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Every effort has been taken in the preparation of this leaflet to ensure the accuracy of representations contained herein. Recommendations as to the use of materials, construction details and methods of installation are given in good faith and relate to typical situations. However, every site has different characteristics and reliance should not be placed upon the forgoing recommendations. Advice can be given as to specific applications of the products upon request.

Help and Advice

To assist both specifiers and contractors, Icopal offers FREE technical support and advice on all aspects of waterproofing.

For further information call our advice line on **0161 865 4444** or visit **www.icopal.co.uk**

SafeSeal®

Self-adhesive
waterproofing for
new and existing
flat roofs



Dealer/Distributor



- Safe and economical
- Clean, quick and easy to install

SafeSeal® Self-adhesive Roofing System

An economical, clean, safe and simple approach to flat roof waterproofing.



SafeSeal® is a high performance waterproofing system designed to provide a professional finish on new or refurbished flat roofs and because it's self-adhesive there's no need for any bitumen boilers or roofing torches making it totally safe and cleaner to use.

SafeSeal® is quick and easy to lay in two self-adhesive layers for maximum waterproofing security. The system comprises a self-adhesive underlay and a self-adhesive capsheet with self-adhesive side laps and a decorative and UV resistant slate granule surface.

SafeSeal® Surface Conditioner is used as a surface preparation prior to laying the membranes and **SafeSeal®** Sealant provides a waterproof seal at roll ends and details. A range of **SafeSeal®** pre-formed aluminium trims to simplify detailing is also available.

SafeSeal® is ideal for a wide range of flat roof applications including all types of domestic building extensions, garages, dormers and porches.

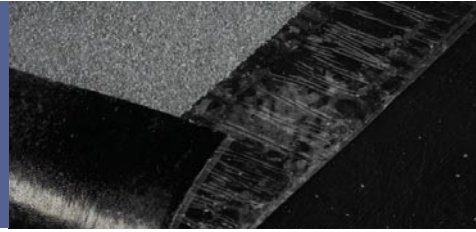
SafeSeal® is tough and durable with a minimum life expectancy of 20 years. The system achieves an FAC fire rating when tested to BS476:part 3: 2004.

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SafeSeal® at a Glance

SafeSeal® is quick and easy to lay in two self-adhesive layers, with self-adhesive side laps for maximum waterproofing security.



The SafeSeal® System comprises:

SafeSeal® Capsheet

Used as the top layer, applied directly onto the SafeSeal® Underlay.

Self-adhesive SBS bitumen underside and side overlap, decorative slate granules on top side providing UV protection.



Product Availability

Roll Width/Length/Nominal Weight	Product Code
1m x 6m/20kg	3005073

SafeSeal® Underlay

Used as the base sheet, applied onto the surface conditioned roof deck.

Self-adhesive SBS bitumen underside, polyethylene film on top side.



Product Availability

Roll Width/Length/Nominal Weight	Product Code
1m x 8m/18.5kg	3005074

SafeSeal® Surface Conditioner

Specially formulated to penetrate and seal porous surfaces whilst providing a base on which to lay the SafeSeal® Underlay. Apply with a brush or roller. Dries to a brown/black finish.



Product Availability

Container Size	Product Code
4 litre tin	3005192

As a guide, a 4 litre tin will cover approximately 13 – 40 sq.m of roof area, dependent upon porosity of surface.

SafeSeal® Sealant

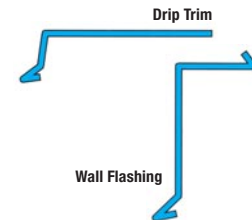
Specially formulated sealant that gives a secure and watertight finish to the end laps of the capsheet when the overlap is made onto the slate granule surface.

Apply with a standard cartridge applicator gun.

Product Availability

Container Size	Product Code
0.3 litre cartridge gun tube	3005190

As a guide, one sealant tube should seal three end laps or 3 linear metres of detail.



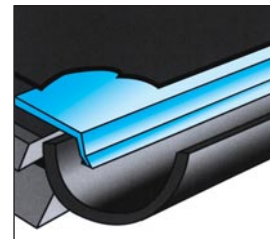
SafeSeal® Trims

A range of pre-formed aluminium trims designed to simplify detailing.

Product Availability

Product	Length	Product Code
Drip Trim	1 metre	3005227
Wall Trim	1 metre	3005228

As a guide, with allowance for joints, each trim covers 980 linear mm.



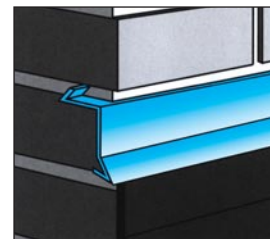
Drip Trim

Xtra-Seal Lead Sealant

Ready to use one part sealant that cures to form a tough flexible watertight seal.

Used for – pointing trims into brickwork.

Apply with a standard cartridge applicator gun.



Wall Flashing

Product Availability

Container Size	Product Code
0.3 litre cartridge gun tube	3003487

As a guide, one 0.3 litre tube of sealant will seal 10 linear metres at a bead width of 6mm

All coverages are provided as an indication only and are dependant upon substrate.

Before you start

A few basic guidelines to help make sure laying your SafeSeal® roof will be as easy as possible.



Estimate materials required

First calculate the roof area by multiplying the length and width in metres. If the roof area is a complex or irregular shape break the areas down into smaller measurable areas which can be added together to determine the overall area. Remember that more complex roof shapes will in general require more material. Make allowances for penetrations, curves, steps in the roof level and abutments.

The following steps will assist you in determining your material requirements:

1. Calculate the total roof area (5m x 4m) = 20 sq.m

2. Add 15% for laps and wastage = 3 sq.m

3. Measure roof perimeter (5+5+4+4) x 0.3m = 5.5 sq.m

- Total = 28.5 sq.m**

4. Calculate Underlay – divide total above by 8 = 3.56 rolls – require **4 rolls**

5. Calculate Capsheet – divide total above by 6 = 4.75 rolls – require **5 rolls**

6. Surface Conditioner – divide total above by 13 = 2.19 tins – require **3 tins**

7. Sealant – measure roof perimeter (5+5+4+4) = 18 linear metres
 Allow for end laps in Capsheet (4 x 1m) = 4 linear metres
 = 22 linear metres ÷ 3 require **8 tubes**

8. SafeSeal® Drip Trim – 4 divide by 0.98 = 4.08 – require **5 lengths**

9. SafeSeal® Wall Flashing – 4 divide by 0.98 = 4.08 – require **5 lengths**

10. Xtra-Seal Lead Sealant – measure length of wall flashing = 4m
 – divide by 10 = **1 tube***

Remember to allow more for intricate shapes and complex details.
 *Coverage is dependant upon size of sealant bead (i.e: 6mm bead = 20 liner metres).



Additional materials required:

1. 50 x 50mm triangular timber fillet (5+5+4) = 14 linear metres

2. 75mm Hardboard strip for reinforced welted drip (5+5) = 10 linear metres

3. 50 x 25mm treated drip batten (5+5) = 10 linear metres

4. 19mm extra large head galvanised clout nails

All coverages are provided as an indication only and are dependant upon substrate.

Tools required

As well as your SafeSeal® materials you'll need a tool kit comprising:

- Brush or roller (to apply SafeSeal® Surface Conditioner)
- Cartridge gun (to apply SafeSeal® Sealant and Xtra-Seal Lead Sealant)
- Tape measure
- Soft headed broom and cloths
- Marker
- Hammer
- Sharp knife
- Wood saw
- Straight edge
- Small pressure roller

The use of personal safety equipment – especially gloves, boots and protective goggles or glasses – is recommended.

Consider the weather

Before beginning to lay your roof always try to ensure that the weather will be dry and warm all day.

Temperature awareness

Self-adhesive membranes by their nature are more effective at temperatures over 10°C. It is recommended that the material be stored in a warm environment for 24 hours prior to use. If it is necessary to work on the roof in cold weather, then the gentle warming of the adhesive side of the membranes with an electric hot air paint stripper or similar (**not a naked flame**) will help the adhesive properties. If temperatures become extreme it is advisable to postpone the work until more favourable temperatures occur. SafeSeal® Surface Conditioner is a water based product and must be stored above 5°C at all times to avoid freezing, causing the product to become damaged.

Health & Safety considerations

Construction or replacement of a flat roof means that you will be working at height and as such personal safety and prevention against a fall must be considered a priority. Roof refurbishment can be complex, is always high risk and demands careful planning. For detailed information relating to Safety in Roofwork consult HSE publication HSG33.

Always consider the following:

Safe access to the roof – Ladders should be of the correct type and height, in good condition and securely fixed to prevent movement or slippage.

Edge protection – Working at height requires prevention against falls by providing adequate roof edge protection or independent scaffolding.

Weather conditions – Consideration must be given to working in adverse or windy conditions. A sudden gust of wind can lead to loss of balance, particular care should be taken if handling large sheets of plywood or roofing materials.

Material handling – Well planned material handling has a significant impact on roof safety and care should be taken when lifting and moving materials to avoid injury.

Getting materials to the roof – Reduce the amount of travelling to the ground to collect materials by using lifting appliances such as a gin wheel or scaffold hoist.

Falling materials – Precaution should be taken to avoid materials or tools falling from the roof causing injury to people below.

Cables and pipes – Always check and identify pipes and cables within the roof structure before work commences.

Overhead cables – check that any cables passing overhead will not interfere with operations, taking particular care when moving metal ladders etc.

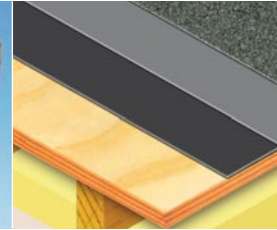
Personal protection – Always wear the right protective equipment ie: boots, gloves, goggles, hard hat.

Protection of work – Adequately protect work in progress.

Material storage – Store materials in a dry and warm location. Self-adhesive materials require a surface temperature of above 10°C to achieve an effective bond. We recommend that material is stored in a warm location and taken to the roof as required. SafeSeal Surface Conditioner must be stored above 5°C to avoid freezing.

Definitions & Design Considerations

Remember, Building Regulations require that new construction and re-roofing projects over a certain size require Building Regulations approval and inspection by building control.

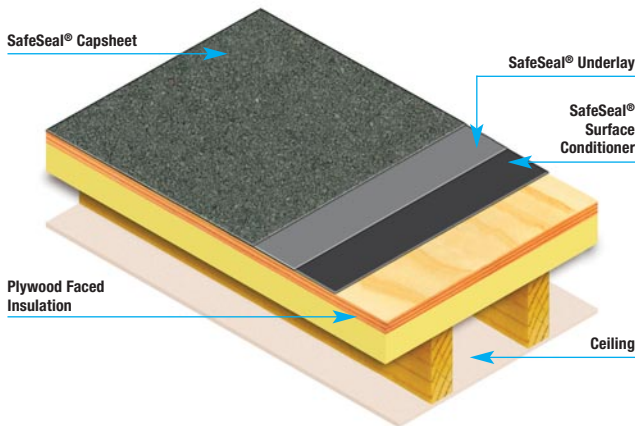


Roof design options

Warm Roof Construction

For this type of construction the thermal insulation is placed above the roof deck and avoids the need for ventilation.

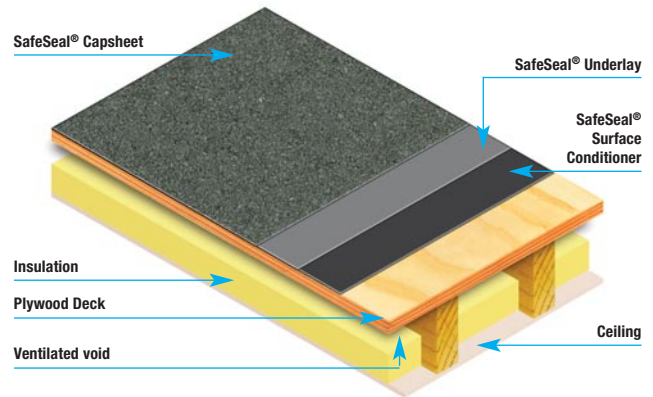
Note – The SafeSeal® self-adhesive system requires a plywood surface to receive the membranes therefore a plywood/polyurethane/polyisocyanurate composite insulation should be used with the plywood uppermost in this type of construction.



Cold Roof Construction

Within this type of construction the Waterproofing Membranes are laid directly onto the roof deck and the thermal insulation is placed at ceiling level between the roof joists.

Note – This type of construction requires a continuous opening along two opposing roof edges and a ventilation space above the insulation with an unrestricted path for ventilation. For a roof up to 5m span a continuous vent opening of 25mm and a space above the insulation of 50mm is required.



Roof design considerations

Roof Falls – The roof should be constructed with finished roof falls of minimum 1: 80 (12.5mm rise in 1m length of roof) draining towards the roof outlets or eaves gutter.

Roof Drainage – Ensure sufficient and correctly sized drainage outlets complete with leaf guards are provided for the roof area. It is advisable to use external gutters wherever possible.

Insulation – Habitable rooms will require levels of insulation to comply with current building regulations whilst garages can be un-insulated.

Roof Access – Ensure the structure is adequately designed for the intended use ie. balconies or regular access by window cleaners.

Wind Action – Ensure the roof structure is adequately restrained against wind damage. Particular attention is required for high level roofs or exposed & coastal locations.

Condensation – Adequate steps should be taken within the roof design to ensure protection of the structure from the build up and harmful effects of condensation (refer to the types of roof construction on pages 10 and 11).

Fire – When incorporated in a suitable roofing specification the fire properties of a roof constructed using SafeSeal® membranes will achieve an FAC fire rating when tested under BS476:pt 3: 2004.

Compatibility – SafeSeal® membranes are compatible with most materials normally associated with roofing structures. However solvent based products and timber preservatives containing solvents may soften bitumen and should be avoided, special care should be taken when choosing treated timber for use in the roof structure.

Deck materials

SafeSeal® roof membranes are suitable for application over the following types of roof deck:

- **Plywood** Class 2 or 3 to B.S. EN 314:part2:1993 and B.S. 5268:part2:1996, pre-treated in accordance with B.S. 6566:part7:1985, minimum thickness 18mm.
- **Orientated Strand Board (OSB/3)** to B.S. 5669:part3:1992 grade F2 minimum thickness 18mm.
- **Close timber boards or tongue and grooved boards** should be covered with 6mm plywood securely mechanically fixed to the timber boarding with all fixing heads well driven to provide a flat smooth surface and avoid damage to the membranes overlay.
- **Screeded Woodwool Slabs**
- **Screeded concrete**

Note – All surfaces must be prepared with the application of SafeSeal® Surface Conditioner before application of the membrane.

Installing a SafeSeal® System

SafeSeal® is quick and easy to lay in two self adhesive layers, each with side laps for maximum waterproofing security.



Step 1: Preparation

On existing roofs the existing roof waterproofing must be removed and disposed of safely.

Check the roof deck for adequate fixing and flush board joints, ensure no steps or hollows in the roof deck.

Replace any damaged or rotten sections of roof deck.

Check roof falls are adequate and in the right direction.

Cut chases 25mm x 25mm in brickwork to receive flashings.

Install triangular timber angle fillets by nailing, screwing or the use of **SafeSeal® Sealant** at all intersections between horizontal and vertical surfaces and the check kerb details. This will aid a smooth transfer of the membrane between the horizontal and vertical.

At roof edges install a 50mm x 25mm timber batten to the fascia board to assist in the formation of a drip detail.

Brush the deck clear of any debris and dust and check to ensure that all nails have been properly driven to avoid nail heads perforating the membrane.



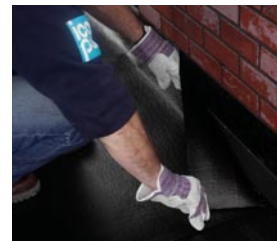
Step 2: Applying SafeSeal® Surface Conditioner

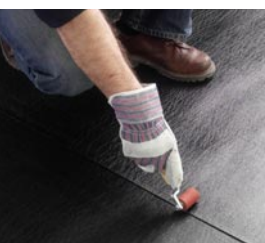
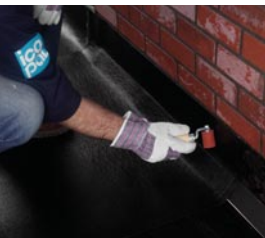
Once the roof has been checked and cleaned as above, apply **SafeSeal® Surface Conditioner** using either a brush or roller to all surfaces to be waterproofed including the top edges of the aluminium drip trim and wall flashing in accordance with the instructions and coverage rates detailed on the tin. Allow the surface conditioner to dry thoroughly.



Step 3: Applying SafeSeal® Underlay

1. Starting at the lowest point of the roof, roll out the **SafeSeal® Underlay** up the slope finishing the membrane with a 25mm overhang at the edge of the drip batten and at the level of termination on the wall and cut to length.
2. Set the **SafeSeal® Underlay** sheet to the required line.
3. Roll back half the **SafeSeal® Underlay** sheet and carefully cut through the release film, taking care not to cut the membrane.





4. Roll the **SafeSeal® Underlay** sheet out onto the roof; progressively removing the release film. Apply even pressure from the centre of the underlay to the outside edges to expel any air from below. A soft brush or cloth is useful for this purpose and helps in applying even pressure.

5. Roll back the remaining half of the **SafeSeal® Underlay** sheet and repeat step 4 above.

6. To apply subsequent sheets of **SafeSeal® Underlay** unroll the membrane as before ensuring an overlap onto the adjacent sheet of a minimum of 75mm and apply by repeating steps 3, 4 and 5 above. Continue this process across the roof until the whole area is covered. To ensure all side laps are secure roll the overlaps with a small roller such as a wallpaper edge roller.

7. If it is necessary to join rolls of **SafeSeal® Underlay** in length, the end overlap must be in line with the fall of the roof (i.e. the top end of the lower sheet must be below the lower end of the upper sheet) and the overlap must be at least 100mm. Ensure the end lap is secured by rolling the end lap with a small roller as for side laps.

8. At details, (such as upstands against check kerbs) start at the lowest part of the roof and work up the roof, cutting a strip of the **SafeSeal® Underlay** from

the end of the roll of sufficient length to run the membrane up the kerb to finish at the roof edge and run onto the roof membrane by a minimum of 100mm.

9. Position and align the cut strip of **SafeSeal® Underlay**, hold it in place on the roof area and fold back the top portion and remove the release film (see Step 3 on page 15). Press the cut strip of **SafeSeal® Underlay** into place. Repeat this with the lower section of the flashing and roll all edges.

10. Continue this process ensuring 75mm side laps to adjacent **SafeSeal® Underlay** membranes are well sealed.

Step 4: Applying SafeSeal® Capsheet

To drip flashings

The drip flashing at the low edge of the roof into the gutter must be prepared and fixed in advance of the application of the **SafeSeal® Capsheet**. To do this follow the steps below:

1. Cut a strip of the **SafeSeal® Capsheet** from the end of the roll long enough to wrap around the hardboard former and overlap onto the underlay by a minimum of 200mm.

2. Nail the pre-cut strip of **SafeSeal® Capsheet** onto the edge batten, including a 75mm deep hardboard former. Ensure the **SafeSeal® Capsheet** is nailed with the mineral surface onto

the batten to expose the mineral when folded around the former.

3. Cut out a 75mm strip from the edge of the first sheet of **SafeSeal®**

Capsheet to allow a smooth overlap of the next sheet. Repeat this process along the length of the roof edge.

4. Starting with the last fixed strip of **SafeSeal® Capsheet**, remove the release film and carefully fold the membrane back over the hardboard former, applying even pressure to expel air from under the membrane and press the overlap onto the roof, again applying pressure to expel air.

5. Repeat this procedure on all other drip flashings.

To the roof area

1. Again start at the lower part of the roof and roll out the **SafeSeal® Capsheet**, as with the underlay. It is important that the **SafeSeal® Capsheet** is laid with side and end laps offset from the laps in the underlay. This is achieved by offsetting the capsheet by at least 330mm from the underlay.

2. The **SafeSeal® Capsheet** should be finished approximately 25mm from the drip edge at the lower edge and at the top of the angle fillets. When rolling out the capsheet membrane ensure air is expelled from below the sheet by even pressure as with the underlay.

3. Edge drips over the kerb details are finished as for the drip into the gutter above.

4. The flashing to the wall detail must be finished with an overlap onto the roof of at least 200mm. The flashing is completed by applying a metal flashing dressed into a pre-cut channel/chase in the wall, wedged and pointed with Xtra-Seal Lead Sealant.

Note – The part of the metal flashing to be positioned into the wall should be painted on both sides with an even coat of SafeSeal® Surface Conditioner to prevent corrosion.

5. When making joints in the **SafeSeal® Capsheet** onto the mineral surface, these must be sealed using **SafeSeal® Sealant** (as directed on the tube) and rolling the lap with a small roller. Be careful not to extrude too much **SafeSeal® Sealant** and do not allow it to become spread over the finished roof area.

Making side laps in the capsheet

1. To apply subsequent sheets of **SafeSeal® Capsheet** unroll the membrane as before ensuring the subsequent sheet overlaps the previous sheet onto the bitumen selvedge.

At this point do not remove the release film from the selvedge.



2. Set the **SafeSeal® Capsheet** to the correct line ensuring the selvedge is completely covered for the length of the sheet.

3. Carefully roll back half the sheet, ensuring that the roll does not move off line, carefully cut through the release film on the roll making sure not to cut the membrane. Also cut through the release film on the self-adhesive selvedge again taking care not to cut the membrane.

4. Roll the **SafeSeal® Capsheet** onto the roof; progressively removing the release film from both the roll and the selvedge. Apply even pressure from the centre of the roll to the outside edges to expel any air from below.

5. Roll back the remaining half of the **SafeSeal® Capsheet** and repeat the process.

6. Repeat this process until all the **SafeSeal® Capsheet** is applied.



Step 5: Application of SafeSeal® Aluminium Drip Edge Trims

Safety note: Always wear gloves to avoid cutting hands on the edges of the trim.

1. The top surface of the fixing arm must be prepared with **SafeSeal®**

Surface Conditioner applied to within 25mm of the external edge of the trim; use masking tape to protect the front of the trim and create a straight edge

finish. The Surface Conditioner must be allowed to dry before fixing and application of the membranes.

2. Position the edge trim over the **SafeSeal® Underlay** with the trim pushed back against the edge of the roof.

3. Hold the trim in position and mechanically fix with either screws or clout nails in a double row staggered pattern at 100mm centres.

4. Adjoining trims are secured in the same way ensuring the trims are joined by lapping one trim into the other until the length of the roof edge is completed.

5. If the trim is to be taken around corners, the fixing arm must be cut with tin snips and the trim carefully bent to the required angle for either an internal or external corner.

Application of cap sheet at drip edge trim

1. When finishing the cap sheet at the drip edge trim, first run a bead of **SafeSeal® Sealant** along the trim approximately 5mm back from the line of the surface conditioner.

2. Roll the cap sheet onto the trim and sealant expelling all air from below the sheet. Finish by rolling the edge of the sheet with a small pressure roller squeezing a small bead of the sealant out at the edge, ensuring a waterproof seal.



Maintenance

Ideally all flat roofs should be inspected once every six months, in the Spring and Autumn.

These inspections only take a matter of minutes and involve a routine look at the roof condition. It is important to check the outlets, projections, gutters, rooflights and flashings. If any of the surface chippings have become displaced they should be swept back into position.

In Spring it is important to check that the gutters and outlets are not blocked by fallen leaves which may cause water to pond. This is also the time to look for frost damage to the pointing which may allow the roof structure to become damp.

Product Data

SafeSeal® products are manufactured under a closely monitored quality control system conforming to the requirements of ISO9001.

Product	SafeSeal® Underlay	SafeSeal® Capsheet
Roll Length	8m	6m
Roll Width	1m	1m
Roll Weight	18.5kg	20kg
Finish on Underside	Self-adhesive SBS Bitumen	Self-adhesive SBS Bitumen
Finish on Topside	Polyethylene Film	Slate Granules

Accessories	Container Size	Coverage
SafeSeal® Sealant	0.3 litre tube	Approximately 3 linear metres per tube
SafeSeal® Surface Conditioner	4 litre	13 – 40 sq.m depending on surface condition
Xtra-Seal Lead Sealant	0.3 litre tube	10.6m of 6mm bead

Trims	Drip Edge	Wall Flashing
Length	1m	1m

Compatibility

SafeSeal® membranes are compatible with most materials normally associated with roofing structures. However solvent based products and timber preservatives may soften bitumen and should be avoided. Special care should be taken when choosing treated timber for use in the roof structure.

Fire

When incorporated in a suitable roofing specification the fire properties of a roof constructed using SafeSeal® membranes will allow unrestricted use under current UK Building Regulations.

Storage

SafeSeal® membranes must be stored on end on a clean level surface under cover above 10°C but away from excessive heat. SafeSeal® Surface Conditioner must be stored above 5°C at all times.