

IKO Ultra Self-Adhesive Membranes - Guidance

IKO Ultra S-A, H-A and T-F Membranes

This document is designed to raise awareness and provide guidance on the recommended installation and application methods of the IKO Ultra S-A, H-A and T-F membranes.

Further to previous correspondence from IKO regarding the recommended installation and application techniques of the IKO Ultra S-A, H-A and T-F membranes, specifically;

- IKO Ultra S-A Vapour Control Layer
- IKO Ultra H-A Underlay
- IKO Ultra H-A DETAILING Underlay
- IKO Ultra T-F Underlay
- IKO Ultra T-F DETAILING Underlay
- IKO Ultra Stick Cap Sheet
- IKO Ultra Life SA Detailing Cap sheet
- IKO Polimar Preparation Layer



We would like to provide further clarity and guidance on our recommended installation techniques of the IKO Ultra S-A, H-A and T-F membranes; and where used in conjunction with IKO torch applied cap sheets. This is highlighted in the photographic summary within this communication.

Whilst we appreciate that every installing operative has their own methodology and variable levels of application techniques of the installation of a roofing membrane, we feel the need to highlight the main areas of concern regarding the incorrect methods of application and installation techniques being used with some installing operatives that are not deemed acceptable to IKO.

We're not trying to tell contractors how they must install IKO Ultra S-A, H-A and T-F membranes, but to highlight the incorrect use and application that could result in a potential defect arising from poor installation techniques

being adopted. Be mindful that it is the IKO Approved Contractor, who is ultimately responsible for their installation of IKO materials throughout the term of the guarantee. To minimise exposure to both IKO and the IKO Approved Contractor, this guidance document highlights some of the points to all installing operatives, and contractors who employ them.

IKO Ultra S-A, H-A and T-F membranes have been designed to be applied to minimise the risks that are associated with hot works such as gas torch applied application near to, or adjacent to combustible materials. The use of IKO Ultra S-A, H-A and T-F membranes is designed to reduce such risk during the installation to components such as timber decks or upstands, where torching directly to, isn't recommended.

As I'm sure you are all aware of the risks associated with any roof waterproofing installation, whether it's drying the roof, or applying the waterproofing components themselves, designing out the risk must be undertaken to all roof installations, and as part of that the correct material selection is part of that process.

The term self-adhesive can be misinterpreted by some. The term self-adhesive relates to the bond and adhesion of the membrane to a substrate where it has been installed, in conjunction with specially formulated bonding primers that react with the self-adhesive coating of the membrane to create the adhesion to the substrate. It doesn't however, relate to the effective waterproofing sealing of any side or end laps that will always require heat activation to facilitate a waterproof seal. The term self-adhesive in the market place can be, and has been misrepresented and perhaps further clarity should be sought from other membrane suppliers. The factor that due to the variable inclement weather of the UK, which can be very seasonal and regional, the term self-adhesive sealing of bitumen laps does not exist within the UK at present.

As an IKO Approved Contractor most of you should all be aware of the NFRC Safe2Torch guidance document, of which most of you would have pledged to support through your company to which I'm sure all would agree that for the safe working practices this is a major initiative for all roofing contractors and manufacturers alike to drive through safe working design and installations for the benefit of waterproofing works.

We've seen the demise of the traditional pour and roll bitumen membrane application through the introduction of torch applied membranes, and now adhered and hot air welded membranes becoming more predominant within the UK. It is therefore paramount that all IKO Approved Contractors ensure their installers are competent in the use, and installation of the products they are installing.

IKO can offer a range of product inductions to ensure the installing operatives become familiar with the installation techniques of components used within all IKO roofing systems. This isn't solely for installers of the IKO products, but also available for contracts managers, estimators and managers alike; who feel the need to have a better understanding of the use, and installation techniques associated with these products so all projects can be effectively managed.

IKO have been a forerunner in the development of S-A, H-A and T-F membranes As well as other cold applied systems and as part of those developments we must consider changing techniques required to how such products are used and installed. As part of this, the development of the IKO Flat Roofing induction programmes, these offer the installer, as well as managers who run projects the opportunity to broaden their awareness of how products not only should be installed, but all other aspects, such as storage, weather conditions, drying off roofs, application techniques as well as product limitations and application considerations. All of the IKO built up roofing courses have been independently approved by the NFRC. For further information on the product inductions programmes IKO offer, please email your enquiry to guarantees.uk@iko.com

Included within this communication are some typical examples of bad practice being seen during the installation process of these membranes? It also provides some recommended guidance and considerations for the installing contractor that may assist the installation process.

Storage and weather conditions

As with all waterproofing components whether they are membranes, primers, adhesives and insulation, their storage is of paramount importance to make the installation process easier.

Key considerations will be storage of the IKO Ultra S-A, H-A and T-F membranes that will make it easier to install where the weather conditions would otherwise restrict or limit the installation process.

All IKO Ultra S-A, H-A and T-F membranes will be affected by poor storage where stored:

Cold weather applications and storage

Do not store IKO Ultra S-A, H-A and T-F membranes on a roof where the temperature will drop to 5°C or lower. This will inhibit the installation process, and may result in shrinkage and ruckling of the membrane once the temperature has risen.

Sun traps and hot weather storage

Do not store IKO Ultra S-A, H-A and T-F membranes in sun traps, as this will activate the tack within the coating and therefore restrict the easy of removing the release film and become prohibitive in hot air welding the laps to form an effective seal. Do not use in temperatures above 26°C. The product should be stored at room temperature prior to its installation. Consideration should be undertaken on product temperature, air temperature and substrate temperature as all may influence the ease of use of the membrane.

Drying a roof where naked flame is prohibited

Drying a roof off is probably the most debated topic for all roofing disciplines, as the most effective way has always been seen as being using a gas torch. However as a result of the safe2Torch guidelines and more specifiers specifying flame free applications the use of a gas torch is becoming more prohibitive.

The Etorch manufactured by Imperial Thermal Engineering allow a method of drying up a roof without the need for naked flames. It also allows a method of installing IKO Ultra S-A, H-A and T-F membranes at lower temperatures.



The powerful electric torch is designed to perform like a traditional gas torch. It can deliver heated dry air at speed with temperatures up to 650°C.

It's cheaper to run than a gas torch, no requirement to store gas bottles on site, no naked flames involved.

However it does require a 3 phase power supply. It is clean and environmentally friendly to use. A gas torch will typically use 75Kw of energy and the Etorch only 22Kw; there are no noxious emissions such as CO₂ and CO. Consideration of the contractor would be the benefit of potential reduced insurance cover where the use of gas may have been restrictive.

The new Etorch design includes a full carbon fibre body, carbon fibre blade, rust and kink free umbilical cord, 3x 240v plug sockets and our new patented innovative vein axial fan. With no backpack. Reduced the weight significantly to 4.5kg. Comfort, flexibility and agility are key features.



Designed, engineered and built in the UK, the Etorch MKII is an electrically powered, computer controlled, high speed torch. Using a 415v, 3-phase 32amp supply with a simple 'plug and play' logic system, the equipment heats the air quickly and efficiently to the desired temperature. The control software maintains the pre-determined temperature throughout the operation duration using mirroring thermocouple censoring. The control systems ensure the equipment operates at the selected temperature and with no naked flame the risk of fire is reduced to a minimum. The burn risk to operatives is also reduced significantly with the equipment shrouded to provide cool surfaces. Works on or adjacent to existing buildings are also made safer as the torch emits hot air and not a naked flame. The hot air is focused onto the work face using a unique set of adjustable nozzles which can rotate around the central axis of the torch body allowing the correct position to be achieved with minimal movement by the operative.

The Etorch is a complete unit comprising a torch, nozzle attachments, control panel and cable, all mounted on an easy to move trolley. Safety is a paramount factor. Current sensing detects any grounding issues which lock out the machine in milliseconds protecting the operative from the risk of shock.



Etorch mark 11

The additional benefit of the Etorch is the suitability to improve bond and adhesion where applying IKO Ultra S-A, H-A and T-F membranes where the weather conditions would normally inhibit and restrict installation of IKO Ultra S-A, H-A and T-F membranes at lower temperatures.

Running the Etorch over the surface of the IKO Ultra S-A, H-A and T-F membranes will allow heat to be transferred through the membrane to assist with adhesion at lower temperatures.



It will also assist in the bonding of the self-adhesive cap sheet in cold weather, or drying the roof membrane.



IKO Ultra S-A, H-A and T-F Membranes and release film

IKO Ultra S-A, H-A and T-F membranes all come with a sacrificial release film that must be removed during the installation process and disposed of. The removal of the release film should be by hand and the release film bagged for disposal to prevent blowing across the roof.

Under no circumstances should the release film be attempted to be burnt off using a gas torch, this will result in lack of adhesion or non-effective sealing of the selvedge lap.

We would also recommend that the membrane is rolled into position and allowed to settle, prior to its application.



Over torching and scraping of the laps

It should also be highlighted that any installation process does not require the membrane laps to be overheated and scraped. This compromises the integrity of the membrane, and is at greater risk of failing.

There are no standards that recommend this practice, and it goes back to the days of where pour and roll applications were common place. This application technique is down to bad practice and one of insecurity in the installation requirements. Installer competency should be assessed, and evaluated to determine if they are actually competent to install either IKO Ultra S-A, H-A and T-F membranes or torch applied membranes.

The image below illustrates over torching an Air and Vapour Control Layer (AVCL) where the end lap has been overheated and scraped, resulting in exposure of the foil within the product. This is not recommended and a sacrificial layer should be applied over the affected areas.

IKO Ultra S-A, H-A and T-F Membranes and Bonding Primers

All IKO Ultra S-A, H-A and T-F membranes are required to be used in conjunction with either:

- IKOpro Sprayfast MPP
- IKOpro Bonding Agent

These specially formulated primers react with the self-adhesive coating of the IKO Ultra S-A, H-A and T-F membrane to create a strong bond. IKOpro S-A bitumen primer could also be used, but doesn't provide a bond as good as those recommended above, cure and grab time will also be slower.

All detailing work is to be formed using a minimum 2 layers including an underlay and Cap sheet. They are to be installed and fully bonded in accordance with IKO recommendations, design details and BS8217.

All detailing works must be primed prior to the installation of any IKO Ultra S-A, H-A and T-F membrane.

Torching of any IKO Ultra S-A, H-A and T-F membrane through details is not recommended, and will potentially compromise the waterproofing integrity of the membrane.

Unprimed substrates will debond.





Scraping lap joints

Scraping of the laps is merely a habit associated with the installation of pour and roll membranes. Again as stated above, the body of the membrane can be compromised should overheating occur. There is also an increased risk that overheating of the IKO Ultra H-A Underlay over ALU insulation, may compromise the insulation facing by delamination of the ALU facing.



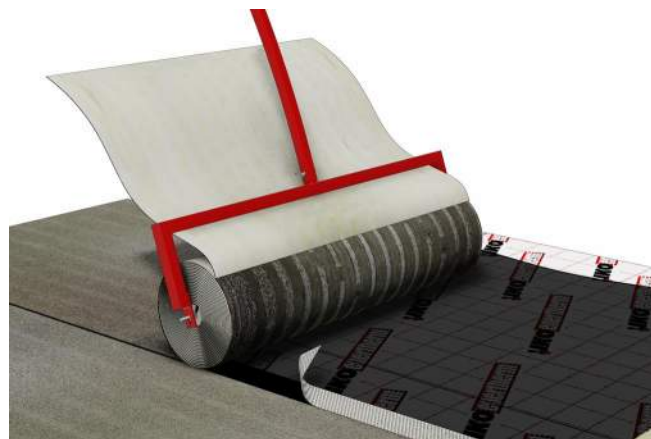
Blackening the underlay in such a manner greatly increases the risk of delamination and blistering occurring between the insulation facing and should be avoided.

Would you install the cap sheet in such a manner?

Roll bar/tube to install IKO Ultra S-A, H-A and T-F Membranes

To assist with providing a uniform bond and adhesion to a substrate, it is recommended the use of a weighted roll bar to help with the installation of the IKO Ultra S-A, H-A and T-F membranes, which assist and reduce the risk of non-adhesion being encountered during the application of the SA membrane.

Application, the membrane can be rolled to remove all entrapped air, and to provide a bond to the substrate.



IKO Ultra H-A underlay with weighted roll bar.



Pressure rollers

The use of a pressure roller will allow for an even bond to the substrate.

General practice is an operative using his hands to push out the roll, this can lead to air pockets being formed between the substrate and the IKO Ultra S-A, H-A and T-F Membrane, and then when the torch applied cap sheet is applied the risk of blistering can be increased.

The installer should ensure the application of all membranes is applied without air pockets being formed between each layer.



NOTE: As it has been stated previously within this correspondence, the bond and adhesion of the IKO

Ultra S-A, H-A and T-F membranes are not fully achieved until the torch applied cap sheet has been installed. So consideration on sequencing of the works is highly critical.

For example should the IKO H-A Underlay be installed, which is generally over the IKO enertherm ALU insulation, and then is left overnight. The full contact and adhesion hasn't been achieved, and as such is vulnerable to wind uplift on the roof and weathering. This should be avoided by sequencing the works so as not to leave large areas not fully bonded to the roof which may result in blistering.

In areas where restrictions apply, it would be recommended that such areas where the IKO H-A Underlay is being applied onto the IKO enertherm insulation and left over night, then the IKO enertherm ALU board facing should be primed with the IKOpro Sprayfast MPP or IKOpro Bonding Agent.

Sealing of Laps in IKO Ultra S-A, H-A and T-F membranes

If the torch applied cap sheet is applied over the IKO Ultra H-A Underlay during the same working day, then there isn't a requirement to seal side laps in the IKO Ultra H-A Underlay.

All laps of the IKO Ultra S-A, H-A and T-F Underlay are left exposed overnight; these will require sealing by hot air welding the lap joints to create a waterproof seal.

This may be achieved by hot air welding techniques using either hand hot air welders from BAKS, Sievert or Leister. With hand welding this will require typically a pre weld and a final weld to create the minimum 80mm lap joint required.

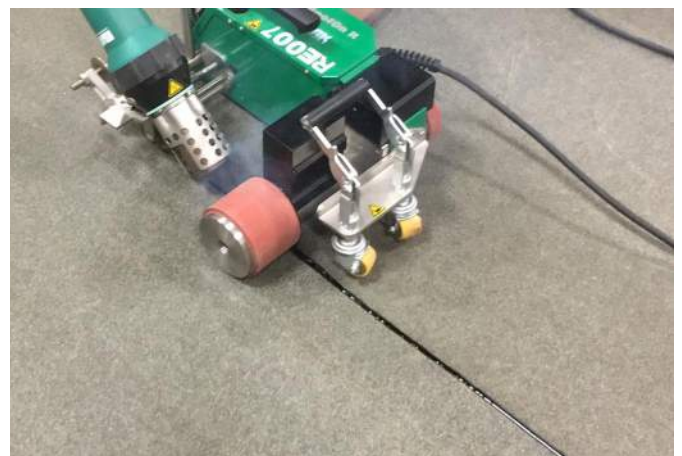
It is paramount this is achieved and a visible bead of bitumen exuded from all side and end laps.



For automatic welding machines for IKO S-A membranes, IKO only approve the **BACS bitumen automatic welding machines** as shown below to which will create an homogeneous **80mm lap weld**. Other manufacturer's auto welders tend to snarl up the membrane due to the size and as such are not recommended for IKO Ultra S-A, H-A and T-F membranes.

The **BAKS RE007** automatic welder for bitumen membranes as shown below will work on all IKO Ultra S-A, H-A and T-F membranes.

Approx. run speeds for the BAKS bitumen auto welder for IKO S-A membranes is approx. 3m/min.



The BAKS Bitumen automatic welders are available via Lancastria Roofing Supplies.

For IKO Mach Two and IKO UPXL T-F cap sheets The Laron auto flame automatic welders or varimat V with 100mm nozzle should be used to ensure the minimum 80mm weld can be achieved.

Installation of Torch applied cap sheets

Whilst these membranes are not self-adhesive, they do form an integral product component with many IKO hybrid specifications. They must be installed in accordance with Safe2torch guidelines, and all installation must be undertaken by an operative who is

competent with the installation of this type of membrane and the safe use of a gas torch.

When installing a torch on cap sheet, it is important that the installing operatives are familiar with the techniques and installation methods required.

The risks associated with naked flame are well known, and it is critical that the levels of competency of the installer are one who is competent to install torch applied membranes.

The image demonstrates poor techniques, poor control of the membrane application, and torching only the lap joint. The potential of creating air pockets will result in the compromise in the long term performance of the installation.



Roll bars and kick rollers

The use of a roll bar or kick bar is recommended when installing all roofing membranes.

For the IKO ULtra H-A membranes a kick bar should be used and for torch applied membranes a roll bar.

These allow a more uniform controlled method of installation that will assist with removing trapped air, and provide sufficient pressure to provide an even flow of bitumen across the membrane.



Torch applied Cap sheet

It is a requirement of IKO T-O membranes to create a full bond to the underlay. The bitumen flow should be consistent across the roll, being controlled to provide a consistent visible bead of bitumen exuded from all side and end laps.

Where a lack of creating a full bond or consistent flow of bitumen across the torch applied cap sheet during the installation process, will result in air pockets being formed between the underlay and cap sheet. These will propegate and be visible during warmer weather conditions as the air trapped between the layers will expand, and form blisters within the roof finish.

It should be noted that it may not always be possible to identify this poor application upon initial installation, however will become evident on warmer days.



Torch applied Cap sheet

All IKO torch applied cap sheets are to be fully bonded with sealed laps and a visible bead of bitumen exuded from all side and end laps.

No air pockets should be formed during the installation process.

Use roll bar to provide even pressure throughout the width of the roll to assist with facilitating a consistent bead of bitumen from the lap joints.

There is no need or requirement where applying the torch applied cap sheet, to blacken the IKO Ultra H-A membranes.

There seems a habit with some operatives to remove the granule facing of the IKO Ultra H-A underlay by over

torching during the installation of the cap sheet. This is not required. A consistent flow of bitumen created during the installation of the torch on cap sheet will provide sufficient bond and adhesion to the IKO Ultra H-A Underlay.



Summary

The flat roofing industry has and is evolving to be more safety aware, the NFRC Safe2Torch guidance, the competency levels of the installers, and the manufacturers products performance and installation requirements to an array of different types of waterproofing membranes.

An IKO Approved Contractor, we would consider them to be the best in terms of their standards of workmanship. However, where subcontracted labour is appointed to install a roofing system, this at times can go astray. It is highly critical the selection of the installer is evaluated by their employer to ensure firstly, the installer fully understands not just the basic understanding of how to undertake and install a built up roofing system, but the application and installation requirement for each component used within the built up roofing system. Would you employ an operative who cannot provide this? How do you evaluate your subcontracted labour?

However, when it comes to IKO monitoring IKO projects that are not in compliance with the installation guidelines defined within the IKO specification document and product inductions; we obviously reserve the right to raise all concerns and issues regarding the incorrect installation to both their installers and their contracts managers for their actions. Again, as IKO do not demonstrate bad practice as part of their product inductions.

Hopefully the points highlighted within this communication have provided yourselves with some questions to ponder that should minimise risk of fires, as well as educating the installer of what should be considered as good practice for the installation of any

built up roofing system. IKO are a leading manufacture who wishes to drive safe installations with long term performance through the Approved Contractors for the benefit of the whole roofing and waterproofing industry, we will continue to strive to undertake this through continuous development of its products and their methods of installations.

Disclaimer

Whilst every precaution is taken to ensure that the information given in this literature is correct and up to date it is not intended to form part of any contract or give rise to any collateral liability, which is hereby specifically excluded.

IKO reserve the right to amend and/or withdraw this document without notice.

Users of published guidance for the installation of IKO materials should therefore verify with the company whether any changes in our specification, application details, withdrawals or otherwise have taken place since this literature was issued.