Proteus
WATERPROOFING

# PROTEUS HOT MELT®
# GUIDANCE

**WATERPROOFING SYSTEM: DURABLE SOLUTIONS FOR CONTEMPORARY ROOFING NEEDS**

Design | Develop | Deliver

# CONTENTS

# 1. INTRODUCTION

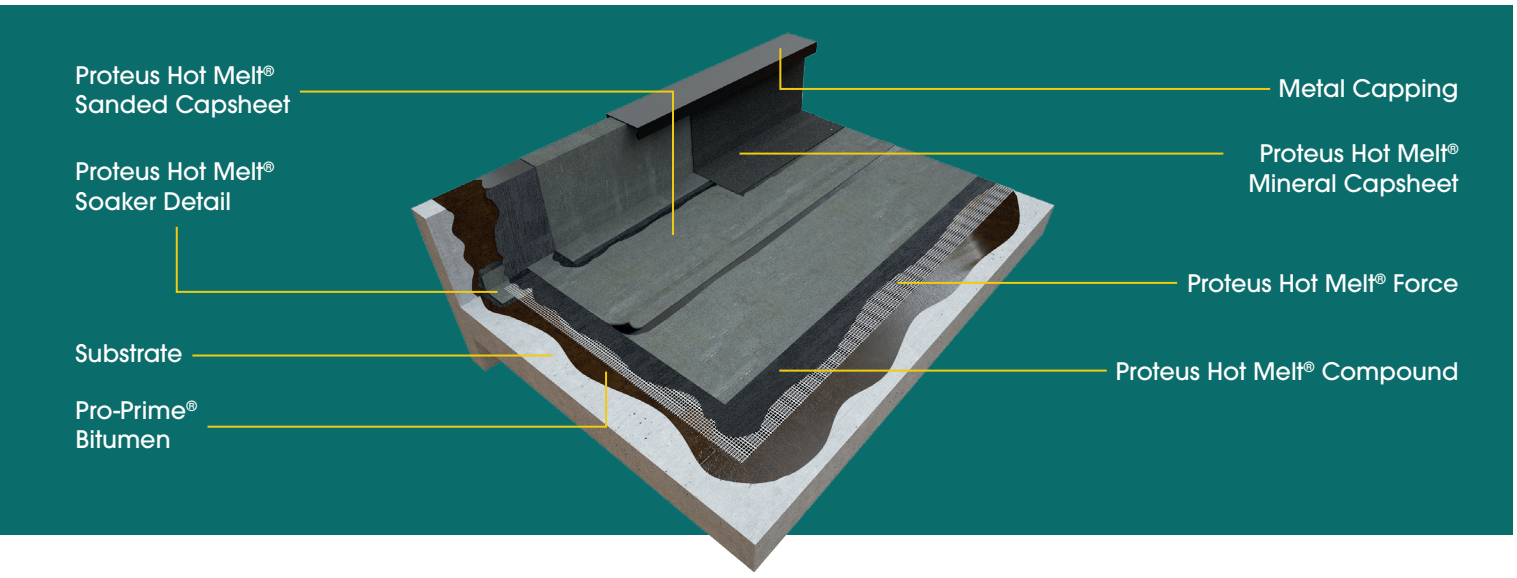
### Purpose of the Guide

This Guide provides detailed instructions for the correct installation of the **Proteus Hot Melt®** waterproofing system. It is intended for use by trained and experienced roofing contractors to ensure compliance with industry-standard practices, relevant British Standards, and the system's certification requirements. The guide outlines step-by-step procedures, safety considerations, and quality checks to achieve a waterproofing solution certified for durability under BBA Agrément Certificate 22/6186. Always refer to the latest product datasheets (DS), Safety Datasheets (SDS), and the BBA Agrément Certificate for supplementary information. Installation must be carried out by contractors approved by Proteus, to qualify for system guarantees.

### Overview of the Proteus Hot Melt® System

The **Proteus Hot Melt®** system is a monolithic waterproofing solution comprising a hot-applied, polymer-modified bitumen compound reinforced with a glass fibre mesh and protected by a modified bitumen capsheet. Key components include:

- **Pro-Prime® Bitumen**: A bituminous elastomeric primer for surface preparation.
- **Proteus Hot Melt® Compound:** A blend of SBS-modified bitumen, synthetic rubber, and polymers, applied hot at 170–180°C for seamless waterproofing.
- **Proteus Hot Melt® Force**: An open-weave glass fibre reinforcing mesh for added strength.
- **Proteus Hot Melt® Capsheet** (Sanded or Anti-Root variants): Polyester-reinforced membranes for protection, with the Anti-Root version incorporating additives to prevent root penetration, lichen, algae, and bacteria growth.




The system offers elasticity, adhesion and durability (confirmed by third party tests and certifications), making it ideal for demanding UK roofing applications. Benefits include weathertightness, resistance to mechanical damage, wind uplift, and root penetration (when using the Anti-Root Capsheet). It holds BBA Agrément Certificate 22/6186, confirming compliance with UK Building Regulations for weathertightness, fire performance, and durability. Under normal service conditions, with full protection, the system can provide weathertightness for the service life of the roof.

### Scope and Limitations

The **Proteus Hot Melt®** system is suitable for flat roofs (minimum finished fall of 1:80), zero-fall roofs (0° to 1:80), and specialised applications such as:

- Inverted roofs.
- Green roofs (extensive), roof gardens (intensive), and blue roofs (for stormwater attenuation).
- Terraces, podiums, and balconies with pedestrian access.

Approved substrates include concrete (in-situ or precast, density ≥1850 kg/m$^3$), timber (exterior-grade plywood

to BS EN 636), and compatible bitumen membranes. It is not suitable for lightweight insulating concrete, in-situ concrete <1850 kg/m$^3$, or friable surfaces without additional preparation.

This system is for professional use only and must be installed in accordance with BS 8217:2005 (Reinforced bitumen membranes for roofing), BS 6229:2018 (Flat roofs with continuously supported flexible waterproof coverings), and other relevant codes such as LRWA Design Guide, GRO Code of Best Practice, and NHBC Standards. It is not intended for cold roofs or vehicular traffic without additional protection. Compatibility with insulation, vapour control layers, or other roof elements must be verified; consult Proteus for bespoke advice. When used in conjunction with stormwater attenuation design for blue roofs, separate engineering calculations are produced.

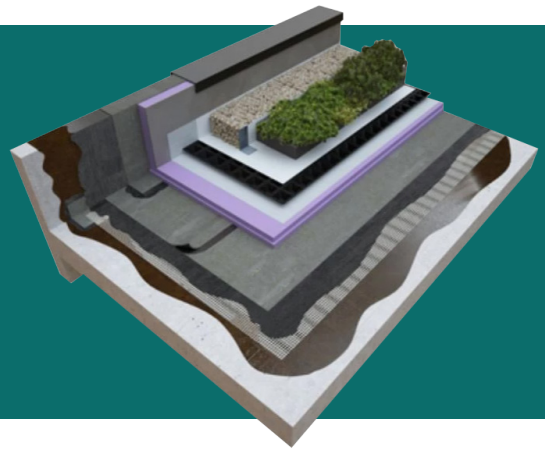
### Key Warnings

- **Hot Works Risks:** The system involves heating bitumen to high temperatures (up to 180°C), posing risks of burns, fire, and fumes. Use thermostatically controlled boilers, avoid overheating, and ensure adequate ventilation. Comply with Safe2Torch guidelines and have fire extinguishers on site.
- **Health and Safety:** Refer to MSDSs for handling solvents and hot materials. Wear appropriate PPE (e.g., heat-resistant gloves, eye protection). Avoid installation in adverse weather (e.g., rain, high winds).
- **Compatibility and Limitations:** Not for use on contaminated or unprepared surfaces. Overheating compound can degrade performance. Defects from poor maintenance or abnormal use may void guarantees. For newly laid concrete or substrates with high moisture readings, use **Cold Melt®** DPM Primer. Always conduct adhesion tests prior to full installation.

## 2. SYSTEM

### Core Components

The **Proteus Hot Melt®** system comprises the following essential elements, each designed to work together for a monolithic, high-performance waterproofing layer. All components are manufactured to stringent quality standards and are covered under BBA Agrément Certificate 22/6186.



- **Pro-Prime® Bitumen**: A bituminous elastomeric primer formulated from oxidised bitumen, elastomeric resins, and pure solvents. It prepares surfaces for optimal adhesion of the hot melt compound, offering higher elasticity and improved bonding, even on slightly damp substrates. Suitable for concrete, metal, and asphalt. Key properties include: density of 0.95–1.02 kg/L, coverage rate of approximately 0.2 L/m$^2$ (dependent on surface absorption), drying time of about 1 hour, and a flash point below 21°C. Supplied in 20 L tins, yielding around 100 m$^2$ per tin. Colour: black.
- **Proteus Hot Melt® Compound**: A tough, flexible hot-applied compound made from SBS-modified bitumen, synthetic rubber, polymers, and additives. It forms the primary waterproofing layer when poured at 170–180°C. Key properties include: softening point of 105°C, penetration at 25°C of 35 (1/10 mm), peel resistance on concrete of 60 N, and an application rate of 3 kg/m$^2$ (minimum 3 mm depth). Supplied in 20 kg blocks in cardboard boxes. Colour: black.
- **Proteus Hot Melt® Force**: An open-weave glass fibre reinforcing mesh that provides integral reinforcement, enhancing tensile strength and crack-bridging. Key properties include: weight of 58 g/m$^2$, thickness of 0.3 mm. Supplied in rolls of 30 m length x 1 m width, weighing 1.75 kg per roll. Colour: white. Finish: glass fibre mesh.
- **Proteus Hot Melt® Capsheet**: A highly durable, polyester-reinforced SBS-modified bitumen membrane used as the protective capsheet. It is rolled into the hot compound for full bonding. Key properties include: mass per unit area of 4.5 kg/m$^2$, thickness of 4 mm, cold flexibility to -20°C, flow resistance to +100°C, tensile strength of 600/400 N/50 mm (longitudinal/transverse). Supplied in rolls of 10 m length x 1 m width, weighing 45 kg per roll. Colour: black. Finish: sanded.
- **Proteus Hot Melt® Anti-Root Capsheet**: A variant of the capsheet with an anti-root additive to prevent root penetration, lichen, algae, and bacteria build-up. Ideal for green roofs and roof gardens. Key properties include: mass per unit area of 4 kg/m$^2$, thickness of 4 mm, cold flexibility to -10°C, flow resistance to +120°C (post-ageing +110°C), tensile strength of 700/500 N/50 mm (longitudinal/transverse). Resistance to root penetration: pass (EN 13948). Supplied in rolls of 10 m length x 1 m width, weighing 40 kg per roll. Colour: black. Finish: plain.

### Ancillary Items

The following items may be required for specific applications or enhanced performance but are not core to the waterproofing layer. These are recommended by Proteus Waterproofing and should be sourced accordingly:

- **Cold Melt® DPM Primer**: For substrates with high residual moisture, providing a damp-proof barrier. Refer to its separate datasheet for details.
- **Proteus Low-K Water Reducing Layer**: Used above insulation in inverted roof systems to manage water flow.
- **Proteus Pro-Therm Upstand Board**: For terminating the system at upstands, offering thermal insulation and a clean finish.
- **Proteus Pro-Felt® Ultima Plus Mineral Capsheet**: For covering pitch pocket details around penetrations.
- **Proteus Bitumen Sealant**: For sealing terminations and flashings.
- **Proteus Pro-Tool/Surface Cleaner**: For cleaning tools post-installation.
- **Termination Bars and Mechanical Fixings**: For securing membranes at terminations.
- **Prefabricated Metal Angles (Galvanised Steel or Aluminium)**: For forming pitch pockets around irregular penetrations.
- **Third Party Expansion Joints**: To accommodate structural movement joints.

### Variations

- Standard Configuration: Use **Proteus Hot Melt®** Capsheet for general roofs, terraces, and podiums. Green roofs require Anti-Root capsheet to be used instead – see below.
- Anti-Root Configuration: Substitute with **Proteus Hot Melt®** Anti-Root Capsheet for green roofs, roof gardens, or areas prone to biological growth. This variant is mandatory for intensive/extensive green roofs under BBA approval.
- High-Moisture Substrates: Incorporate **Cold Melt®** DPM Primer.
- Inverted/Blue Roofs: Add water-reducing layers and ballast for protection and attenuation.

All components must be used as specified to maintain system integrity and guarantee eligibility. For bespoke variations, contact Proteus.

## 3. HEALTH AND SAFETY

### Risk Assessments and PPE RequirementsGeneral

Prior to commencing any work with the **Proteus Hot Melt®** system, a comprehensive site-specific risk assessment must be conducted in accordance with UK health and safety legislation, including the Health and Safety at Work etc. Act 1974 and the Construction (Design and Management) Regulations 2015 (CDM). This should identify hazards such as hot works, manual handling, working at height, and exposure to solvents or fumes. Method statements should be prepared and shared with all operatives.

Personal Protective Equipment (PPE) is mandatory and must comply with the Personal Protective Equipment at Work Regulations 1992 (as amended). Minimum requirements include:

- Heat-resistant gloves (e.g., rated for temperatures up to 200°C) to handle hot compound and tools.
- Safety goggles or full-face shields to protect against splashes and fumes.
- Flame-retardant overalls or clothing to reduce burn risks.
- Steel-toed boots with non-slip soles for site safety.
- Respiratory protection (e.g., FFP3 masks or powered air-purifying respirators) in poorly ventilated areas to guard against bitumen fumes and solvents.
- Hard hats and high-visibility vests where applicable, especially on construction sites.
- Hearing protection if using noisy equipment like mechanical grinders for substrate preparation.

All PPE must be inspected regularly, and operatives should be trained in its use. First-aid kits, including burn treatments, must be readily available on site.

### Handling Hot Materials

**The Proteus Hot Melt®** Compound is applied at temperatures between 170–180°C, presenting risks of burns, scalds, and thermal injuries. Use thermostatically controlled air-jacketed agitated boilers or bitumen boilers to heat the compound, ensuring overheating (beyond 180°C) is avoided to prevent degradation and increased fume emission. Prolonged heating should be minimised to maintain product integrity.

Safe handling practices:

- Transfer molten compound using 'V'-lipped or asphalt buckets designed for hot materials; never overfill to avoid spills.
- Pour steadily and avoid splashing; keep a safe distance from the pour point.
- Do not leave heated boilers unattended, and ensure they are positioned on stable, non-combustible surfaces away from flammable materials.

- For manual handling of components (e.g., 20 kg compound blocks or 45 kg capsheet rolls), use mechanical aids like trolleys or team lifts to prevent musculoskeletal injuries. Adhere to the Manual Handling Operations Regulations 1992 (as amended).
- Clean tools with Proteus Pro-Tool/Surface Cleaner; avoid solvents that could create additional hazards.

In case of contact with hot material, cool the affected area immediately with cold water (do not remove adhered material) and seek medical attention.

**Fire Risks and Precautions**

Hot melt application involves open flames or high-heat sources, increasing fire risks. Comply with the Regulatory Reform (Fire Safety) Order 2005 and NFRC Safe2Torch guidelines. A hot works permit system should be implemented, including fire watches for at least one hour post-work.

Precautions include:

- Have ABC-rated fire extinguishers, fire blankets, and water sources on site.
- Clear the area of combustible debris, and protect adjacent surfaces with non-flammable sheets.
- Monitor for ignition sources; avoid working near gas lines or electrical installations.
- In windy conditions (> Force 4 on the Beaufort scale), postpone hot works to prevent flame spread.
- Ensure specifications for balconies or high-risk areas account for restrictions under Building Regulations (e.g., no unrestricted use on balconies without additional measures).

**Reference to Safety Datasheets (SDSs) and CLP Regulations**

All components are classified and labelled under the CLP Regulation (EC) No 1272/2008. Users must consult the relevant Safety Datasheets (SDSs) for each product before use. These detail hazards such as flammability (flash point <21°C for primer), skin/eye irritation from solvents, and inhalation risks from fumes.

Key COSHH (Control of Substances Hazardous to Health Regulations 2002) requirements:

- Conduct COSHH assessments for all substances.
- Ensure adequate ventilation to maintain exposure below Workplace Exposure Limits (WELs) for bitumen fumes.
- Provide eyewash stations and emergency showers.

**Environmental Considerations**

Minimise environmental impact in line with UK regulations such as the Environmental Protection Act 1990. Dispose of waste (e.g., empty tins, excess compound) via licensed handlers; do not burn or pour into drains. Recycle packaging where possible. Avoid spills that could contaminate soil or watercourses—use spill kits on site. For green or blue roof applications, ensure no leaching of bitumen affects planting or attenuation systems.

This system is for professional use only. Non-compliance with these guidelines may result in accidents, voided guarantees, or regulatory breaches. For further advice, contact Proteus.

## 4. STORAGE AND HANDLING

**Storage Conditions**

Proper storage of **Proteus Hot Melt®** system components is essential to maintain product integrity, prevent damage, and ensure safe handling on site. All materials must be stored in accordance with the manufacturer's recommendations, as detailed in the product Datasheets and Safety Datasheets.

General guidelines include:

- Store indoors in a dry, well-ventilated area, protected from direct sunlight, rain, frost, and extreme temperatures. Ideal storage temperatures are above 0°C to prevent brittleness or degradation.
- Keep away from heat sources, open flames, and ignition risks to avoid accidental combustion or softening (e.g., flash point for **Pro-Prime® Bitumen** is below 21°C).
- For rolls (e.g., **Proteus Hot Melt®** Force, Capsheets): Store upright on a clean, level surface to prevent distortion. Avoid stacking rolls or pallets horizontally, as this can cause deformations that compromise installation quality.
- For **Proteus Hot Melt®** Compound blocks: Once opened, protect from sunlight and heat to maintain usability. Unopened blocks have an indefinite shelf-life under normal conditions.
- For **Pro-Prime® Bitumen**: Store tins upright in a cool, dry place. Avoid exposure to temperatures below freezing or above 40°C, which could affect viscosity.
- Protect all components from physical damage, contamination, or moisture ingress. Use original packaging or protective covers where necessary.
- Shelf life: Most components (e.g., capsheets, reinforcement) have an indefinite shelf-life if stored correctly. Primers and compounds should be used within 12–24 months for optimal performance—check batch dates on labels.

Site storage should comply with UK regulations, such as the Control of Substances Hazardous to Health (COSHH) Regulations 2002, ensuring segregation from incompatible materials (e.g., no storage near acids or oxidisers).

**Shelf Life**

- **Pro-Prime® Bitumen**: Up to 24 months when stored unopened in original containers under recommended conditions.
- **Proteus Hot Melt® Compound**: Indefinite if unopened and protected; once opened, use promptly to avoid exposure-related degradation.
- **Proteus Hot Melt® Force**: Indefinite, but inspect for damage before use.
- **Proteus Hot Melt® Capsheet and Anti-Root Capsheet**: Indefinite when stored upright and protected from UV and mechanical stress.
- Always rotate stock using a first-in, first-out (FIFO) system and discard any damaged or expired materials. Consult Proteus if shelf life concerns arise.

**Manual Handling Techniques**

Components can be heavy (e.g., 20 kg compound blocks, 45 kg capsheet rolls), so adhere to the Manual Handling Operations Regulations 1992 (as amended) to minimise injury risks. Key practices include:

- Assess loads before lifting: Use mechanical aids (e.g., trolleys, hoists, or pallet trucks) for items over 20 kg or awkward shapes.
- Team lifts: For heavier rolls or blocks, employ two or more operatives, maintaining clear communication.
- Correct posture: Bend knees, keep back straight, and hold loads close to the body. Avoid twisting while carrying.
- Training: Ensure all site personnel are trained in safe manual handling, especially for hot or hazardous materials.
- Pallet handling: Pallets are suitable for warehouse movement but not for hoisting—use appropriate lifting equipment.
- On-site protection: Once delivered, cover materials to shield from weather and secure against theft or tampering.

**Packaging Details and Quantities**

- **Pro-Prime® Bitumen**: 20 L tins, 48 tins per pallet. Coverage: ~100 $m^2$ per tin.
- **Proteus Hot Melt® Compound**: 20 kg blocks in silicon-lined cardboard cartons, 50 blocks per pallet.
- **Proteus Hot Melt® Force**: Rolls (30 m x 1 m) individually wrapped in clear plastic bags, 25 rolls per pallet.
- **Proteus Hot Melt® Capsheet**: Rolls (10 m x 1 m) wrapped with paper seals, 25 rolls per pallet.
- **Proteus Hot Melt® Anti-Root Capsheet**: Rolls (10 m x 1 m) wrapped with paper seals, 20 rolls per pallet.

Labels include product name, batch number, weight/volume, manufacturing date, and the BBA Certificate number (22/6186). Inspect packaging upon delivery for damage and report issues immediately to Proteus.

**Site Delivery and Protection**

- Coordinate deliveries to avoid prolonged on-site storage; unload in a designated, secure area away from traffic.
- Protect from environmental factors: Use tarpaulins or enclosures for temporary outdoor storage if indoor space is unavailable.
- For ancillary items (e.g., protection fleeces), follow similar guidelines—store flat and dry.
- Environmental note: Packaging is recyclable where facilities exist; dispose of responsibly per UK waste regulations.

Failure to follow these guidelines may affect product performance and void guarantees. For specific queries, contact Proteus.

# 5. TOOLS AND EQUIPMENT REQUIRED

### Essential Tools

The following tools are required for the safe and effective installation of the **Proteus Hot Melt®** system. Ensure all tools are in good condition, clean, and suitable for hot works or bitumen applications. Tools should be selected based on site conditions and comply with UK standards for construction safety.

- **Priming Tools**: Brush, roller, broom, or spray equipment for applying **Pro-Prime® Bitumen**. Use solvent-resistant brushes or rollers to achieve even coverage.
- **Substrate Preparation Tools**: Stiff brushes, vacuum cleaners, or mechanical grinders/scrapers for removing oil, dust, debris, and friable material. Wire brushes or power tools may be needed for corroded or defective areas.
- **Heating and Application Equipment**: Air-jacketed boiler or thermostatically controlled bitumen boiler/agitated mixer for heating **Proteus Hot Melt®** Compound to 170–180°C. 'V'-lipped or asphalt buckets for transferring and pouring the molten compound.
- **Reinforcement and Membrane Tools**: Scissors or utility knives for cutting **Proteus Hot Melt®** Force mesh and capsheets. Trowels or squeegees for ensuring full encapsulation and bonding during pour-and-roll application.
- **Detailing Tools**: Hardboard or 6 mm plywood sheets (cut to size) for forming and pressing upstands and angles. Mechanical fixings (e.g., drills, screws) for securing termination bars or metal formers in pitch pockets.
- **Cleaning Tools**: Proteus Pro-Tool/Surface Cleaner for removing residue from tools and surfaces post-application. Solvent wipes or rags for minor clean-ups.
- **Measurement and Testing Tools**: Tape measures for overlaps. Thermometers or infrared guns to monitor compound temperature. Utility knives for bond test incisions.

### Specialist Equipment

For enhanced precision, safety, or specific applications:

- **Adhesion Testing Kit**: Basic items like a knife for cutting test patches (300 mm x 300 mm) and assessing peel resistance.
- **Vacuum or Blower Systems**: Industrial vacuums for thorough debris removal, especially on large areas.
- **Mechanical Aids**: Trolleys or hoists for handling heavy rolls (up to 45 kg) and blocks (20 kg).
- **Weather Protection**: Tarpaulins or temporary shelters for working in variable UK weather conditions.
- **For Green/Blue Roofs**: Spatulas or spreaders for applying protection fleeces or water-reducing layers evenly.

### Safety Equipment

Cross-refer to Section 3 (Health and Safety) for full PPE details, but essential safety tools include:

- Fire extinguishers (ABC-rated) and fire blankets for hot works.
- First-aid kits with burn treatments.
- Ventilation fans or extractors for fume control in enclosed spaces.
- Warning signs and barriers for site isolation during hot melt application.

### Cleaning and Maintenance of Tools

- Clean all tools immediately after use with Proteus Pro-Tool/Surface Cleaner to prevent bitumen hardening.
- Inspect and maintain equipment regularly (e.g., calibrate boiler thermostats) to ensure compliance with the Provision and Use of Work Equipment Regulations 1998 (PUWER).
- Dispose of cleaning waste responsibly, following environmental guidelines.

All tools must be used by trained operatives. For specialised or rented equipment, ensure operator certification. If additional tools are needed for bespoke details, consult Proteus.

# 6. DESIGN CONSIDERATIONS

### Suitable Roof Types and Substrates

The **Proteus Hot Melt®** system is designed for a variety of UK roofing applications, ensuring compliance with Building Regulations and standards. It is suitable for:

- **Roof Types**: Inverted flat roofs (including zero-fall), warm roofs, green roofs (extensive with shallow growing medium and low-maintenance plants like sedums), roof gardens (intensive with deeper soil for shrubs/trees and pedestrian access), blue roofs (for stormwater attenuation as part of SuDS), terraces, podiums, balconies, and pitched roofs (>1:6 fall).
- **Access Levels**: Limited access (maintenance only) or pedestrian access; not for vehicular traffic without additional protection.

Approved substrates must be structurally sound and comply with BS 6229:2018. Suitable options include:

- Concrete (in-situ or precast, density ≥1850 kg/m$^3$; concrete blocks for vertical applications).
- Timber (exterior-grade plywood to BS EN 636:2012, Clause 8, fixed per BS 8217:2005).
- Compatible existing bitumen membranes (SBS/APP types).

Unsuitable substrates: Lightweight insulating concrete, in-situ concrete <1850 kg/m$^3$, friable or contaminated surfaces (require remediation). For high-moisture substrates, incorporate **Cold Melt®** DPM Primer. Always conduct adhesion tests to confirm suitability.

### Falls and Drainage

Design falls to prevent ponding and ensure effective drainage, aligning with UK Building Regulations (e.g., Requirement C2 for moisture resistance) and NHBC Standards 2022, Chapter 7.1.

- **Flat Roofs**: Minimum finished fall of 1:80; design assuming twice this (1:40) to account for deflections, unless detailed analysis is available.
- **Zero-Fall Roofs**: Falls between 0° and 1:80; reference LRWA Note 7 for guidance. Not recommended for green roofs without specialist design (NHBC requires 1:60 minimum for green/roof gardens).
- **Pitched Roofs**: Falls >1:6.
- **Blue Roofs**: Incorporate controlled attenuation; design per NFRC Technical Guidance Note for Blue Roofs. Falls should facilitate slow drainage; stormwater systems are outside this guide—consult engineers.
- **Drainage**: Ensure outlets are clear and positioned to avoid water build-up. For inverted roofs, use Proteus Low-K Water Flow Reducing Layer above insulation.

Terraces and balconies must follow BS 8579:2020 for falls and drainage to prevent water ingress.

### Loadings

Account for all loads to ensure system stability and longevity, per BBA Certificate assessments.

- **Wind Uplift**: Resistance depends on specification (e.g., ballast or paving in inverted roofs). Calculate per BS EN 1991-1-4:2005 (UK National Annex) and BS 6399-2:1997. Ballast (e.g., aggregate or pavers) must secure the system; minimum requirements vary by exposure zone—consult wind load calculations.
- **Mechanical Loads**: Accepts limited foot traffic during installation/maintenance and minor structural movements. For pedestrian access (e.g., terraces), add protection like pavers.
- **Other Loads**: In green roofs, factor soil weight and plant growth; use Anti-Root Capsheet. Blue roofs must handle temporary water loads without compromising waterproofing.

### Detailing Requirements

Details must ensure watertightness and durability, following BS 8217:2005.

- **Upstands**: Minimum 150 mm above finished roof level (e.g., ballast or growing medium).
- **Overlaps**: **Proteus Hot Melt®** Force: 75 mm; Capsheets: sides 100 mm, ends 150 mm (staggered 300 mm).
- **Penetrations and Terminations**: Use pitch pockets for irregular details (minimum 100 mm clearance, filled to 30 mm above fixings). Terminate with bars at 300 mm centres, sealed with Proteus Bitumen Sealant. Flashings (e.g., lead) per Lead Sheet Association guidelines, extending 75 mm over waterproofing.
- **Expansion Joints**: Design per project specifics—consult Proteus for detailing to accommodate movement without cracking.
- **Protection Layers**: For inverted/green roofs, add Proteus Pro-Living Protection Fleece to prevent fines migration.

# 7. SUBSTRATE PREPARATION

### Inspection and Repair

Before applying the **Proteus Hot Melt®** system, thoroughly inspect the substrate to ensure it is structurally sound, stable, and free from defects that could compromise waterproofing performance. This aligns with BS 6229:2018 and BS 8217:2005 requirements for flat roofs and reinforced bitumen membranes.

- Conduct a visual and tactile inspection for issues such as cracks, voids, holes, tears, spalling, or uneven areas.
- Repair defects using suitable materials (e.g., compatible concrete repair mortars for concrete substrates or fillers for timber). Cut out and reinstate any defective or decayed sections to provide a solid, level base.
- For cracks: Hairline cracks (<1.5 mm) can be bridged with **Proteus Hot Melt®** Force; wider cracks require filling and levelling.
- Ensure the substrate meets minimum strength criteria (e.g., concrete density ≥1850 kg/m$^3$ for in-situ or precast).
- On existing roofs (e.g., refurbishments), remove incompatible materials like old coatings or failed membranes. The system is not assessed for refurbishment by the BBA, so consult Proteus for site-specific advice.
- For upstands and details: Check for loose or friable material and repair as needed.

Document all repairs and obtain approval if required under NHBC Standards or Building Regulations.

### Cleaning Methods

Surfaces must be clean, dry, and free from contaminants to achieve proper adhesion. Contaminated substrates can lead to bond failure.

- Remove oil, grease, dust, debris, and loose particles using stiff brushes, vacuum cleaners, or mechanical means (e.g., grinding or shot-blasting for stubborn residues).
- Eliminate fungal growth, moss, algae, corrosion, or efflorescence with appropriate cleaners or abrasives; avoid chemical residues that could affect bonding.
- For concrete: Power wash if necessary, but ensure complete drying afterwards.
- For timber: Sand or plane to remove splinters or contaminants; ensure fixings are secure per BS EN 636:2012.
- Vacuum all areas post-cleaning to remove fine particles. Do not use compressed air, as it may redistribute dust.

Adhere to COSHH regulations for any cleaning agents used.

### Drying Requirements

Substrates must be visibly dry and free from dampness to prevent blistering or poor adhesion. High residual moisture can trap water vapour.

- Allow surfaces to dry naturally after cleaning or rain; test for moisture using a hygrometer or plastic sheet test (no condensation after 24 hours indicates readiness).
- Drying time varies with ambient conditions (e.g., temperature, humidity); aim for substrate temperatures above 5°C.
- No visible dampness or ponding should be present. For zero-fall roofs, ensure design prevents long-term water retention.
- Prohibit forced drying with gas torches, as this can damage substrates or create uneven conditions.

If moisture persists, proceed to special cases below.

### Special Cases

- **High Residual Moisture**: Use **Cold Melt®** DPM Primer as a vapour barrier. Apply per its datasheet, allowing full cure before proceeding with next installation steps. This is essential for substrates like new concrete with trapped water.
- **Porous or Absorbent Surfaces**: Increase primer coverage if needed (up to 0.25 L/m$^2$) and conduct adhesion tests.
- **Lightweight or Friable Substrates**: Not suitable without reinforcement; consult Proteus for alternatives.
- **Metal or Asphalt Substrates**: Prime directly with **Pro-Prime® Bitumen**; ensure no oxidation or peeling.
- **Green/Blue Roofs**: Prepare for additional layers (e.g., protection fleeces); ensure substrate can support extra loads from soil or water.

Always perform adhesion/bond tests (Section 8) after preparation to confirm readiness. Failure to prepare adequately may void guarantees and lead to system failure. For complex substrates, contact Proteus Waterproofing technical support.

# 8. ADHESION/BOND TESTS

**TheProcedure**

Adhesion or bond tests are critical to verify the substrate's suitability and ensure strong bonding of the **Proteus Hot Melt®** system, as required by the BBA Agrément Certificate 22/6186 and product datasheets. These tests must be performed after substrate preparation (Section 7) but before full priming and installation. The process simulates the system's application on a small scale.

Step-by-step procedure:

**1.** Select representative test areas (e.g., 2–3 locations per 100 $m^2$, including upstands and details if applicable).

**2.** Clean and prepare a 300 mm x 300 mm patch as per Section 7.

**3.** Apply **Pro-Prime® Bitumen** to the patch at approximately 0.2 L/$m^2$ (adjust for porosity) using a brush or roller. Allow to dry fully (1–3 hours, depending on ambient conditions and substrate).

**4.** Heat a small quantity of **Proteus Hot Melt®** Compound to 170–180°C in a controlled boiler.

**5.** Pour the hot compound over the primed area at ~3 kg/$m^2$, and immediately rolling in a matching section of **Proteus Hot Melt®** Capsheet (or Anti-Root variant if applicable). Ensure full bonding and excess compound extrusion (~50 mm).

**6.** Allow the test patch to cool completely (at least 1 hour).

**7.** Make a triangular incision (e.g., 100 mm sides) into the centre of the patch using a utility knife, cutting through the capsheet and compound to the substrate.

**8.** Attempt to peel back the membrane by hand or with a tool.

**Acceptance Criteria and Troubleshooting**

- **Satisfactory Adhesion**: The compound resists peeling, shows cohesive failure (e.g., tearing within the material rather than at the interface), or requires significant force to separate. This indicates the substrate is ready.
- **Unsatisfactory Adhesion**: If the patch peels easily with minimal resistance or delaminates at the substrate interface, the surface is not suitable. Common causes include residual moisture, laitance, contaminants, or insufficient priming.
- Troubleshooting:
- Re-clean and dry the area if contamination is suspected.
- For high moisture, apply **Cold Melt®** DPM Primer first and re-test.
- Adjust primer coverage or drying time; re-prime and test again.
- If failures persist, consult Proteus for substrate remediation (e.g., mechanical abrasion or alternative primers).
- Protect successful test patches until main installation; the system will bond monolithically with new material.

**Frequency**

Bond tests are mandatory for all projects, including roofs, balconies, terraces, podiums, and specialised applications like green or blue roofs. Conduct at least one test per substrate type or area, and additional tests for variable conditions (e.g., different concrete batches or weather-exposed sections). For large projects (>500 $m^2$), test every 100 $m^2$ or daily. Record results (e.g., photos, notes on resistance) for quality assurance and guarantee purposes.

Failure to perform or pass these tests may result in system failure and voided guarantees. Always use fresh materials for tests to match installation conditions.

# 9. PRIMING

### Application Method

Priming is essential to enhance adhesion, seal porous surfaces, and improve the overall performance of the **Proteus Hot Melt®** system, as specified in the product datasheets and BBA Agrément Certificate 22/6186. Use **Pro-Prime® Bitumen** for all substrates prior to applying the hot melt compound.

- Apply the primer to the prepared, dry substrate (post-adhesion testing) using a brush, roller. Ensure even coverage without pooling or runs.
- Work in sections to avoid drying inconsistencies; apply in a thin, uniform layer.
- For vertical surfaces (e.g., upstands), use a brush to prevent drips.
- Tools: Solvent-resistant brushes or rollers; clean immediately after use with Proteus Pro-Tool/Surface Cleaner.

Priming must cover all areas to receive waterproofing, including details like outlets and penetrations.

### Drying Times and Conditions

- Standard drying time: 1–3 hours, depending on ambient temperature (ideally 5–25°C), humidity, ventilation, and substrate porosity. Do not proceed until the primer is tack-free and fully dry to the touch.
- Environmental factors: Avoid application in rain, fog, or high humidity (>80%), as this can extend drying or cause defects. In cooler weather, allow extra time; monitor with touch tests.
- Do not force-dry with gas torches or heaters, as this can compromise adhesion or create hotspots.
- For high-moisture substrates: If **Cold Melt®** DPM Primer was used, ensure it is fully cured.

Re-prime any areas contaminated or left overnight.

### Coverage Variations and Tools

- Nominal coverage rate: Approximately 0.2 L/$m^2$, yielding ~5 $m^2$/L or ~100 $m^2$ per 20 L tin. Adjust based on substrate absorption—porous concrete may require more; smoother surfaces like metal less.
- Variations: Increase for absorbent or rough substrates (e.g., asphalt or repaired concrete); test small areas to calibrate.
- Tools: As listed in Section 5; measure coverage with marked containers to ensure consistency.
- Waste minimisation: Mix only what's needed; dispose of excess per SDS and UK waste regulations.

Inspect primed surfaces for missed spots before proceeding to heating and application (Section 10). Poor priming can lead to bond failure and void guarantees. For queries, contact Proteus.

# 10. HEATING AND APPLICATION OF PROTEUS HOT MELT® COMPOUND

### Boiler Setup and Temperature Control

The **Proteus Hot Melt®** Compound must be heated correctly to ensure proper flow, adhesion, and system performance, as per the product datasheet and BS 8217:2005. Use an air-jacketed boiler or thermostatically controlled bitumen boiler/ agitated mixer designed for hot melt applications.

- Position the boiler on a stable, level, non-combustible surface away from flammable materials, traffic, and edges (comply with working at height regulations).
- Load compound blocks (20 kg each) gradually to avoid overloading; stir occasionally with the agitator to ensure even heating.
- Heat to a target temperature of 170–180°C; monitor with a built-in thermometer or infrared device. Do not exceed 180°C or prolong heating, as this can degrade the polymer-modified bitumen, reduce elasticity, and increase fume risks.
- Preheat the boiler if cold to prevent thermal shock. Allow 30–60 minutes for initial melting, depending on ambient conditions (e.g., longer in cooler UK weather).
- Safety: Follow Section 3; use PPE, ensure ventilation, and have fire controls ready. Never leave the boiler unattended while heating.

### Application Rate

- Standard rate: Minimum 3 kg/$m^2$, achieving a depth of at least 3 mm for monolithic waterproofing.
- Variations: Increase slightly for absorbent substrates or details (e.g., upstands); ensure uniform application to avoid thin spots.
- Coverage: One 20 kg block covers ~6–7 $m^2$ at 3 kg/$m^2$; calculate based on project area, adding 10–15% for waste and overlaps.

### Transfer and Pouring Techniques

- Transfer molten compound from the boiler to 'V'-lipped or specialised asphalt buckets (heat-resistant, with handles for safe carrying).
- Pour steadily ahead of the unrolling reinforcement and capsheet (detailed in Sections 11–12), ensuring the compound flows through the **Proteus Hot Melt®** Force mesh for full encapsulation.
- Technique: Pour in a controlled stream to cover the primed substrate evenly; avoid splashing or pooling. Work in manageable sections (e.g., 5–10 m lengths) to keep the compound hot and workable.
- PPE: Mandatory heat-resistant gloves, face shields, and overalls; teamwork for heavy buckets.
- Weather: Avoid pouring in rain or high winds; protect fresh applications from contaminants.

### End-of-Day Sealing

- At the end of each working day, fully seal all applied areas with capsheet to prevent exposure and contamination. Do not leave **Proteus Hot Melt®** Force or compound uncovered overnight, as this can lead to moisture ingress or degradation.
- Temporary seals: If pausing mid-section, overlap and bond a temporary capsheet strip, to be integrated monolithically the next day.
- Clean-up: Shut down the boiler safely, allowing it to cool; store any unused molten compound in insulated containers if resuming soon, or discard solidified remnants per waste regulations.

Over-application or under-heating can cause defects; always verify temperature and rate on-site. For issues, contact Proteus Waterproofing technical support.

# 11. INSTALLATION OF PROTEUS HOT MELT® FORCE (REINFORCING MESH)

### Unrolling and Positioning

**Proteus Hot Melt®** Force is the glass fibre reinforcement layer that provides tensile strength and crack-bridging within the system. Install it directly over the primed substrate (post-Section 9) before applying the hot melt compound.

- Unroll the mesh (30 m x 1 m rolls) onto the prepared and primed surface, ensuring it lies flat without wrinkles or bubbles.
- Align rolls to cover the entire area, starting from one end and working methodically across the roof or detail.
- Overlaps: Minimum 75 mm on all sides to ensure continuous reinforcement; stagger joints where possible to avoid weak points.
- For upstands or vertical details: There is no need to use mesh in those areas.
- Secure temporarily if needed in windy conditions, but avoid fixings that could puncture the primer.

Work in sections compatible with the pour-and-roll method to keep the installation efficient.

### Spot-Sticking if Needed

- In most cases, the mesh can be held in place by the subsequent hot compound pour. However, for sloped areas, or in breezy UK weather, spot-stick the mesh using small dabs of heated **Proteus Hot Melt®** Compound.
- Apply spots (~50–100 mm diameter) at intervals of 500–1000 mm along edges and overlaps; press firmly to adhere without saturating.
- Avoid excessive compound to prevent pooling; this is temporary and will integrate during full application.

### Encapsulation with Compound

- Immediately after positioning, pour the heated **Proteus Hot Melt®** Compound (from Section 10) through the mesh at the minimum rate of 3 kg/m$^2$ (3 mm depth).
- Ensure the open-weave structure allows full penetration and encapsulation; the mesh should be fully embedded without voids.
- Proceed directly to capsheet installation (Section 12) while the compound is hot to achieve monolithic bonding.
- For details: Over hairline cracks (<1.5 mm) or concrete upstands, apply extra mesh layers if specified, with overlaps.

Inspect for full coverage; any exposed mesh must be re-encapsulated. Do not leave the Force layer uncovered overnight—seal as per Section 10. Comply with BS 8217:2005 for pour-and-roll techniques. For issues, contact Proteus.

# 12. INSTALLATION OF CAPSHEET

**Preparation**

The capsheet (**Proteus Hot Melt®** Capsheet or Anti-Root variant) provides the protective layer, rolled into the hot compound for full bonding and weathertightness. Prepare after installing **Proteus Hot Melt®** Force (Section 11) and while the poured compound remains hot.

- Unroll the capsheet roll (10 m x 1 m) above the positioned Force mesh, aligning it to the required length.
- Roll the capsheet back on itself halfway to expose the starting end, ready for immediate unrolling into the compound. This prevents cooling and ensures seamless integration.
- Cut rolls to size for details or edges using a utility knife; handle carefully to avoid damage.
- For upstands or details: Pre-cut sections to fit (e.g., 150 mm x 150 mm for soakers), ensuring coverage extends minimum 150 mm above finished roof level.

Work in ambient conditions above 5°C; protect from rain or wind to maintain heat.

**Pour-and-Roll Method**

Follow the pour-and-roll technique per BS 8217:2005 for reinforced bitumen membranes.

- Pour heated **Proteus Hot Melt®** Compound (from Section 10) through the Force mesh at minimum 3 kg/m$^2$ ahead of the capsheet.
- Immediately unroll the prepared capsheet into the molten compound, pressing the roll firmly and evenly to ensure full contact and eliminate voids.
- The capsheet must be fully bonded to the compound; excess should extrude from edges by at least 50 mm as a visible seal (do not back-scrape onto laps).
- Continue pouring ahead while unrolling to maintain heat and flow.

This method creates a monolithic system; apply pressure evenly to avoid wrinkles.

**Overlaps**

- Side overlaps: Minimum 100 mm.
- End overlaps: Minimum 150 mm, staggered by at least 300 mm from adjacent rolls to prevent build-up and weak points.
- Seal all overlaps by ensuring hot compound flows through; extrude excess for watertight joints.
- For details: Overlap onto horizontal areas by 100–150 mm; stagger end laps similarly.

Inspect overlaps for full adhesion; re-heat and re-roll if needed.

**Variations**

- **Standard Capsheet**: Use **Proteus Hot Melt®** Capsheet (sanded finish) for general roofs, blue roofs without vegetation, terraces, and podiums.
- **Anti-Root Capsheet**: Mandatory for green roofs, roof gardens, or blue roofs with vegetation; substitute for root resistance.
- **Special Roofs**: In inverted or zero-fall setups, ensure capsheet is protected promptly with ballast or fleeces.
- **Details:** For rainwater outlets or penetrations, embed capsheet into compound without drips into pipework.

**Main Field Area/Horizontal Installation**

- Start at the lowest point or per roof layout; unroll Force first (Section 11), then pour compound and roll capsheet in continuous runs.
- Cover the main horizontal field after completing upstands and details for integrated waterproofing.
- Stagger all end laps to avoid excessive layering; ensure full encapsulation of Force.
- At day's end, seal completely (Section 10); do not expose intermediate layers.

# 13. DETAILING

Detailing ensures watertight transitions, accommodates movement, and integrates with roof elements, complying with BS 8217:2005 and the BBA Agrément Certificate 22/6186. Complete details before or alongside the main field area (Section 12) for monolithic waterproofing. Use heated **Proteus Hot Melt®** Compound, **Proteus Hot Melt®** Force for reinforcement, and appropriate capsheet.

### Upstands and Soakers

Upstands must extend a minimum 150 mm above the finished roof level (e.g., ballast, growing medium) to prevent water ingress.

- **Soaker Detail**: Pour **Proteus Hot Melt®** compound into the upstand angle and using hardboard or 6 mm plywood spread the **Proteus Hot Melt®** Compound evenly on both the vertical and horizontal surfaces. Apply **Proteus Hot Melt®** Sanded capsheet into the Hot Compound ensuring this is pressed tightly into angles and ensuring 150mm x 150mm minimum to both vertical and horizontal is achieved.
- **Full Upstand**: Pour compound up the height, and roll in capsheet, pressing into the angle. Overlap onto horizontal areas by 100 mm.

### Rainwater Outlets

- Prime the outlet flange and surrounding deck with **Pro-Prime® Bitumen**; allow to dry.
- Pour compound through Force mesh into the outlet, embedding capsheet. Extend onto the deck by 150 mm minimum. Avoid drips into pipework—use a funnel if needed.
- Ensure the outlet remains clear for drainage; integrate with main field for seamless flow.

### Penetrations

For irregular penetrations (e.g., balustrades, soil vent pipes (SVPs), or pipes), use pitch pockets to create a watertight seal.

- Install prefabricated once-bent galvanised steel or aluminium angles to form a pocket around the penetration, ensuring 100 mm minimum clearance. Fix the horizontal leg outwards mechanically or with compound.
- Prime the metal former; pour compound in layers to fill the pocket fully, achieving a flat surface minimum 30 mm above bolt fixings or penetration base.
- Cover the pitch pocket with **Proteus Pro-Felt® Ultima Plus** Mineral Capsheet, bonded into hot compound.
- Overlap surrounding capsheet by 150 mm; reinforce with extra Force if needed.

### Expansion Joints

Expansion joints accommodate structural movement; design per project specifics (e.g., building size, materials).

- Consult Proteus Waterproofing for bespoke design and detailing to ensure flexibility without compromising waterproofing.

### Terminations

- **Termination Bars**: Mechanically fasten bars at maximum 300 mm centres to clamp the capsheet edge to the wall or upstand. Apply Proteus Bitumen Sealant to the top lip for runoff.
- **Chases**: Cut new 25 mm deep chases in masonry upstands (150 mm above roof level). Finish waterproofing flush with the chase bottom, secure with termination bar, and install flashing (e.g., lead or bespoke) dressed in. Point with sealant.
- **Lead Flashings**: Install per Lead Sheet Association guidelines, extending 75 mm minimum over the waterproofing. Joint and dress neatly.
- **Pro-Therm Upstand Board**: Use for insulated terminations; bond to upstand and integrate with system.

### Bespoke Details

- For non-standard elements (e.g., skylights, HVAC), adapt pitch pocket or upstand methods; prime all surfaces.
- Flashings: Use compatible materials; ensure 75 mm overlap onto capsheet.
- Green/Blue Roofs: Add Anti-Root Capsheet and protection layers at details to prevent root or water damage.

All details must extrude excess compound (50 mm) and achieve full bonding. Inspect for voids; re-apply if needed. For complex projects, seek Proteus approval to maintain guarantees.

# 14. SPECIAL APPLICATIONS

**Green Roofs and Roof Gardens**

Green roofs (extensive: shallow growing medium with low-maintenance plants like sedums, mosses, or grasses) and roof gardens (intensive: deeper soil for shrubs, trees, and pedestrian access) require root resistance to prevent penetration or biological growth (e.g., lichen, algae, bacteria).

- Use **Proteus Hot Melt®** Anti-Root Capsheet exclusively as the protective layer; it incorporates anti-root additives.
- Install per standard pour-and-roll method (Section 12), ensuring full bonding and overlaps.
- Add Proteus Pro-Living Protection Fleece above the capsheet to prevent fines migration into the waterproofing; this protects from soil or substrate wash-down.
- Falls: Minimum 1:60 per NHBC for drainage; design per GRO Code of Best Practice, including irrigation and overflow.
- Maintenance: Inspect twice yearly (autumn for debris clearance, spring for weather damage); follow designer's plan for vegetation.
- Loadings: Account for saturated soil weight; ensure substrate supports.

For intensive gardens, add pedestrian protection (e.g., pavers) and consult for wind uplift in exposed UK locations.

**Blue Roofs**

Blue roofs manage stormwater attenuation, often as part of Sustainable Drainage Systems (SuDS).

- Use standard or Anti-Root Capsheet based on vegetation; integrate with attenuation design.
- Falls: Zero-fall or minimal (0°–1:80) to allow controlled ponding; ensure outlets restrict flow without overloading.
- Sloped blue roofs: With careful design, it is possible to incorporate blue roof system on sloped roofs. Contact Proteus for advice.
- Protection: Add Proteus Low-K Water Flow Reducing Layer above insulation to manage water; ballast or fleeces prevent fines ingress.
- Detailing: Reinforce outlets and edges for temporary water loads; test for watertightness (60 kPa).
- Considerations: Design for UK rainfall patterns; avoid prolonged ponding that could affect compound integrity.

Monitor for blockages; inspect per BS 6229:2018.

**Inverted and Zero-Fall Roofs**

Inverted roofs (insulation above waterproofing) and zero-fall (0°–1:80) require protection from water and loads.

- Install system below insulation; use Proteus Low-K Water Reducing Layer atop insulation to minimise water contact.
- Ballast: Apply aggregate or paving (minimum per wind calculations, BS EN 1991-1-4:2005) for UV/mechanical protection and stability.
- Falls: Reference LRWA Note 7; design twice the minimum (e.g., 1:40) for deflections.
- Zero-Fall: Ensure no ponding via precise levelling; suitable for warm roofs but monitor drainage.

**Balconies, Terraces, and Podiums**

These pedestrian-access areas must follow BS 8579:2020 for design.

- Use standard Capsheet; add pavers or decking for traffic protection (limited to foot loads).
- Falls: 1:80 minimum for drainage; integrate with thresholds to prevent ingress.
- Detailing: Emphasise upstands (150 mm) and terminations; use termination bars and sealants.
- Loadings: Resist wind uplift with ballast; suitable for UK balconies (restricted fire use per Regulations—see Section 3).
- Access: Design for maintenance; avoid vehicular loads.

For all specials, defects from poor maintenance void guarantees. Contact Proteus for CAD details or advice.

# 15. QUALITY CONTROL AND INSPECTION

Quality control ensures the **Proteus Hot Melt®** system is installed correctly. Conduct checks throughout installation by trained operatives, with records maintained for guarantees and compliance.

### Site Checks

Perform ongoing visual and physical inspections during application to verify system integrity.

- **Bond Strength**: Post-adhesion tests (Section 8), randomly check installed areas by attempting small peels or cuts; ensure cohesive failure and no delamination.
- **Coverage and Depth**: Measure compound application (minimum 3 kg/m$^2$, 3 mm depth); verify primer at 0.2 L/m$^2$. Check for uniform encapsulation of **Proteus Hot Melt®** Force.
- **Overlaps and Joints**: Inspect all overlaps (Force: 75 mm; Capsheet: sides 100 mm, ends 150 mm staggered 300 mm); confirm excess compound extrusion (50 mm) and full bonding without voids or wrinkles.
- **Details**: Examine upstands (150 mm height), penetrations (pitch pockets filled 30 mm above fixings), and terminations
- **Temperature and Conditions**: Monitor compound at 170–180°C; note ambient weather to avoid issues like rapid cooling.

Address defects immediately (e.g., re-prime and re-apply); halt work if non-compliant.

### Integrity Testing

Test the completed waterproofing for leaks and durability.

- **Watertightness**: Flood test or electronic leak detection; aim for no penetration.
- **Wind Uplift/Mechanical**: Simulate loads if specified (e.g., pull tests on samples); ensure ballast secures inverted roofs per BS EN 1991-1-4:2005.
- **Frequency**: Test key areas (e.g., details, field sections) and 10% of total area; mandatory for balconies/terraces per BS 8579:2020.

Use certified testers; document results with photos.

### End-of-Day and Final Inspections

- **End-of-Day**: Inspect all work; ensure no exposed layers (seal with capsheet). Check for debris, proper sealing, and protection from weather.
- **Final Inspection**: Comprehensive walkthrough post-completion; verify full coverage, clean finishes, and compliance (e.g., falls, drainage). Involve client or inspector; sign off before handover.
- **Special Applications**: For green/blue roofs, confirm protection layers; test attenuation if applicable.

### Record-Keeping

Maintain a site log including:

- Dates, weather, operatives.
- Test results (adhesion, integrity).
- Photos of key stages/details.
- Material batches, quantities used.
- Non-conformities and rectifications.

Retain for guarantee claims (defects from poor QC may void); submit to Proteus if required or requested. For audits, align with BS 8000-0:2014 workmanship principles.

# 16. MAINTENANCE AND REPAIR

Regular maintenance is essential to preserve the integrity and longevity of the **Proteus Hot Melt®** system, ensuring it performs. Under normal conditions, with proper care, the system can last the service life of the roof. Defects arising from inadequate maintenance or abnormal use (e.g., excessive loads or neglect) may void Proteus guarantees. Record all activities in the building's information manual for compliance with NHBC Standards 2022 and Building Regulations.

### Inspection Schedule

Inspect the roof at least twice yearly to identify issues early, aligning with BS 6229:2018 and LRWA guidelines:

- **Autumn**: Focus on clearing seasonal debris to maintain free drainage.
- **Spring**: Check for winter weather damage (e.g., frost or storms).
- **Frequency for Specialist Roofs**: Green, blue, roof gardens, or other complex systems should follow the designer's original plan, potentially requiring more frequent checks (e.g., quarterly for blue roofs with attenuation).

### Inspections should cover:

- Internal signs: Examine ceilings, walls, eaves, and soffits for water penetration, condensation, or movement.
- External roof: Assess for damage or displacement in waterproofing layers, insulation, water flow reduction layers (WFRL), surface protection, flashings, and details.
- Debris and growth: Record build-ups of leaves, moss, plants, or dirt.
- Fixtures: Verify waterproof seals on safety barriers, fall arrest systems, harness bolts, satellite dishes, or other rooftop installations.

Use access equipment safely per UK working at height regulations.

### Cleaning and Clearance

Maintenance involves routine cleaning to prevent blockages and degradation:

- Remove accumulated leaves, dirt, debris, moss, or plants using soft brushes or vacuums—avoid abrasive tools that could damage the capsheet.
- Clear rainwater outlets, downpipes, and gutters to ensure free draining; test flow if needed.
- Replace dislodged surface protection (e.g., ballast, pavers, or fleeces).
- For inverted roofs: Check ballast stability and redistribute if shifted by winds.
- Use mild, compatible cleaners; avoid harsh chemicals that could affect bitumen.

Perform after inspections or storms; document clearances.

### Repair Procedures

Address issues promptly to avoid escalation. Repairs must use compatible materials (i.e. original Proteus components) and techniques, ideally by the original installer if under guarantee.

- **Minor Damage** (e.g., small tears, punctures, or localised delamination): Clean the area, re-prime with **Pro-Prime® Bitumen**, heat and apply **Proteus Hot Melt®** Compound (3 kg/m$^2$), embed Force mesh, and patch with matching capsheet (overlaps 150 mm). Ensure monolithic bonding; test adhesion post-repair.
- **Major Damage** (e.g., widespread failure or substrate issues): Appraise the original design per BS 6229:2018 Clauses 4–6. Cut out affected sections, repair substrate, and reinstall the full system. For renewals, reassess falls, insulation, and details.
- **Flashings and Details**: Re-seal loose terminations with Proteus Bitumen Sealant; replace damaged flashings per Lead Sheet Association guidelines.
- **Testing Post-Repair**: Conduct integrity tests (e.g., flood or electronic leak detection) on repaired areas.

All repairs should be recorded, including dates, methods, and photos.

### Special Maintenance for Green/Blue Roofs

- **Green Roofs/Roof Gardens**: Follow GRO Code of Best Practice; inspect vegetation for overgrowth or root issues. Clear excess plants, check irrigation, and monitor soil erosion. Extensive roofs need minimal care; intensive may require professional gardeners.
- **Blue Roofs**: Per NFRC guidance, check attenuation outlets for blockages quarterly; clear sediment from temporary ponding. Inspect for water overload effects on details.
- Both: Examine protection fleeces for fines build-up; replace if compromised. UK climate (rain, wind) may accelerate debris—adjust schedules accordingly.

For advice or approved repairers, contact Proteus. Neglect will fall outside guarantees.

# 17. GUARANTEES

The **Proteus Hot Melt®** system is backed by guarantees from Proteus Waterproofing Limited, providing assurance of quality and performance when installed correctly. These guarantees are subject to terms and conditions, and compliance with this Application Guide, the BBA Agrément Certificate 22/6186, and relevant UK standards (e.g., BS 8217:2005 and BS 6229:2018). Guarantees are issued upon project completion and inspection.

**Proteus Waterproofing Guarantee Details**

- **Coverage**: Independent Pre-Paid Insurance Backed Guarantees are available covering materials and labour, subject to the current terms and conditions of the guarantees which are available separately upon request.
- **Duration**: Varies by project specifics (e.g., roof type, application); standard guarantees range from 20 to 35 years, depending on the specification and maintenance regime. For green, blue, or inverted roofs, guarantees may include root resistance or attenuation-related clauses.
- **Process**: Apply via Proteus upon submission of installation records, including adhesion tests, quality inspections, and as-built drawings. A final site audit will be required.

**Installation by Approved Contractors**

- Guarantees are only valid when installed by Proteus-approved contractors, trained in hot melt systems.
- Approval ensures adherence to best practices; unapproved work voids coverage.
- For NHBC-compliant projects, use registered installers to meet Chapter 7.1 requirements.

Proteus offers training and certification—enquire for details. Always verify contractor status to secure guarantee eligibility.

# 18. REFERENCES

This section lists key resources, standards, and contact details referenced throughout the **Proteus Hot Melt®** Application Guide. These ensure compliance with building regulations, best practices, and system certification. Contractors must familiarise themselves with these documents, as Proteus accepts no responsibility for misinterpretation or lack of knowledge by third parties. All works should align with the specified requirements.

**Relevant Standards and Codes**

The system and installation must conform to the following British Standards and industry guidelines:

- **BS 6229:2018** – Flat roofs with continuously supported flexible waterproof coverings – Code of practice.
- **BS 8217:2005** – Reinforced bitumen membranes for roofing – Code of practice.
- **BS 8000-0:2014** – Workmanship on construction sites – Introduction and general principles.
- **BS 8000-4:1989** – Workmanship on building sites – Code of practice for waterproofing.
- BS EN 636:2012 – Plywood – Specifications (for timber substrates).
- **BS EN 1991-1-4:2005** (including UK National Annex) – Actions on structures – General actions – Wind actions.
- **BS 8579:2020** – Guide to the design of balconies and terraces.
- **LRWA Design Guide for Specifiers** – Liquid Roofing and Waterproofing Association guidance for flat roof design.
- **S2T (Safe2Torch)** – NFRC guidelines for safe hot works in torch-on roofing.
- **GRO Code of Best Practice** – Green Roof Organisation standards for green roofs and roof gardens.
- **NHBC Standards 2022, Chapter 7.1** – Flat roofs, terraces, and balconies (note: not applicable for refurbishments).
- **EN 13707:2013** – Flexible sheets for waterproofing – Reinforced bitumen sheets for roof waterproofing – Definitions and characteristics.
- **EN 13948** – Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of resistance to root penetration (for Anti-Root Capsheet).
- **NFRC Technical Guidance Note for Blue Roofs** – Construction and design of roofs and podiums with controlled temporary water attenuation.

Additional references include UK Building Regulations (e.g., Part B for fire, Part C for moisture), the Construction (Design and Management) Regulations 2015, and COSHH Regulations 2002.

**BBA Certificate 22/6186**

- **Proteus Hot Melt®** BBA Agrément Certificate 22/6186 – Issued by the British Board of Agrément, confirming the system's suitability for weathertightness, fire performance, durability, root resistance (with Anti-Root Capsheet), and compliance with regulations. Available for download here or via Proteus website linked below.

Proteus
WATERPROOFING

## Design, Develop, Deliver

Manufactured in the UK and Europe, Proteus Waterproofing is an innovative and fast growing company in the waterproofing market. Proteus Waterproofing is a single source systems supplier, with an array of hot and cold-applied waterproofing and protection systems. The company's comprehensive product range is suitable for high performance roofing, balconies, walkways and car parks. It offers a vast range of systems, that have been engineered to meet the harshest of weather conditions and provide a lasting and robust waterproofing solution, in both refurbishments and new builds.

Experts in all forms of liquid applied and bituminous membrane roofing and waterproofing. Proteus Waterproofing is adaptable to each client's individual needs and circumstances, and offers long-term performance product reliability and a simple installation as standard.

## Total Peace of Mind

Proteus Waterproofing roofing systems are tested to the most rigorous international standards, ensuring they will outperform the initial design life. This will give your project a durable, reliable and long-lasting waterproofing finish, that will last for many years to come, providing excellent value to clients and building owners.

## Guaranteed Performance

Proteus Waterproofing presents clients with a robust choice of guarantees for its bespoke systems, from an offer that also incorporates enhanced independently-backed warranties, for total peace of mind.

For further information, please contact Proteus Waterproofing to discuss the most suitable option to meet your requirements.

**Proteus Waterproofing's range of lasting and robust systems includes:**

- Liquid applied waterproofing: Cold Melt®, Proteus Pro-Cold®, Proteus Hot Melt®
- High performance felts: Proteus Pro-Felt® Ultima Plus, Extra Plus, Endura, Endura AIRdhesive
- Balconies and walkways: Pro-BW® Plus, Pro-BW® LO, Cold Melt®
- Technical Insulation Design: Proteus Pro-Therm
- Coating Protection: Pro-Cryl®
- Exterior walls waterproofing; Monosil, Monodex, Monodex Textured

**The Proteus Waterproofing Specification includes:**

- On-going technical support
- Comprehensive guarantees
- Free roof evaluation service
- Roof condition surveys, reports, and bespoke specifications
- Expert advice on low maintenance solutions
- Site survey and design stage involvement
- Thermal value calculations to building regulations
- Part 'L' Tapered insulation scheme design
- Wind uplift calculation
- Building regulations Part B (fire) compliance options

**The Proteus Waterproofing service package includes:**

- Detailed specifications calculation
- National contractor base
- Technical manager inspections throughout the project installation and sign off

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