Product Datasheet
Caltech Alpha

Sheet No: PD572FR
Issued: July 2021

INTRODUCTION

The world's first hybrid polyurethane liquid applied moisture triggered roof waterproofing membrane, Caltech Alpha is made from polymers that have been stripped of residual monomers, which are a health hazard, making Caltech Alpha one of the safest products in application and use.

Caltech Alpha moisture triggered technology utilises atmospheric and substrate moisture to cross-link discrete polymers in the liquid phase into a fully cross-linked polymeric sheet membrane.

USES

Caltech Alpha is used as the UV stable topcoat and first/embedment coat in Caltech Alpha ystems. Caltech Alpha is used in the Caltech Alpha 10, 15, 20 & 25 systems, and can be used in both insulated and uninsulated systems. Ideal for refurbishment and new work.

CHARACTERISTICS / ADVANTAGES

Does not carry the R42 May cause sensitisation by inhalation safety phrase or the Globally Harmonised System (GHS) safety phrases H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled or H335 May cause respiratory irritation

One component, modified hybrid moisture triggered polyurethane, stripped of free residual monomer

UV stable throughout the whole membrane.

Reduced odour.

Cold applied seamless liquid applied

membrane. BBA certified No. 14/5169.

Highest fire ratings for finished systems: EXT. F.AA and

BROOF(t4). No mixing required.

Easy and quick to apply, fully reinforced coating

system. Fast cure and immediate rain resistance.

Caltech Alpha allows rapid wetting out of the Caltech GFM reinforcing glass fibre matt.

Fully conforms to the existing roof shape and design to produce a made in place waterproofing membrane. Can be applied all year round with air and substrate temperatures of 2°C and rising.

Bonds to most commonly found flat roof substrates. Guaranteed systems up to 25 years.

PRODUCT DATA

APPEARANCE: Pigmented thixotropic liquid. Mid Grey (RAL 7037), Light Grey (RAL 7004); RAL K5 Classic Range (Approx.)

PACKAGING: 15 Litre container

PACK WEIGHT: 23 Kilograms

STORAGE: Store at greater than 5°C and up to 22°C in original container.

SHELF LIFE: When stored unopened at average temperature of 20-25°C, shelf life is 6 - 9 months. Higher temperatures will reduce the shelf life.

TECHNICAL DATA

CHEMICAL BASE:	One component modified hybrid moisture triggered polyurethane.
SOLIDS CONTENT:	Ca. 87%
SPECIFIC GRAVITY:	1.49
SERVICE TEMPERATURE:	-20°C to +80°C (intermittent)
CHEMICAL RESISTANCE:	Resistant to a range of dilute acids, alkalis and salt solutions. This covers acid rain, airborne pollutants and general industrial atmospheres. NOTE: Low molecular weight alcohols will attack the product, as will strong acids. Surface staining may be seen with contact by strong alkalis. Product will resist decaying vegetation and algal attack.

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TECHNICAL SYSTEM DATA		
TEST DESCRIPTION	**SYSTEM***	**RESULT**
Dry film thickness	Caltech Alpha 10 Caltech Alpha 15 Caltech Alpha 20 Caltech Alpha 25	Approx. 1.2mm Approx. 1.4mm Approx. 1.7mm Approx. 2.0mm
Accelerated Weathering; 30,000 hours	Caltech Alpha 10	Medium chalking, no cracking or surface defects
QUV + water spray		Lighter in colour
Water vapour resistance	Caltech Alpha 10 Caltech Alpha 15 Caltech Alpha 20 Caltech Alpha 25	24 MNs/g 28 MNs/g 34 MNs/g 40 MNs/g
BSEN778-3-Part2(1999)	Caltech Alpha 15 (unreinforced)	16.4g/m²/day
Tensile Strength at Break (BS903-A2/1995)	Caltech Alpha 10	15Nmm^{-2}
Tensile Load (BS903-A2/1995)	Caltech Alpha 10	360N
Elongation (BS903-A2/1995)	Caltech Alpha 10	20-25%**
Liquid Water Impermeability (DIN1048-PART1)	Caltech Alpha 15	No penetration (15m head of water)
Hydrolysis Resistance (70°C)	Caltech Alpha 15	No visible changes after >60 days
Adhesion Bond Strength (EN1542 (1999))	Caltech Alpha 15	All results >3Nmm^{-2} (after adhesive failure)
		Bitumen felt = cohesive failure in felt at >2Nmm^{-2}
Impact Resistance	Caltech Alpha 10	Steel – No defects in coating.
BRE Impact Resistance		Aluminium – No defects after indentation >0.85mm
* All systems reinforced unless otherwise stated. ** This will be the same for all systems.		

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APPLICATION DATA				
Typical System Coverage Rates†				
Caltech Alpha 10	Caltech Alpha first/embedment coat	1.0 L/m²		
	Caltech GFM	Fully reinforced		
	Caltech Alpha second/top coat	0.5 L/m²		
Caltech Alpha 15	Caltech Alpha first/embedment coat	1.0 L/m²		
	Caltech GFM	Fully reinforced		
	Caltech Alpha second/top coat	0.75 L/m²		
Caltech Alpha 20	Caltech Alpha first/embedment coat	1.0 L/m²		
	Caltech GFM	Fully reinforced		
	Caltech Alpha second/top coat	1.0 L/m²		
Caltech Alpha 25	Caltech Alpha first/embedment coat	1.0 L/m²		
	Caltech GFM	Fully reinforced		
	Caltech Alpha second/intermediate coat	0.625 L/m²		
	Caltech Alpha third/top coat	0.625 L/m²		
† Given coverage rates are for smooth surfaces. Coverage rates will depend on surface roughness and absorbency.				
Substrate Quality				
The substrate must be sound, dry, clean and free from all deleterious materials. Substrates must be properly prepared and primed as required. Primers must be used and allowed to cure as detailed in the relevant product's technical datasheet.				
Overcoat time:	Minimum 8 hours.			
	Maximum 14 days, after this period reactivation primer will be required. Avoid inter-coat contamination.			
Opened drums:	Skin formation will occur once the drum has been opened. This can happen overnight or during a working day if the lid is left off, but will not occur during normal use.			
Substrate moisture:	Maximum of 28% WME (Wood Moisture Equivalent) or 5% moisture content of concrete. For moisture content greater than the above, primers will be required - see primer data.			
Air/substrate temperature:	Minimum air and substrate temperatures of 2°C and rising. Dew Point: Surface temperature must be at least 3°C above dew point to avoid condensation, which could increase moisture content above 28% WME / 5% concrete. Low temperatures experienced before full cure may cause the surface to matte-off and/or lighten.			
Overcoating				
Waiting time / Overcoating:	Temperature	Relative Humidity	Minimum	Maximum
	+5°C	50%	8 hours	After 14 days the surface must be cleaned and primed.
	+10°C	50%	6 hours	
	+20°C	50%	5 hours	
	+30°C	50%	4 hours	
	Note: Times are approximate and will be affected by changing ambient conditions, particularly temperature and relative humidity.			

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Curing					
	Temperature	Relative Humidity	Rain resistant	Touch dry	Full cure
Applied product ready for use:	+2°C	50%	Immediately	8 hours	≈24 hours
	+10°C	50%	Immediately	6 hours	<16 hours
	+20°C	50%	Immediately	5 hours	≈12 hours
	+30°C	50%	Immediately	4 hours	≈8 hours
	Note: Times are approximate and will be affected by changing ambient conditions, particularly temperature and relative humidity.				

APPLICATION INSTRUCTIONS	
Mixing:	No mixing required
Application tools:	Apply using high density medium pile solvent resistant roller. Brushes or small specialised rollers can be used for small areas or detailing.
Application method:	Install the first/embedment coat to the details before proceeding with main roof areas. Apply the first/embedment coat to the prepared substrate surface at the required rate for the surface roughness and absorbency. Whilst wet, reinforce by inserting the Caltech Glass Fibre Mat. Roller the surface until the mat is completely embedded, ensuring that all overlaps in the mat are a minimum of 50mm. The mat must be completely saturated with no pinholes or tented mat. Flatten any "wicks" or protruding fibres by rollering back into place with a loaded roller. Allow the first coat to dry in accordance with the waiting/overcoating times indicated above before applying the subsequent second coat.

APPLICATION/LIMITATIONS

Avoid inter-coat contamination; application of the system should be approached as one operation.
Where outgassing is likely for a particular substrate, Caltech Alpha should be applied during falling ambient and substrate temperature. Applying during rising temperatures may lead to 'pin-holing'. The use of suitable primers can significantly reduce the occurrence of outgassing.

When applying Caltech Alpha in a confined space, follow recommendations as stated in the Safety Data Sheet.

Ensure air conditioning units are switched off or isolated before applying Caltech Alpha close to air intake vents, otherwise vapour may be drawn into the building.

Minor colour differences may occur between batches; where aesthetics are important, ensure that the Caltech Alpha used for the top coat is from the same batch. Batch numbers are printed on the label.

Always use a carrier membrane between insulation boards and the Caltech Alpha system.

Timber based roof decks, irregular substrates and areas with high movement require a separation layer. (e.g. a carrier membrane.)

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

Grit, salt and/or other de-icing agents must not be used between layers of Caltech Alpha, as this may adversely affect the cure and inter-coat adhesion.

Health & Safety
Safety Data Sheets are available upon request and can also be downloaded directly from www.alumascroofing.com.

Technical Support
Technical advice is available from Alumasc Technical Services at:

Telephone: +44 (0)1744 648400

Email: technical@alumascroofing.com

The company pursues a policy of constant product development and information contained in this publication is therefore subject to change without notice. The customer is responsible for ensuring that each product is fit for its intended purpose and that the conditions for use are suitable. All quoted data is nominal and subject to production tolerances.