

Eolis HC

INSULATION
FOR ROOFS



ROOF INSTALLATION GUIDELINES



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STRUCTURAL
TIMBER ASSOCIATION
Member

ACTIS

GENERAL INSTALLATION GUIDELINES



GENERAL INFORMATION

Eolis HC is a reflective insulation product with built-in vapour control function. It is generally installed on the inside face of thermal elements (e.g. roofs, walls).

Eolis HC is installed with the reinforced (grid pattern) copper-coloured film facing inwards. The product should be installed in a continuous layer to guarantee contiguous insulation, airtightness and prevent any water vapour diffusion through the structure.

Eolis HC is laid over the inside of timber structure and fixed using corrosion-resistant staples, in the case of installation on a metal frame, double-sided tape is recommended.

Joints should be sealed using the integral lap or sealed with **ACTIS** tape which is recommended for the product. Where necessary, noggins are suggested as support to the joints in order to ensure a secure fixing point.

Eolis HC can be combined with other **ACTIS** products or with traditional insulation products. It can be in direct contact with building components but the thermal efficiency will be improved with air gaps associated with the product.

It is good practise to install an independent and continuous underlay on the cold side of construction build-ups.

Eolis HC is available in 1.5m (+0.1 self-adhesive lap) x 8m rolls, which cover an area of 12.00m².

1 roll of **ACTIS** tape will cover the installation of approximately 3x Eolis HC rolls.



SCAN TO DISCOVER
ACTIS REFLECTIVE
INSULATION
PRODUCTS AND
HANDY
INSTALLATION
VIDEOS.

TOOLS / ACCESSORIES

Cutter, Stapler, Tape.



PRECAUTIONS

Eolis HC must not be in contact with a chimney, fire or any source of ignition. The product must be isolated from a chimney with a fire resistant material or a safety distance of min. 200mm shall be maintained.

The product is not intended to provide an internal finish and should be lined with a suitable building board.

The installation of **Eolis HC** must not be continued over the junctions of compartment elements (e.g. walls or floors). **Eolis HC** is a non-load bearing product. It will resist normal loads associated with installation and use, although cannot be walked on.

Fire safety precautions and limitations of use apply to **ACTIS** products. Please see chapter 'Additional & Safety' information.

STEP BY STEP INSTALLATION

Eolis HC

1



Remove the packaging e.g. by using an **ACTIS** cutter. Use **Eolis HC** with the reinforced (grid pattern) copper-coloured film facing the inside (warm side) of the building.

2



Install **Eolis HC** across the face of timbers fixing in a continuous layer. Maintain insulation thickness by making sure that the product is not pulled too taut and that the insulation fills the space required to accommodate product thickness. Staple to timbers every 250mm, using min. 14mm galvanised staples.

3



Eolis HC can easily be cut using an **ACTIS** cutter or a sharp knife. Align a timber batten where the product is fixed onto rafters and cut along pressing the timber batten firmly onto the product. Alternatively an electrical circular shear tool can be used.



If the product is required to be cut lengthwise, it is recommended that this is carried out whilst the product is still in its packaging using an insulation saw.

4**5****6**

Butt-join **Eolis HC** with the next layer of the product. Peel back the paper from the built-in self-adhesive tape and bring the entire overlap in contact with the lower layer sealing securely. Vertical joints are to be sealed with **ACTIS** tape which is recommended for the product.

All perimeter edges, including around windows and doors should be stapled every 50mm and secured with tape and batten.

Prepare for plasterboard by fixing horizontal or vertical battens (size in accordance with specification e.g. 25mm, 38mm, 50mm battens) nailing or screwing through **Eolis HC** to the timber structure. Where joints between plasterboard sheets are unsupported, timber noggins should be installed.

SPECIFIC DETAILS

Penetration through the product

If penetration of the product is necessary, this should not deteriorate the insulation and all joints must be sealed with ACTIS tape to achieve good airtightness. Airtight grommets can be used as an alternative. Penetration of product by services should be kept to a minimum.



Pipes and Ducting

Make a cross-shaped cut through the product with a sharp knife, matching the diameter of the pipe and put the pipe through the product. Stick the airtight grommet to the product. Alternatively cut several strips of ACTIS tape and stick around the pipe overlapping each piece by approximately 1cm. If required, stick further pieces of tape on top of the first layer of tape, covering the joins.

Electric Wiring

Create a hole through the product using a sharp tool (e.g. screwdriver or knife) and thread the wire through the hole. Stick the airtight grommet to the product. Alternatively cut two pieces of tape approximately 10cm in length. Stick the tape either side of the protruding wire, attaching the wire to the product.

Note: ACTIS products must not be in contact with heat sources above 80°C. If heat sources above 80°C are present, a safety distance of min. 200mm shall be maintained.

For specific services e.g. waterpipes, gas pipes, electrical wiring, flues follow guidance BR 262 thermal insulation - avoiding risks.

Puncture damages

Where damage has occurred, apply a good-sized patch of insulation over the hole ensuring all edges of the patch are completely sealed with tape. Alternatively, for small puncture damage of less than 25mm, ACTIS tape may be used.

Retrofit projects

Where required the installation must be undertaken on the basis of a retrofit design in accordance with PAS2035 using a process complying with PAS 2030 including Annexes.

Check that sufficient space is available to allow for product thickness and any ventilation requirements that might be needed and extend timbers if required.

Make sure that allowance is given for drape of underlays (usually 10mm) and for a sufficient ventilated air cavity between the product and underlay where required.



SPECIFIC DETAILS

System solution for existing warm pitched roofs with HR underlay

Warm pitched roofs with existing sarking felt (HR underlay) usually require 25mm ventilation on the warm side of the sarking felt, to avoid the risk of interstitial condensation, in accordance with BS5250. When ventilation of the air space is reduced and deviating from BS5250, then a condensation risk analysis in accordance with EN 15026 is required as stated within BBA certificate 22/6462.

Such an assessment carried out by Fraunhofer Institute for Building Physics IBP, using parameters deemed worst case scenario for UK applications, shows that there is no risk of condensation within a system using **Eolis HC** combined with PIR insulated plasterboard.

This assessment report conducted by the Fraunhofer Institute for Building Physics IBP is available upon request.

Installation with Sarking Felt (HR underlay)

Rafter size (mm)	Centres (mm)	Eolis HC (mm)	Batten size (mm)	PIR Insulated plasterboard (mm)	U-value (W/m ² K)	Air cavity ventilation (below underlay)	No interstitial condensation	Reference
50 x 100	400	135	38 x 50	≥ 67.5	0.16	n/a	✓*	PF383
50 x 100	400	135	50 x 50	≥ 67.5	0.16	< 25	✓*	PF384
50 x 125	400	135	25 x 50	≥ 67.5	0.16	< 25	✓*	PF385
50 x 125	400	135	38 x 50	≥ 67.5	0.16	> 25	✓	PF386
50 x 150	400	135	25 x 50	≥ 67.5	0.16	> 25	✓	PF387

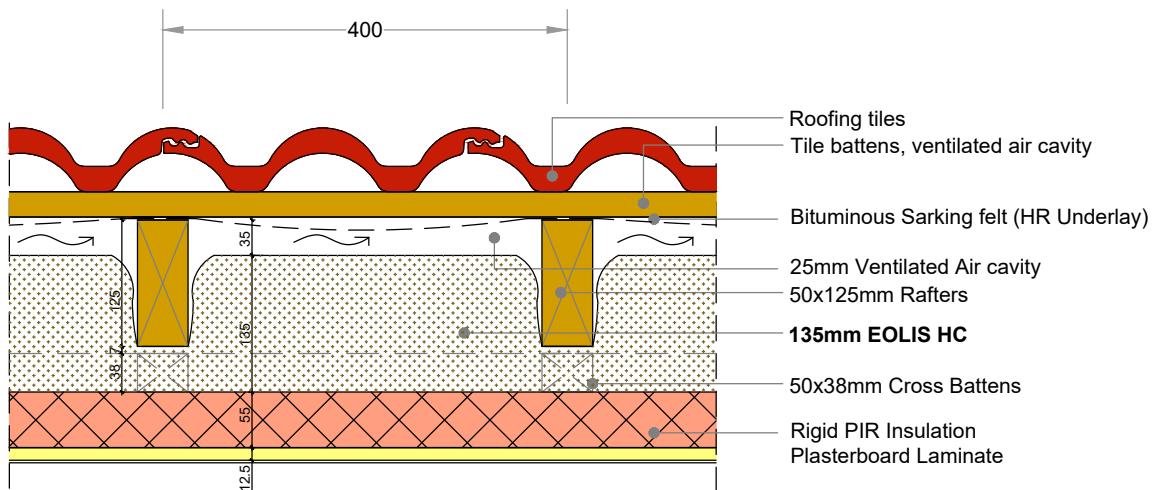
50 x 100	600	135	38 x 50	≥ 67.5	0.16	n/a	✓*	PF388
50 x 100	600	135	50 x 50	≥ 67.5	0.16	< 25	✓*	PF389
50 x 125	600	135	25 x 50	≥ 67.5	0.16	< 25	✓*	PF390
50 x 125	600	135	38 x 50	≥ 67.5	0.16	> 25	✓	PF391
50 x 150	600	135	25 x 50	≥ 67.5	0.16	> 25	✓	PF392

Notes

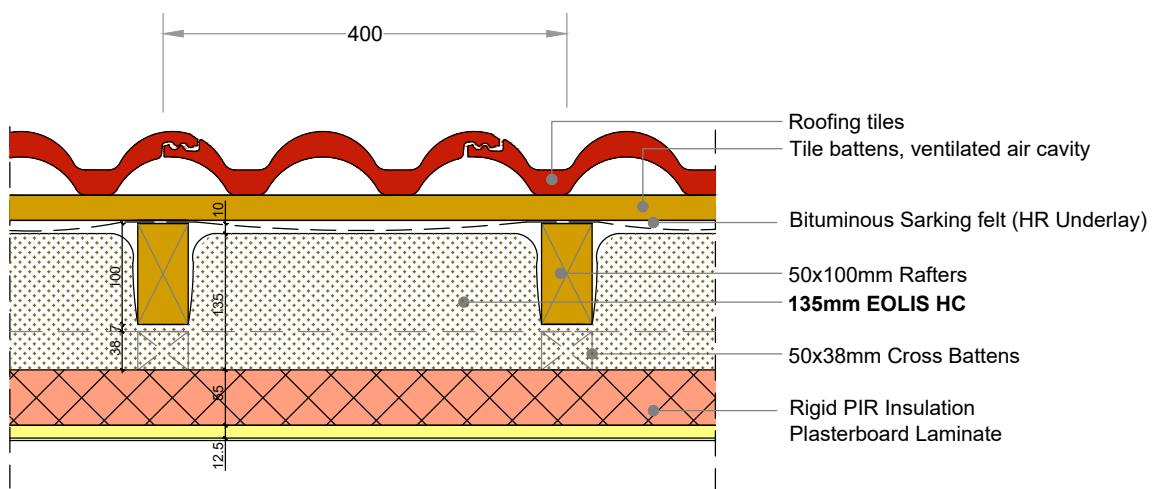
*Interstitial condensation risk analysis in accordance with EN 15026 using WUFI software based on scenario deemed worst case for UK, sarking felt with $sd < 90m$ i.e. $Z < 450MNs/g$. Composite of foil faced rigid PIR insulation core (with thermal conductivity $\lambda < 0.022 W/mK$, faced on either side with foil $sd > 22.2m$ i.e. $Z > 111MNs/g$) and 12.5mm plasterboard. PIR Insulated plasterboard support battens installed @600mm centres perpendicular to rafters.

SPECIFIC DETAILS

PF386 Pitched roof @400c U-value = 0.16 W/m²K



PF383 Pitched roof @400c U-value = 0.16 W/m²K



Where ventilation of the air space is reduced, please request condensation risk analysis in accordance with EN 15026 from ACTIS Technical Department.

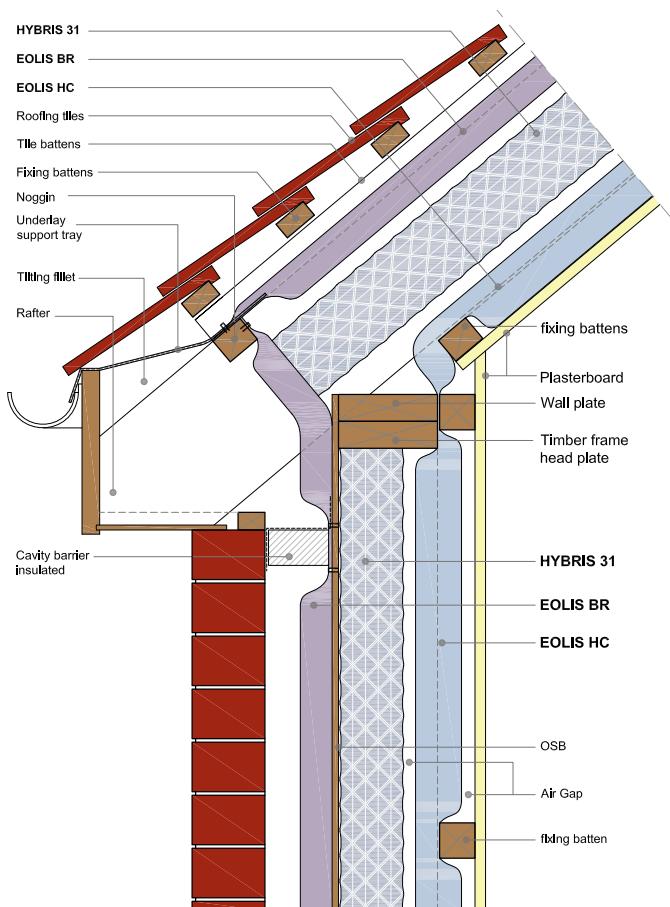
FOR FURTHER ADVICE
FROM ACTIS CALL THE
TECHNICAL DEPARTMENT
ON 01249 462 888 OR EMAIL
SOLUTIONS@
INSULATION-ACTIS.COM

FURTHER TECHNICAL GUIDANCE

Continuity of insulation and airtightness

Building Regulations state that "Insulation should be reasonably continuous over the whole building envelope. Reduction in thermal performance can occur where the air barrier and the insulation layer are not continuous and the cavity between them is subject to air movement."

Attention to detail is therefore paramount from technical design through to construction stage, to address any shortcomings that may lead to the building not performing as predicted. Please see below typical timber frame wall build-up with **Eolis HC, Hybris 31 and Eolis BR/Eolis BR BOOST**, further construction details are available at www.insulation-actis.com



Thermal bridging

A thermal bridge is where a penetration through the insulation layer occurs, and heat is transferred through a non-insulating material, reducing thermal performance and potentially contributing to condensation and extra energy consumption. Thermal bridging can usually be reduced by ensuring:

- tightly fitting insulation layers without gaps
- perfectly sealed joints between adjacent insulation layers
- all exposed edges of multifoil insulation are folded under to stop air ingress
- continuous insulation and airtightness at construction junctions

Linear thermal bridging

Heat loss at construction details (i.e. where two thermal elements meet) is defined as linear thermal bridging and quantified by the Ψ -value (psi-value).

Thermal modelling assessment of junctions have shown that using thermal blankets, such as **Eolis HC and Eolis BR/Eolis BR BOOST** helps to counteract linear thermal bridging.

Please contact Actis Technical Department for standard construction details and related psi-values.

Ducting & service voids

Reflective insulation products are preferably installed with air cavities/service battens. This creates an integrated service void, undisturbed by follow up trades, which favours the continuity of the insulation product within the building envelope and quality on-site. If penetration of product is necessary, this should not deteriorate the insulation and joints must be sealed with **ACTIS** tape to achieve good airtightness.

The installation requires careful detailing around doors and windows to achieve a satisfactory surface for finishing. The construction must be designed to accommodate the thickness of the dry lining, particularly at reveals, heads and sills.

Note: Continuity of insulation must not compromise compartmentation (fire safety). Please also see chapter 'Additional & Safety' information.

Condensation risk management

Condensation is most likely to occur when warm moisture laden air is able to pass from the warm to the cold side of the insulation and is then prevented from dissipating to the external ambience. Please consider the following to prevent condensation risk and also refer to Building Regulations Approved Document C and BS 5250:

Ventilation

Excess of water vapour in the internal ambient air increases the risk of condensation. This can be avoided by adequately ventilating internal spaces using natural or mechanical ventilation. Furthermore, insulated building zones are to be maintained at constant internal ambient temperature of at least 12°C.

Vapour control layer

Vapour control layers on the warm side of construction build-ups are recommended because they limit the flow of warm air and water vapour through the structure to the cold side and provide airtightness.

It is recommended to install a continuous vapour control layer with a significantly greater vapour resistance than any products installed beyond it. Joints must be well sealed with appropriate tape to guarantee airtightness.

Breather membrane

Construction build-ups are to be covered on the external with a membrane to prevent water ingress into the structure and to prevent the effect of wind loading onto wall/roof covering. Please follow good practice guidance as laid out in BS 5534 – Code of practice for slating and tiling.

High vapour resistant membranes can be used, but usually require ventilation on their warm side, unless a condensation risk analysis in line with EN 15026 proves otherwise. Such ventilation is not necessary when breather membranes are used as they allow for water vapour to disperse. In order to avoid a build-up of moisture in the batten space between breather membrane and roof covering, it is good practice to ensure adequate air movement through this void (e.g. under-tile ventilation). This will allow moist air to dissipate into the atmosphere.

Assessment of condensation risk

Construction build-ups should be assessed in accordance with BS 5250 – Code of practice for control of condensation in buildings. In order to show that solutions are free from condensation risk. A condensation risk analysis in accordance with EN 13788 (Glaser method) is recommended for most build-ups.

Actis offer a free calculation service for U-value and Condensation Risk Analysis. Please contact the Technical Department.

ADDITIONAL & SAFETY INFORMATION

IMPORTANT:

Fire safety precautions and limitations of use apply to ACTIS products. In addition to the specific recommendations given by ACTIS below, your ACTIS products should be installed and used in compliance with (1) good building practice, (2) the most recent editions of any applicable regulations or relevant guidance (see, for example, the fire safety provisions contained in Approved Document B, which provides practical guidance on the fire safety requirements of the Building Regulations in England and Wales; or refer to the relevant provisions in Scotland and Northern Ireland, as amended from time to time) and (3) any British or European Standards relating to the installation and use of insulation/membrane products, particularly in relation to safety precautions.

Fire precautions & limitations of use

ACTIS reflective insulation products **EOLIS HC**, **EOLIS BR** & **EOLIS BR BOOST** and **HYBRIS** have been classified Euroclass F.

ACTIS insulation products must not be exposed to a direct heat source above 80°C, sparks, naked flame or any other ignition source. **ACTIS** products will melt and shrink away from a heat source, but will burn in the presence of a naked flame.

Keep blow torches well away from **ACTIS** products, even when using a flame guard or other protective device, and make sure that hot debris and sparks do not make contact with the products. Those carrying out hot work should have appropriate fire extinguishers with them and know how to use them.

ACTIS products must not be used in the construction of an external wall (including balconies) of buildings (a) with a storey 18m or more in height (b) that include a 'residential' purpose with a storey 11m or more in height (i.e. this is typically above 4 storey buildings)

Note: In Scotland, the maximum building height at which **ACTIS** products can be used is 11 metres.

Please follow fire safety provisions contained within guidance documents mentioned above.

Fireproof finishes & internal fire spread

As recommended by current regulatory guidance, **ACTIS** insulation products should always be covered with a fireproof lining board such as plasterboard as soon as possible.

Building Regulations specify minimum periods of fire resistance to be achieved by building elements e.g. 30 minutes fire resistance (REI 30). The periods of fire resistance vary according to the use and the size of buildings. Please follow fire safety provisions contained within guidance documents mentioned above.

For further information about fire resistance of systems using **ACTIS** products please contact **ACTIS** Technical Department and request to the detailed fire safety information document TSD11.

Compartmentation

The spread of fire within a building can be restricted by sub-dividing it into segments separated from one another by walls and / or floors and / or roofs of fire resisting construction.

To ensure that compartment walls achieve the requisite levels of fire resistance, the insulation should not be carried over junctions with such walls.

Fire stops are used to ensure that fire resistance requirements are met – they are typically based on non-combustible materials.

Cavity barriers are used within air cavities of cladding systems to prevent the spread of smoke and fire. Cavity barriers are usually required at eaves, around openings and at elements between compartments.

Please follow fire safety provisions contained within guidance documents mentioned above including positioning of cavity barriers.

Fire mitigation measures might be required during the construction phase of a project to prevent fire spread onto neighbouring properties. Follow STA (Structural Timber Association) Site Safe Guidance and consult a fire engineer to assess fire mitigation measures when necessary, depending on site requirements. Limitations to cladding materials apply depending on separating distances to boundaries. Please follow fire safety provisions contained within guidance documents mentioned above.

Chimneys, flues, heat exchangers and other sources of heat

Never use **ACTIS** insulation products to insulate a chimney flue, heat exchanger or any other heat source above 80°C. Use a Euroclass A1 non-combustible insulation in compliance with British or European Standards. **ACTIS** advise leaving a minimum gap of 200 mm between the insulation and chimneys, flues, heat exchangers and all other sources of heat above 80°C.

Electrical installations

Follow requirements for electrical installations as set out in Building Regulations, NHBC and other relevant standards. De-rating of electrical cables must be considered in areas where the product restricts the flow of air. The use of suitable conduit or trunking is recommended.

The use of down-lighters, recess lighting or any other source of localised heat (transformers, etc.) in direct contact with **ACTIS** insulation products is prohibited. However, if the use of recess lighting in conjunction with **ACTIS** insulation products is desired, specific precautions must be taken and **ACTIS** recommend the provision of a 'safety cavity' by creating a space between the insulation and the heat source in line with NHBC guidance.

This "safety cavity" guarantees the installation of e.g. down-lighters without the risk of contact with the insulation. The minimum height of this "safety cavity" depends on the safety distance recommended by the down-light manufacturer.

In all cases advice should be sought from the relevant Building Control officer for guidance on a case by case basis.

For further information please contact **ACTIS** Technical Department and request the detailed fire safety information document TSD11.

Safety

Security precautions against e.g. falling from height are necessary.

During installation extra care should be taken when working in wet conditions due to the increased risk of slipping.

ACTIS products are lightweight and non-loadbearing. They will resist normal loads associated with installation and use, although cannot be walked on. Check individual company policy regarding the distribution and type of PPE required e.g. Hi-Viz tops, hard hats, safety footwear, gloves etc.

Remember that **ACTIS** products are highly reflective. Where the products are being installed in bright or sunny weather conditions, appropriate eyewear should be worn (such as sunglasses conforming to the most stringent requirements of BS EN 172, as amended from time to time) and protect against sunburn.

All **ACTIS** products have safety information data sheets (COSHH) available on request. They are free from asbestos or irritant fibres and are CFC and HCFC free.

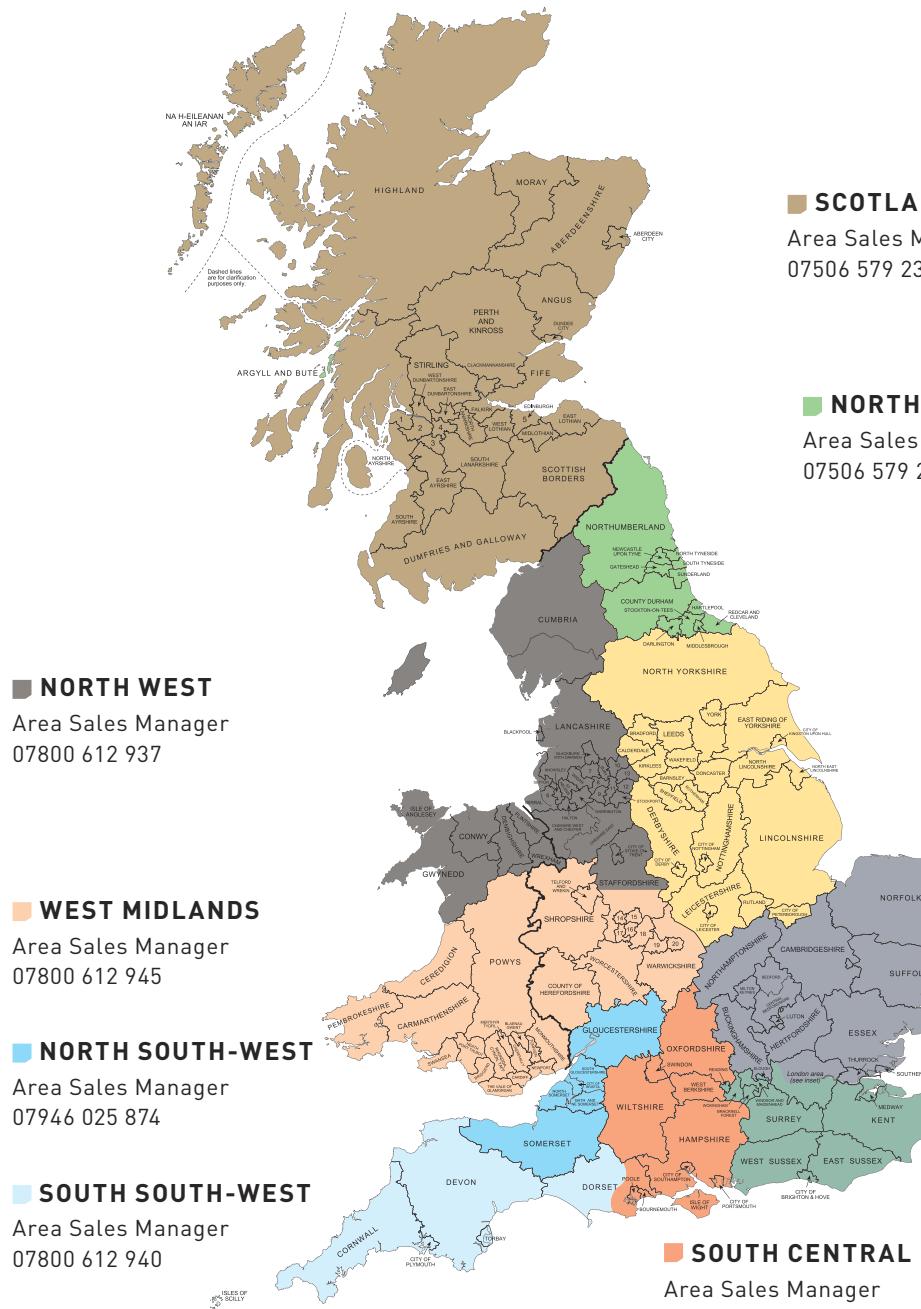
Storage

Products should be stored in clean, dry conditions, not exposed to UV-radiation and sunlight and in such a way that dirt and dust cannot adhere to the product surfaces.

Indoor storage of product is recommended. The products must be protected from being dropped or crushed by objects.

They must not be exposed to a direct heat source above 80°C, sparks, naked flame or other ignition sources and must be stored away from flammable material such as solvents. Avoid all contact between **ACTIS** products and caustic products.

YOUR CONTACTS FOR MORE INFORMATION



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