitious substrate. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. During application of the torch-on capsheet, the underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the insulation.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Thermazone PureFoil SA Insulation
4. Bonded To Bitumen Stripes
5. TorchSafe T.A. VCL - Stripes
6. Icopal S.A. Primer
7. Cementitious Substrate

Note: Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.

Important Note: Surfaces should be checked with an adhesion strength test on all areas for acceptability to receive Self-Adhesive / Thermically Activated Membranes.
Thermically Activated - Existing Asphalt/BUR

Refurbishment: Warm Roof Overlay
This system is based on a thermically activated VCL applied to the existing substrate. The insulation is bonded in appropriate insulation adhesive or mechanically fixed. During application of the torch-on capsheet, the underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the insulation.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Thermazone PureFoil SA Insulation
4. Bonded To Bitumen Stripes
5. TorchSafe T.A. VCL - Stripes
6. Icopal S.A. Primer
7. Existing Asphalt/BUR

A. Anderson T.A. or T.O. Capsheet, at detail
B. Anderson T.A. Detailing Underlay

Important Note: Surfaces should be checked with an adhesion strength test on all areas for acceptability to receive Self-Adhesive / Thermically Activated Membranes.

Note: Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
Thermically Activated - Plywood/OSB (Cold Roof)

**New Build/Refurbishment: Cold Roof**
This system is based on a thermically activated TorchSafe Underlay applied to the combustible ply/osb substrate, thereby protecting the vulnerable substrate. On application of the torch-applied capsheet, the TorchSafe Underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the substrate.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Icopal S.A. Primer
4. Plywood/OSB Deck

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.

Thermically Activated - Cementitious (Cold Roof)

**New Build/Refurbishment: Cold Roof**
This system is based on a thermically activated TorchSafe Underlay applied to the cementitious substrate. On application of the torch-applied capsheet, the TorchSafe Underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the substrate.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Icopal S.A. Primer
4. Cementitious Substrate

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
**Thermally Activated** - Overlay To Existing Asphalt/BUR

**Refurbishment : Overlay**
This system is based on a thermically activated TorchSafe Underlay applied to the existing substrate. On application of the torch-applied capsheet, the TorchSafe Underlay’s high tack bitumen stripes are activated, further enhancing the adhesion of the underlay to the substrate.

1. Anderson Torch On Capsheet
2. TorchSafe T.A. Underlay
3. Icopal S.A. Primer
4. Existing Asphalt/BUR

**A** Anderson T.A. or T.O. Capsheet, at detail

**B** Anderson T.A. Detailing Underlay

**Important Note:** Surfaces should be checked with an adhesion strength test on all areas for acceptability to receive Self-Adhesive / Thermically Activated Membranes.

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
The Total Torch system is a fully torchable system and has proven its performance in all kinds of roofing applications time and time again. The system has been engineered to be up to 25% quicker than laying traditional torch-on built up roofing systems.
Project: Medway Health Centre, Sale, Greater Manchester
Total Torch

Torch On - Plywood/OSB

New Build/Refurbishment: Warm Roof
This system is based on a thermically activated VCL applied to the combustible ply/osb substrate. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Thermazone Torch On Insulation
4. Bonded To Bitumen Stripes
5. TorchSafe T.A. VCL - Stripes
6. Icopal S.A. Primer
7. Plywood/OSB Substrate

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

New Build/Refurbishment: Warm Roof
This system is based on a thermically activated VCL applied to the combustible ply/osb substrate. The insulation is bonded in appropriate insulation adhesive or mechanically fixed. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Thermazone Torch On Insulation
4. Icopal Insulation Adhesive
5. TorchSafe T.A. VCL - Sanded
6. Icopal S.A. Primer
7. Plywood/OSB Substrate

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

Note: Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
Torch On - Profiled Metal

New Build : Warm Roof
This system is based on a torch-on VCL applied to the metal deck. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Thermazone Torch On Insulation
4. Bonded To Bitumen Stripes
5. Total Torch VCL - Stripes
6. Icopal Insulation Adhesive
7. Total Torch VCL - Sanded

Note: TorchSafe VCLs should be substituted when these systems are used on refurbishment projects where the existing is stripped off and there is a combustibility risk.

1. Anderson T.O. or T.A. Capsheet, at detail
2. Anderson T.O. or T.A. Underlay, at detail

Note: Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
Total Torch

Torch On - Cementitious

New Build/Refurbishment: Warm Roof
This system is based on a torch-on VCL applied to the non-combustible substrate. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Thermazone Torch On Insulation
4. Bonded To Bitumen Stripes
5. Total Torch VCL - Stripes
6. Icopal Q.D. Bitumen Primer
7. Cementitious Substrate

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

Note: Each detail should be assessed to whether it is 'Safe2Torch'. If in doubt, use TorchSafe T.A. detailing methodology.
**Torch On** - Warm Overlay To Existing BUR/Asphalt

**Refurbishment: Warm Roof Overlay**
This system is based on a torch-on VCL applied to the existing substrate. The insulation is bonded to the activated bitumen stripes on the upper surface of the VCL. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Thermazone Torch On Insulation
4. Bonded To Bitumen Stripes
5. Total Torch VCL - Stripes
6. Icopal Q.D. Bitumen Primer
7. Existing BUR/Asphalt

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

**Refurbishment: Warm Roof Overlay**
This system is based on a torch-on VCL applied to the existing substrate. The insulation is bonded in appropriate insulation adhesive or mechanically fixed. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Thermazone Torch On Insulation
4. Icopal Insulation Adhesive
5. Total Torch VCL - Sanded
6. Icopal Q.D. Bitumen Primer
7. Existing BUR/Asphalt

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
Total Torch

Torch On - Overlay To Existing BUR/Asphalt

**Refurbishment : Overlay**
This system is based on a torch-on waterproofing overlay to the existing substrate. Detailing membranes can be substituted with a combination of Thermically Activated membranes to protect vulnerable construction substrates from fire.

1. Anderson Torch On Capsheet
2. Total Torch Vapour Dispersion Layer
3. Icopal Q.D. Bitumen Primer
4. Existing BUR/Asphalt

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

Torch On - Cementitious (Cold Roof)

**New Build/Refurbishment : Cold Roof**
This system is based on a torch-on waterproofing system applied direct to the cementitious substrate. Detailing membranes can be substituted with a combination of Thermically Activated membranes to protect vulnerable construction substrates from fire.

1. Anderson Torch On Capsheet
2. Total Torch Dispersion Layer
3. Icopal Q.D. Bitumen Primer
4. Cementitious Substrate

A. Anderson T.O. or T.A. Capsheet, at detail
B. Anderson T.O. or T.A. Underlay, at detail

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
**Torch On - Cementitious (Inverted Warm Roof)**

**New Build/Refurbishment : Inverted Roof**
This system is based on a torch-on waterproofing system applied direct to the cementitious substrate. The system utilises the Rootbar Capsheet with root inhibitor for use beneath a green roof.

1. Rootbar Capsheet
2. Monarperm Water Reducing Layer
3. Thermazone Inverted IVR Insulation
4. Bonded To Bitumen Stripes
5. Total Torch VCL - Stripes
6. Icopal Q.D. Bitumen Primer
7. Cementitious Substrate

**Note:** Structures to support Inverted Roofs should be checked for suitability to accept the additional loading.

**Torch On - Cementitious (Green Roof)**

**New Build/Refurbishment : Warm Green Roof**
This system is based on a torch-on system applied to the non-combustible substrate. The top surface of the Torch On Insulation board is designed and tested to receive the torch-on underlay with minimum heat. The system utilises the Rootbar Capsheet with root inhibitor for use beneath a green roof.

1. Ballast
2. Monarperm Water Reducing Layer
3. Thermazone Torch On Insulation
4. Rootbar Capsheet
5. Tectatorch SBS Sand
6. Icopal Q.D. Bitumen Primer
7. Cementitious Substrate

**Note:** Each detail should be assessed to whether it is ‘Safe2Torch’. If in doubt, use TorchSafe T.A. detailing methodology.
Complimentary Products

Icopal’s approach to providing a fully guaranteed and integrated waterproofing solution is to include a range of specifically designed complimentary products eliminating the need for split responsibility or unknown quality.

Roofgard Rainwater Outlets
A range of roof outlets manufactured from stainless steel pipes and SBS modified bitumen flanges which can be fully integrated into Anderson bitumen waterproofing systems to provide a cohesive waterproofing detail. The outlets are supplied with a range of rubber “O” rings to ensure a complete seal to the downpipe and maximum resistance to backflow. The Roofgard Parapet Outlet is designed as a square to round spigot along with two forms of Parapet Outlet attachments, either a Chute or an Extension.

Roofgard Telescopic Vent and Roofgard Cable Duct
The Roofgard Telescopic Vent and Roofgard Cable Duct provide integrated detailing for soil vent pipes and for cables and tubes which penetrate the roofing system. Manufactured from high grade stainless steel with factory sealed bitumen flanges, they provide complete security against potential weak points in the roof detailing.

GRP Edge Trims
The Icopal Roofgard GRP edge trim provides a superior and effective roof edge trim to built-up reinforced bitumen roofing. Quick and easy to install, the GRP construction of the trims ensures they will retain their colour and shape for the life of the associated roof covering. Three different profiles are available including the standard TYPE B50 section. TYPE B100 section has an extended 100mm fascia. TYPE B150 has an extended 150mm fascia.

Roofgard Lightning Conductor Clip
A highly secure lightning conductor clip that ensures the waterproofing integrity of the roof remains intact. It is a simple to install and designed to secure the lightning conductor to the roof without puncturing or exerting undue stress on the roofing system.

Dalite Rooflights and Hatches
It is now accepted that natural light in buildings helps create better quality environments for people, improving their concentration and general feeling of well-being, leading to better productivity.

Specifying and installing a Dalite Rooflight helps ensure optimum and uniform natural light in rooms, guaranteeing both health and economic benefits.
Icopal Insulation Spray Adhesive
A single component moisture cured polyurethane adhesive supplied in a 22-litre pressurised canister and is applied using a hose and spray applicator gun. The adhesive contains no VOCs and uses non-flammable propellants reducing the risks associated with pressurised canisters. It is compatible with Thermazone Roofboard and Torch On boards.

Icopal T.P.I. Insulation Adhesive
A foaming two-part rapid curing polyurethane insulation adhesive. The adhesive contains no volatile solvents. It is supplied in a 1.5 litre twin cartridge and is applied using a battery powered applicator mixing gun. It is green in colour when mixed, and is compatible with Thermazone Purefoil SA, Roofboard and Torch On boards.

Roofgard Paving Support System
Roofgard Paving Support System provides a versatile and cost effective means of creating a fully supported and stable raised paved area, terrace or walkway on a roof. The Roofgard Paving Support consists of a threaded upper supporting head for fine adjustment and paver levelling which is interchangeable with three varying bases and additional extension collars to provide variable paving heights from 40 mm to 225 mm.

Roofgard Roof Plant and Equipment Support
Provides a cost effective way of supporting rooftop equipment and services without penetrating the waterproofing, helping to extend the roof’s economic life. The system is lightweight and adaptable, avoiding unnecessary costly detailing and supports virtually any rooftop mounted equipment and services while protecting waterproofing integrity.

KwikGuard Free-Standing Edge Protection
KwikGuard Edge Protection Systems provides an affordable means of continuous protection from falls to height in compliance with current legislation. It provides a free-standing, fixed rail system that does not penetrate the roof surface protecting both waterproofing and guarantee. It takes its strength from proven cantilever design and locking principles. A version of the KwikGuard system designed for use on parapets of 300mm wide or more is also available.

For further information on the range of products and accessories, please consult product sheets or visit the website at www.icopal.co.uk
## Technical Data

<table>
<thead>
<tr>
<th>Torch On Capsheets</th>
<th>Length (m)</th>
<th>Width (m)</th>
<th>Thickness (mm)</th>
<th>Mass per Unit Area (kg/m²)</th>
<th>*Tensile Strength (N/50mm)</th>
<th>*Elongation (%)</th>
<th>Roll Weight (kg)</th>
<th>Pallet Quantity</th>
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<tr>
<td>Thermaweld Mineral</td>
<td>7</td>
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<td>700/500</td>
<td>40/50</td>
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<td>40/50</td>
<td>40</td>
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### Thermally Activated Detail Capsheet

| Thermaweld FireSmart Mineral | 7          | 1         | 4.3            | 5.4                       | 650/550                   | 22/30          | 38              | 25             |

### Torch On Underlays

| Torch On Vapour Dispersion Layer | 8          | 1         | 3.8            | 4.0                       | 650/450                   | 4.0/3.5        | 32              | 25             |
| Total Torch Premium SBS Underlay | 10         | 1         | 2.7            | 3.9                       | 700/400                   | 35/45          | 39              | 25             |

### Torch On Vapour Control Layers

| Total Torch VCL - Stripes | 8          | 1         | 3.6            | 4.0                       | 650/450                   | 3.5/3.0        | 32              | 25             |
| Total Torch VCL - Sanded  | 8          | 1         | 2.8            | 3.9                       | 650/450                   | 3.5/3.0        | 32              | 25             |

### Thermically Activated Underlays

| TorchSafe T.A. Underlay     | 10         | 1         | 3.6            | 2.8                       | 450/450                   | 4.0/3.5        | 28              | 25             |
| TorchSafe T.A. Detailing Underlay | 10  | 1         | 4.0            | 4.4                       | 600/800                   | 2.0/2.0        | 45              | 25             |

### Thermically Activated Vapour Control Layers

| TorchSafe T.A. VCL - Stripes | 7.5        | 1         | 3.6            | 3.5                       | 450/350                   | 3.0/3.0        | 28              | 25             |
| TorchSafe T.A. VCL - Sanded  | 15         | 1         | 2.8            | 3.0                       | 450/350                   | 2.0/2.0        | 45              | 16             |

*Machine Direction / Transverse Direction

<table>
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<tr>
<th>Insulant Type</th>
<th>Thickness (mm)</th>
<th>Board Size (mm)</th>
<th>Conductivity (W/m·K)</th>
<th>Surface Upper</th>
<th>Surface Lower</th>
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<td>Thermazone Torch On Board PIR</td>
<td>25, 30, 40, 50, 60</td>
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<td>bitumen-coated glass tissue / PP fleece</td>
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