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BRoof (t4) Fire Classification and Compliance for Liquid Roofing Systems

BROOF (t4)

External fire performance classification for Flat Roofs

White Paper | October 2025

Executive Summary

Why BRoof(t4) Matters for Flat Roofing

Fire safety in construction has become a central concern across the UK, driven by heightened regulatory oversight and the need for demonstrable compliance. Among the most critical standards for roofing systems is the BRoof (t4) classification, which assesses a roof's resistance to external fire sources such as burning embers or nearby structural fires. This classification, tested under EN 13501-5 using TS 1187 Test 4, represents the highest level of fire performance for flat and low-slope roofs.

Tricel's TriRoof systems have been developed to meet and exceed BRoof (t4) requirements, offering fully tested assemblies that include membrane, insulation, primer, and deck. Unlike partial certifications seen elsewhere in the market, TriRoof systems are assessed as complete build-ups, ensuring clarity and confidence for specifiers, building control officers, insurers, and developers.

This whitepaper provides a detailed overview of the BRoof (t4) classification, its regulatory context, and the practical challenges faced in achieving compliance. It also outlines how TriRoof simplifies specification and installation through rigorous testing, technical support, and installer training—making it a dependable choice for long-term fire protection in modern construction.

What is BROOF(t4) in UK roofing regulations?

BROOF(t4) is the highest fire classification under the UK's external roof performance standards. It means that a complete roofing system has passed rigorous testing under TS 1187 Test 4 (burning brands, wind, radiant heat) and did not allow fire penetration within 60 minutes, with minimal flame spread. A BROOF(t4) rating qualifies a roof for unrestricted use near boundaries under Approved Document B (ADB) and is often required for compliance on flat or low-slope roofs.

- No fire penetration in 60 minutes
- Flame spread under 0.38 m
- Burnout time under 5 minutes

Only systems tested as a complete build-up (deck, insulation, membrane) can be classified as BROOF(t4).

Key Highlights

- BROOF(t4) is the UK's highest fire classification for external roofing systems, required for unrestricted use near boundaries and on vulnerable buildings. Only complete systems—deck, insulation, membrane, and finishes—tested together under EN 13501-5 (TS 1187 Test 4) can achieve this rating.

- TriRoof systems are fully tested and certified as complete assemblies, not just individual products, providing clarity and confidence for specifiers, contractors, and building control.

- Strict regulatory and insurance requirements mean that non-compliance can result in project delays, higher premiums, or legal liability. Full-system documentation and traceability are essential.

- Common industry misconceptions—such as assuming A-rated membranes guarantee BROOF(t4), misusing deemed-to-satisfy finishes, or overlooking detailing—are leading causes of compliance failure.

- Installation must match the tested build-up exactly; substitutions or deviations can invalidate certification and insurance cover. Only trained and approved installers should be used.

- TriRoof MultiFlex and HPX Overlay systems offer certified solutions for both new build and refurbishment, with cold-applied, low-risk installation and up to 20-year warranties.

- Comprehensive technical support, installer training, and compliance documentation are provided to ensure correct specification, installation, and handover.

- Best practice for compliance includes: starting with a tested build-up, avoiding substitutions, using approved installers, maintaining full site records, and conducting final inspections.

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1. Introduction & Context

In the UK construction sector, fire safety is no longer a peripheral consideration—it is a regulatory and reputational imperative. Nowhere is this more evident than in the specification of roofing systems, where external fire performance plays a critical role in safeguarding both property and life.

Historically, roof fire performance was assessed under BS 476-3, a national standard that evaluated flame spread and penetration. However, this approach has been superseded by the European standard BS EN 13501-5, which provides a more robust and harmonised framework for classification. Within this standard, the TS 1187 Test 4 (t4) method is the designated approach for the UK. It simulates realistic fire conditions by exposing roofing systems to burning brands, wind, and radiant heat—conditions that can occur during external fire events.

As a result of these changes, architects, contractors, and manufacturers are now held to a higher standard. They must demonstrate not only product-level compliance but also full-system performance under fire conditions. This shift demands clear documentation, proven test results, and systems designed to maintain integrity under stress.

Fast Facts: BRoof (t4) & Triroof

Item	Detail
Classification BROOF(t4)	Highest external fire rating in the UK
Test Method	EN 13501-5 + TS 1187 Test 4
Application	Required near boundaries, on tall or vulnerable buildings
System Type	Full build-up: deck, insulation, membrane, primer
TriRoof Products	MultiFlex, HPX Overlay
Warranty	Up to 20 years (TriRoof)
Regulatory	Document Approved Document B (Fire Safety)
Installation	TriRoof-approved contractors only

TriRoof has responded proactively to this landscape by developing a portfolio of roofing systems that are fully tested and certified to achieve BROOF(t4) classification. These systems are designed to simplify compliance, reduce design risk, and ensure dependable fire resistance across a range of roof build-ups. This whitepaper outlines the regulatory framework, testing methods, and practical implications of BROOF(t4), while demonstrating why TriRoof is a trusted leader in this essential area of specification.

2. Regulatory & Standards Framework

Key Takeaway:
Approved Document B mandates that roofing systems in England meet stringent fire safety standards, particularly the BROOF(t4) classification under EN 13501-5. This ensures resistance to external fire exposure through rigorous testing of the complete roof build-up. The shift from BS 476-3 to EN 13501-5 reflects a move towards more robust and harmonised evaluation.
Noncompliance can result in legal consequences, insurance complications, and increased accountability under the Building Safety Act 2022.

Regulatory Framework: Approved Document B and EN 13501-5

2.1 Approved Document B (ADB)

Approved Document B forms part of the Building Regulations in England and sets out the legal requirements for fire safety in buildings. It provides both prescriptive and performance-based guidance to ensure that materials and construction systems limit the spread of fire.

Section B4 of ADB specifically addresses the external fire performance of building elements, including roofs. According to this guidance, any roofing system used near a boundary or on certain classes of buildings must demonstrate suitable resistance to external fire exposure. To be considered "unrestricted" in use, the roof system must achieve a classification of BROOF(t4) under the European fire testing standard BS EN 13501-5.

This requirement applies across most building types, particularly where proximity to adjacent properties or increased fire risk necessitates proven performance.

2.2 Transition from BS 476-3 to EN 13501-5

Historically, external fire performance in the UK was classified using BS 476-3, which assigned ratings such as AA, AB, and BB based on flame spread and fire penetration. While familiar within the industry, this system lacked harmonisation with European legislation and did not test roof systems as complete assemblies.

The transition to EN 13501-5, incorporating TS 1187 test methods, represents a move towards more rigorous, standardised evaluation. These tests assess the fire resistance of the full roof build-up—including deck, insulation, and waterproofing layers—under simulated real-world conditions.

The UK specifically mandates the use of Test Method 4 (t4) from TS 1187. This test exposes roofing systems to:

- Burning brands (to simulate falling embers or debris),
- Wind (to assess flame spread under pressure),
- Radiant heat (to mimic nearby structure fires).

A roofing system that passes this test without penetration or excessive flame spread is awarded the BROOF(t4) classification.

2.3 Legal and Insurance Implications of Compliance

The implications of noncompliance with fire performance standards are wide-ranging. Building control authorities now expect documented proof that roofing systems meet BROOF(t4) requirements—supported by third-party test reports and certificates that reflect the exact system used.
Insurers are also enforcing stricter underwriting criteria.

Projects using uncertified or incorrectly specified roofing systems may face:

- Higher premiums,
- Denial of cover,
- Or the need for costly remedial works post-installation.

Furthermore, under the Building Safety Act 2022, all duty holders—developers, architects, contractors, and manufacturers—carry greater accountability. A failure to meet fire performance standards such as BROOF(t4) can lead to delays in approval, enforcement action, or future liability in the event of a fire-related incident.

3. What Test 4 actually means?

Key Takeaway:
BRoof(t4) is the highest external fire rating for roofs under EN 13501-5, achieved through CEN/TS 1187 Test 4, which simulates burning debris, wind, and radiant heat on the entire roof build-up. To maintain compliance, the installed system must exactly match the tested configuration, including detailing, and be installed by approved contractors with full documentation.

How is BRoof(t4) Tested? TS 1187 Test 4 Method Demystified

3.1 Understanding the Test Method (TS 1187 – Test 4)

The t4 test method replicates extreme conditions that a roof might face during an external fire—such as a neighbouring building catching fire, flaming debris landing on the roof, or embers being carried by wind.

To simulate this, the test combines three elements in a controlled lab environment:

- Burning Brand: A wooden crib (representing debris or embers) is ignited and placed directly on the roofing system.
- Wind: A consistent airflow is applied to test how flames might spread across the roof surface under windy conditions.
- Radiant Heat: Infrared radiation mimics the intense heat a roof could be exposed to from a nearby fire source.

The test is carried out on multiple specimens of the full roof build-up, including the deck, insulation, membranes, and any surface finishes.

This is not a component test. The entire system is tested as a whole, including any primers, adhesives, or detailing—meaning only systems tested in their complete form can carry a BROOF(t4) rating.

3.2 Pass Criteria for BROOF(t4)

To be classified as BROOF(t4), the roofing system must meet all of the following conditions during testing:

- No fire penetration through the roof within 60 minutes.
- Flame spread must not exceed 0.38 metres across the surface during the initial (preliminary) test.
- The system must self-extinguish or stop burning within 5 minutes after the flame source is removed.
- No flaming droplets or material falling from the test specimen that could ignite surrounding areas.

3. What Test 4 actually means?

3.3 What BROOF(t4) Means for Installation

For installers, the BROOF(t4) classification isn't just a box to tick—it affects how you build and what materials you use:

3.3.1 You Must Match the Tested Build-Up

The certification applies to the exact combination of materials used during testing. If you change the deck, insulation, membrane, or even detailing, you may void the BROOF(t4) status—unless the variation is approved via an EXAP (Extended Application report).

3.3.2 Detailing Matters

Upstands, outlets, joints, and perimeter terminations must all follow the tested specification. Fire can exploit weak points, so correct detailing is critical to maintaining compliance.

3.3.3 Use Trained Installers

Systems like TriRoof offer BROOF(t4)-certified solutions only when installed to specification by approved contractors. This ensures that installation techniques—such as layer thickness, curing time, and fixings—meet the conditions of the test..

3.3.4 Keep Documentation

Maintaining a comprehensive site file is essential for proving compliance with BRoof(t4) requirements and safeguarding against future disputes or liability. Building Control officers, insurers, and clients increasingly expect clear evidence that the roof was installed exactly as tested. Your documentation should include:

- Product batch numbers
- Photographs of key stages
- Proof of correct substrate and insulation
- Installation records

This not only satisfies building control but also protects you against liability in case of a fire-related incident later.

4.Classification Levels & Implications

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Key Takeaway:
Roof fire classifications in the UK—BROOF(t4), CROOF(t4), DROOF(t4), EROOF(t4), and FROOF(t4)—define how a complete roof system performs under external fire exposure. Only BROOF(t4) systems are considered "unrestricted" under Approved Document B, allowing use near boundaries and on high-rise or vulnerable buildings. Lower classifications (CROOF, DROOF, EROOF, FROOF) come with significant restrictions, such as minimum setbacks, reduced allowable roof areas, or additional fire protection measures. Using anything below BROOF(t4) can lead to design complications, delays in approval, and increased liability. For most UK projects, BROOF(t4) is the preferred—and often required—standard, offering maximum design flexibility and regulatory confidence.

4.1 Understanding Roof Fire Classifications

Roof systems in the UK are classified under EN 13501-5 based on how they perform in the TS 1187 fire exposure tests. These classifications are essential for ensuring safe use in different building types and locations. The classification levels—BROOF, CROOF, DROOF, EROOF, and FROOF—are followed by (t4) to indicate that Test Method 4 has been used (the only one recognised in the UK).

Classification	Description	Regulatory Use
BROOF(t4)	Highest level of external fire resistance. No fire penetration, minimal flame spread	**Unrestricted use**—including close to property boundaries or on vulnerable buildings
CROOF(t4)	Medium-level resistance. Limited flame spread; no deep penetration	**Restricted**—must be set back from boundaries or combined with additional protection
DROOF(t4)	Fire penetration occurs earlier; more surface burning	**Highly restricted**—design and usage significantly limited by regulations
EROOF/ FROOF(t4)	Failed or untested systems. Little to no fire resistance	**Not permitted** in most applications—especially near boundaries or on high-risk buildings

4.Classification Levels & Implications

4.2 Design and Specification Implications

- Only BROOF(t4) systems are considered “unrestricted” under Approved Document B.
- Any roof within 6 metres of a boundary, or used on buildings above 18 metres, generally must achieve BROOF(t4).
- Systems rated CROOF(t4) or lower can be used only where:
  - The building is sufficiently far from any boundary
  - The building height and use class allow it
  - Additional fire protection (e.g. barriers or separation) is incorporated

4.3 Using a Lower Classification?

Designers and contractors using CROOF or below must carefully review:

- Setback requirements (minimum distance from site boundaries)
- Maximum allowable roof area sizes
- Additional detailing (fire breaks, parapets, or separation zones)
- Building use class (e.g. schools, flats, or public spaces have stricter requirements)

Failure to account for these restrictions can lead to:

- Delays in building control approval
- Additional design revisions or retrofits
- Increased liability and insurance risk

4.4. Why BROOF(t4) is the Preferred Standard?

BROOF(t4) systems offer design flexibility, reduced risk, and simplified compliance. For specifiers, builders, and clients, they:

- Allow unrestricted use in nearly all UK applications
- Simplify planning and reduce design constraints
- Minimise the need for fire engineering or mitigation strategies

5.Design, Specification & Installation

Key Takeaway:
Achieving and maintaining BROOF(t4) compliance is about more than just selecting a certified product — it requires building the exact tested system, with no unauthorised substitutions or shortcuts. Every component (deck, insulation, primer, membrane, finish) must match the tested build-up, and installation must follow manufacturer instructions precisely. Even minor changes or poor workmanship can invalidate certification, delay approvals, or expose you to legal and insurance risks. Always use detailed technical data, approved installers, and keep to the tested specification from design through to final inspection to ensure lasting compliance and peace of mind.

Installation Essentials: Achieving and Maintaining BRoof(t4)

Achieving and maintaining a BROOF(t4) classification depends on more than just choosing the right product—it requires strict adherence to the exact tested system, correct specification, and precise on-site application. Every layer, every material, and every detail must match what was tested and certified.

5.1 Full System Testing – It's All or Nothing

BROOF(t4) is not a product rating—it is a system rating.

That means the following elements are tested as a complete assembly:

- Roof deck (e.g. plywood, OSB, concrete, profiled metal)
- Type and thickness of insulation
- Primer and bonding agents
- Waterproofing membrane (liquid or sheet)
- Finishes (e.g. exposed, ballasted, or overlaid)

A membrane that has passed fire testing on one build-up may fail completely on another. Therefore, the BROOF(t4) classification only applies to the exact combination of components used in the original test or those covered by an Extended Application (EXAP) document.

If you swap out even one element—like changing from PIR to mineral wool insulation—you risk invalidating the certification unless the new combination is approved by the manufacturer.

5.2 As Built = As Tested

On site, the system must be built exactly as it was tested. The principle is simple:
If it's not what was tested, it's not what was certified.
Common substitutions that can cause noncompliance:

- Changing the insulation material or thickness
- Using a different deck type or primer
- Modifying joint details or edge flashings
- Varying application methods or layer thicknesses

That's why TriRoof provides:

- Detailed technical data sheets for each tested build-up
- EXAP documentation outlining acceptable variations
- Design-stage guidance to help specifiers avoid risky assumptions

By designing around a tested and certified system from the outset, projects avoid late-stage redesign, compliance issues, or costly site delays.

5.3 Installer Responsibility – Do It Right the First Time

Even the best system can fail if installed incorrectly. Fire performance depends on precise application, especially when working with liquid systems like those in the TriRoof range.
Installers must follow manufacturer guidelines for:

- Surface preparation: Dry, clean, and structurally sound
- Primer application: Correct product, uniform coverage, no pooling
- Curing times: Respect minimum curing times before topcoats or finishes
- Detailing: Correct execution around upstands, outlets, edges, and service penetrations.

Why This Matters?

Failure to follow the tested build-up or installation instructions can lead to:

- Loss of BROOF(t4) classification
- Insurance claims rejected in the event of a fire
- Delays or refusal by building control
- Exposure to legal liability

TriRoof's approach minimises this risk by giving designers and contractors everything they need to get it right—from planning through to final inspection.

6.Common Challenges and Misconceptions

Key Takeaway:
Achieving BROOF(t4) is about the entire roof system, not individual components. Misconceptions—such as assuming an A-rated membrane guarantees compliance, misusing deemed-to-satisfy provisions, or overlooking detailing—are major causes of failure. Full system testing, strict adherence to regulations, and precise detailing are essential to ensure fire safety and regulatory compliance.

Common Challenges and Misconceptions in BRoof(t4) Compliance

Achieving BROOF(t4) is not simply a matter of selecting a high-performing product—it requires a complete understanding of how fire classifications work and how systems behave in practice. Misinterpretations at the design or installation stage are common and can lead to non-compliance, failed inspections, or even legal and insurance issues.

Below are three of the most frequent misconceptions seen across the industry.

6.1 Misconception: A-Rated Membranes Guarantee BROOF(t4)

A common assumption is that if a membrane carries an A1 or A2 Euroclass rating (under EN 13501-1, which tests materials for internal fire performance), then the roof will automatically be compliant for external fire safety. **This is incorrect.**

The BROOF(t4) classification is issued under EN 13501-5, which applies to external fire exposure. It evaluates the full roof system, not just the membrane. This includes:

- Deck type and thickness (e.g. concrete, plywood, metal)
- Type of insulation (e.g. PIR, mineral wool, EPS)
- Installation method (mechanically fixed, adhered, liquid-applied)
- Surface finishes and detailing

Even an A-class membrane can fail the BROOF(t4) test if used with combustible insulation or incompatible substrates.

Always check that the entire system—not just the membrane—has been tested and certified as BROOF(t4).

6.Common Challenges and Misconceptions

6.2 Misconception: Deemed-to-Satisfy Finishes Apply to Every Situation

Another area of confusion relates to 'deemed-to-satisfy' provisions under Approved Document B. These provisions allow certain surface finishes—such as:

- Gravel ballast (≥50 mm depth)
- Concrete paving slabs (≥40 mm thick)

—to be considered compliant without testing, but only under very specific conditions.

These conditions include:

- Minimum depth or thickness thresholds
- Full, consistent coverage across the roof
- Non-combustible substrate layers underneath

Unfortunately, these rules are often misapplied or used as a shortcut in situations where they don't apply. For example:

- Using insufficient depth of gravel
- Applying slabs only in certain areas (e.g. walkways)
- Assuming a deemed-to-satisfy finish compensates for an untested or combustible build-up

Designers and installers must not rely on deemed-to-satisfy finishes unless the project fully meets the criteria outlined in the regulation—and even then, they must be confident the system as a whole won't compromise fire resistance.

6.3 Misconception: Detailing Has Minimal Impact on Fire Performance

Junctions, penetrations, edge detailing, and upstands are often viewed as minor finishing tasks. In reality, they can be the weakest link in the fire performance of the roof.

During a fire event, heat and flame exploit gaps, transitions, and corners where systems are poorly sealed or incompatible materials meet. Poorly detailed areas can:

- Accelerate flame spread beneath membranes
- Create pathways for fire to penetrate the insulation or deck

Compromise the entire fire rating of the system

6.Common Challenges and Misconceptions

TriRoof addresses this by ensuring:

- All test setups include critical details like rooflights, upstands, outlets, edge terminations, and service penetrations
- Installers follow standardised detailing guidance developed in line with the certified build-up
- Optional on-site support is available to validate complex or bespoke detailing on live projects
- Fire performance is not just about the flat surface—it's about every detail being executed exactly as tested.

Summary

Challenge	Reality
Assuming A-rated membrane = BROOF(t4)	Only full systems can be classified, not individual components
Misusing deemed-to-satisfy clauses	Valid only under strict, clearly defined conditions
Overlooking detailing in fire safety	Fire often exploits weak points in transitions and penetrations

By addressing these misconceptions early, specifiers and contractors can avoid the most common compliance failures—and ensure their projects meet both regulatory requirements and real-world fire safety standards.

7. TriRoof Systems & Certification

Key Takeaway:
TriRoof delivers fully tested, BROOF(t4)-certified roofing systems—MultiFlex for versatile new-build and complex projects, and HPX for cost-effective refurbishment overlays—eliminating the risks of mixing components. Backed by technical guidance, on-site support, and compliance documentation, TriRoof ensures fire safety and regulatory approval from design through installation.regulations, and precise detailing are essential to ensure fire safety and regulatory compliance.

TriRoof has taken a forward-looking and standards-led approach to roofing fire performance in the UK. Rather than relying on isolated component ratings or deemed-to-satisfy shortcuts, TriRoof has tested its core roofing systems as full assemblies in accordance with BS EN 13501-5 using TS 1187 Test 4 (t4)—the only recognised method for external roof fire performance in the UK.

This means specifiers and contractors can work with confidence, knowing each TriRoof system is backed by tested performance, clear certification, and technical guidance from design to installation.

7.1 TriRoof MultiFlex® – GRP System with Wide Application Range

TriRoof MultiFlex® is a flexible, liquid-applied GRP (glass-reinforced polyester) roofing system engineered for both new-build and refurbishment applications. It is suitable for flat and low-slope roofs and is particularly effective in complex roof geometries where seamless, joint-free waterproofing is critical.

Key Features:

- Certified BROOF(t4) across multiple common deck types (e.g. timber, concrete, profiled metal)
- Cold-applied system with no heat or flames required, reducing installation risk
- Application from as low as 1°C, making it ideal for year-round use in the UK climate
- One universal primer compatible with a wide range of substrates—reduces error and speeds up installation
- Compatible with a variety of finishes and suitable for detailing around upstands, penetrations, and outlets

MultiFlex is ideal for contractors seeking flexibility without compromising compliance, even on complex or phased projects.

7.2 Technical Support & Compliance Assistance

TriRoof backs its certified systems with a comprehensive support service to ensure that each project remains compliant—not only in design, but through to installation and final inspection.

Support includes:

- Design-stage assistance to help specifiers select the correct certified build-up
- Access to EXAPs for guidance on acceptable variations
- Detailed technical data sheets, test reports, and installation specifications
- On-site support during installation (on request)
- Approved installer training and certification
- Post-installation QA documentation support for handover and building control sign-off.

7.3 TriRoof vs Competitors

In an increasingly regulated construction environment, roofing system manufacturers are expected to provide not only high-performing products but also complete, test-backed systems that make compliance simple and defensible.

TriRoof stands apart from many competitors by offering more than just a product—it delivers a fully tested, fully supported solution for achieving and maintaining BROOF(t4) fire classification.

7.4 Why This Matters on Real Projects

Specifiers and contractors frequently face pressure to deliver compliant roofing within tight timeframes and cost constraints. When choosing systems from suppliers with limited BROOF(t4) coverage or fragmented documentation, this often results in:

- Substitutions that invalidate certification
- Design compromises due to lack of flexibility
- Delays in approval from building control
- Increased liability if the build-up is later questioned

By contrast, TriRoof systems are designed to minimise risk and simplify delivery:

- One primer system means fewer mistakes and less site stock.
- Broader deck compatibility gives designers more freedom.
- Full technical support means issues are resolved quickly and clearly.

With TriRoof, the specification is not just easier—it's safer.

7. TriRoof Systems & Certification

7.5 Designed for Compliance – Not Compromise

Many products on the market today still rely on outdated or narrow testing data. TriRoof takes a forward-thinking approach by ensuring every major system is:

- Independently tested
- Tested as a complete build-up
- Backed by a manufacturer who supports the product beyond the sale

This means no grey areas when it comes to fire compliance—just clear, test-based answers.

Category	TriRoof	Typical Competitors
Certification Coverage	BROOF(t4) across multiple decks and insulation types	Often limited to one or two specific build-ups
Specification Simplicity	One universal primer for most surfaces	Multiple primers required for different substrates
Installer Network	Trained and approved contractors only	Often sold via distributors with no installer verification
Documentation	Full test reports, EXAPs, technical data, detailing drawings	Basic data sheets; limited or outdated certification
Technical Support	Direct access to specification advice, on-site support	Often limited to distributor knowledge
Fire Detailing	Tested with common penetrations, upstands, and outlets	Many systems omit these from test scope
Warranties	Up to 20 years, with clear performance guarantees	Shorter or conditional warranties tied to limited systems

7. TriRoof Systems & Certification

8.Best Practices for Implementation

Best Practices for BRoof(t4) Implementation

Achieving BROOF(t4) fire compliance does not end with selecting the right roofing system—it requires correct specification, installation, and documentation from start to finish. The following best practices are designed to ensure consistent, compliant execution on site.

These steps apply whether you're specifying TriRoof MultiFlex for a new build or applying TriRoof HPX as a refurbishment overlay.

8.1 Always Start with a Tested Build-Up

Before specifying any roofing system, confirm that the entire proposed build-up is:

- Independently tested to EN 13501-5, using TS 1187 Test 4
- Listed on a valid BROOF(t4) classification report
- Suited to the exact deck, insulation, and detailing required for the project

Do not rely on product performance in isolation. Certification only applies when every element in the build-up matches the test specimen.

Use TriRoof's specification guides or contact their technical team to select a compliant build-up from the outset.

8.2 Do Not Substitute Materials

Changing the type of insulation, primer, or deck—even slightly—can:

- Void BROOF(t4) compliance
- Create risk during fire exposure
- Lead to delays in sign-off by building control

If substitution is absolutely necessary, consult TriRoof for guidance on:

- Acceptable changes under Extended Application (EXAP) documents
- The need for additional testing or approval in writing

Minor substitutions can have major compliance consequences. Always check first.

8.3. Use Trained and Approved TriRoof Installers

TriRoof systems are installed by trained professionals who:

- Understand the tested installation method
- Use approved primers and application techniques
- Follow detailing procedures identical to those used in the fire test

This reduces the risk of:

- Incorrect primer use
- Inadequate coverage or curing
- Poor detailing at edges, upstands, or penetrations

TriRoof maintains a network of certified installers to help maintain system integrity across all applications.

8.4 Maintain Site Records for Traceability

Proper documentation is critical for compliance, warranties, and insurance. On every job, contractors should maintain a compliance folder that includes:

- Product batch numbers and delivery notes
- Photographic records of each key installation stage
- QA checklists and material usage logs
- Signed installation certificates
- Copies of the relevant BROOF(t4) test reports or certificates

This documentation provides assurance to clients, building control, and insurers that the installation meets regulatory standards.

8.5. Conduct a Final Inspection

Before handover, perform a thorough check to ensure:

- All areas are fully and correctly coated
- No deviations from the tested build-up exist
- Detailing (e.g. outlets, penetrations, terminations) matches the manufacturer's guidance
- The compliance folder is complete and ready for submission

Final inspections reduce risk of rework, improve client satisfaction, and ensure that the roofing system is truly compliant with BROOF(t4).

Many TriRoof projects include optional technical sign-off visits—particularly for high-risk or large-scale installations.

9.Case Studies: Real-World BRoof(t4) Projects

9.1 Case Study: Wicklow Lighthouse Restoration

Overview

The historic Wicklow Lighthouse, Ireland, faced severe roof leaks and exposure to harsh marine conditions. The challenge was not only to restore waterproofing but also to ensure full compliance with BROOF(t4) fire performance standards—critical for safety and regulatory approval.

The Challenge

- Heritage structure with strict conservation requirements
- Extreme coastal weather and salt-laden winds
- Need for a tested, certified system to meet BROOF(t4) compliance
- Existing roof system had deteriorated, causing significant water ingress.
- Complete removal of the failed roofing system was required.
- Installation of a new, durable solution capable of withstanding harsh coastal conditions.
- Maintain a clean, aesthetic finish suitable for a heritage structure.

9.Case Studies: Real-World BRoof(t4) Projects

The Solution: TriRoof MultiFlex

TriRoof deployed its MultiFlex liquid-applied GRP system, a cold-applied solution designed for complex geometries and exposed environments. Fully tested and certified to BS EN 13501-5 using TS 1187 Test 4, MultiFlex provided:

- Seamless, joint-free waterproofing
- Proven fire performance under BROOF(t4)
- Year-round application capability, even in challenging weather

The Outcome

The project successfully restored the roof's integrity while meeting the strictest fire performance classification. MultiFlex's adaptability and durability ensured long-term protection in one of Ireland's most demanding environments.

Key Insights

- Compliance First: Only fully tested systems guarantee BROOF(t4) certification and regulatory approval.
- Technical Support Matters: On-site guidance and responsive supply chains are vital for heritage projects.
- Confidence Through Certification: Documented warranties and compliance reports reassure clients and building control.
- Adaptability: MultiFlex excels in complex, exposed, and sensitive environments.

Why It Matters

By choosing a certified system like TriRoof MultiFlex, contractors avoid the risks of mixing untested components and ensure both fire safety and long-term performance—even in the toughest conditions.

9.Case Studies: Real-World BRoof(t4) Projects

9.2 Case Study: K-Leisure Roof Refurbishment - TriRoof MultiFlex

Overview

K-Leisure, a busy leisure centre in County Kildare, required a roof refurbishment that could deliver long-term waterproofing, fire compliance, and minimal disruption to daily operations. The existing roof was aged and leaking, creating an urgent need for a reliable, tested system.

The Challenge

Existing roof nearing end of life with water ingress issues
Requirement for BROOF(t4) compliance to meet building regulations
Need for a cold-applied system to avoid hot works and reduce risk
Project delivery within a live, operational environment

The Solution: TriRoof MultiFlex

TriRoof specified MultiFlex, a liquid-applied GRP system designed for both new-build and refurbishment projects. Its cold-applied nature eliminated the need for flames, reducing on-site risk and ensuring safe installation in an occupied building.

Key Features Delivered:

- Certified BROOF(t4) fire performance for full compliance
- Seamless, joint-free waterproofing for maximum durability
- Cold-applied application, ideal for live environments
- Universal primer for multiple substrates, reducing complexity
- Year-round installation capability, even in low temperatures

9.Case Studies: Real-World BRoof(t4) Projects

The Outcome

The refurbishment was completed on time and without disruption to K-Leisure's operations. The MultiFlex system provided a robust, fully compliant roofing solution backed by TriRoof's technical support and warranty.

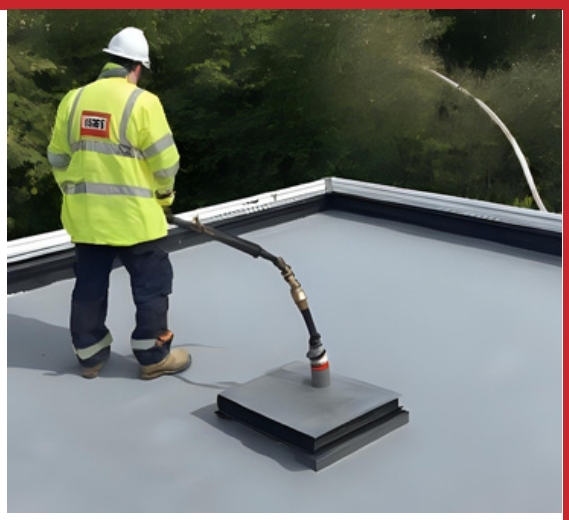
Key Insights

- Compliance Assured: Full-system testing to BS EN 13501-5 (TS 1187 Test 4) ensures regulatory approval.
- Safety First: Cold-applied installation eliminates hot works risk.
- Technical Support: Design guidance and on-site assistance streamline complex projects.
- Durability: MultiFlex delivers long-term performance in demanding environments.

Why Choose TriRoof MultiFlex?

- By selecting a fully tested and certified system, K-Leisure avoided the risks of mixing untested components and achieved a fire-safe, watertight solution with minimal operational impact.

10. Compliance, Risk & Liability



Compliance, Risk, and Liability: What's at Stake?
Achieving BROOF(t4) classification is not simply a matter of product performance — it is a core aspect of legal compliance, insurability, and professional accountability.
As regulations tighten and enforcement increases, stakeholders across the design and construction chain must ensure their roofing specifications are fire-tested, traceable, and correctly installed.

9.1 The Building Safety Act 2022

The Building Safety Act 2022, enacted in response to long-standing safety concerns in the built environment, has significantly raised the stakes for compliance. The Act introduces:

- Greater personal accountability for duty holders, including architects, contractors, and building control bodies.
- Mandatory documentation for the Golden Thread of building information, including fire performance evidence.
- Stronger enforcement powers and penalties for non-compliance.

Failure to specify or install a roofing system with verified BROOF(t4) compliance could result in enforcement action, project delays, or future liability—particularly on higher-risk or boundary-sensitive buildings.

10.2 Insurance Requirements

Many insurers now require proof of BROOF(t4) certification when underwriting roofing works near property boundaries or in high fire-risk areas.

Risks of omitting this certification include:

- Increased premiums or exclusions in cover
- Refusal of claims in the event of a fire
- Reduced resale or lease potential due to non-compliant fire classification

By contrast, systems such as TriRoof MultiFlex and TriRoof HPX, which come with third-party certification and full test documentation, provide insurers with confidence in material performance and proper installation.

10.3 Legal Exposure for Designers and Contractors

Specifying a membrane with a Euroclass A rating does not guarantee BROOF(t4) classification. Only full-system testing (including substrate, insulation, and finish layers) can achieve the necessary certification.

If a fire occurs and the system in place was not tested or documented to meet BROOF(t4), the following parties could be held liable:

- Architects for failing to specify a compliant system
- Contractors for substituting materials or deviating from approved details
- Building control officers for signing off without sufficient evidence

TriRoof minimises this exposure by supplying fully tested build-ups, clear design documentation, and extended application reports (EXAPs) where appropriate. In addition, TriRoof's technical team supports compliance at each stage—from specification to installation and handover.

10.4 Summary: Why BROOF(t4) = Risk Reduction

Risk Area	Without BROOF(t4)	With BROOF(t4) (TriRoof)
Regulatory Compliance	May breach ADB guidance or BS EN 13501-5	Fully compliant with national standards
Insurance Cover	May be excluded, restricted, or expensive	Recognised classification eases underwriting
Project Delays	Risk of retrospective works or rejection at building sign-off	Proven test data accelerates approvals
Legal Accountability	Increased liability for specifiers and contractors	Reduced exposure through documented conformity

11. Summary and Key Takeaways

The BROOF(t4) fire classification is not just a benchmark—it is a critical requirement for achieving regulatory compliance, securing insurance, and protecting buildings from external fire risks. The guidance, systems, and support offered by TriRoof allow specifiers and contractors to meet this standard without ambiguity or added complexity.

11.1 Key Takeaways:

- BROOF(t4) is required for unrestricted roof use under UK Building Regulations, particularly when close to boundaries or in high-risk settings.
- Only full-system testing counts. A compliant result depends on the specific combination of deck, insulation, primer, membrane, and finish—all tested together under TS 1187 Test 4 and certified to EN 13501-5.
- Material substitution invalidates certification. Seemingly minor changes—such as using a different primer or insulation thickness—can compromise compliance.
- Insurers, fire officers, and building control increasingly demand formal evidence. Verbal assurances or partial testing are no longer acceptable.

11.2 Recommendations for Specifiers, Contractors & Project Managers:

Approved Document B – Volume 1 & 2 (2023 Edition)

UK Government guidance on fire safety, including external roof performance near boundaries.

- Volume 1 – Dwellings: Download PDF
- Volume 2 – Buildings other than dwellings: Download PDF

BS EN 13501-5:2016

European classification standard for external fire performance of roofs.

- This standard is not freely available from official sources. It must be purchased via BSI Knowledge or accessed through institutional subscriptions.

TS 1187 – Test Method 4 (t4)

Mandated test method for assessing external fire exposure of roofing systems.

- TS 1187 is also a paid standard and not freely available from official EU sites. It can be purchased via CEN or BSI.

11. Summary and Key Takeaways

TriRoof Product Technical Sheets

Technical documentation for TriRoof MultiFlex, HPX, and other systems.

- TriRoof MultiFlex Topcoat BRoof (t4) certified: Download PDF
- TriRoof Roofing Resin: Download PDF
- TriRoof HPX Hybrid Polymer: Download PDF

TriRoof Certificates & EXAPs

Third-party test certificates and extended application reports.

- Overview and contact: TriRoof BRoof (t4) Certification Page
- For EXAPs and certificates: Contact Tricel Technical Support [Class A, B...for Roofs]

Frequently Asked Questions

General Compliance

Q: What is BROOF(t4)?

A: BROOF(t4) is the highest fire performance classification for external roof systems in the UK. It means a complete roofing build-up has passed rigorous fire testing (TS 1187 Test 4) with no fire penetration in 60 minutes and minimal flame spread.

Q: Is BROOF(t4) required for every roof?

A: No. It is essential for roofs near boundaries, on tall or vulnerable buildings, or where unrestricted use is required under Approved Document B.

Q: How do I check if my roof is BROOF(t4) compliant?

A: Review the system's test certificate and ensure your build-up (deck, insulation, membrane, primer) matches the certified configuration. Only full-system certificates are valid.

Q: Who is responsible for ensuring BROOF(t4) compliance?

A: All duty holders—specifiers, contractors, installers, and building control—are responsible for ensuring the correct system is specified, installed, and documented.

Specification & System Selection

Q: Does an A-rated membrane guarantee BROOF(t4) compliance?

A: No. BROOF(t4) applies to the entire roof system, not individual components. Full-system testing and certification are essential.

Q: Can I mix products from different suppliers and still achieve BROOF(t4)?

A: Only if the complete system has been tested together or approved under an EXAP (Extended Application) report. Mixing untested components may void compliance.

Q: What happens if I change the insulation or deck type?

A: Any change to the tested build-up (deck, insulation, membrane, primer, or detailing) may invalidate the BROOF(t4) classification unless the variation is covered by an EXAP or approved in writing by the manufacturer.

Q: Are deemed-to-satisfy finishes always compliant?

A: No. Deemed-to-satisfy finishes (e.g. gravel ballast, paving slabs) are only compliant under strict conditions, such as minimum thickness and full coverage, and do not compensate for an untested or combustible build-up.

Installation & Documentation

Q: What documentation is needed for compliance?

A: Maintain a site file with product batch numbers, photographs of key stages, proof of correct substrate and insulation, installation records, and the relevant BROOF(t4) certificate.

Q: What is an EXAP?

A: An Extended Application (EXAP) report allows for limited, tested variations from the original certified build-up, such as minor changes in insulation or deck, without voiding compliance.

FAQ: BRoof (t4) Fire Compliance

Frequently Asked Questions

Installation & Documentation

Q: What are the consequences of non-compliance?

A: Non-compliance can lead to building control rejection, insurance issues, increased liability, and the need for costly remedial works.

Q: Who can install TriRoof systems?

A: Only trained and approved installers should install TriRoof systems to ensure the tested build-up and detailing are followed exactly.

Product & Application

Q: Can TriRoof systems be used for refurbishment as well as new build?

A: Yes. TriRoof MultiFlex is suitable for both new build and refurbishment, provided the substrate is compatible and the full system is installed as tested.

Q: Do TriRoof systems support green roof finishes?

A: Yes, TriRoof systems can support green or ballasted finishes when combined with approved layers or coverings, provided the full build-up remains as tested or is covered by an EXAP.

Q: What support does TriRoof provide for compliance?

A: TriRoof offers technical data sheets, EXAPs, design-stage guidance, installer training, on-site support, and post-installation QA documentation.

Q: What warranties are available with TriRoof systems?

A: TriRoof systems are available with manufacturer-backed warranties of up to 20 years, subject to build-up and specification.

Risk, Insurance & Legal

Q: What are the insurance implications of BROOF(t4) compliance?

A: Many insurers require proof of BROOF(t4) certification for roofing works near property boundaries or in high fire-risk areas. Lack of certification can result in higher premiums, exclusions, or refusal of claims.

Q: What legal risks exist if BROOF(t4) is not achieved?

A: Failure to specify or install a compliant system can result in enforcement action, project delays, or future liability for architects, contractors, and building control officers.

Glossary

Approved Document B (ADB):
- UK government guidance on fire safety in buildings, including requirements for external roof performance near boundaries.

BROOF(t4):
- The highest UK fire rating for external roof systems, indicating no fire penetration or excessive flame spread under TS 1187 Test 4.

Build-Up (Full Build-Up):
- The complete assembly of roof deck, insulation, primer, membrane, and finishes as tested for fire performance.

Certification:
- Formal documentation confirming that a roofing system has passed the required fire tests and meets regulatory standards.

Cold-Applied System:
- A roofing system installed without the use of heat or open flames, reducing on-site fire risk.

Compliance Folder:
- A site file containing all documentation required to demonstrate that the installed system matches the tested and certified build-up.

Deemed-to-Satisfy:
- Regulatory provision allowing certain finishes (e.g. gravel, slabs) to be considered compliant without testing, but only under strict conditions**.**

Detailing (Fire Detailing):
- The design and execution of junctions, penetrations, upstands, and edges to maintain fire performance across the entire roof.

EN 13501-5:
- European standard for classifying the fire performance of roofs and roof coverings exposed to external fire.

EXAP (Extended Application):
- A report that allows for certain tested variations from the original certified build-up, such as changes in insulation or deck, without voiding compliance.

Flame Spread:
- The distance that flames travel across the surface of a roofing system during fire testing.

Green Roof:
- A roof system that supports vegetation, which may require additional layers or coverings to maintain fire compliance.

HPX Overlay:
- A TriRoof acrylic-based liquid roofing system designed for overlaying existing, structurally sound roofs.

Installer Network:
- A group of contractors trained and approved by the manufacturer to install certified roofing systems according to tested methods.

Joint-Free Waterproofing:
- A seamless roofing finish, typically achieved with liquid-applied systems, that eliminates joints and potential weak points

Liquid-Applied System:
- A roofing membrane applied in liquid form, which cures to create a seamless, waterproof surface.

Glossary

Membrane:
- The waterproofing layer in a roofing system, which may be liquid-applied or sheet-based.

MultiFlex:
- TriRoof's flexible, liquid-applied GRP (glass-reinforced polyester) roofing system, certified to BROOF(t4)

Overlay (Refurbishment Overlay):
- A roofing system designed to be applied over existing, structurally sound substrates to upgrade fire and waterproofing performance.

Primer:
- A preparatory coating applied to the substrate to ensure proper adhesion of subsequent roofing layers.

QA Documentation:
- Quality assurance records maintained during installation, including batch numbers, photographs, and checklists.

Refurbishment:
- The process of upgrading or renewing an existing roof, often using overlay systems to improve fire and waterproofing performance.

Specification:
- The detailed description of materials, build-up, and installation methods required to achieve compliance and performance standards.

Substrate:
- The underlying surface (e.g. timber, concrete, metal) to which the roofing system is applied.

Technical Data Sheet:
- Manufacturer-issued document detailing the properties, application, and performance of a roofing product.
- **Test Certificate:**
- Official document confirming that a roofing system has passed fire testing to the required standard.

TriRoof:
- Tricel's range of fully tested and certified liquid-applied roofing systems, including MultiFlex and HPX Overlay.

TS 1187 (Test 4):
- The UK's designated test method for external fire exposure of roofing systems, simulating burning brands, wind, and radiant heat.

Upstand:
- A vertical or raised section of a roof, such as at the perimeter or around penetrations, requiring careful detailing for waterproofing and fire performance.

VOC-Compliant:
- Indicates that a product meets regulations for low emissions of volatile organic compounds, making it suitable for use around occupied buildings.

Warranty:
- A manufacturer-backed guarantee of system performance, often contingent on correct installation and documentation.

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BROOF (t4)

External fire performance classification for Flat Roofs