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# **PRODUCT INFORMATION & DESIGN GUIDE**





# **PROTEC** - A DURABLE, SEAMLESS, COLD APPLIED LIQUID ROOFING SOLUTION

# CONTENTS



PROTEC

# TECHNICALLY ADVANCED ROOFING SYSTEM

Protec is a cost-effective, fast curing polyester roofing system that is ideal for a wide range of refurbishment and new build applications. The system is cold applied and fully reinforced providing a tough yet highly flexible seamless membrane. The system rapidly becomes weather resistant allowing fast access in situations where foot traffic is required. The ease of application of the system enables effective waterproofing over complex or awkward detailing such as protrusions and plant.

Suitable for direct application to a variety of substrates, including built-up felt, concrete, asphalt, plywood and many single-ply membranes, the system is well suited to refurbishment or new build projects of any size. In most cases there is no need for stripping of the old roof, and therefore is ideal for projects that require a fast solution with minimum disruption. Where required, insulation can be provided in conjunction with the system to offer improved thermal performance for projects that demand the highest requirements in energy efficiency. The system is also highly effective for use in inverted or green roof situations, which offer a wide range of environmental benefits.

For balconies and walkway applications the system is finished with PolyFinish MMA, a tough impact resistant yet flexible methyl methacrylate-based finishing coat. Used in conjunction with guartz sand aggregate, it has been specially developed to impart a highly wear resistant, anti-slip finish to the Protec system.



# Overlays

- Warm roofs
- Inverted roofs
- Green roofs
- Balconies
- BBA and FM approved
- 10 or 20 Year Guarantees
- Durable finish
- Choice of colours
- Suited to any size of project
- Quickly weather resistant
- Seamless cold-applied liquid membrane



# COLD APPLIED

Like all Polyroof systems, Protec is cold applied, meaning there is minimum disruption, whilst avoiding

the fire and safety risks associated with conventional systems that rely on boilers and exposed flames.

# **ECONOMICAL**

Protec is a very economical and cost effective system for roofs of any size. Most existing substrates can be over-coated meaning less stripping and disruption. The system is also extremely durable and can be re-coated at the end of the guarantee period. This leads to a low overall life cycle cost for the client.

# **ENVIRONMENTAL CONSIDERATIONS**

Polyroof Products are committed to environmentally responsible manufacturing. A copy of our environmental policy is available on request. Protec Resins are manufactured in accordance with ISO 14001. The system is extremely durable with a long service life and therefore a reduced impact on the environment.

# NATIONWIDE NETWORK OF COMPANY **TRAINED TECHNICIANS**

Protec is only supplied to and installed by contractors fully application trained and licensed by the company, to ensure consistent quality of installation. Contractors' performance is regularly monitored and random inspection of installations carried out. Failure to comply with the company's stringent standards leads to withdrawal of certification.

# **QUALITY CONTROL**

Polyroof Products Ltd operates comprehensive and rigorous guality control procedures in accordance with ISO 9001:2008. The scope of this approval includes the design and installation of roofing systems, the provision of technical support, as well as the appointment and monitoring of installers. Not only is the manufacture of Polyroof liquid applied roofing systems and accessories quality approved, but so too is the procurement, storage and supply of all related materials and consumables.

# **GUARANTEES**

Manufacturer's guarantees are available for 10 or 20 years, subject to specification and insurance backing is also available. Please call 0800 801 890 for details.

MINIMAL DISRUPTION COST EFFECTIVE SEAMLESS

# **ROOF CONSTRUCTION**

Consideration should be given to the type of roof construction to which the system is to be applied. These can be broadly categorised as:

- Direct overlays
- Warm roofs
- Inverted roofs

#### GENERAL

Protec is suitable for both refurbishment and new build applications. The design of the roof to which the Protec system is to be applied should be in accordance with the relevant regulations, codes and good practice. Insulation may be incorporated as necessary.

# **SUBSTRATES**

The system can be applied to a range of substrate types including built up felt, concrete, asphalt, plywood\*, GRP, Polyroof 'RES' insulation board\*\* and many types of single ply. The level of preparation and priming requirements will vary depending on the substrate type. Adhesion tests are recommended for single ply, solar reflective paint and other unidentified coatings or surfaces.

\*New plywood decks should be a timber panel to structural grade BS 5268-2:2002 (EN13986 Structural 2+). \*\*Direct application to insulation must be to Polyroof approved 'RES' insulation.

Standard preparation paragraphs can be downloaded at www.polyroof.co.uk or obtained by contacting technical services on 0800 801890.

## **DIRECT OVERLAYS**

Suitable for refurbishment or new build projects where insulation is not required. Existing roofs must be structurally sound and should comply with current building regulations.

In many cases overlay systems prove to be the best method of providing fast long term cost effective waterproofing to new or existing roofs with minimal disruption for the building's occupants. On refurbishment projects care should be taken to ensure that the existing roof construction is structurally sound and complies with current building regulations. If this is not the case then a complete strip or thermal upgrade may be necessary.

# FALLS

Minimum falls recommended by the relevant British Standard Code of Practice for flat roofs is 1:80. However, a design fall of 1:40 is often adopted to provide a construction tolerance. Standing water is not detrimental to the waterproof integrity of the system but if required existing falls may be increased by the using either timber firrings or cut-to-fall insulation. Protec also has BBA compliance for completely flat (zero fall) designs.

# WALKWAYS/TRAFFIC

Protec is available with anti-slip options for occasional or regular traffic (*Please refer to Page 6*). The surface finish is anti-slip but cannot possibly eliminate all risk of slipping, this is particularly relevant in the event of ice forming on the roof surface.

# DRAINAGE

Advice on roof drainage is given in Code of Practice BS.6367. The majority of standard rainwater outlets can be incorporated into Protec installations.

## PENETRATIONS

The system can be moulded to suit penetrations such as soil pipes, stanchions or machinery fixing positions.

# **KEY FEATURES**

Refurbishment or new constructions

- No stripping
- Minimal disruption
- Extends service life of existing roofs

PROTEC MAT

REINFORCEMENT

- Fast application
- Suitable for roofs, gutters, balconies & walkways



PROTEC

RESIN

UNI-PRIMER

SUBSTRATE

PROTEC

RESIN

# WARM ROOFS

# Suitable for new constructions or upgrade of existing roofs to meet current building regulation standards.

Protec is the ideal system for warm roof applications and is equally suited for both new build and refurbishments. A vapour control layer must always be provided prior to installation of rigid insulation boards and care should be taken to ensure the roof achieves the required U-value in accordance with current building regulations standards. The Protec Warm Roof System allows direct application to an approved Polyroof 'RES' Insulation board and, combined with a fast curing adhesive for the insulation panels, provides a much quicker installation than traditional methods.

# **KEY FEATURES**

- Vapour control layer
- Excellent thermal performance
- Reduced energy bills
- Adhesively bonded or mechanically fixed
- Direct application to approved Polyroof 'RES' Insulation
- Cut-to-falls insulation available



Please contact Polyroof Technical Services for details of FM Approved specifications.

# **INVERTED ROOFS**

# Suitable for new build or refurbishment projects to meet current building regulation standards.

Inverted roof applications (also known as upside down or protected membrane roofs) are where the waterproofing layer is applied directly to the structural deck. The Protec system is ideal for inverted roofs and can be applied rapidly to existing or new decks. Decks should be capable of accepting the loading of ballast. Inverted roofs have the advantage of keeping the waterproofing membrane protected at all times and also and eliminate the need for mechanical fixings.

# **KEY FEATURES**

- Protected membrane for increased service life
- Eliminates mechanical fixing / adhesives
- Ballast (Pebbles or Paving)
- Low absorbent insulation board
- Geotextile layer (if required)



New insulation provided. Adhesive or mechanical fix.



Application of waterproofing direct to primed insulation.



Completed warm roof suitable for occasional foot traffic.



# MINIMAL DISRUPTION COST EFFECTIVE SEAMLESS



# FOOT TRAFFIC

Protec is designed to accept either maintenance or regular foot traffic depending on the specification required. The Protec system is available in a number of variants depending on the level of foot traffic anticipated.

# PROTEC MINERAL FINISH (ANTI-SLIP)



This is specified for areas where the roof may have some occasional foot traffic and where an anti-slip finish is desired. Typical examples include maintenance walkways to plant rooms and fire escapes.

# PROTEC WITH QUARTZ SAND & POLYFINISH (ANTI-SLIP)



This is specified for balconies, walkways or other areas demanding a high level of wear. Protec with Quartz Sand & Polyfinis has a super tough, impact resistant finish and is suitable for regular foot traffic.

# **OTHER FINISHES**

If required the Protec system may be overlaid with various alternative finishes. Popular methods include timber decking or paving slabs. Our recommendation is to use a loose laid system on proprietory supports (Caro systems or similar).

Should directly bonded coverings be required, consult Technical Services for advice.





# LEAD AND COPPER REPRODUCTION

Protec lead roll finish is used on new build or refurbishment projects to reproduce the look of lead at lower cost whilst also removing the risk of theft.

The roll is formed using a pre-formed fibreglass trim. Various levels of reproduction colours and finishes are available to reproduce the look of lead or oxidised copper.







Showing a typical build up of the Protec lead roll system.
 Pre-formed lead roll detail
 Preywood deck
 Protec Mat Reinforcement
 Protec

ASK FOR OUR GREEN

# **GREEN ROOF SYSTEMS**

The Protec membrane provides an ideal waterproofing solution for use in green roof systems as it is flexible enough to easily accommodate structural movements as well as being lightweight and extremely durable.



Green roofs are becoming increasingly popular, and for good reason. They reduce energy costs by creating natural insulation, they create peaceful retreats and recreational areas, they provide natural habitats for wildlife, and they absorb storm water thereby reducing run-off into overworked sewer systems.

In city environments, green roofs improve air quality by absorbing pollutants and by helping to reduce the urban heat island effect. Evaporation from a green roof has also been shown to cool surrounding air temperatures.



# PROTEC FILTER LAYER

DRAINAGE LAYER SEDUM

MINIMAL DISRUPTION COST EFFECTIVE SEAMLESS

SUBSTRATE

Details below show the advantages of seamless liquid waterproofing used in a variety of warm and cold roof applications. For comprehensive downloadable CAD details visit www.polyroof.co.uk or contact technical services.



# **OPTIONAL PREFORMED TRIMS**

The Polyroof range of rigid GRP trims offer a fast, reliable way of installing finishing trims and ensuring perfect detailing. These trims are optional as, in many cases, the existing detailing can be retained. A wide range of non-standard profiles exist. Consult Polyroof with your specific requirements.



# ACCREDITATIONS

Protec has been independently tested to the very highest standards and has British Board of Agrément and Factory Mutual approval.

BBA Approval: 09/4676 FM Approval: 3025793



## **QUALITY ASSURANCE**

Polyroof Products carry out rigorous quality control testing and for peace of mind all manufacturing is carried out strictly in accordance with the quality standard ISO 9001:2008.

# **GUARANTEES**

Protec is available with a manufacturer's guarantee of either 10 or 20 years (subject to specification). All work is carried out by a network of fully accredited Polyroof contractors.

# DURABILITY

The Protec system will provide a durable waterproof covering with a service life of at least 20 years when exposed.

# **PROPERTIES IN RELATION TO FIRE**

Tests show that the system achieves EXT. F.A.B in accordance with BS476 part 3. This enables the roof to be unrestricted under building regulations.

# WEATHERTIGHTNESS

Test data confirms that the system will adequately resist the passage of moisture to the inside of the building and so meet the requirements of the National Building Regulations.

# **RESISTANCE TO WIND UPLIFT**

Protec is a fully bonded system. The adhesion of the system is sufficient to resist the effects of any likely wind suction and the effects of thermal or other minor movement likely to occur in practice.

TEST	METHOD	RESULT	TEST	METHOD	RESULT
Fire Tests	BS EN 13501-5:2005	B <sub>ROOF</sub> (t4)	Water vapour transmission (gm– <sup>2</sup> day– <sup>1</sup> )	<b>BS 3177</b> (25°C/75% RH)	0.72
	<b>ANSI/UL 790</b> PU Foam DensDeck Prime	Class A Class A	Water vapour resistance (MNsg-1)	<b>BS 3177</b> (25°C/75% RH)	285
	ASTM E108-06 PU Foam DensDeck Prime Other substrate data available	Class A Class A	Delamination strength (kPa) unaged heat aged <sup>(2)</sup> water exposure <sup>(5)</sup>	EOTA TR 004	1260 <sup>(4)</sup> 1288 <sup>(4)</sup> 1178 <sup>(4)</sup>
	FM Calorimeter Test	Class 1	Dynamic		
Wind Uplift	FM Test	Up to Class 1-990	indentation		
Foot Traffic	<b>FM Test</b> PU Foam (91kg)	Pass	concrete unaged EOTA TR 006	EOTA TR 006	I <sub>4</sub>
Hail Damage	LIV aged <sup>(3)</sup>		I <sub>4</sub> I <sub>2</sub>		
	Concrete (0.4kg from 5.4m)	Pass	Static indentation		
Water Leakage	FM Test 150mm head of water 7 days (After 1000 hrs accelerated weathering)	Pass	concrete unaged water exposure <sup>(5)</sup> insulation unaged	EOTA TR 007	L <sub>4</sub> L <sub>4</sub>
Tensile strength (N per 50 mm) unaged heat aged <sup>(2)</sup> UV aged <sup>(3)</sup>	BS EN ISO 527-3	3307 4851 4911	Fatigue cycling unaged Protec		L <sub>4</sub> pass
Elongation at maximum load (%) unaged heat aged <sup>(2)</sup> UV aged <sup>(3)</sup>	BS EN ISO 527-3	3.7 2.8 3.1	Protec MMA heat aged <sup>(2)</sup> Protec Protec MMA	EOTA TR 008	pass pass pass

(1) The test documents are detailed in the Bibliography. Numbers in the table refer to the sections/parts of the various documents.
(2) Heat aged 200 days at 70°C to EOTA TR 011.

(3) UV aged using UVA lamps at an exposure of 800  $\rm MJm^{-2}$  at 50°C.

(4) Failure 100% within the concrete.

(5) Water exposure 180 days at 60° to EOTA TR 012.

# **NBS - TYPICAL SPECIFICATIONS**

range of new and existing substrate types. All substrates should be prepared in accordance with Polyroof Products Ltd recommendations. Any blow holes in asphalt are to be smoothed out or removed and

levelled off using a suitable repair compound. Allow repairs to cure

All large cracks and voids should be cleaned and made good using a

suitable quick-drying repair compound. Repairs should be allowed to

Mechanically abrade metal stanchions to remove loose paint and rust.

Rub down all sound residual coating surfaces to provide a mechanical

NB: Please consult Polyroof Products for preparation and priming of any

key for repainting and remove debris. Thoroughly wipe metal

# Spec 1 - Protec overlay to asphalt (with optional balcony finish)

# This is a guideline specification based on the application of the Polyroof Protec System to an existing balcony or walkway to accept regular foot traffic.

J31 Liquid Applied Waterproof Roof Coatings	Coating Application (Part A: Waterproofing)	
To be read in conjunction with Preliminaries / General Conditions.	<ul> <li>To be laid by Polyroof Approved Contractor strictly in accordance with Polyroof Products Recommendations and BBA certificate.</li> <li>First coat of Protec applied to primed surfaces at a minimum coverage rate of 1.3litres/m<sup>2</sup> with Protec Mat reinforcement.</li> <li>Second coat of Protec applied at an approximate coverage rate of 0.5litres/m<sup>2</sup> to achieve final surface finish.</li> </ul>	
Surface Preparation		
The following is indicative based on an existing asphalt balcony with metal handrails and stanchions. The Protec system can also be laid to a wide		

Coating Application (Part B: Anti-Slip to Balcony / Walkway Only)

A third coat of Protec is applied at an approximate coverage rate of 0.5litres/m<sup>2</sup> and blind with Quartz Sand (0.7mm-1.2mm) at an approximate coverage rate of 4kg/m<sup>2</sup>. Once cured remove excess sand.

Apply PolyFinish resin at an approximate coverage rate of 0.6litres/m<sup>2</sup> to provide a final surface finish.

To un-gritted upstands thoroughly wipe Protec with Acetone prior to application of Polyfinish. Apply Polyfinish Resin at a minimum coverage rate of 0.25litres/m<sup>2</sup> to the upstands to provide a final surface finish. Allow to cure.

Please note that the above finish is anti-slip but cannot entirely eliminate all risk of slipping. Please consult Polyroof Products Ltd for further advice.

#### **Minimum Dry Film Thickness**

1.85mm (waterproofing layer).

# Accessories

Polyroof pre-formed GRP trims (optional).

## Approvals

BBA Approval: 09/4676 FM Approval: 3025793

# **Further Information**

This specification is only a guideline. NBS specifications can be accessed from www.polyroof.co.uk



# Polyroof pre-form

# Primer Coat

Product Ref:

before priming.

cure before priming.

other surfaces

Polyroof Uni-Primer to be applied to asphalt at an approximate coverage rate of  $4-5m^2/litre$ .

Polyroof MC Metallic Primer to be applied to metal handrails at an approximate coverage rate of  $4-5m^2$ /litre.

Polyroof Protec System

To be applied by an approved contractor. Manufacturer Company: Polyroof Products Ltd Web: www.polyroof.co.uk Tel: +44 (0)1352 735 135

Waterproofing System

stanchions with acetone prior to priming.

# NBS - TYPICAL SPECIFICATIONS

# Spec 1 - Protec warm roof (occasional foot traffic)

This is a guideline specification based on the application of the Polyroof Protec System to Polyroof 'RES' insulation boards in order to form a warm roof design suitable for occasional foot traffic.

J31 Liquid Applied Waterproof Roof Coatings		
To be read in conjunction with Preliminaries / General Conditions.		

# **Substrate Preparation**

The following is based on a newly laid clean, dry concrete. The Protec system can also be laid to a wide range of new and existing substrate types. All substrates should be prepared in accordance with manufacturer's recommendations.

Wet or saturated substrates should be allowed to thoroughly dry out before any products are applied. For newly laid concrete/screed, follow general guidelines allowing a cure time of at least 28 days or one week per 25mm, or preferably follow manufacturer's instructions. In the case of polymer modified material, refer to manufacturer's instructions.

# Warm Roof: Vapour Control Layer

A felt vapour control layer is to be applied to the roof deck and must be fitted strictly in accordance with manufacturer's recommendations. Note - for options on cold applied felt vapour control layers contact technical services.

#### Warm Roof: Insulation

Polyroof RES insulation boards (1.2 x 1.0m) are to be bonded using Polyroof Approved Fastec Fastflow Poly 2 Adhesive or Polyroof approved mechanical fixings, installed strictly in accordance with manufacturer's recommendations. All Polyroof RES Insulation board joints are to be taped using 75mm Protec Taping Mat and Polyroof Protec Resin.

#### Waterproofing System

To be applied by an approved contractor.

Manufacturer

Company:	Polyroof Products Ltd
Web:	www.polyroof.co.uk
Tel:	+44 (0)1352 735 135
Product Ref:	Polyroof Protec System

# Primer Coat

Consult Polyroof Technical Services regarding priming requirements.

# **Coating Application**

To be laid by Polyroof Approved Contractor strictly in accordance with Polyroof Products Recommendations and BBA certificate.

First coat of Protec applied to primed surfaces at a minimum coverage rate of 1.3litres/m<sup>2</sup> with Protec Mat reinforcement.

Second coat of Protec applied at an approximate coverage rate of 0.5litres/m<sup>2</sup> to achieve final surface finish.

#### **Minimum Dry Film Thickness**

1.85mm

#### **Surface Protection**

Anti-slip available for occasional foot traffic. For regular foot traffic consult Polyroof Technical Services for an alternative system.

#### Accessories

Polyroof pre-formed GRP trims (optional).

#### Approvals

BBA Approval: 09/4676 FM Approval: 3025793

# **Further Information**

This specification is only a guideline. NBS specifications can be accessed from www.polyroof.co.uk

# **NSSPlus**

MINIMAL DISRUPTION

FOR SPECIFICATION ADVICE CALL THE TECHNICAL HELPLINE ON 0800 801 890

SEAMLESS

COST EFFECTIVE

# **TECHNICAL ASSISTANCE**

Polyroof Products offer comprehensive technical support for specifiers, contractors and clients. Our technical services department are on hand to offer product advice and answer any questions throughout all stages of your project from inception to completion.

We will review any drawings and offer detailed guidance regarding specifications including recommendations to ensure compliance with all current regulations. We offer a free bespoke specification service and can carry out site surveys to ensure that the most appropriate specification is put forward for your project.

Telephone:0800 801890Fax:01352 736363Email:technical@polyroof.co.uk

# LITERATURE AND SAMPLES

Polyroof Products produce a comprehensive range of literature and product samples for specifiers, contractors and clients. Individual brochures and product samples are available on request for all of our products and are available either in paper copy or electronic format.

A complete specifiers manual is also available which contains a complete set of literature along with product samples. Contact us today for a copy or visit our website www.polyroof.co.uk where you can download individual brochures and NBS specifications.

Telephone: 0800 801890 Fax: 01352 736363 Email: marketing@polyroof.co.uk

#### Disclaimer

Polyroof Products reserve the right to amend product specifications without prior notice. The information provided in this literature is given in good faith. Recommendations for use should be verified to ensure compliance with all current building regulations and standards. Please check that your current copy of literature is the latest version by contacting the marketing department or visiting www.polyroof.co.uk/downloads.

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# www.polyroof.co.uk

# FREEPHONE HELPLINE: 0800 801 890





# CUSTOMER SERVICES



On completion of your project customer services are on hand should you need aftercare advice or should you have any queries relating to your installation, guarantees or warranties.

 Telephone:
 01352 735135

 Fax:
 01352 735182

 Email:
 service@polyroof.co.uk

# **GENERAL ENQUIRES**

For all other enquiries contact Polyroof Products on the number below.

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