

Caltech Alpha

**HIGH SOLIDS, LOW ODOUR, ONE COMPONENT, UV STABLE
LIQUID-APPLIED POLYURETHANE WATERPROOFING MEMBRANE**

Product Description

Eurorof Caltech Alpha is a high performance polyurethane coating with low odour used as for the Caltech Alpha 15, 20 and 25 year systems.

Uses

- For Caltech Alpha waterproofing systems
- For insulated and non-insulated roof designs
- For new construction and refurbishment projects

Characteristics / Advantages

- Low odour, one component polyurethane for sensitive sites
- Totally seamless, single pack liquid applied membrane
- Cold applied – eliminating the risk of fire during installation
- Higher solids, VOC compliant to 2004/42/CE
- Highest fire ratings once installed (BROOF (t4) (t1))
- Fast curing, develops early rain resistance
- Excellent adhesion to most conventional substrates
- Easy and quick application using G-Mat Glass Fibre Matting
- Minimal disruption and low maintenance
- Elastic properties – tolerant of thermal movement
- Flexible, impact resistant membrane
- Can be applied all year round above 2°C
- Approved to ETAg 005 (Part 6)
- Product warranty available if installed by an Alumasc Caltech Registered Contractor

Tests

Approvals / Standards

1. External fire performance: BROOF (t4) & (t1) & classification under BS 476-3: 1958 EXT.F.AB.
2. Odournet – Test Number 456- 2014

Product Data

Appearance

Pigmented liquid
Dark grey (RAL7015) or Medium grey (RAL7045)

Packaging

15 litres

Storage Conditions / Shelf Life

Store in original, unopened and undamaged sealed packaging in dry conditions at temperatures >0°C and < 25°C. Protect from frost.

A shelf-life of 9 months is achieved when stored in accordance with the above recommendations at a temperature of 20°C. Exposure to higher temperatures will reduce the shelf-life.

Reference should also be made to the storage recommendations of the material safety datasheet.

It is recommended that the product is stored under warm conditions (approx. 20°C) immediately prior to application at temperatures below 10°C.

Chemical Base	One-component moisture-triggered Polyurethane
Density	1.41 kg/L (+20 °C) (EN ISO 2811-1)
Solid Content	~ 84.5 % by volume / ~ 88.0 % by weight
Flash Point	+ 100°C
Service Temperature	-30 to +80°C (intermittent)

Resistance

Chemical Resistance Strong resistance to a wide range of reagents including paraffin, petrol, fuel oil, white spirit, acid rain, detergents and moderate solutions of acids and alkalis. Some low molecular weight alcohols can soften the material. Contact Technical Services for specific recommendations.

Salt spray to ASTM B117 (1000 hours continuous exposure) and prohesion testing to ASTM G85- 94; Annex A5 (1000 hours cyclic exposure).

System Information

Maximum Coverage Rates

Waterproofing Only

15 year warranty

Preparatory Layer	Substrate must be prepared according to specification – for further information please contact technical customer services	
Embedment Layer	Caltech Alpha	1.25 L/m ²
	G-Mat glass fibre reinforcement	
Top Coat	Caltech Alpha	0.50 L/m ²

20 year warranty

Preparatory Layer	Substrate must be prepared according to specification – for further information please contact technical customer services	
Embedment Layer	Caltech Alpha	1.25 L/m ²
	G-Mat glass fibre reinforcement	
Top Coat	Caltech Alpha	0.75 L/m ²

25 year warranty

Preparatory Layer	Substrate must be prepared according to specification – for further information please contact technical customer services	
Embedment Layer	Caltech Alpha	1.25 L/m ²
	G-Mat glass fibre reinforcement	
Top Coat	Caltech Alpha	0.60 L/m ²
Top Coat	Caltech Alpha	0.60 L/m ²

Note: The application of the system must be approached as one operation. Always plan for reasonable progress of each coat. Work only so far in advance that the existing surface can be overcoated as the next operation. Finish the coating system completely before progressing to the next area. The ideal time between coats is within 48 hours.

It is not good practice to plan breaks between coats of more than 14 days. For periods longer than this and in cases of accidental or unavoidable delay consult Alumasc for advice. Ensure each application/coat is clean and dry prior to overcoating

At no stage should the Caltech system or waterproof coating in its finished or intermediate stage be used as a workspace or access floor without adequate protection.

Please note: the above rates are for smooth substrates only.

Typical Test Data - System

	15 year system	20 year system	25 year system
Dry Film Thickness (mm) EN ISO 527	1.5	1.8	2.2
Tensile Strength (N/mm²) EN ISO 527	10	8.5	8.3
Tensile Load (N/25mm) EN ISO 527	370	410	530
Tear Force (N) EN ISO 527	47	54	66
Tear Strength (N/mm) EN ISO 527	30	30	30
Tensile Elongation (%) EN ISO 527	65	45	95
Water Vapour Transmission EN1931 Method B - g/m²/day	8.18	6.93	6.07

Application Details

Substrate Quality

Cementitious substrates

New concrete should be cured for at least 28 days and should have a pull off strength ≥ 1.5 N/mm². Inspect the concrete, including upstands (all areas should be hammer tested). Concrete must be suitably finished, preferably by wood float or steel pan. A power float finish is acceptable where the surface is prepared to avoid laitance (a tamped finish is not acceptable). The surface finish must be uniform and free from defects such as laitance, voids or honeycombing. The substrate must be of a suitable quality and condition to receive the system. Please refer to specification for further details.

Brick and stone

Bricks, blocks and mortar joints must be sound and preferably flush pointed.

Slates, tiles, etc.

Ensure all slates/tiles are sound and securely fastened, replacing obviously broken or missing sections.

Asphalt

Asphalt contains volatiles which can cause bleeding and slight non-detrimental staining. The asphalt must be carefully assessed for moisture and/or air entrapment, grade and surface finish prior to any coating works being carried out.

Bituminous felt

Ensure that bituminous felt is firmly adhered or mechanically fixed to the substrate. Bituminous felt should not contain any badly degraded areas.

Single ply

Caltech Alpha should be used over existing Single Ply membranes only with Meta Primer to act as a migration barrier. Consideration should be given to the method of fixing and the anticipated life term.

Bituminous coatings

Bituminous coatings should not have sticky or mobile surfaces, volatile mastic coatings, or old coal tar coatings.

Metals

Metals must be in sound condition.

Timber substrates

Timber and timber-based panel roof decks are to be well constructed, in good condition, firmly adhered, and with sufficient fixings for the nature and location of the site.

Paints/Coatings

Ensure the existing material is sound and firmly adhered.

Existing Caltech Systems

The existing Caltech System should still be soundly adhered to the substrate.

Substrate Preparation

Cementitious substrates

Laitance, other loose friable material and weak concrete must be completely removed and surface defects such as blowholes and voids must be fully exposed. In severe cases use abrasive blast cleaning, grinding or scarifying equipment to achieve a sound surface.

Repairs to the substrate, filling of joints, blowholes/voids and surface levelling must be carried out using appropriate products.

High spots must be removed e.g. by grinding.

Outgassing is a naturally occurring phenomenon of concrete that can produce pinholes in subsequently applied coatings. The concrete must be carefully assessed for moisture content, air entrapment, and surface finish prior to any coating work. Any requirement for priming must also be considered. Installing the membrane either when the concrete temperature is falling or stable can reduce outgassing. It is generally beneficial, therefore, to apply the embedment coat in the late afternoon or evening.

Brick and stone

Thoroughly clean by power wash and allow to dry. Where there is a risk of algal re-growth on absorbent surfaces use Caltech Fungicidal Wash - refer to the product data sheet for further information. Repair any spalling, flaking or other damage and replace any missing jointing.

Asphalt

Thoroughly clean using by power wash and allow to dry. All major cracks should be sealed to allow continuity of the Caltech System. Asphalt must be carefully assessed for moisture and/ or air entrapment, grade and surface finish prior to any coating works being carried out. Any priming requirement must also be considered.

Bituminous felt

Thoroughly clean using by power wash and allow to dry. Treat blisters by star cutting and removing any underlying water. Allow to dry and re-adhere. Badly degraded areas should be made good prior to coating.

Single ply

The Single Ply should be prepared in accordance with the Specification provided for the individual project.

Bituminous coatings

Remove loose, degraded, tacky or mobile coatings. Apply the Caltech System directly.

Metals

Steelwork is ideally prepared to Sa2½ (Swedish Standard SIS 05: 5900 = 2nd quality BS4232 = S.S.P.C. grade SP10) OR as indicated by the blasting specification which may be of a higher standard. Where blasting to Sa2½ (Swedish Standard SIS 05: 5900 = 2nd quality BS4232 = S.S.P.C. grade SP10) is not permitted alternative blast media or clean metal preparation by pin hammer, etc. is acceptable. Less effective methods of preparation that leave corrosion in-situ may reduce expected life term.

Non-ferrous metals are prepared as follows. Remove any deposits of dust and oxidation and abrade to bright metal. Wire brushing can be used for soft metal such as lead. The surface must be clean and free from grease which, if present, must be removed with a proprietary solution. Wash with detergent, rinse and dry.

Timber substrates

Timber and timber-based panel roof decks require a complete layer of Caltech Preparation Layer prior to the application of the chosen system. The substrate should then be treated as a felt roof. Small timber protrusions may be treated directly, provided that the timber is of exterior quality, e.g. marine plywood, (see Substrate Priming for further information).

Paints/Coatings

Remove loose or degraded coatings returning to a firm, feathered firm edge. Remaining coatings can only be overcoated if soundly adhered. Ensure the surface is clean and free from grease.

Existing Caltech Systems

Clean the membrane using a water jet at approximately 14N/mm² (2000 p.s.i) using detergent and rinse thoroughly. Thoroughly clean by power wash and allow to dry.

Note: For the Waiting Time/Overcoating please refer to the technical datasheet of the appropriate cleaner. Other substrates must be tested for their compatibility. If in doubt, apply a test area first.

Substrate Priming

Substrate	Primer
Cementitious Substrates	Caltech Concrete Primer
Brick and Stone	Not required
Slate, tiles etc	Not required
Asphalt	Not required, subject to surface assessment tests
Bituminous Felt	Not required
Single Ply	An adhesion and compatibility test should be carried out by Alumasc.
Bituminous Coatings	Not required
Metals	Caltech Metal Primer
Timber Substrates	Timber based roof decks require a layer of Caltech Preparation Layer. Consult Alumasc Technical for specific advice.
Paints	Subject to adhesion tests - Metal Primer for alkyd aluminium based solar reflective coatings

Notes:

Volatile Asphalt, bitumen felt, or bitumen coatings may require a coat of Metal Primer to act as barrier. Consult Alumasc Technical for advice.

Other substrates must be tested for their compatibility. If in doubt, apply a test area first.

Application Conditions / Limitations

Air Temperature +2°C min. / +40°C max.

Substrate Temperature +2°C min. / +60°C max.

Substrate Moisture Content Wood moisture equivalent (wme) (max): < 28%
Please note: Reference should also be made to the appropriate primer technical datasheet.

Relative Air Humidity 20% min. / 85% max.

Dew Point Beware of condensation. Surface temperature during application and cure must be a minimum of 3°C above dew point.

Application Instructions

Mixing Stir if separated. NB – Mechanical mixing with a drill and paddle may lower viscosity.

Application Method Prior to the application of Caltech Alpha embedment coat the substrate must be prepared and the priming coat must have cured tack-free. For the waiting time/overcoating please refer to the technical datasheet of the appropriate primer.

Apply first coat of Caltech Alpha embedment coat and roll in the G-Mat reinforcement whilst wet. Ensure there are no bubbles or creases and that the G-Mat overlaps by a minimum of 50mm. Prior to the application of a second and third coat of Caltech Alpha the indicated waiting time in the table below should be achieved.

Please note, always begin with details prior to waterproofing the horizontal surface. Please refer to the table on the previous page for coverage rates.

Application Tools For best results apply Caltech Alpha by brush (for details and penetrations) or roller. Rollers should be disposable medium simulated sheepskin.

Cleaning of Tools Clean all tools and application equipment with proprietary cleaning solvent immediately after use. Hardened and/or cured material can only be removed mechanically.

Pot Life Caltech Alpha is designed for fast drying. High temperatures combined with high air humidity will increase the drying process. Thus, material in opened containers should be applied immediately. In opened containers, the material will form a film within 1 hour.

Curing Details

Applied Product ready for use

Temperature	Relative humidity	Rain resistant	Overcoating Time	Full cure
+5°C	50%	1 hour	overnight	24 hours
+10°C	50%	1 hour	8-10 hours	18-24 hours
+20°C	50%	1 hour	4-6 hours	12-18 hours

Note: Times are approximate and will be affected by changing ambient conditions particularly temperature and relative humidity.

**Be aware that heavy rain or rain showers can physically mark or damage the still liquid coating*

Application at heavier than recommended thicknesses may result in a prolonged soft feel to the coating. This will eventually cure.

Notes on Application / Limitations

Do not apply Caltech Alpha on substrates with rising moisture. Caltech Alpha is not Intended for permanent immersion under water.

Material will dry at the surface in around 30 minutes depending on temperature. Always maintain a wet edge and finish surface as work proceeds. Going back to re-work areas that are partially dried may disrupt the surface.

All colours are interchangeable. However, darker colours e.g. Dark Grey are best suited for embedment of the G-Mat. Lighter colours used as final coat will reduce solar heat gain into the roof build up.

On substrates likely to exhibit outgassing, apply during falling ambient and substrate temperature. In combinations of damp surfaces and/or during rising temperatures "pin holing" may occur.

Substrate preparation is crucial to ensure durability. Please follow the instructions in the technical datasheet of the corresponding Primer and pre-treatment.

Applications of Caltech Alpha in confined spaces must be undertaken in accordance with safety datasheet recommendations.

Do not apply close to the air intake vents of running air conditioning units until either switched off or isolated as vapour may be drawn into the building.

Caltech Alpha is not recommended for frequent traffic. If daily pedestrian traffic is unavoidable, it must be covered with appropriate protection/surfacing.

Always use Caltech Preparation Layer between Alumasc insulation and Caltech Alpha.

Areas with high movement, irregular substrates, or timber-based roof decks require a layer Caltech Preparation Layer.

Do not apply cementitious products (e.g. tile mortar) directly onto Caltech Alpha.

Do not use grit salt and/or other de-icing agents between coats of Caltech Alpha during installation as this may interfere with the cure and inter-coat adhesion of the product.

The application of the system must be approached as one operation. Always plan for reasonable progress of each coat. Work only so far in advance that the existing surface can be overcoated as the next operation. Finish the coating system completely before progressing to the next area. The ideal time between coats is within 48 hours.

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Value Base	All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.
Eu Regulation 2004/42/CE VOC Decopaint Directive	According to the EU Directive 2004/42/CE, the maximum allowed content of the VOC (product category 11A / i type sb) is 600/500g/l (limits 2007/2010) for the ready to use product. The maximum content of Caltech Alpha is <500g/l for the ready to use product
Health and Safety Information	For information and advice on the safe handling, storage and disposal of chemical products, please refer to the most recent Safety Data Sheet.

LEGAL NOTES

The information, and the recommendations relating to the application and end-use of Caltech products, are given in good faith based on Alumasc's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Alumasc's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Alumasc reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.