FLEXITEC HT
TECHNICAL DOCUMENT

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RESTEC

PART OF
Roberts Group

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1. Executive Summary

This document outlines the technical performance of Restec's **FLEX**ITEC HT liquid-applied membrane – a flame-free and cold-applied waterproofing system for refurbishment and new construction projects.

Restec's unique MPeC technology, the proprietary technology powering **FLEX**ITEC HT, is the combination of a unique, Modified Polyester resin, which is catalysed and combined with a chopped strand mat (CSM) fiberglass reinforcement, creating a seamless and robust Composite membrane.

FLEXITEC HT is available as a standard variant or high temperature variant. The high temperature *(HT)* variant represents a minor formulation adjustment, providing specifiers, installers and clients with major results in High Temperature climatic environments.

The unique properties of this product are supported by robust in-house Research and Development (R&D) testing, trusted third-party testing and accreditation, and real-world application case studies – all of which are drawn on within this document.

With the unmatched combination of flexibility, elasticity, toughness and high-end aesthetics; there is no better choice to protect your structures than with **FLEX**ITEC HT.

The Poppy Factory – London, UK

Boat Dock Deck – Texas, US

2. Product and Company Accreditation

Restec's reputation has been built on the exceptional level of technical support provided to customers before, during and after contracts. Restec are part of the Roberts Group who supply to global roofing markets via the Restec, Polyroof and Stormcure Brands. Our reputation is not only held in high esteem by our clients, but also by the leading industry bodies in the UK, Europe, and the US.

Our manufacturing operations are in accordance with our ISO (International Organisation for Standardisation) 9001:2015 quality management certification and ISO 14001:2015 environmental management certification. The ISO 9001 Quality Management System is a standard for companies that demonstrate the ability to consistently provide products to meet customer and statutory requirements and to enhance customer satisfaction. The ISO 14001 Environmental Management System is a standard for companies that establishes, implements, maintains and improves environmental management systems and conform with environmental policies.

Quality and Environmental Accreditations

The **FLEX**ITEC HT system range comprises of the standard variant for application temperatures between 3-30°C, and the high temperature environment variant for application temperatures between 5-45°C. The **FLEX**ITEC HT system range is internationally recognised by third-party associations. These certifications provide compliance confidence and risk reduction for specifiers, product quality assurance for installers, and warranty longevity and credibility for end clients.

The Fire Performance of **FLEX**ITEC HT is outlined fully in section **9. Fire Performance and Safety**. **FLEX**ITEC HT can achieve the highest possible fire classification under BS EN 13501-5 : 2016 of BROOF(t4). **FLEX**ITEC HT is also available within our group of companies as a BROOF(t1) rated product under Restec (EU), and is also available within our group of companies as a UL Certified product, tested and classified as Protec FW-25 under Stormcure – Roberts Group USA (Cert Number R-R41466 – tested in accordance with the following standards: UL 790 Standard Test Method for Fire Tests of Roof Coverings, CAN/ULC-107 Methods of Fire Test of Roof coverings).

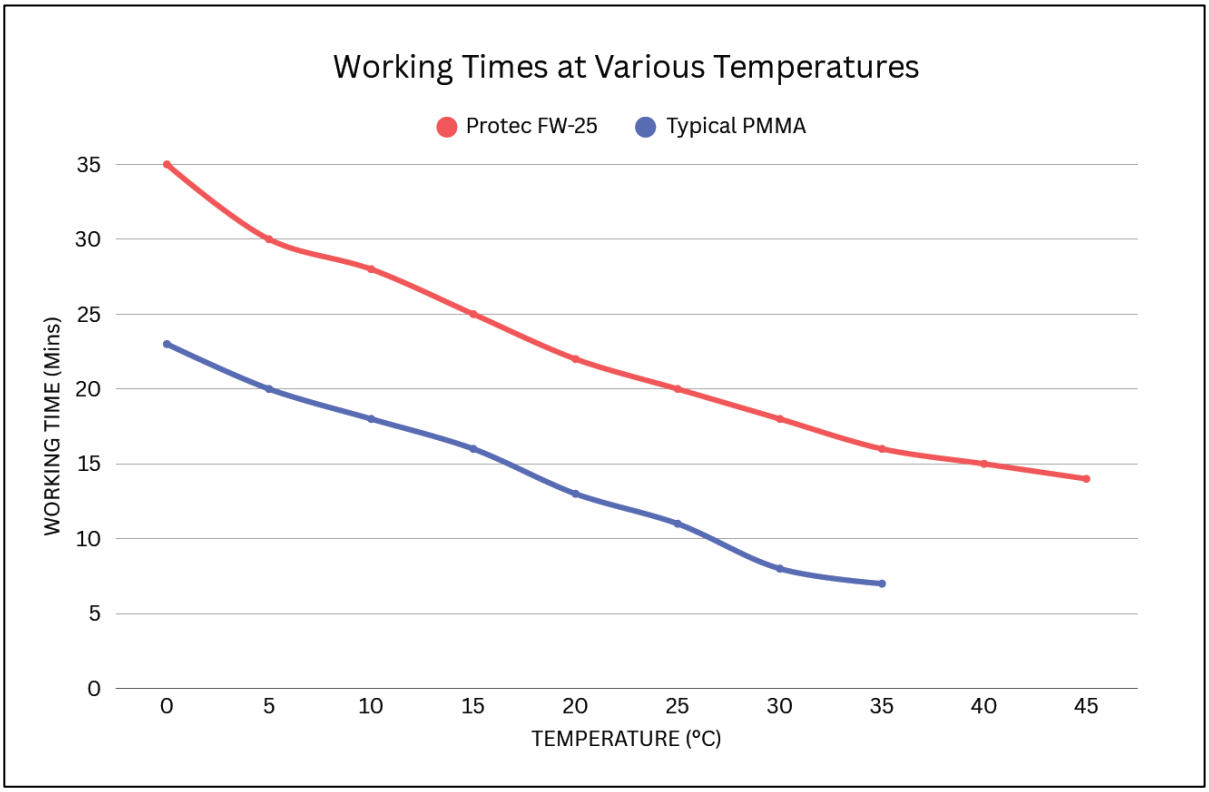
3. High Temperature Installation

FLEXITEC HT is a highly durable yet flexible waterproofing membrane, with the High Temperature variant excelling in arid and humid environments during its installation and its lifespan.

Usability: FLEXITEC HT offers ample work times for installers in ambient temperatures of up to 45°C, all without the need for resin additives such as inhibitors. The installation of **FLEX**ITEC HT is therefore not limited to cooler times of the year, a major benefit for specifiers looking to meet client's needs year-round. These installation benefits are all without compromising on mechanical properties – with **FLEX**ITEC HT still providing optimum flexibility and shear resistance to cope with substrate thermal movement.

Catalyst: FLEXITEC HT utilises a catalyst to initiate and control the curing process. This gives the installer control over the application, allowing consistent results across a broad range of installation environments. Controlled curing means the membrane is applied as a liquid but can be walked on as soon as 30 minutes after installation. The full system installation can be completed in hours, rather than days; a rapid solution that keeps labour costs and client disruption to a minimum.

IRR (Infrared Reflectivity): The IRR and bright white pigment mix in **FLEX**ITEC HT not only afford additional working time during installations, but also afford long-term benefits for specifiers and clients, further described in section **4. Solar Reflectivity and Thermal Emittance**.



Internal R&D working time study versus a typical PMMA formulation.

4. Solar Reflectivity and Thermal Emittance

The long-term degradation of roofing products is expected when subject to continuous UV exposure. **FLEX**ITEC HT unique formulation contains a mixture of Infrared Reflective (IRR) and bright white pigments which ensure that the **FLEX**ITEC HT membrane sufficiently reflects infrared rays. The IRR Pigments also contribute to the reduction of the Urban Heat Island effect, as outlined below.

Under ASTM (American Society for Testing and Materials) testing carried out through the Cool Roof Rating Council's (CRRC) Rapid Ratings process, **FLEX**ITEC HT proves its capabilities as a robust solution suited for extreme environmental conditions (also described in Section **10. Sustainability**):

- On **Solar Reflectance** (ASTM C 1549), **FLEX**ITEC HT was shown to significantly reduce surface temperatures through its solar reflectivity IRR and bright white pigment mix.
- On **Thermal Emittance** (ASTM C 1471) **FLEX**ITEC HT was also strong, with the system scoring highly for thermal emittance – the ability to help the roof cool more rapidly – helping clients reduce air-conditioning-related costs and as such their environmental impact.
- The resulting **Solar Reflectance Index** (SRI) (ASTM E 1980) score is used for compliance with Leadership in Energy and Environmental Design (LEED) requirements and is calculated using the values for reflectance and emissivity – **FLEX**ITEC HT passes the LEED requirements for both the initial and aged tests (LEED is the world's most widely used green building rating system, developed by the U.S. Green Building Council).

Chalking is a natural degradation associated with all liquid-applied waterproofing and coating materials. **FLEX**ITEC HT's unique MPeC chemistry means that expected long-term degradation is significantly reduced as the membrane is UV-resistant from the top coat through to the base coat. Only one 0.5 L/m2 topcoat is required to achieve the service life figure; no thicker or repeat topcoats are required to prolong lifespan. This is a distinct advantage of **FLEX**ITEC HT over PU and Acrylic systems, whilst bituminous and hot melt systems often require a Solar Reflectivity coating to be applied atop, or to be buried completely to prolong longevity.

Sample ID	Solar Reflectance		Thermal Emittance		SRI		
	ASTM C 1549		ASTM C 1371		ASTM E 1980		
	Average	Std. Dev.	Average	Std. Dev.	Low-Wind	Med-Wind	High-Wind
Before Soiling							
FLEXITEC HT IRR White 3 specimens; 25mil DFT Cond 336±12h @ 73.4±3.6°F & 50±10%RH	0.714	0.005	0.90	0.00	87	87	88
After Soiling							
FLEXITEC HT IRR White 3 specimens; 25mil DFT Cond 336±12h @ 73.4±3.6°F & 50±10%RH; ASTM D 7897 Soiling	0.668	0.009	0.91	0.01	81	81	81

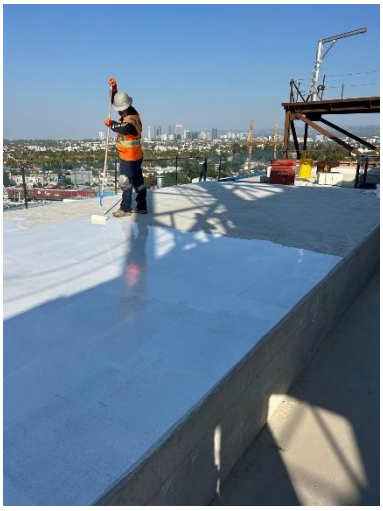
Data as listed on CRRC listed as Roberts Group USA inc. – Restec* **FLEXITEC HT IRR White

5. VOC (Volatile Organic Compounds)

VOCs (Volatile Organic Compounds) are chemicals that can be released as gases from materials such as liquid-applied membranes, adhesives, coatings, or primers during installation and curing. Compliant VOC roofing products help improve installer safety, reduce environmental impact, and support compliance with air quality and sustainability requirements on modern construction projects.

FLEXITEC HT is compliant with the most stringent VOC rulings and air quality standards in the US – the South Coast Air Quality Management District (SCAQMD). The SCAQMD are widely regarded as one of the strictest VOC standards globally.

FLEXITEC HT has a VOC loss, in accordance with the principles of ASTM D 2369 (Method E), which is well within the VOC limit (SCAQMD Rule 1113, VOC limit for Roof Coatings), with even higher-scoring system combinations (**FLEX**ITEC HT resin, plus differing catalyst levels) scoring more than 30% **below** the limit of 50g/l.



Californian hospital project

6. Chemical Resistance

FLEXITEC HT has superior chemical resistance when compared to other liquid membranes. The system has been specified and installed on projects for decades in varying environmental contexts, also where plant and mechanical and electrical equipment have been installed atop. Furthermore, **FLEX**ITEC HT is a reliable costal and high-salinity environment solution, offering strong salinity resistance.

Modern roofs frequently host plant equipment such as air-conditioning units, generators, and electrical systems. These installations can occasionally produce run-off or minor leaks of fluids such as fuels, oils, or cleaning chemicals that drip onto the waterproofing layer. For specifiers, **FLEX**ITEC HT's good chemical resistance helps ensure the roof design remains robust in real-world conditions.

For installers, installing **FLEX**ITEC HT provides confidence that the waterproofing will tolerate incidental exposure to substances encountered during installation and maintenance. Plant equipment servicing, fuel storage, or accidental spills are proven unlikely to damage the membrane, meaning the installer's work remains protected over time and the risk of callbacks is reduced.

For end clients and building owners, chemical resistance contributes to the overall longevity and reliability of the roof. Rooftop plant areas can be challenging environments, particularly where fuel-powered equipment or backup generators are present. Testing shows that **FLEX**ITEC HT performs well in these scenarios:

- **Diesel exposure:** Even after prolonged contact there were no significant defects. Submersion in diesel for one week produced no observable effect, indicating the system is suitable for applications such as diesel bund liners.
- **Petrol exposure:** Submersion in petrol for one week produced only a slight temporary softening effect, which reverted once the sample was removed and allowed to dry, demonstrating good resistance to petroleum products.

Together, these characteristics mean the waterproofing layer can withstand the operational realities of rooftop plant areas, helping protect the building fabric and extending the service life of the roofing system.

Install Versatility: Chemical Bund Lining

Long-term protection: Coastal Installations

7. Resistance to Blistering and Outgassing

Blistering and Outgassing can be failures common with other waterproofing solutions but are not failures associated with **FLEX**ITEC HT. Several factors contribute to **FLEX**ITEC HT's strong resistance to these issues, including its catalyst-curing process, the modified polyester resin chemistry, the CSM reinforcement layer, and primer options available.

Blistering is primarily caused by trapped moisture or air escaping (Outgassing) from the substrate, often triggered by rapid temperature increases on sunny days. Other causes include applying membranes to damp surfaces, poor surface preparation (e.g. inadequate priming), and osmotic pressure drawing moisture through the membrane.

Catalyst-Cured – **FLEX**ITEC HT avoids outgassing as it is catalyst-cured and not moisture- or solvent-cured, with the controlled exothermic reaction ensuring moisture is not trapped within the composite material. The resulting minimal amounts of VOCs being released during curing present no bubbling effect within the membrane. Other moisture- or solvent-curing products may release gases, solvents, or unreacted curing agents, particularly during high-temperature curing.

MPeC - Modified Polyester Formulation – The **FLEX**ITEC HT modified polyester resin quickly dissolves the CSM binders during installation. The resin combines with this CSM reinforcement to form a robust, three-dimensional composite material, which continuously adheres to the substrate beneath, alleviating blistering concerns. The CSM also helps regulate resin consumption during installation, ensuring optimum system longevity. **FLEX**ITEC HT is not reliant on adhesives or fasteners, so blistering concerns associated with adhesive- or fastener-reliant waterproofing systems are avoided.

CSM Reinforcement – Blistering can occur in alternative unreinforced or non-woven polyester fleece-reinforced liquid-applied membranes. The rigidity of a fleece reinforcement means it is installed as a "blanket", which severely limits workability for the installer. This increases the likelihood of air pockets, and as such pressure build-up, forming between the waterproofing and the substrate, leading ultimately to blistering and potential delamination. These issues are alleviated by **FLEX**ITEC HT's use of CSM reinforcement, which is far more pliable, and helps form a continuous bond to the substrate.

Primers – With a range or primers available for **FLEX**ITEC HT, including porous substrate primers, it not only achieves proper consumption rates for installers and clients' benefits, but also provides excellent adhesion to all common substrates. Tests carried out under the EOTA TR (European Organisation for Technical Assessment – Technical Report) 004: May 2004 on the system, featuring accelerated water soaking and heat aging, result in the failure with the substrate for each specimen tested, and **not** with the waterproofing layer, demonstrating outstanding adhesion properties, further outlined in section **8. Adhesion Capabilities.**

225g/m2 CSM Resin, the reinforcement layer for **FLEX**ITEC HT, binders dissolved by the resin to create 3D composite

FLEXITEC HT (IRR White) base coat, showing consolidated, swirly fibres, alleviating opportunities for blistering

8. Adhesion Capabilities

FLEXITEC HT has excellent adhesion to new or existing substrates (concrete, timber, metal etc.), PVC, TPO and EPDM Single-Ply Membranes, bituminous surfaces, and many others. As with any waterproofing or coating system, adhesion will vary by the substrate type and its condition, with properly prepared and primed substrates of course increasing **FLEX**ITEC HT's adhesion capabilities. Under ASTM D4541 testing conditions, properly prepared structural substrates should provide **FLEX**ITEC HT sufficient components to substrate bond strengths.

Roofs, balconies and terraces often feature multiple details with complex shapes and geometries, such as parapet upstands, protrusion details, outlets, and many more. These details, often composed of varying material types, represent high risk areas for potential water ingress **FLEX**ITEC HT provides a robust solution to fully encapsulate these areas, continuously adhering to all substrates without the need for adhesives or fasteners.

This versatility of adhesion is showcased on one of our group's most prestigious projects to date – a complex refurbishment project at Spectrum House, UK. The existing Single-Ply membrane was delaminating and splitting, but the vast majority was able to be retained to reduce waste, cost, time – and ultimately significantly reduce disruption for the clients. Furthermore, 59 suspension anchors supporting Spectrum's unconventional roof structure, each with four fixing points to the main roof space, totaling well over 220 steel and cast-iron details, were suitably primed and encapsulated.

The benefits outlined in section **7. Resistance to Blistering and Outgassing**, specifically **FLEX**ITEC HT's Modified Polyester Formulation, its CSM Reinforcement and the range of Primers available, are also relevant to its strong Adhesion properties.

Substrate	Recommended Primer	Secure Adhesion
Asphalt	Uni-Primer DP	Yes
Built-up Roofing Felt / Mineral Cap Sheet	Uni-Primer DP	Yes
Concrete / Brickwork / Masonry	Uni-Primer DP / Moisture-Mitigating Twin Pack Epoxy Primer	Yes
GRP	No Priming Required	Yes
Liquid Applied Coatings	Subject to Adhesion Tests	Yes
Metals (Detailing Only)	Restec Metal Detailing Primer or Restec Quick Dry 2-Pack Epoxy Primer	Yes
Screed	Uni-Primer DP	Yes
Single Ply Membranes	Subject to Adhesion Tests – typically no primer required / SP Primer. TPO & EPDM – SP Primer	Yes
Solar Reflective Coating	Uni-Primer DP – Subject to Adhesion Test	Yes
Timber	Uni-Primer DP	Yes
uPVC (Pipes, Rooflights, Upstands, etc)	No Priming Required (Abrade and Acetone Wipe)	Yes

9. Fire Performance and Safety

The Roberts Group carry out an extensive programme of fire tests on our liquid applied membranes. **FLEX**ITEC HT is tested to DD CEN/TS 1187:2012, Test 4 (test methods for external fire exposure to roofs), and these results are classified under the standard BS (British Standard) EN (European Norm) 13501-5 2016. The Classification system set out in BS EN 13501-5 covers external Fire penetration and Spread of Flame of roof systems in their response to external fire exposure.

A key requirement of the UK building regulations is to resist fire spread over roof coverings. BS EN 13501-5 classification refers to four separate roof testing methods T1, T2, T3 and T4 (DD CEN/TS 1187:2012) that measure the performance of roofs. The test method for the UK and Ireland is test method 4, with test method 1 being common in mainland Europe.

BROOF(t4) rating is the highest rating achievable and allows flat roof systems to be classed as 'unrestricted', or 'low vulnerability', in accordance with relevant national building regulations.

FLEXITEC HT can achieve the highest possible classification under BS EN 13501-5:2016 of BROOF(t4). It is important to note that when tested on both the most and least combustible substrate classifications, **FLEX**ITEC HT still achieved the BROOF(t4) rating. **FLEX**ITEC HT is also available within our group of companies as a BROOF(t1) rated product.

FLEXITEC HT is available within our group of companies as a UL Class A Certified product, tested and classified as Protec FW-25 under our Stormcure brand, a part of Roberts Group USA (Cert Number R-R41466 – tested in accordance with the following standards: UL 790 Standard Test Method for Fire Tests of Roof Coverings, CAN/ULC-107 Methods of Fire Test of Roof coverings).

From an installation perspective, **FLEX**ITEC HT is cold-applied which totally removes the risks associated with open flames required for torch-on systems. This limits the risk of accidental fires when using **FLEX**ITEC HT, ensuring the duty of care is maintained throughout installations.

(Quartz Grey)

10. Sustainability

Specification of long lasting, durable waterproofing systems, which can be overlaid repeatedly, can reduce the carbon footprint of your roof across its lifetime. **FLEX**ITEC HT is highly durable and robust; and can be easily overlaid at the end of its life.

Furthermore, the refurbishment capabilities of **FLEX**ITEC HT are considerable, with excellent adhesion to most common substrates meaning existing build-ups can be retained, reducing environmental impacts associated with landfill or waste incineration. See section **8. Adhesion Capabilities**.

Under ASTM testing carried out through the Cool Roof Rating Council (CRRC), **FLEX**ITEC HT proves its capabilities as a roofing system capable of positively impacting the building's environmental capabilities. See section **4. Solar Reflectivity and Thermal Emittance**.

FLEXITEC HT is a fully water-tight and root impenetrable membrane created is ideal for water- and greenery-retaining roof spaces. Restec have a breadth of experience in specifying and winning Green Roof projects, from the vast KPMF commercial unit to the prestigious, award-winning McGee House.

Furthermore, the toughness and ability of the system to hold plant units, alongside its usability for encapsulation of complex details, makes it the ideal solution for PV-loaded roof spaces.

We hold an Environmental Product Declaration (EPD) for a variant of the **FLEX**ITEC HT system, which transparently demonstrates the environmental impact of a product across its lifecycle. EPDs are based on a comprehensive, third party verified, life cycle assessment (LCA) in line with EN 15804, ISO 14025, and other related standards.

Roberts Group has also been awarded at the edie Net-Zero Awards in London, recognising our leadership in driving sustainability within the roofing sector. Our strategy focuses on reducing carbon emissions across operations and the supply chain, including a target to cut Scope 1 and 2 emissions by 42% by 2030, supporting the UK's UK Net Zero by 2050 target while advancing sustainable product innovation.

25,000m² – refurbishment – substrate retained

275m² – refurbishment – loaded with PV Panels

11. European Climate – Long Term Performance

This section should be considered alongside the technical capabilities outlined throughout this document.

The robustness of **FLEX**ITEC HT sets it apart from other liquid-applied membranes on the market for use in trafficable areas which require a tough, fully waterproof membrane. Other liquid-applied membranes, particularly un-reinforced coatings, whilst providing a quick and easy refurbishment option, do not provide a robust, long-term solution.

Temperature Variation Performance: Temperature variation between night and day in Europe can be considerable. The combination of **FLEX**ITEC HT's modified polyester resin and the CSM reinforcement provides the optimum combination of elasticity and toughness to be able to respond with this temperature variability whilst retaining its strong mechanical properties.

Robust System: FLEXITEC HT achieves a Shore D hardness of 60, creating a firm but not fully rigid surface, balancing durability with flexibility, making it particularly suited for high-temperature variability environments. The system is inherently resistant to abrasion and performs effectively during Pendulum Slip testing, demonstrating reliable performance in areas subject to foot traffic and other dynamic impacts. Furthermore, large air-conditioning units and plant equipment impose substantial weight and point loads on the waterproofing layer. **FLEX**ITEC HT is well suited to areas supporting significant mechanical and electrical plant loading.

Seamless, Monolithic Layer: Waterproofing layers will usually fail at the detail areas where laps and joins are present. **FLEX**ITEC HT forms a continuous, monolithic waterproof membrane with no seams or overlaps. This significantly reduces the risk of de-bonding and water ingress as the system ages.

Tensile Strength: **FLEX**ITEC HT is a highly durable waterproofing system designed to withstand temperature variability, mechanical stress, and long-term environmental exposure.

Essential Characteristics	Test Method	Performance
Ultimate Tensile Strength	BE EN ISO 527-3 : 2018	53 MPa (Heat aged for 200 days at 70°C)
Shore D Hardness	ASTM D2240	60
Dynamic Indentation	EOTA TR 006 : 2004	I4 – Highest Level
Static Indentation	EOTA TR 007 : 2004	L4 – Highest Level