

CERTIFICATE NO. 03/0192

Renolit Belgium N.V., Industrie Park De Bruwaan 9,
B-9700 Oudenaarde, Belgium.

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Alkorplan Roof Waterproof Membranes

Système d'étanchéité pour toitures Dachabdichtungen

The **Irish Agrément Board** is designated by Government to issue European Technical Approvals.

Irish Agrément Board Certificates establish proof that the certified products are '**proper materials**' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2006**.

The **Irish Agrément Board** operates in association with the **National Standards Authority of Ireland (NSAI)** as the National Member of UEAtc.



PRODUCT DESCRIPTION:

This Certificate relates to Alkorplan roofing systems for use as a mechanically fastened, ballasted or bonded waterproofing layer on pitched or flat roofs with limited access as well as on flat roofs such as terraces and planted roofs. This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2006.

USE:

This Certificate covers the use of Alkorplan Roof Waterproof Systems (35170, 35176, 35177, 35179) as a bonded, loose laid and ballasted or mechanically fixed waterproofing membrane on pitched roofs with limited access as well as on flat roofs such as terraces and planted roofs. These systems are intended for use on flat roofs with substrates in accordance with BS 8217:2005 *Code of practice for reinforced bitumen membranes for roofing*, and for the waterproofing of all normal roofing details such as parapets, outlets and roof lights.

MANUFACTURE AND MARKETING:

The membrane system is manufactured by:

Renolit Belgium N.V.,
Industrie Park De Bruwaan 9,
B-9700 Oudenaarde,
Belgium.

The product is marketed in Ireland by:

Laydex Ltd.,
Unit 3,
Allied Industrial Estate,
Kylmore Road,
Dublin 10.

Tel: 00353 1 642 6600
Fax: 00353 1 642 6601
Email: sales@laydex.ie

1.1 ASSESSMENT

In the opinion of the Irish Agrément Board (IAB), Alkorplan Roof Waterproof Membranes installed in Ireland by trained, licensed contractors in accordance with processing specifications issued by Renolit Belgium N.V. and used in accordance with this Certificate, can meet the requirements of the Building Regulations 1997 to 2006, as indicated in Section 1.2 of this Irish Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2006

REQUIREMENT:

Part D – Materials and Workmanship

D3 – Alkorplan Roof Waterproof Membranes, as certified in this Certificate, are manufactured from materials which are proper materials fit for their intended use (see Part 4 of this Certificate).

D1 – Alkorplan Roof Waterproof Membranes used in accordance with this Certificate, meet the requirements of the building regulations for workmanship.

Part B – Fire Safety

B4 – External Fire Spread

Alkorplan Roof Waterproof Membranes can meet the requirements for resistance to fire penetration and the distance of spread of flame for roofs, as indicated in Section 4.1 of this Certificate.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

Alkorplan Roof Waterproof Membranes can meet the requirements when installed as indicated in Section 2.6 of this Certificate.

2.1 PRODUCT DESCRIPTION

Alkorplan Roof Waterproof Membranes are manufactured from PVC polymer, plasticizers, stabilisers and pigments. Membranes are secured either by mechanical fixing, ballast or glue. Lap joints are made using solvent or by hot air welding. A range of suitable profiles can be fabricated from Alkorplan metal to deal with parapet, edge, upstands and gulley details as required.

2.2 PRODUCT RANGE

	Thickness (mm)	Roll Width (m)	Roll Length (m)	Weight (kg/m ²)	Colour
35170	1.5	1.05	20	1.95	Various
35176	1.2	1.05	25	1.53	Various
	1.5	1.60	20	1.85	
	1.5	2.10	20	1.85	
35177	1.2	2.05	20	1.57	Light Grey
	1.5	2.05	15	1.96	
35179	1.2	2.05	15	1.86	Various
	1.5	2.05	15	2.26	

Table 1: Product Range

- Alkorplan 35170 is a non-reinforced PVC membrane suitable for mechanical fixing.
- Alkorplan 35176 is a polyester reinforced PVC membrane suitable for mechanical fixing.
- Alkorplan 35177 is a glass fibre fleece reinforced PVC membrane suitable for loose laying and ballasting.
- Alkorplan 35179 is a PVC membrane backed with a polyester fleece suitable for bonding.

2.3 ANCILLARY ITEMS

- Alkorplan 81170 – Galvanised steel sheet laminated with PVC foil (2m x 1m).
- Alkorplan 81171 – Galvanised steel sheet laminated with PVC foil (3m x 1m).
- Alkorplus 81044 – Cleaner on ethyl acetate base.
- Alkorplan 81060 – Preformed internal corner in PVC membrane.
- Alkorplan 81061 – Preformed external corner in PVC membrane.
- Alkorplan 81062 – Preformed external corner for rooflights.
- Alkorplan 81038 – Seam sealing mastic (liquid PVC).
- Alkorplus 81025 – THF based welding fluid for cold welded seams.
- Alkorplus 81001 – 120 g/m² glass-fibre fleece for use as a separation layer.
- Alkorplus 81004 – 500 g/m² polyester fleece for use as a protection layer.

- Alkorplus 81005 – 300 g/m² polyester fleece for use as a protection layer.
- Alkorplus 81008 – 180 g/m² polyester fleece for use as a separation layer.
- Alkorplan 35171 – 1.5mm PVC membrane for detailing work in different colours.
- Alkorplus 81040 – Solvent based nitrile contact adhesive.
- Alkorplus 81068 – PU adhesive.
- Alkorplus 81012 – LDPE vapour check.
- Alkorplus 81057 – Double-sided seam tape for LDPE vapour check.
- Alkorplan 35x76 – PVC walkway protection membrane for trafficked areas.
- Alkorplus 81058 – Compressive foam strip for wind-tight laminated metal connections.
- Alkorplus 81192 – Aluminium tape for flexible laminated metal connections.
- Alkorplan 35121 – Protective polyester fleece with PVC foil lamination.
- Alkorplus 81345 – Applicator brush for cold welded seams.
- Alkorplus 81145 – PE bottle for seam sealing mastic.
- Alkorplus 81245 – Nozzle for PE bottle.
- Alkorplan 81503 – Standing seam profile, X-large.
- Alkorplan 81504 – Standing seam profile, large.
- Alkorplan 81502 – Double pressure roller for standing seam profiles.

2.4 MANUFACTURE

Alkorplan Roof Waterproof Membranes are manufactured by calendaring plasticized PVC into sheets. Two or three of these sheets are then heat laminated together with a reinforcing scrim in between or fleece-backed if appropriate. The product is then cut to length and reeled onto a cardboard core, wrapped and labelled.

2.5 DELIVERY, STORAGE AND MARKING

Each roll carries a label bearing the product's name, product description including type no., article no., thickness, width and length. The same product description as before and in addition the batch no. and the date of production are printed on the top side of the edge of the roofing sheet at regular spaces. Labels containing the IAB identification mark and IAB Certificate number are fixed to each roll pack.

Rolls are to be stored horizontally on pallets in a dry condition. No more than two pallets should be stored on top of each other.

Solvents and sealants must be stored in a dry, sealed area reserved for inflammable materials.

2.6 INSTALLATION

Only trained installers, working in accordance with the manufacturer's recommendations and manufacturer's installation instructions shall carry out installation of the roof covering.

Roof decks to which the covering is applied, must comply with BS 6229:2003 *Code of practice for flat roofs with continuously supported coverings*.

Substrates should be clean and free from sharp projections such as nail heads and concrete nibs. Where Alkorplan Roof Waterproof Membranes are laid over rough finished decks, the appropriate protection layer must be used.

The roofing sheets are not compatible with bitumen, coal tar pitch or oil based products and direct contact with such products must be prevented by use of one of the recommended separating layers.

Direct contact with polystyrene, polyurethane or polyisocyanurate insulation boards can only be used under Alkorplan when they have a top surface of laminated aluminium foil or have one of the recommended separating layers intervening.

Alkorplan Roof Waterproof Membranes may be laid in conditions normal to roofing work, but should not be laid in wet weather conditions. At temperatures below 5°C, to avoid the risk of moisture entrapment or contamination of the solvent used in lap jointing, suitable precautions must be taken.

All installation work must be carried out under the supervision of operatives who have received training from Renolit Belgium NV.

2.6.1 Installation Procedure: Mechanically Fixed System

Alkorplan Roof Waterproof Membranes must be initially loose-laid with the light grey/coloured surface uppermost (automatically when unrolling the roll). The loose-laid waterproofing membrane should be secured by mechanical fixing using the appropriate roof fasteners for each kind of supporting substructure (SFS Isostaf pressure plates or equal). The lap joints are made using solvent by hot air welding. Laps must be at least 100mm wide and shall be fully supported during welding operations as to accommodate the pressure plate of the fixing element and a 50mm wide weld (see Figure 1).

The mechanical fixing of the initially loose-laid membrane is designed to absorb the wind uplift forces and to transmit these forces to the supporting substructure. The fixing system described in Section 2.1 of this Certificate is to be used.

Where SFS discs or equal are used, the Alkorplan Roof Waterproof Membrane is fixed in the joint overlaps. The discs are installed with the longitudinal side parallel to the outer edge of the membrane and with a minimum dimension of 30mm from the edge to the centre of the disc. The overall overlap width in the membrane must be 100mm, in order to ensure a remaining overlap width of 50mm to accommodate the weld.

The fixing in the supporting substructure is effected by corrosion resistant screws.

The pressure plates of the fixing elements are installed in the overlap with the longitudinal side parallel to the outer edge of the membrane and with a minimum dimension of 30mm from the edge of the sheet to the centre of the pressure plate. The pressure plates are fixed to the substrate by means of corrosion resistant screws through the thermal insulation, vapour control layer and existing protection or separation layers to the supporting substructure.

2.6.2 Installation Procedure: Ballasted System

Alkorplan Roof Waterproof Membranes must be loose laid with the light grey surface uppermost. The loose-laid membrane should be secured by ballast. The lap joints are made using solvent or by hot air welding. Laps must be at least 50mm wide (see Figure 2). The ballast on the initially loose-laid membrane is designed to absorb the wind uplift forces and to transmit these forces to the supporting substructure. Immediately after the installation of the Alkorplan membrane on the surface, a sufficient layer of ballast is put in place to avoid movement of the membrane by wind forces. When necessary, a protection layer is previously installed between the membrane and the ballast.

2.6.3 Installation Procedure: Glued System

Alkorplan Roof Waterproof Membranes are glued with Alkorplus PU adhesive to the substrate. Appropriate substrates for gluing Alkorplan membranes are metal, concrete or timber supporting substructures as well as existing bituminous waterproofing of old roofs or thermal insulation specially designed for this purpose.

The lap joints are made by solvent or hot air welding. Laps must be at least 80mm wide. The weld is 50mm wide (see Figure 3). The glue is designed to absorb the wind uplift forces and to transmit these forces to the supporting structure. The PU adhesive is applied in stripes and spread on full area.

2.6.4 Details

Upstands, edge and gulley details are formed in Alkorplan Metal (PVC coated galvanised steel) sections mechanically fixed to the substructure. Alkorplan Roof Waterproof Membranes should be continuously welded to all Alkorplan Metal components (see Figure 4).

2.6.5 Jointing Procedure

The solvent used in welding laps has a low flash point and where it is to be used in enclosed spaces, adequate ventilation facilities should be provided.

Welds must be achieved using Alkorplan solvent or by means of a hot air welder. The lap joint area on both sheets must be cleaned back a minimum of 50mm and then dried. Laps must be at least 50mm wide and should be fully supported during welding operations.

Welded laps should be consolidated by the application of firm even pressure to ensure a watertight seal. All laps must be checked at least 15 minutes after welding by running a metal probe along the welded edge, and any discontinuities made good.

All laps must finally have a bead of Alkorplan liquid PVC sealing mastic applied to the exposed edge and injected into any voids to close all remaining capillaries. Hot air welding may also be used to close capillaries.

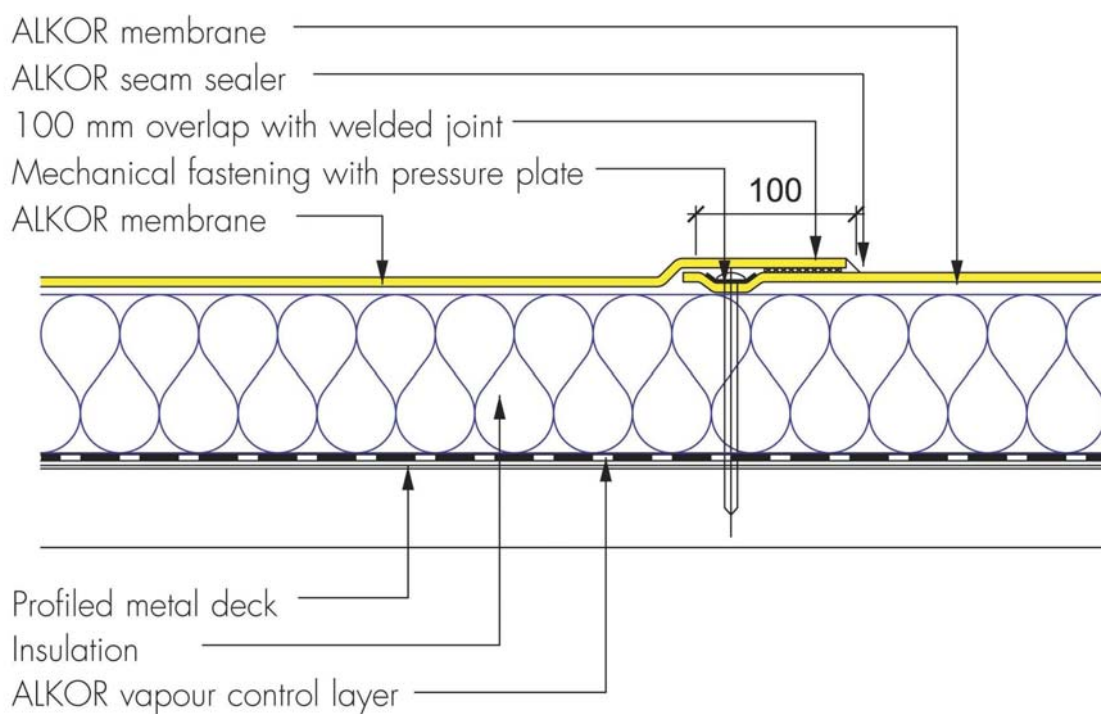


Figure 1: Mechanically Fixed Seam

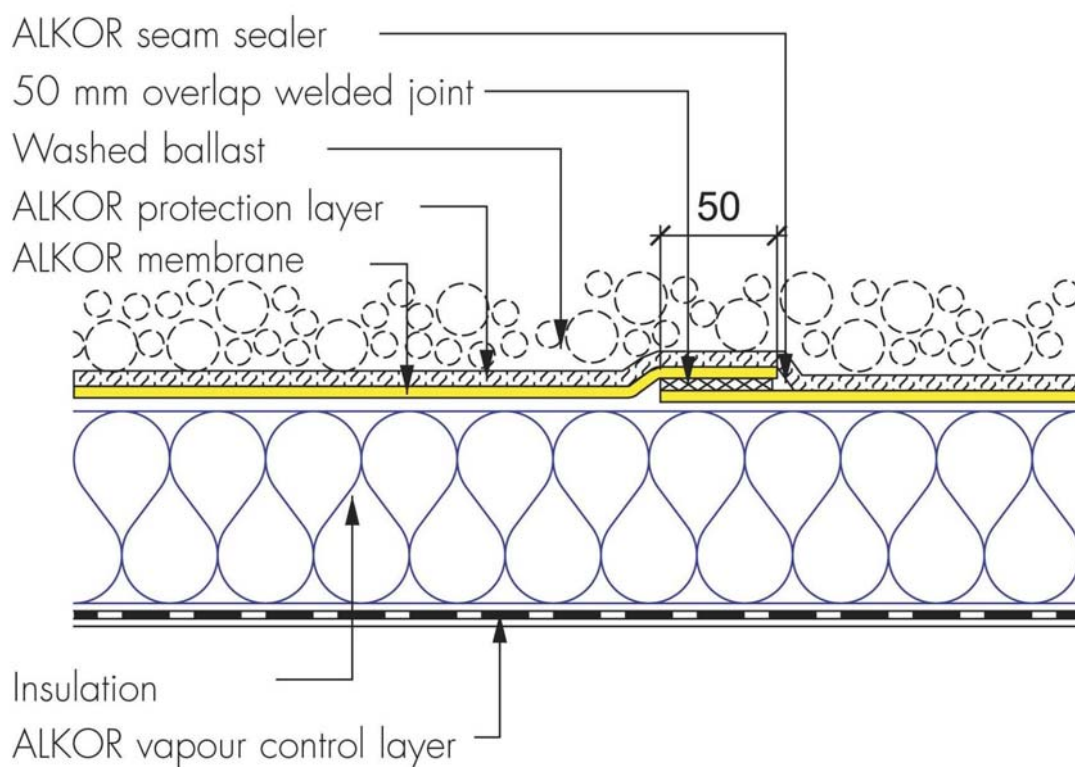


Figure 2: Loose Laid Ballasted Seam

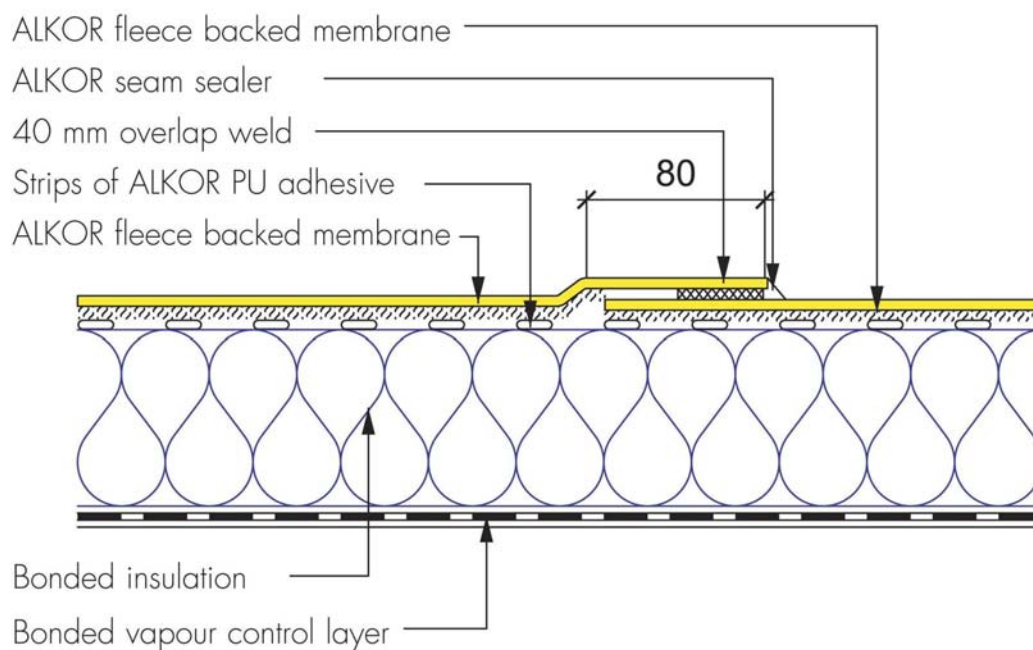


Figure 3: Partially Bonded Seam

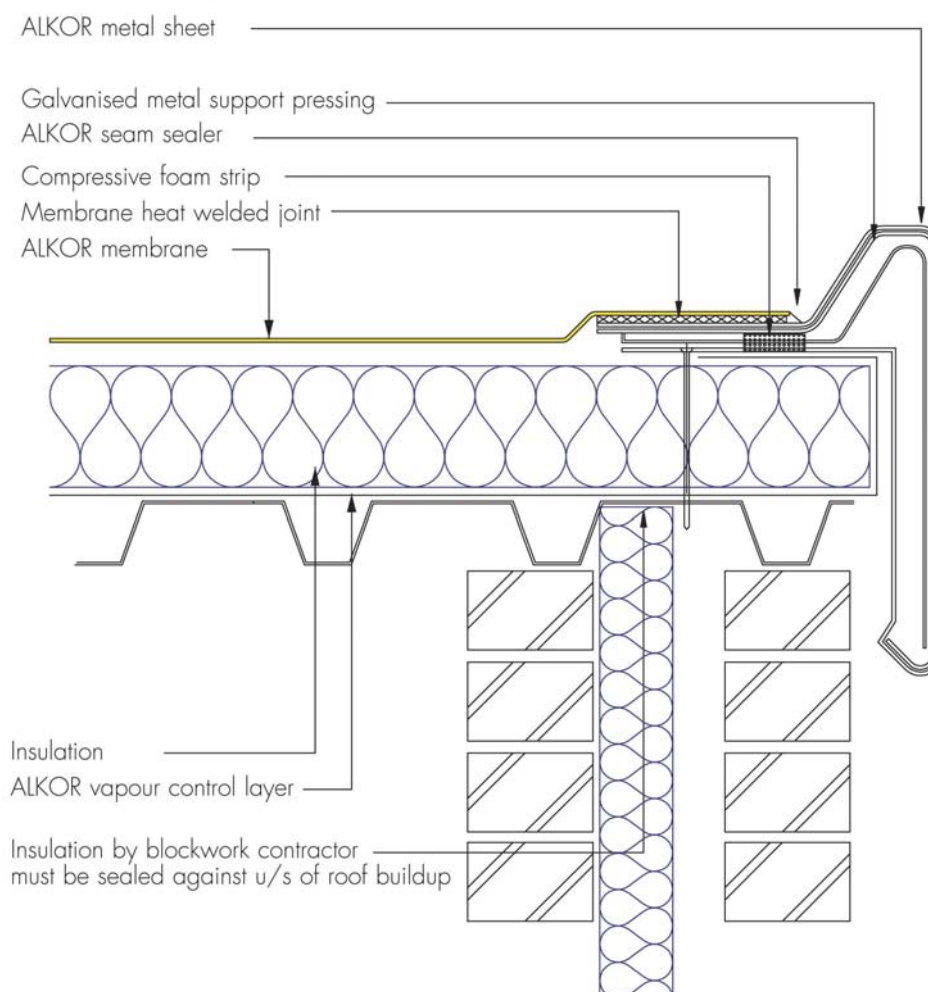


Figure 4: Water-Check Kerb

3 GENERAL

- 3.1 Alkorplan Roof Waterproof Membranes when installed in accordance with the manufacturer's instructions are suitable for use on timber, metal, concrete or insulated decks as mechanically fixed waterproofing membranes on flat and pitched roofs with limited access.
 - (a) A fully bonded single layer waterproof covering on pitched roofs with limited access.
 - (b) A fully bonded single layer waterproof covering on flat roofs with limited access.
- 3.2 Alkorplan Roof Waterproof Membranes are also suitable for use as loose-laid ballasted membrane single layer waterproof covering, ballasted with aggregate to prevent wind uplift. On flat roofs with limited access as well as on roofs for public access such as terraces and planted roofs, appropriate protection layers shall be used.
- 3.3 Alkorplan Roof Waterproof Membranes are also suitable for use as glued membranes on flat and pitched roofs with limited access.
- 3.4 Alkorplan Roof Waterproof Membranes are also suitable for use where appropriate as an exposed capsheet.
- 3.5 Limited access roofs are defined for the purpose of this Certificate as those roofs that are subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters etc. Where traffic in excess of this is envisaged, special precautions such as additional protection to the membrane must be taken, as recommended by the manufacturer.
- 3.6 Flat roofs are defined for the purpose of this Certificate as those roofs up to 10° to the horizontal and having a minimum finished fall of 1:80. Pitched roofs are defined as those having falls within the range of 10° to 70° to the horizontal.
- 3.7 When designing flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, and direction of falls.
- 3.8 Decks to which the product is to be applied must comply with the relevant requirements of BS 8217:2005 and BS 6229:2003.
- 3.9 Non-traditional insulation systems or materials used in conjunction with the product must be used in accordance with the manufacturer's instructions.
- 3.10 The adhesion of Alkorplan Roof Waterproof Membranes to decking, or bituminous felt, is sufficient to resist the effects of wind suction, elevated temperatures and thermal shock conditions likely to occur in practice.
- 3.11 The systems can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance operations. Reasonable care is required, however, to avoid puncture by sharp objects or concentrated loads.

4.1 BEHAVIOUR IN FIRE

A roof waterproofed with Alkorplan 35177 and ballasted with a minimum depth of 50mm of aggregate is deemed to be of designation EXT.F.AA rating.

When tested in accordance with BS 476-3:2004, a system comprising:

1. A 18mm oriented strand board, a vapour control layer, 80mm foil-faced polyurethane insulation board and 1.2mm thick Alkorplan 35176, mechanically fastened, achieved a rating of EXT.S.AB.
2. A 0.7mm steel deck, a vapour control layer, 80mm foil-faced polyurethane insulation board and 1.5mm Alkorplan 35170, mechanically fastened, achieved a rating of EXT.F.AB.
3. A 0.75mm profiled metal deck covered on upper surface with a low density polyethylene vapour control layer, a 50mm layer of phenolic foam insulation board, covered by 1.5mm thick Alkorplan 35170, achieved an EXT.F.AB rating.
4. A 0.75mm profiled metal deck covered on upper surface with a low density polyethylene vapour control layer, a 50mm layer of polyurethane foam insulation board, covered by a 1.2mm thick Alkorplan 35176, achieved an EXT.F.AB rating.
5. A 22mm plywood deck covered on its upper surface with a bitumen vapour control layer, a 60mm polyurethane insulation board, covered with two layers of felt, bonded with 95/25 bitumen, covered by Alkorplan 35179 partially bonded with Alkorplus 81066 achieved an EXT.F.AB rating.

A roof waterproofed with Alkorplan 35177 and ballasted with a minimum depth of 50mm of aggregate shall be deemed to be of designation AA.

The designation of other roof types should be confirmed by test or assessment.

4.2 CONDENSATION RISK

When a vapour barrier is used on the warm side of the insulation, interstitial condensation will not occur within the system.

4.3 MAINTENANCE

Alkorplan Roof Waterproof Membranes have little need of maintenance. Drainage outlets and gutters should be regularly maintained.

In the event of accidental damage, the sheet can be effectively repaired after cleaning, with pieces of Alkorplan Roof Waterproof Membranes welded to the damaged area.

4.4 WEATHERTIGHTNESS

Test data examined by the IAB confirm that membranes, and joints in membranes, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so meet the requirements of Part C of the Building Regulations 1997 to 2006.

The membranes are impervious to water and when used in the systems described will give a weather tight roof covering capable of accepting structural movements without damage.

4.5 DURABILITY

When installed in accordance with this Certificate and adequately supported by the substrate, the system's life as a weatherproof covering will be in excess of 30 years and the need for maintenance will be minimal. Repairs can be carried out by the procedures listed above and are effective in restoring weather tightness.

4.6 TOXICITY

The membranes are not toxic in normal service.

4.7 SECURITY OF FIXING

Properly mechanically fixed, ballasted or bonded membranes are capable of resisting wind loads. Membranes, being flexible, have good resistance to cyclic movement.

4.8 APPEARANCE/STAINING

Water running off the membranes does not stain walls.

4.9 EFFECTS OF TEMPERATURE

Alkorplan Roof Waterproof Membranes will resist temperatures in the range of -20°C to 80°C .

4.10 OTHER INVESTIGATIONS

- (i) The manufacturing process was examined including methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (ii) The IAB carried out visits to assess the history of use and practicability of installation of the product.
- (iii) A condensation risk analysis was performed.

Test	Method	Mean Results		
		35170	35176	35177
Tensile strength (N/50mm)	MOAT 65: 4.2.5 (200 mm/min)			
MD		840	1296	780
CD		875	1231	685
Elongation at break (%)	MOAT 65: 4.2.5 (200 mm/min)			
MD		372	18	313
CD		372	19	264
Tear resistance (N/mm)	MOAT 65: 4.3.12			
MD		160	243	162
CD		147	257	137
Nail tear test (N)	MOAT 65: 4.3.11			
MD		242	415	251
CD		282	399	245
Dimensional stability (%)	MOAT 65: 4.3.5			
MD		-1.03	-0.31	-
CD		+0.54	-0.03	-

Table 2: Physical Performance - Directional

Test	Method	Mean Results		
		35170	35176	35177
Static indentation	MOAT 65: 4.3.8			
Concrete		L ₄	L ₄	L ₄
Polystyrene		-	-	L ₄
Perlite		L ₄	L ₄	L ₄
Mineral wool		L ₄	L ₄	L ₄
Low temperature flexibility (°C)	MOAT 65: 4.3.14	-20	-20	-20
Joint strength in peel (N/50mm)	MOAT 65: 4.3.18			
MD		-	-	133
CD		-	-	163

Table 3: Service Performance

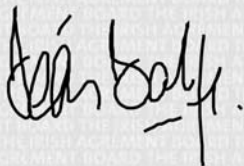
- 5.1** National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue so long as:
- (a) the specification of the product is unchanged.
 - (b) the Building Regulations 1997 to 2006 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
 - (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
 - (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
 - (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
 - (f) the registration and/or surveillance fees due to IAB are paid.
- 5.2** The IAB mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the IAB mark and certification number and must remove them from the products already marked.
- 5.3** In granting Certification, the NSAI makes no representation as to;
- (a) the absence or presence of patent rights subsisting in the product/process; or
 - (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
 - (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.
- 5.4** This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.
- 5.5** Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act. 1989, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.
- 5.6** The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.
- 5.7** Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

The Irish Agrément Board

This Certificate No. **03/0192** is accordingly granted by the NSAI to **Renolit Belgium NV** on behalf of The Irish Agrément Board.

Date of Issue: **November 2003**

Signed



Seán Balfe
Director of the Irish Agrément Board

Readers may check that the status of this Certificate has not changed by contacting the Irish Agrément Board, NSAI, Glasnevin, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsai.ie

Revisions: October 2006

- Scope extended to cover use of product on roofs with a pitch of up to 70 degrees