Reg. No. 95/03958/07

HEAD OFFICE
ACCOUNTS & FACTORY
P.O. Box 1584
DASSENBERG, 7350
Tel: (021) 577-1105
Fax: (021) 577-1182

SOUTH AFRICA (PTY) LTD

SALES & DISTRIBUTION
GAUTENG SALES: (012) 653-8204
CAPE SALES: (021) 983-1140
KZN SALES: (031) 569-1800

SUBMITTAL

PRE-QUALIFICATION DOCUMENT

FOR

"ISOBOARD"

EXTRUDED POLYSTYRENE FOAM BOARDS

MANUFACTURED BY :

ISOFOAM SA (Pty) Ltd

C/o NEIL HARE & LOUWTJIE ROTHMAN
ATLANTIS INDUSTRIAL
ATLANTIS
7349
TEL: (021) 577 1105
FAX: (021)577 1182
Web Site: www.isoboard.com

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SALES OFFICES

1. WESTERN CAPE

[ISOBOARD SA – BRACKENFELL]

E-Mail: capesales@isoboard.com / merchants@isoboard.com
TEL: (021) 983 1140
FAX: (021) 981 6099
Physical Address: 23 Kenwill Drive
Okavango Park
BRACKENFELL
7560

2. GAUTENG

[ISOBOARD SA – CENTURION]

E-Mail: gautengsales@isoboard.com / northsales@isoboard.com
TEL: (012) 653 8204
FAX: (012) 653 0782
Physical Address: C/o Jurg & Jakaranda Street

Hennops Park
CENTURION
0157

3. KWAZULU NATAL

[ISOBOARD SA – DURBAN]

E-Mail: kznsales@isoboard.com /kznstores@isoboard.com / kznadmin@isoboard.com
TEL: (031) 569 1800
FAX: (031) 569 2393
Physical Address: Unit 13, 50 Moreland Drive
Rinaldo Industrial Park, Redhil
DURBAN
4051

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1. COMPANY PROFILE

ISOFOAM, Kuwait was established in the State of Kuwait in the year 1973, an affiliate of M/s. Mohamed Abdulmohsin AL Kharafi & Sons Co. W.L.L.

ISOFOAM South Africa (Pty) Ltd was establish in the year 1995 in South Africa, an affiliate of Kharafi Holding Group.

ISOFOAM's ISOBOARD Extruded Polystyrene Foam Boards are produced since 1981 in Kuwait by a continuous fully automated Extrusion process in accordance with international specifications and standards.

ISOFOAM's ISOBOARD Manufactured in South Africa using the same technology since 1995 in ATLANTIS Industrial area.

ISOFOAM's products are very well known and established in the Kuwait Market and made a niche in the Gulf States, in the Far East Countries and as far as Australia, Singapore, South Africa and other territories surrounding South Africa. Due to their Quality and Technology used in its production. Comprehensive Quality Control is carried out at every stage of the production in their laboratories.

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KZN SALES: (031) 569-1800

2. PRE-QUALIFICATION

1. Company Name	: ISOFOAM SA (Pty) Ltd
2. Address	: P.O. Box: 1584, DASSENBERG, 7350
3. Owner	: Kharafi Holding Group.
4. Factory & Head Office ATLANTIS, 7349	: C/o Neil Hare & Louwtjie Rothman, Atlantis Industrial Location Western Cape South Africa
5. Date of Start of Production	: 1981 in Kuwait (ISOBOARD Extruded Polystyrene Foam Boards) : 1995 in South Africa
6. Business	: Manufacture's and Suppliers of Thermal Insulation Products.
7. Product	: ISOBOARD
8. Company Reg. No.	: 95/03958/07
9. Contact	: ISOFOAM SA (Pty) Ltd P.O. Box: 1584, DASSENBERG, 7350 Tel. (021) 577 1105 Fax: (021) 577 1182 Web: www.isoboard.com

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3. CERTIFICATE OF COMPLIANCE

IT IS TO CERTIFY THAT WE,
ISOFOAM South Africa (Pty) Ltd, MANUFACTURER
OF "ISOBOARD" EXTRUDED POLYSTYRENE FOAM
BOARDS COMPLYING WITH THE RELEVANT STANDARDS
SANS 53164, SANS 428 AND HAVING THE RELEVANT

GRÉMENT SOUTH AFRICA CERTIFICATES

ISOFOAM SA (Pty) Ltd

Youssef Fouad

PRODUCTION ENGINEER & QUALITY CONTROL SUPERVISOR

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4.“ISOBOARD” CATALOGUES

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ISOBOARD®

Premier Thermal Insulation for · Roofs · Ceilings · Floors · Walls

Product Information

IsoBoard thermal insulation is a high density, extruded polystyrene rigid insulation board, having a 100% closed cell structure. IsoBoard has been tried and tested internationallysince 1970,and manufactured in South Africa since 1995, using a fully automated extrusion process, in accordance with international specifications and standards.

Attributes

- Low long term aged thermal conductivity/ High thermal Resistance
- Highest resistance to water vapour diffusion and water absorption
- Uniform density
- High compressive strength
- Ageing resistance as well as resistance to bacteria and micro organism growth
- Paintable and washable
- Suitable for professional and DIY applications
- Tested and proven over 25 years

These and many other features make IsoBoard an innovative and cost effective thermal insulation product. This versatility means that IsoBoard is used in various applications in numerous different markets. IsoBoard contains gases which have been accepted in terms of the Montreal Protocol with zero ozone depletion potential.

Installation alternatives

Resisting heat flow through the roof is the primary purpose of insulation. IsoBoard can be installed in a variety of applications to effectively meet this objective:

- **Over purlin** for retail, commercial, industrial and residential steel frame roof applications.
- **Inverted Roof** for concrete roofing systems where insulation is installed over waterproofing.
- **Under soffit** installed below a concrete deck where an inverted roof is inappropriate.
- **Nail up ceilings** replacing existing ceiling systems with an insulated ceiling.
- **Over rafter** for residential and low cost housing applications.
- **Over truss** for retail, commercial and residential exposed wooden truss applications.

These and many other features make IsoBoard an innovative and cost effective thermal insulation product. This versatility means that IsoBoard is used in various applications in numerous different markets. IsoBoard contains gases which have been accepted in terms of the Montreal Protocol with minimal ozone depletion potential accepted as having zero ozone depletion potential in terms of the Montreal and subsequent protocols.

IsoBoard is employed in other building applications with the objectives of energy cost savings and comfort:
Within Cavity wall to maintain a constant internal building temperature.
Under surface bed to insulate floors from the effect of the surrounding earth temperature (with or without heating/cooling systems).
Under soffit above exposed parking areas to insulate retail and residential environments from “cold foot syndrome”.

Properties

Heat Flow: IsoBoard provides excellent resistance to heat flow. IsoBoard reduces heat flow into buildings in summer and reduces internal heat outflow during winter. The heat flow resistance will reduce over time when exposed to air and will also be influenced by water content. Accordingly, a design heat flow value of 0.03 W/m°C is appropriate. (Confirmed by SAFIERA RGHB)

Water: IsoBoard will only absorb 1% maximum water by volume. Heat flow resistance will reduce by a maximum of 3%.
Water Vapour: IsoBoard’s closed cellular structure provides exceptional resistance to water vapour permeability. Heat flow resistance due to vapour penetration (including water absorption) can reduce by a maximum of 8%.
Fire: IsoBoard contains self-extinguishing fire retardants, non-flammable blowing gasses and will not propagate fire in exposed roof applications. See reports on website.
Sound Insulation: IsoBoard is a thermal insulator and should not be used in isolation to achieve noise reduction. Consult a specialist with respect to noise reduction systems.

Operating Range: -30 to +60°C.

Density: IsoBoard has a high density of 32-36 Kg/ m3. The compressive strength ranges from 160 to 310 kPa, dependant on the thickness of the board. The thicker the board, the higher the compressive strength.
Chemically Inert: IsoBoard is odourless, chemically inert and does not supply nutrition for pests, or support micro organism growth.

Heat Flow inwards reduction compared with uninsulated systems

Application	Board Thickness	% Reduction
Inverted Roof	50mm	80%
Cavity Wall	30mm	64%
Ceilings	30mm	70%
Over Purlin	40mm	70%

Storage and handling

Consult the appropriate application guide or your IsoBoard supplier for specific storage and handling advice

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Order options and tolerances

Surface Finishes: Plain, IsoPine (100 mm centre grooved) or edge bevelled.
Width: standard 600mm with ±2mm tolerance.
Stock Lengths: from 4.8m to 7,2m in 0,6m increments, and in 8m for 25, 30, 40, 50mm boards. Tolerance ±5mm.
Enquire availability of thicker board and shorter lengths.
Thickness: up to 50mm stock tolerance ±2mm, >60mm ±3mm.
Edge Profiles: Tongue & Groove, Straight edge or Shiplap.
Colour: White.

Applications for every building insulation requirement

IsoBoard is exceptionally versatile. Most building and construction thermal insulation applications are catered for by IsoBoard.

IsoBoard fixing methods - application guides

1.1 Over-purlin and Side cladding
1.2 Cavity Wall
1.3 Nail-up Ceiling
1.4 Under Soflit Ceilings
1.5 Under Floor or Foundation Perimeter
1.6 Inverted Roof
1.7 Retrofit
1.8 Over Rafter and Truss

Technical Assistance

For assistance with other fixing methods contact IsoBoard at your nearest regional office.


1.1


1.2


1.3


1.4


1.5


1.6


1.7


1.8

ISOBOARD®

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Properties

IsoBoard, high-density extruded polystyrene rigid thermal insulation board, having 100% closed cell structure!

Physical properties of IsoBoard

1. Determination of physical properties ofIsoBoard rigid foam insulation, dated July 1996, by the Division of Building Technology of the CSIR.
2. Copies of test reports are available from Isofoam (South Africa) (Pty) Limited upon request, or on our website.
3. Thermal conductivity reports by the general physical laboratory of the South African Bureau by Standards numbered 722/82397 /NK9, 10, confirmed by Guarded HB tests February 2010.
4. IsoBoard is combustible, with no flame spread characteristics. IsoBoard is suitable for all occupancy types in horizontal and vertical applications, except for buildings where non-combustible materials are prescribed by SANS 10400XA. (Reports on the fire propagation properties of IsoBoard dated July 1996, by the Division of Building Technology of the CSIR, and further assessments by Firelab to SANS 428 dated July 2007).
5. The compressive strength and density of IsoBoard increase with thickness of boards. Thermal conductivity is constant across the density range.
6. Sample board immersed in water to 50mm depth for 24 hours. Water absorption is expressed as an average percentage increase over the original volume.

IsoBoard Physical Properties

	Standard	Conditions	IsoBoard
Density2	ISO 845; 1988	FDIS4898	32-36 kg m3 (± 10 %)
Compressive Strength5	ISO 844; 1978	10% Strain	160-310 kpa
Water Vapour Permeability2	ISO 1663; 1981	38°C / 88% RH	0.78 ng/Pa.s.m
Water Absorption6	ISO 2896; 1987	See note 6 below	< 1 % by volume
Coefficient of Linear Thermal Expansion2	ISO 4897; 1985	-10°C to 60°C	0.067 mm per m per °C
Dimensional Stability	EN1604	-10°C to 60°C	<1.0%
Thermal Conductivity3 (average of two tests)	ISO 8302; 1991 (F)	20°cmean temperature Dry and 90 day aged	0.024W/m°C 0.028W/m°C
Long term Thermal Conductivity		Five year aged	0.030W/m°C
Recommended Design	Value Wetting Curve Paper	90%RH	
Combustibility and Flame Spread4	Class: B/B1/2/H&V. Refer SANS 428 Classification Table.		

Tongue-in-groove joint

Shiplap joint

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Nail Up Insulated Ceilings

Heat gain in residential homes is largely through the roof structure. Insulated ceilings retard heat flow into the living areas in summer, and contain generated heat in winter, providing a comfortable living environment. Note that ventilation, window design and positioning of the building also affect comfort in the dwelling.

Typical uses for IsoBoard in this application

1. Residential housing installed as insulated ceiling. IsoPine grooved and bevelled finishes are options.
2. In retail developments when no insulation is provided,
3. IsoBoard is frequently retrofitted to achieve comfort and cost saving objectives, and protect the expected shelf life of perishable produce.
4. Community housing, police stations, clinics, school projects and Office developments.

Bevelled edge

IsoPine

Nail-up guidelines

- Order either bevelled edge or “IsoPine”.
- Boards to run wall to wall: avoid butt joints
- Brandering maximum 700 mm spacing, with perimeter brandering around room.
- Boards must be positively secured on ends.
- Always use adhesive, screws and concealed clips as recommended for ceiling installation.
- Ensure planned lighting is compatible with IsoBoard.
- Paint with two coats of a good quality water based matt PVA paint. Painting also prevents discolouration of boards by UV rays (reflected sunlight).
- Double fixing points where board is installed externally or in windy areas.
- Overlay IsoBoard with fibre products where sound insulation is required.

Site Handling Instructions

1. Store boards flat within original packaging until required.
2. Boards are to be protected from adverse weather conditions and direct sunlight for the storage period.
3. Handle and install with care to prevent damage to board edges and exposed surfaces.
4. IsoBoard is easily cut to length or trimmed using a sharp knife or hack-saw.
5. Surface indentations and imperfections can be repaired using a plasterkey and crack filler paste or by applying a filler base coat.
6. Wipe boards with cloth and softened water solution to clean as necessary, prior to painting two coats of good quality PVA.

Retrofit nail up installtion

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Suggested bill of quantity specification

"IsoBoard" high density 32-36kg/m3 rigid extruded polystyrene 100% closed cell insulation board of ___mm thickness and 600 mm width, tackfixed with recommended adhesive at 200 mm intervals to timber/ steel brandering installed at maximum 700mm centres transversely to trusses, and edge-fixed with concealed ceiling clips screwed/ pop-riveted to timber/steel brandering. Boards to be secured to perimeter brandering with drywall screws and washers at 300mm centres.

Recommended installation

1. Fit timber or steel brandering at maximum 700mm centres transversely to the trusses, as well as all around the perimeter of each room. Increase brandering x-sectional area where truss spacing exceeds 750mm.
2. IsoBoard sheets to be of sufficient length to span brandering transversely without butt jointing. Trim boards on site, allowing for a 5mm gap to each wall.
3. Apply 5ml blobs of recommended adhesive at 200mm intervals along the brandering.
4. Fix initial panel to perimeter brandering with screws and washers at 300mm intervals, such as to be concealed with cornice.
5. Break out tongue or top of groove at each intersection of board edge and brandering to accept concealed clip into edge of IsoBoard sheet. Screw or pop rivet clip into brandering, pressing up to ensure adhesive contact. Fit subsequent IsoBoard panels, using the tongue and groove joint.
6. Trim the final board and fit to complete the installation.
7. Fit polystyrene cornice.
8. Sand grooves lightly, fill any indentations with a plasterkey and crack filler paste.
9. Wipe surface clean. Finish with two coats good quality matt acrylic paint, of which we recommend the first coat to be an acrylic filler-coat, to cover minor surface indentations and imperfections.
10. Contact with ANY solvents or solvent-based products will damage the boards. Only water-based cleaners, adhesive and paints to be used.

Using IsoBoard externally under eaves and verandas and in windy areas:

Halve the brandering spacings and double the number of clips/screws and adhesive fixing points where IsoBoard is installed externally or in windy areas. This is to accommodate the effect of wind and air pressure differences. Painting is required to avoid discolouration.

Sound Insulation:

IsoBoard is a thermal insulator and should not be used in isolation to achieve noise reduction. Please consult a specialist with respect to noise reduction systems. (Generally a wool blanket will reduce sound transmission.)

Ordering information

- IsoBoard thermal insulation is available in standard lengths from 4.8m to 7,2m with 0,6m increments and in 8m and halves for 25, 30, 40, 50mm boards. Tolerance ± 5mm. Enquire availability of lengths of thicker board.
- Thicknesses range from 25mm, 30mm, 40mm up to 80mm, with board thicknesses of 50 mm and above made to order
- IsoBoard can be ordered with the Isopine surface finish, which looks similar to a tongue and groove pine surface, having grooves at 100mm centers down the length of the board, or, with bevelled edge, to achieve a panelled look finish.
- IsoBoard is always 600mm (± 2mm) wide, with a tongue and groove edge profile so adjacent boards interlock.
- Please consult a representative for the appropriate thickness for use in your region to comply with energy usage requirements.

Lighting and IsoBoard ceilings

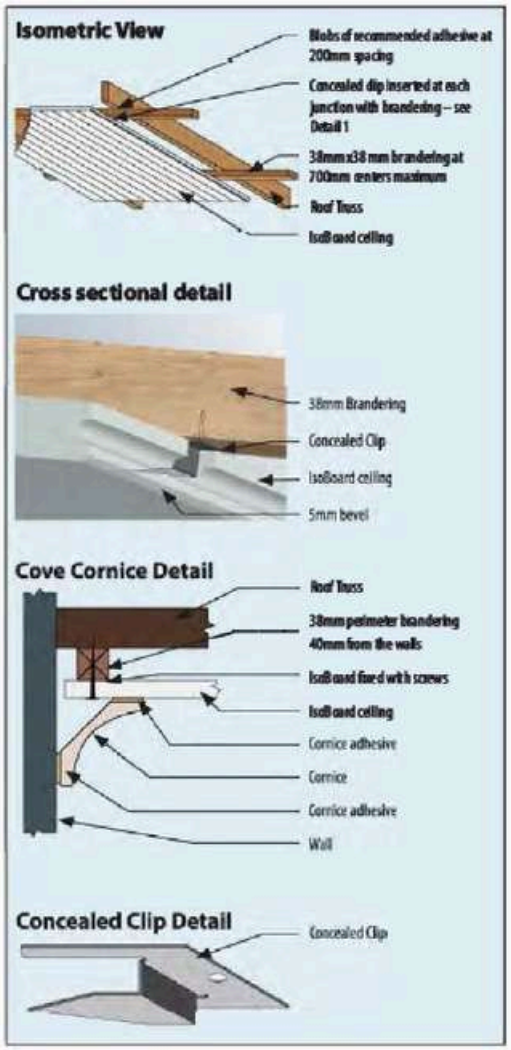
Lamp holders fixed through Isoboard should be fitted with lamps generating heat not exceeding temperatures of 70°C. Above this temperature Isoboard will soften and retract from the heat source.

Space fluorescent lamp holders (with fitted ballast) approximately 3mm away from IsoBoard using washers, and fix to supporting brandering or trusses. Use Energy Saver lamps when installing other lamp fittings in close proximity to IsoBoard. Heavier light fittings should always be hung from timber fixed above the IsoBoard.

Downlighters: Lamp fittings to be of swivel type.

We only recommend Energy Saver or LED lamps be used. For 12V installations, position transformers off the board on battens/truss and 200mm away from the lamp fittings. Allow a minimum of 150mm airspace above the IsoBoard for sufficient ventilation.

Flush look ceilings are not recommended due to the special skills and time it takes to achieve an aesthetically pleasing result. Please consult with IsoBoard before attempting this finish.



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Over Purlin Insulation

IsoBoard Insulation installed over purlin under roof sheet. - In South Africa, the bulk of retail and industrial buildings are steel-sheet clad frames, where 70% of the heat gain is through the roof. IsoBoard over purlin insulation is the most cost effective method of achieving thermal efficiency in these buildings.

As a general rule for cavity wall applications, 30mm IsoBoard will be effective in dwellings and 40/50mm in temperature controlled buildings.

Typical uses for IsoBoard in this application

1. **Industrial developments** to improve staff comfort and productivity;
2. **Agricultural applications** such as poultry-, pig-, mushroom-, crocodile-and fish-farming requiring consistent optimum growth conditions;
3. **Temperature controlled** environments such as vegetable, flower and fruit processing areas and wine cellars;
4. **Warehouses** containing perishable and temperature sensitive goods;
5. **Retail developments** to provide comfort and reduce air conditioning costs.

Over Purlin guidelines

1. For minimum deflection, do not exceed recommended spans as per table overleaf, use T-sections to support board where spanning limits per thickness is exceeded.
2. Wipe boards before installation to remove static.
3. To avoid friction noise between paint treated roof sheets (chromadek) and IsoBoard, separate the products with a 3mm masonite washer. Spacers are not necessary with cliplock systems, galvanized and aluzinc roof sheets.
4. Butt join boards over purlins.
5. Install roof ridge vents above IsoBoard of 40 mm or thicker to prevent excessive heat buildup.
6. IsoBoard can follow a 5m radius when using 50mm or thinner board.
7. Please consult a representative for the appropriate thickness of IsoBoard for use in yourregion.
8. The board is an extrusion and flow lines can be visible. Paint with two coats of good quality matt acrylic paint and/ or edge bevel board for aesthetically finished requirements.
9. Fit boards below purlins using retrofit H sections.

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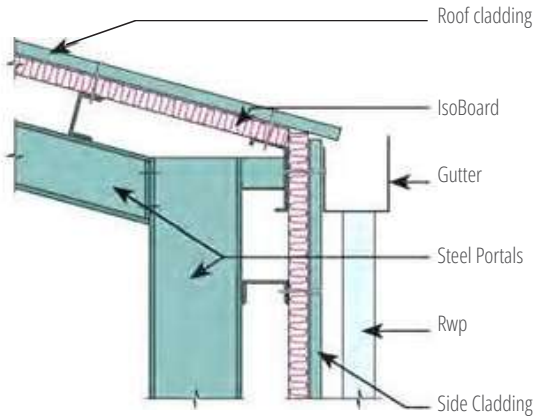
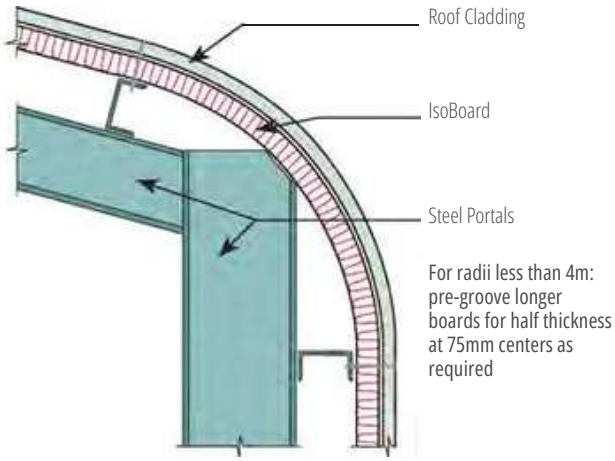
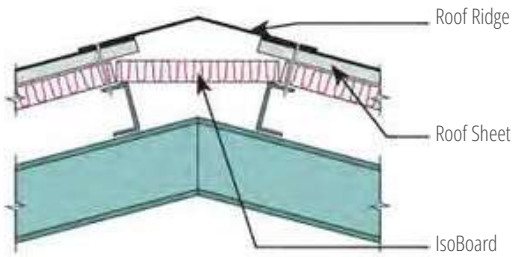
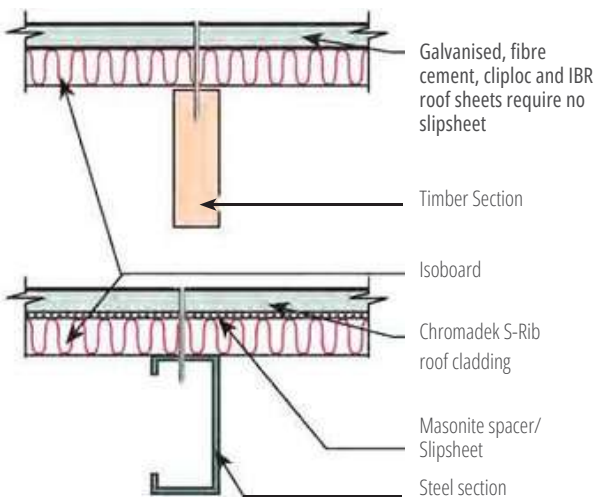




For radii less than 4m: pre-groove longer boards for half thickness at 75mm centers as required





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Suggested bill of quantity specification

IsoBoard high density 32-36kg/m3 rigid extruded polystyrene 100% closed cell insulation board of __ mm thickness and 600 mm wide, with tongue and groove joints, fixed concurrently with roof covering, over steel purlins at approximately __ mm centres, with S mm gap between boards buttjoined on top of purlins.

Please note: The fixing of any laminates e.g. vinyl facing or slipsheet to IsoBoard will result in a higher fire risk. Please consult Sales Office.

Site Handling Instructions

1. Handle and install with care to prevent damage to board edges.
2. Store boards flat within original packaging until required.
3. Protect from adverse weather conditions and direct sunlight for the storage period.
4. IsoBoard is easily cut to length using a sharp blade or hacksaw.
5. In potentially dusty conditions during or after construction, wipe boards clean with a weak softened water solution immediately prior to over purlin installation. This removes possible static charges present on the board surface which attract dirt and dust.

Please contact IsoBoard for any queries with respect to the above.

Ordering information

- Standard stock lengths and thicknesses are generally available through your nearest Regional Distribution Centre. Contact us for a quotation.
- Order IsoBoard with square edge profile if board is to be supported by T or H-sections.
- Consult with a representative.
- Standard lengths from 4,8m to 7,2m in 0,6m increments and in 8m for 25, 30, 40, 50 mm boards. Tolerance ± 5mm. Enquire availability of lengths of thicker board or shorter lengths.

Recommended installation

1. Wipe boards clean with a softened water solution immediately prior to installation. This removes any static charges built-up during the transport and handling of the board, preventing dust particles from adhering to the board.
2. Boards are laid from apex to eave, always beginning and ending on a purlin. Where necessary, boards are to be butt-joined centrally on top of purlins, with a 5mm expansion gap between boards. Note: Butt-joined/Staggered boards may not align due to width tolerance.
3. Longitudinal jointing is effected using the tongue and groove edge profile, enabling the boards to support each other and lock together tightly. Fix roof sheet concurrently with IsoBoard so that IsoBoard is secured positively between purlins and roof sheets, using roof screws.
4. To avoid friction noise between paint treated roof sheets (chromadek) and IsoBoard, separate the products with a 3mm masonite washer. Spacers are not necessary with cliplock systems, galvanized and aluzinc roof sheets.
5. See table below for recommended purlin spacing limitations for unsupported IsoBoard allowing for a 15mm deflection at mid-span.

Table 1 : Spacing limits for unsupported IsoBoard

Thickness	Maximum Purlin Spacing	Domestic & Chromadek
25mm	1100mm	900mm
300mm	1400mm	1200mm
40mm and thicker	1600mm	1500mm

6. Note: The recommended purlin spacings are reduced under Chromadek due to the higher temperature buildup, and for the higher aesthetic requirement in domestic applications. IsoBoard can be supported using aluminium T-sections, should purlin spacings exceed the recommended maximum.
7. In Industrial and Commercial applications where the designed purlin spacing exceeds that recommended for IsoBoard, please consult your nearest IsoBoard Regional Distribution Centre for installation advice.
8. Profiled roofing closures or coverstrips should be used, where damage by birds or vermin to exposed board ends can be expected.
9. 9. The full text of the Large Scale Fire Test as conducted by the CSIR Building Technology unit with respect to the over purlin installation method is available on the IsoBoard website.
10. We recommend that roof ridge air vents are installed for IsoBoard of 40mm or thicker, particularly under chromadek roof sheets. Hot air ventilation prevents deflection through heat build-up above the board.

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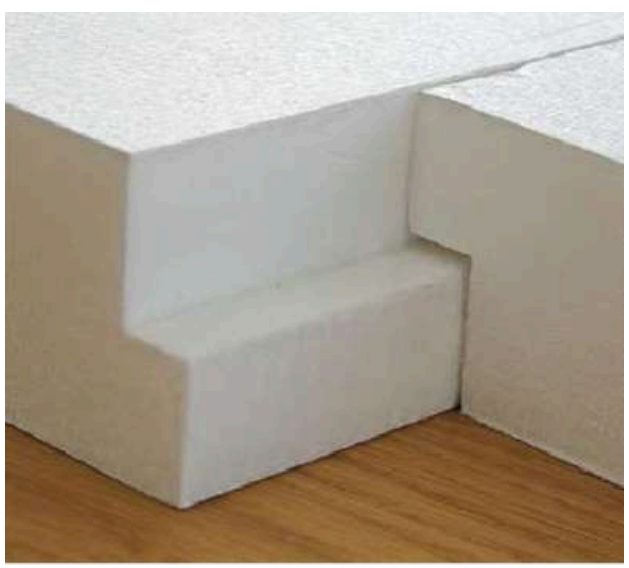
Inverted Roof Insulation

The Inverted Roof Concept, also known as protected membrane or upside down roofing, ensures insulating both the water-proofing membrane and the reinforced concrete slab from extreme thermal stress. This is achieved by placing IsoBoard extruded polystyrene insulation board above, instead of below the waterproofing membrane.

Typical uses for IsoBoard in this application

Installed either as new or retrofit insulation above water-proofing membranes on flat topped buildings or balconies, in retail or office developments, flats, hospitals, airports, hotels and in residential housing.



Installation guidelines

1. Apply ballast above the insulation board to prevent wind uplift and flotation:
    - using 20 mm nominal size gravel where no traffic is envisaged
    - using paving slabs where pedestrian traffic is envisaged
    - using light weight concrete screed to falls where drainage is important
    - and below a flexible road pavement or reinforced concrete slab for parking decks.
2. Avoid placing the insulation above the slab and below the water proofing layer (warm deck installation). Moisture penetration through the slab from below will condense under the water proofing, resulting in bond failure and bubbling.

Suggested bill of quantity specification

"IsoBoard" high density 32-36kg/m3 rigid extruded polystyrene 100% closed cell insulation board of (__)mm thickness and 600 mm width with shiplap joint all round laid tightly butted on waterproofing membrane (elsewhere).

Site handling instructions

1. Store boards flat within original packaging until required.
2. Boards are to be protected from adverse weather conditions and direct sunlight for the storage period.
3. IsoBoard is easily cut to length or trimmed using a sharp knife or hacksaw.
4. Handle and install with care to prevent damage to board edges
5. Please contact IsoBoard for any queries with respect to the above.

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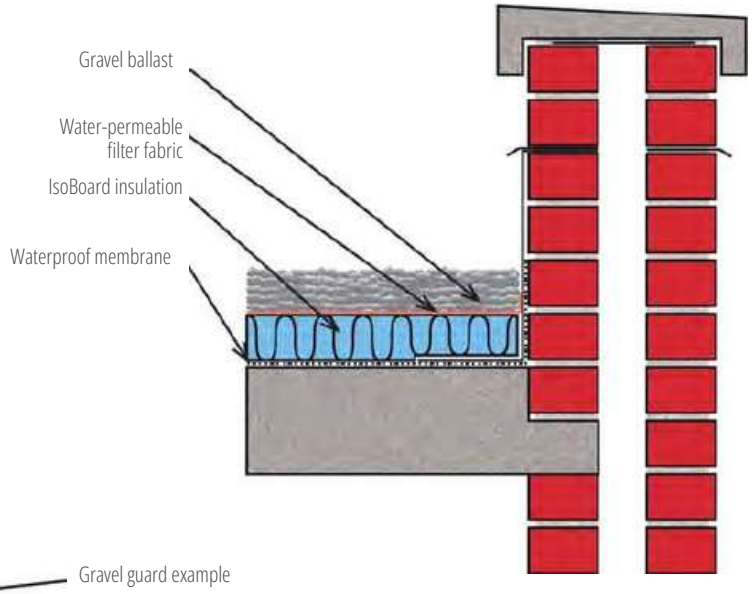
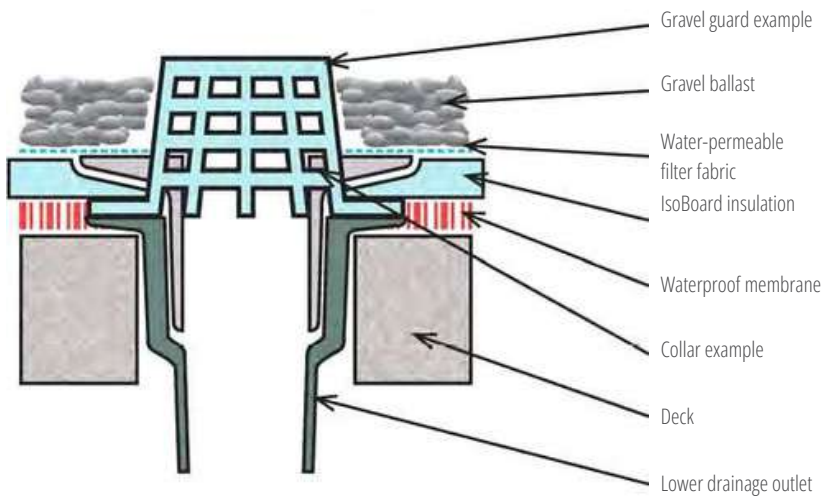
The recommended inverted roof installation method for IsoBoard

- IsoBoard profiled all-round with shiplap or tongue and groove edge profiles is laid over the water-proofing membrane.
- A water-permeable geofabric membrane is laid over the IsoBoard, and covered with 20 mm nominal size rounded gravel, paving slabs or concrete screeds to prevent flotation and wind uplift.
- The thickness of ballast loading required should resist flotation and wind uplift, as stipulated in the Agrement Certificate tables.
- Rainwater outlets/downlets should be dual level, capable of accepting water from above both the waterproofing membrane and the IsoBoard layer. Verges, upstands and roof-light kerbs should be high enough to contain the insulation and ballast layer, with modifications carried out to existing buildings if necessary.
- Maintenance on drainage downlets is important.
- Concrete paving slabs should be laid over insulation in areas subject to foot traffic, such as access ways to lift or air-conditioning plant. Slabs need to be raised above the insulation to facilitate drainage. Slabs can be laid on a bed of pea gravel or special support rings.
- When vehicular traffic is envisaged, the paving structure will require design by a competent person.

Ordering information

- For this application boards in lengths of 1,2m/2,4m are practical.
- Order boards with shiplap or tongue and groove edge profiles.
- Consult your nearest IsoBoard sales office for advice concerning the appropriate thickness of IsoBoard required for your application.





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Cavity Wall Insulation

Cavity wall insulation will prevent heat transfer and build-up to the inner leaf of sun exposed walls. Moisture within the cavity is prevented from condensing onto and penetrating through the inner leaf when IsoBoard is installed. The insulation restricts heating ingress to temperature controlled and passive cooled environments.

As a general rule for cavity wall applications, 30mm IsoBoard will be effective in dwellings and 40/50mm in temperature controlled buildings.

Typical uses for IsoBoard in this application

1. Residential homes designed for comfort and energy efficiency;
2. Cold storage applications;
3. Designs which function with minimum of mechanical cooling;
4. Passive cooled building systems;
5. Agricultural, pharmaceutical, medical and commercial applications with temperature controlled environments requiring stable internal temperatures.

Installation guidelines

1. Walls are constructed, leading with the initial 1.4m of inner leaf containing the first two rows of wall ties, spaced 600mm apart;
2. Space the cavity ties, with holding back ties in between, to be embedded as per building standards (see detail 1 & figure 2). Board support ties to be 2mm galvanised wire with fish-tail ends;
3. Excess mortar to be cleaned from the cavity face of the leading leaf;
4. The initial two rows of IsoBoard sheets are placed on edge against the leading leaf with shiplap joint installed to shed moisture away from the inner leaf, or with tongue facing upwards, and secured with the holding back ties (see figure 2);
5. A run of boards may commence below a damp-proof course level to provide some edge insulation for the floor;
6. IsoBoard can be placed in a potentially damp position without losing excessive thermal performance in the long term;
7. Construct the outer leaf taking care to keep the residual cavity clean and secure the cavity ties. Please note that the construction of a cavity wall with insulation requires competent supervision, to ensure that the cavity is cleaned and the cavity ties properly secured (see figure 3);
8. IsoBoard is easily trimmed on site using a sharp blade or hack-saw to neatly notch board edges around wall ties and fit snugly around window and door frames.

Fig. 1

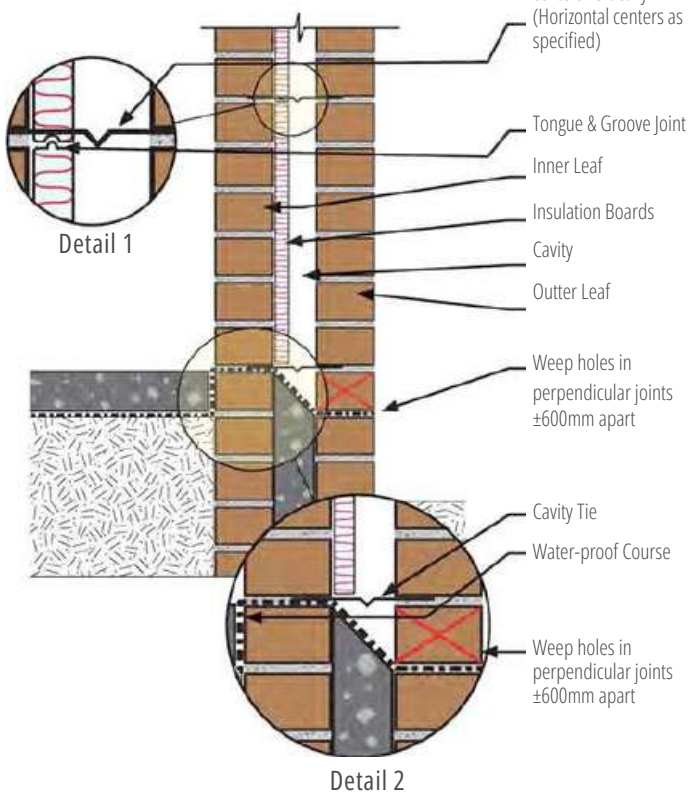


Fig. 2

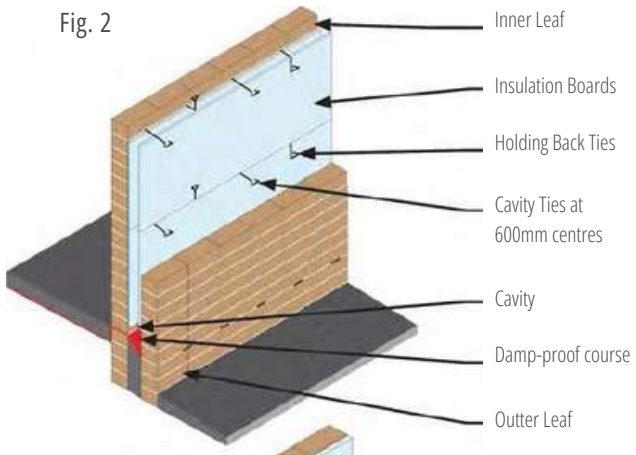
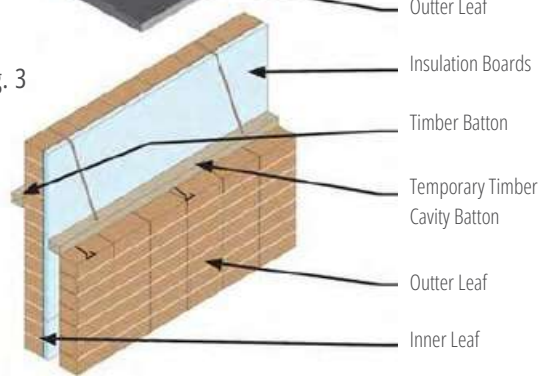


Fig. 3



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Suggested bill of quantity specification

"IsoBoard" high density 32-36 kg/m3 rigid extruded polystyrene 100% closed cell insulation board of_mm thickness and 600mm width with tongue and groove/butt-ended joints fixed to inner skin of block cavity wall such as to shed moisture. Galvanized mild steel ties size__mm with fish tailed ends built into horizontal joints in wall at maximum 300mm centres along top and bottom edges, including neatly notching board edges around wall ties, window and door frames. Alternate ties are used to secure boards to the inner leaf.

Ordering information

- 1,2m and 2,4m lengths are practical for this application.
- Thicknesses range from 25mm, 30mm, 40mm up to 80mm, with board thicknesses above 50mm made to order.
- IsoBoard is always 600mm in width, with a tongue and groove or shiplap edge profile so that adjacent boards interlock.
- Please consult a representative for the appropriate thickness of IsoBoard for use in your region.

Double layer wall insulation, Maun Hospital

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Under Soffit Ceilings

Where construction, design and/or cost implications prohibit the installation of an inverted roof insulation system, the requirement for insulation is met by fixing IsoBoard to the under soffit surface of the slab as a ceiling.

Typical uses for IsoBoard in this application

Used in Residential and Commercial applications to provide insulation where an inverted roof insulation system may not be appropriate.

Site handling instructions

1. Store boards flat within original packaging until required.
2. Boards are to be protected from adverse weather conditions and direct sunlight for the storage period.
3. Handle and install with care to prevent damage to board edges and exposed surfaces.
4. Wipe boards with cloth and softened water solution to clean as necessary.
5. Please contact IsoBoard for any queries with respect to the above.

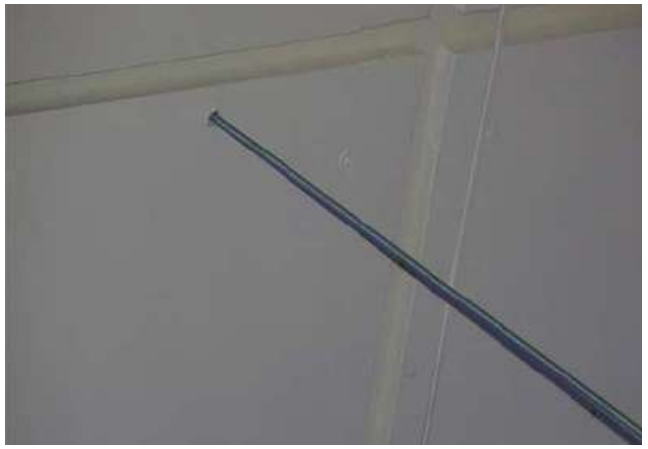
Recommended installation

1. Place board and drill fixing holes at 300mm centre spacings into soffit. Fix IsoBoard using plastic washers and plugs (Hilti or equivalent).
2. In the case where the board is placed under soffit above a service duct, IsoBoard is installed in panels not exceeding 1,5 square metres in area, with a minimum 25 mm spacing between adjacent panels (see fire report).
3. Where applicable, suspended ceiling fixings can be effected through the IsoBoard.
4. If an aesthetically acceptable finish is required, provide a level surface to attach the board to, such as brandering. Edge bevelling is recommended.
5. The full text of the Below Soffit In Service Duct Fire Test as conducted by the CSIR Building Technology unit with respect to this installation method, report no. BF 502/089-5600-5664, is available on the IsoBoard website.
6. IsoBoard is an extrusion and flow lines can be visible. It is recommended to paint two coats of good quality matt acrylic paint in public areas.

Suggested bill of quantity specification

IsoBoard high density 32-36kg/m3 rigid extruded polystyrene 100% closed cell insulation board of ___ mm thickness and 600mm width, fixed using washers and plastic plugs at 300mm centres through pre-drilled holes to underside of smooth concrete soffit (fixed to levelling brandering if required).

Exposed Under Soffit ceiling insulation below parking deck

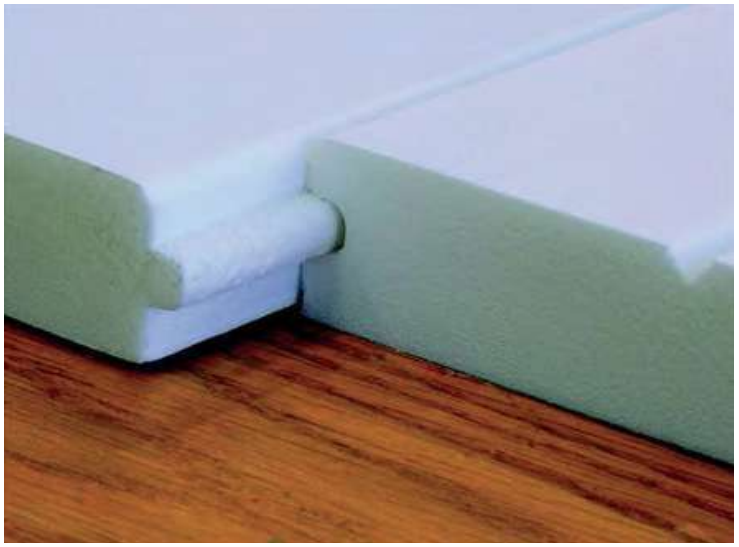


Under Soffit in service duct

Under Soffit with ancillary

Ordering information

- Use boards 1.2 m or 3 m long profiled all round to allow for alignment and tolerances expected in the product.
- IsoBoard is easily cut to length on site using a sharp blade or hack-saw.
- Where IsoBoard is to be installed under soffit above a service duct, the boards should be ordered in maximum 1200 mm lengths, with two installed adjacent to one another to form the required panel size. Allow 25mm gap between panels.



Under Soffit in service duct

Under Soffit in exposed parking insulation

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Surface Bed Insulation

Loss of heat through floors on concrete surface beds is experienced as a cold underfoot condition, particularly during winter when the supporting soils cool down due to hygroscopic action of water. In order for rooms to be heated or cooled energy efficiently, the floors need to be insulated from the surrounding soil bed to prevent soil bed from being heated.

Typical uses for IsoBoard in this application

1. Placed between mesh reinforced floor screeds and surface bed to prevent room heat loss and additional comfort.
2. Installed below refrigerated slabs of ice rinks, freezer rooms and certain agricultural applications to minimise heat flow from warmer surface beds into cold room environments.
3. Installed below screeds of domestic and commercial applications where under-floor heating systems are installed.

Typical uses as IsoBoard surface perimeter insulation

Installed new or as a retrofit to residential homes having under floor heating, for those interested in energy cost saving.

Suggested bill of quantity specification

Surface Bed Insulation for residential applications
IsoBoard high density 32-36kg/m3 rigid extruded polystyrene 100% closed cell insulation board of30 mm thickness and 600 mm width with tongue and groove joints laid on plastic sheeting (elsewhere) under reinforced concrete beds.

Perimeter Insulation
soBoard high density 32-36kg/ m3 rigid extruded polystyrene 100% closed cell insulation board of 30 mm thickness and 600 mm width installed upright against outer foundation wall to depth of 600 mm secured with soil ballast.

Above slab, below screed Insulation
IsoBoard high density 32-36kg/ m3 rigid extruded polystyrene 100% closed cell insulation board of mm thickness and 600 mm width installed above floor slab below reinforced screed not less than 60 mm thick.

Weldmesh reinforcing in surface bed

Adbove slab, below screed insulation

Above slab, below screed insulation

Site handling instructions

- Store boards flat within original packaging until required.
- Boards are to be protected from adverse weather conditions and direct sunlight for the storage period.
- Handle and install with care to prevent damage to board edges.
- IsoBoard is easily cut to length on site using a sharp blade or hack-saw, or can be supplied cut-to-length by the Regional Distribution Centres.

Installation guidelines

Surface Bed Insulation

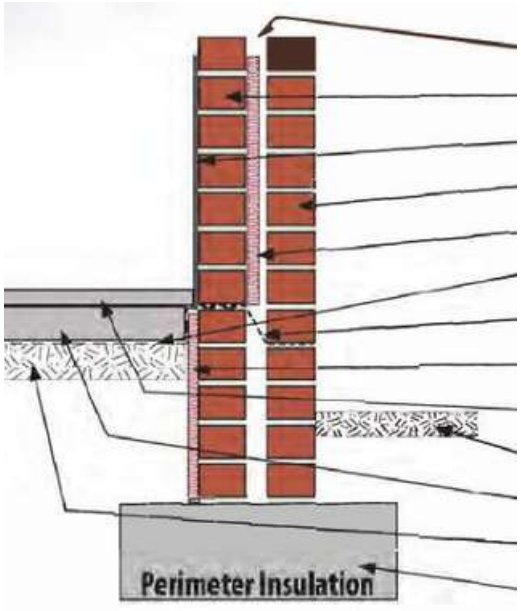
1. Prepare soil foundation and treat with weed killer and place damp proof course. After cleaning, place IsoBoard panels.
2. Jointing between boards should be effected with the tongue and groove or shiplap edge profiles.
3. The reinforced concrete slab is poured above the IsoBoard, in accordance with the specifications of the Structural Engineer, with the reinforcing spaced above the board.
4. Care must be exercised to prevent board flotation during pouring.

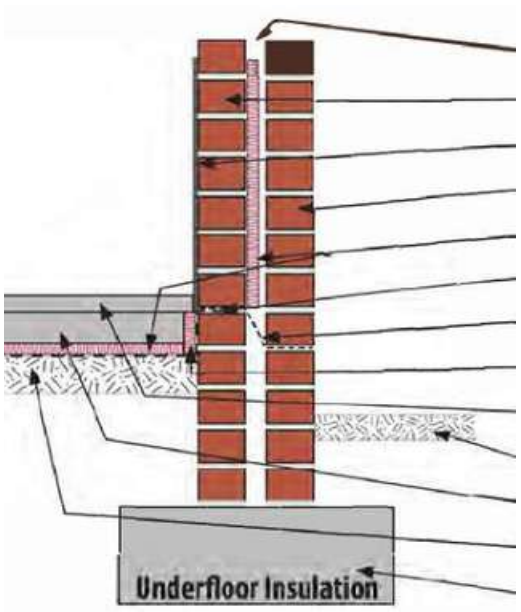
Perimeter Insulation

1. IsoBoard is installed vertically against the inner or outer foundation wall to a depth of 600mm, with the tongue towards the top. Secure IsoBoard with soil ballast.

Ordering information

- For this application 1,2m or 2,4m board lengths are practical.
- Order boards with shiplap or tongue and groove edge profiles all round.
- In South Africa 30 mm thick board will generally suffice for domestic applications, whilst up to 150mm will be required in the ice rink/ freezer room applications.





Perimiter insulation

IsoBoard installation over slab under screed

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Feel the complete comfort of premium thermal insulation.

Why Insulate?

Installing effective building thermal insulation such as IsoBoard will:

Achieve a comfortable living or working environment within your home or building, usually between 21°C and 28°C.

Enable energy efficiency, and achieve legislated compliance, as required by the National Building Regulations SANS 10400 XA. Using IsoBoard means the minimum amount of energy is used for heating and cooling interventions to achieve comfortable living, or specified temperatures for commercial or agricultural activities. This also contributes to reducing personal or commercial greenhouse gas emissions, i.e. lowering your carbon footprint.

Save money on heating and cooling energy costs. The investment in thermal insulation is usually repaid within two to four years, meaning real savings in successive years. This is especially true with IsoBoard insulation, which can be expected to last the life of the building with the minimum deterioration in thermal performance.

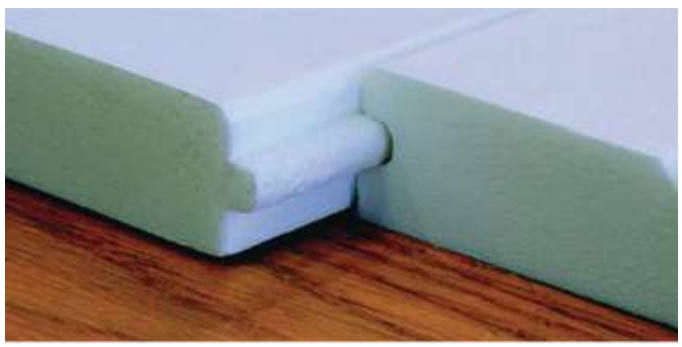
Improve health and productivity. Good thermal insulation will reduce internal condensation and provide stable internal temperatures, contributing to your health, well-being and productivity. In commercial and particularly agricultural applications, yield and input cost is often directly dependent on effective temperature control.

What is IsoBoard?

IsoBoard is a rigid, high density, extruded polystyrene, manufactured in different thicknesses and lengths to meet almost any building thermal insulation requirement in the temperature range -30°C to +60°C.

IsoBoard has Board of Agrément SA certification for five popular applications, which certify IsoBoard is fit for use as recommended. IsoBoard is without doubt the most versatile thermal insulator available.

Thermal insulation provides a barrier to heat transfer, which keeps heat energy on one side of the board or the other. Insulation does not, of itself, provide heating or cooling, but rather controls where heat energy should be, either inside or outside.



IsoBoard has over 25 years of successful local manufacture.

Advantages of IsoBoard

The advantages of IsoBoard are in its effectiveness as a thermal insulator, ease of installation, high compressive strength, resistance to moisture and excellent performance in fire situations. The board is extremely durable and will last for the life of the building, with minimal drop off in thermal performance.

IsoBoard can be painted with water based paints when used in exposed applications, and washed to clean if necessary.

Please see our website **www.isoboard.com** for the full description of the properties and characteristics of IsoBoard thermal insulation.

Thermal Performance of IsoBoard

All insulation products age over time, whether affected by dust, oxidisation, moisture or gas exchange. However, IsoBoard is the only manufacturer to declare and promote the use of fully aged values for our thermal insulation products.

We promote the use of fully aged design thermal values, to determine the anticipated performance of the IsoBoard insulation over the lifetime of the building.

Our design values can be relied upon to be effective over the expected life of a building.

Thermal Resistance: R - Value (m ° C/W)		
Thickness	**Design Value**	**90 Day***
25mm	0.83	1.04
30mm	1.00	1.25
40mm	1.33	1.67
50mm	1.66	2.08
60mm	2.00	2.50
70mm	2.33	2.92
80mm	2.66	3.33

*If comparing IsoBoard to other insulation products, use the resistance values in the column “90 day”, as these equate to the published resistance values for other insulation products.

Fire Performance

IsoBoard is classified as **B/B1/2/H&V** in terms of SANS 428. This means that although the board is combustible, it poses no flame spread hazard and can be used in any building type in a horizontal or vertical application, both with and without sprinklers, with the exception of regulated buildings requiring non-combustible materials, such as hotels and hospitals.

Exposed to fire, IsoBoard shrinks away from the heat source. There are no flaming droplets, and no flame spread. The gases released as a product of combustion are less toxic than burning wood.

THE ISOBOARD ADVANTAGE

IsoBoard does not spread flame.

SANS 10400XA

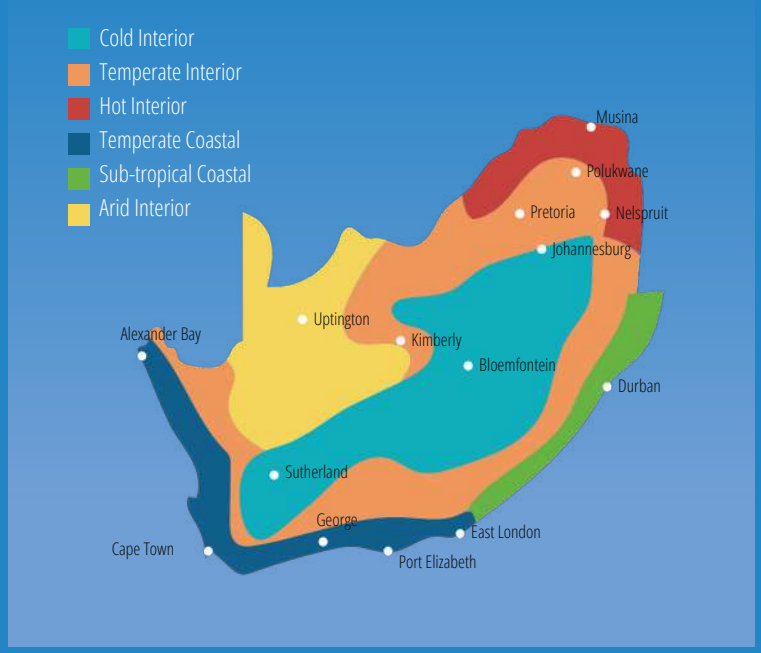
The National Building Regulations SANS 10400 require that all new renovated buildings are thermally insulated to limit energy usage from heating and cooling. Compliance with section XA is achieve in one of three ways:

1. Following the **prescriptive tables** for each climatic zone in South Africa, generally proven very conservative in nature.

2. Having a competent person demonstrate that the **annual energy usage and energy demand of designated building classifications** does not exceed tabled design limits.

3. Performing a **rational design according to the reference building method**, which demonstrates an equal or better energy usage outcome when compared to compliance with the prescriptive tables.

IsoBoard believe the most cost effective and beneficial alternative to the prescriptive tables is the rational design approach. Examples performed of various building occupancy classifications across all climatic zones demonstrate the benefits of rational design from a cost and flexibility point of view. The cost of performing a rational design will repay in cost savings for buildings of approximately 100m2, and more.

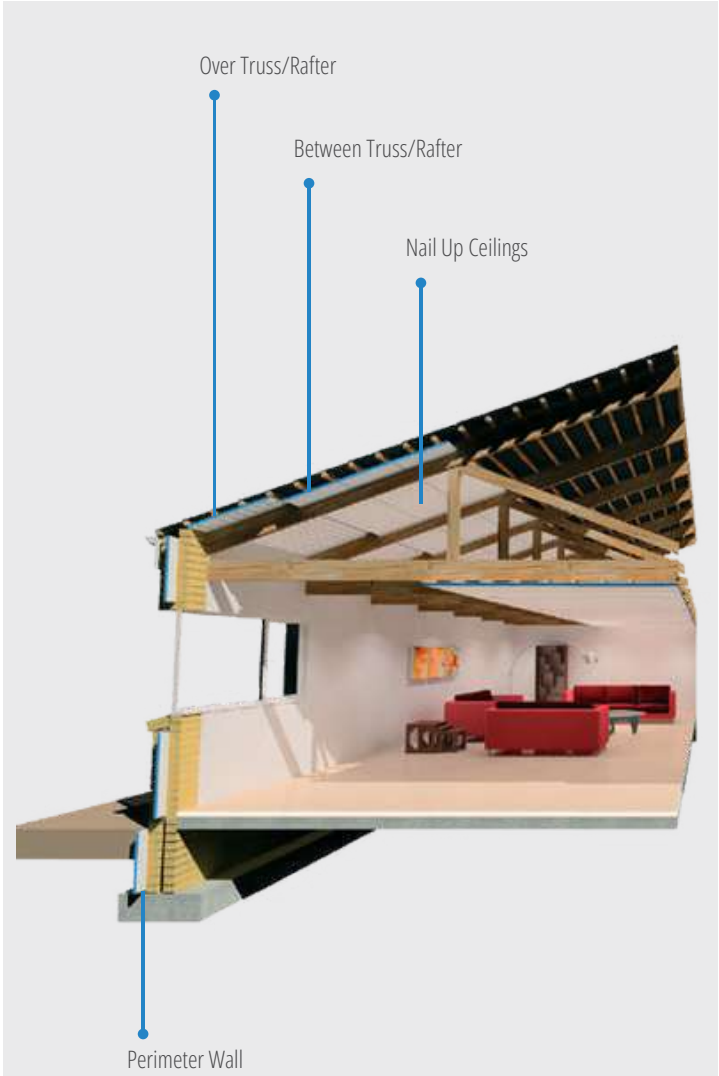


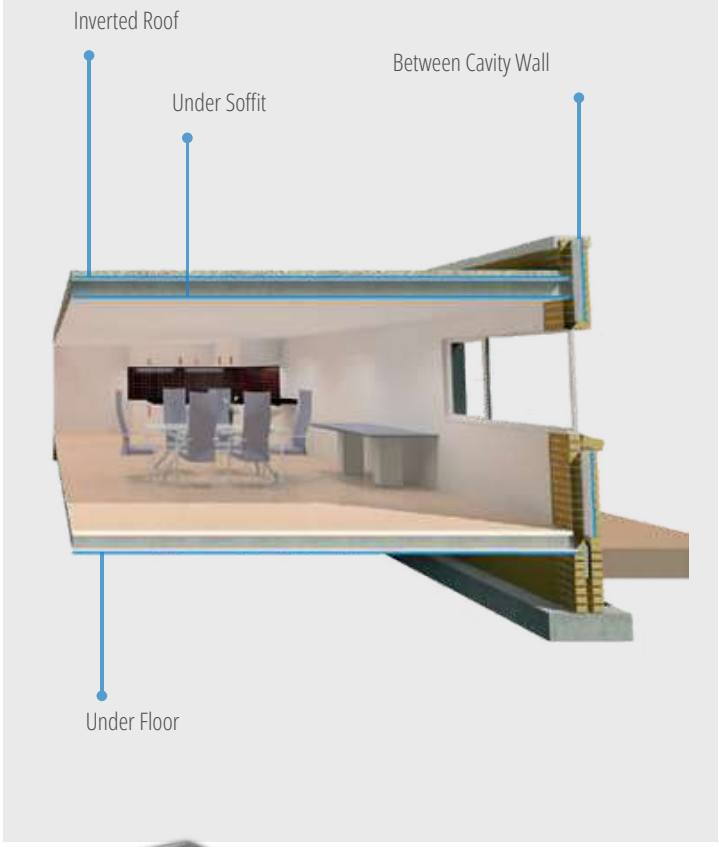
Prescriptive Compliance						
Climatic Zones	**1**	**2**	**3**	**4**	**5**	**6**
Description	Prescriptive Requirements: SANS 10400 XA Clause 4.2.1(b)					
Roofs						
Minimum required Total R-value (m2.K/W)	3.7	3.2	2.7	3.7	2.7	3.5
Direction of heat flow	up &up	up	down	up	down	up
	70	80		100	65	90
Non-Masonry Walls						
Minimum required Total R-value (m2.K/W)	2.2	1.9	1.9	1.9	1.9	2.2
IsoBoard Requirement	40	30	30	30	30	40
Floors with underfloor heating						
Minimum required Total R-value (m2.K/W)	1.0	1.0	1.0	1.0	1.0	1.0
IsoBoard Requirement	30	30	30	30	30	30

Rational Design Compliance (recommended)						
Climatic Zones	**1**	**2**	**3**	**4**	**5**	**6**
Building Classification	Prescriptive: IsoBoard Required Ceiling Insulation (mm per Climatic Zone)					
Small Shop / Strip Mall	40	30	30	30	30	40
High Rise Office	40	40	40	40	40	40
Low Rise Office	30	30	30	30	30	40
Residential > 132m2	40	40	40	40	40	40
Subsidy Housing	40	30	30	40	30	40
Hospital	40	40	40	40	40	40
Hotel	40	30	40	30	40	40
Retail Shops & Malls	40	40	40	40	40	40

IsoBoard is non toxic, and unaffected by dust and moisture

IsoBoard Thermal Insulation Applications





ISOBOARD THE ADVANTAGE

Simple fixing guidelines allow professional and DIY installations.

Nail Up Ceiling

Fit brandering to room perimeter, and at max. 700mm centres one direction only. IsoBoard is fixed to brandering using adhesive and concealed fixing clips. Use dry wall screws at 300mm intervals on the perimeter where cornices will be installed. Apply adhesive in 5ml blobs every 200mm, coverage is approximately 30m2 per litre. Clip usage is 3 per m2.

IsoBoard can be retrofitted below an existing ceiling to cover damage, provide insulation or change the appearance. IsoBoard can also be fixed below a concrete soffit. Fit brandering below the soffit or other ceiling if necessary to allow for rough or sagging surfaces.

When fixing IsoBoard between existing trusses, rafters and brandering, use screws, clips and adhesive as for nail-up ceilings.

Over Rafter and Truss

The boards are laid horizontally in long lengths, always beginning and ending on a truss or rafter. Fix a counter batten above each truss or rafter, secured with screws through the IsoBoard into the beam below at 300mm intervals.

Battens or purlins are fixed to the counter battens.

If fitting IsoBoard below a steel roof, install fibrous acoustic insulation over IsoBoard to dampen weather noise.

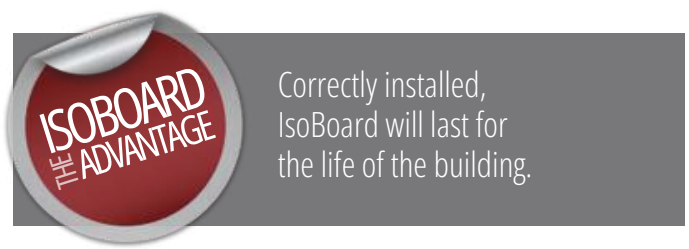
Cavity Wall Insulation

Cavity wall insulation is an excellent way of controlling heat transfer through walls, as well as preventing moisture condensing on and penetrating the inner leaf. As homes become smaller and taller, the ratio of roof area to wall area decreases, and the impact of the heat transfer through the walls increases.

Essentially, the boards are fixed horizontally to the inner leaf using wire ties, alternating with ties used to secure the two leaves together across the cavity. Remember to keep the cavity clean.

Inverted Roof Insulation

IsoBoard is laid above the water proofing layer and secured in place using ballast, to prevent flotation or wind uplift. The ballast layer can be gravel, paving stones or a concrete screed. The water proofing is protected from the sun and weather by the IsoBoard, rendering it practically maintenance free. The thermal mass of the concreted slab is maintained at the internal temperature of the building, protected from daily variation, helping to maintain a contact temperature within the building. Inverted Roof insulation can be installed onto a new building, or as a retrofit solution later. IsoBoard excels in Inverted and Green Roof applications, as it is the insulator least affected by water.



Surface Bed Insulation

The IsoBoard can be installed either below the screed above the floor slab, or below the floor slab. As a rule, if planning to have an electric heating system to warm your floor, install IsoBoard below screed, to minimize the volume of concrete to heat, and reduce heating costs. If planning a solar water heating system, install the IsoBoard below the floor slab, as the slab will gradually release retained heat into the building at night. An insulated floor without any under-floor heating can be expected to be warmer than an uninsulated floor by 4 to 5°C. SANS 10400XA requires that all heated floors are insulated to a minimum thermal resistance of 1, i.e. 30mm IsoBoard. Specialised applications of this type would include ice rinks and cold rooms.

Foundation Perimeter Insulation

The effect of this application is very similar to under-floor slab insulation, however, perimeter insulation can also be a retrofit installation. IsoBoard is placed against the external foundations of the building, from the surface to the depth of the foundation or at least 600mm. By insulating foundations to this depth, your building is not subjected to heat transfer through the floor from adjacent soil temperatures, which may range from 40°C to frozen. The IsoBoard insulation maintains your floor slab at an even moderate temperature, assisting in controlling the temperature of the building.

Over Purlin Insulation

IsoBoard is laid over purlin, always beginning and ending on a purlin. The board can follow a 5m radius for curved roof applications. Use T-sections to increase the unsupported spanning capability of the IsoBoard. The IsoBoard is clamped to the purlin by the roof sheets, or the concealed-fix fittings. Remember to use longer roof screws to accommodate the thickness of the board. If IsoBoard is clamped in direct contact with a Chromadek or similar painted roof sheet, fit 3mm masonite spacers or slip-sheeting to prevent possible squeaking noise. Spacers are not necessary if concealed-fix roof sheets are used. IsoBoard can be used to clad the sides of steel frame buildings.

Ordering IsoBoard

IsoBoard thermal insulation is available in standard lengths from 1.8m to 7.2m in increments of 600mm, and 8m. Thicknesses range from 25mm, 30mm, 40mm up to 80mm, with board thicknesses above 50mm made to order. IsoBoard can be ordered with the IsoPine surface finish, which looks similar to a tongue and groove pine surface, or beveled edge with the edge of the board beveled to achieve a panel finish. IsoBoard in always 600m in width, having a tongue and groove edge profile to interlock adjacent boards.

IsoBoard keeps you comfortable during summer and winter.

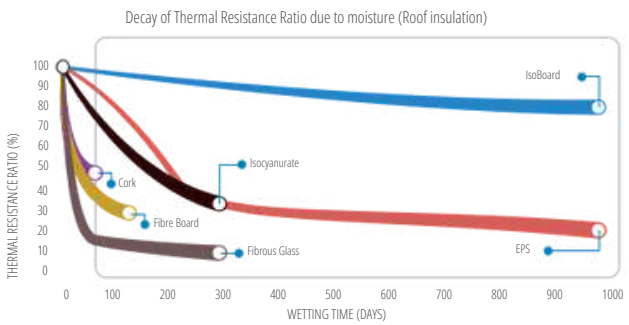
Guidelines For IsoBoard Usage

IsoBoard is a bulk insulator, and the thicker the board chosen, the more resistance is provided. Temperatures are more stable in better insulated buildings, all else being equal. Different climatic regions require different insulation interventions to achieve similar levels of comfort, and legal compliance. **Contact IsoBoard to determine an appropriate thickness for your application.**

- P The board should always be positively secured on its ends, i.e. not left hanging loose.
- P Avoid butt-joining IsoBoard when used as ceilings, as these joints are difficult to conceal. Butt joints for roof lining applications should be over a purlin, rafter or truss.
- P IsoBoard can be readily trimmed to length using a sharp knife or hacksaw.
- P Keep lighting lamps which generate heat in excess of 70°C away from IsoBoard.
- P When fitting down-lighters, always use a swivel-type fitting and either "energy saver CFL" or LED lamps.
- P IsoBoard should not be used on its own as a sound insulator, as it does not have the properties required to be a good sound absorber.
- P IsoBoard should be wiped with a cloth soaked in a softened water solution immediately prior to installation to remove static charges from the surface, if left unpainted.
- P Finish with 2 coats good quality matt acrylic paint, of which we recommend the first coat to be an acrylic filler coat to cover minor surface indentations & imperfections.
- P Always paint IsoBoard in applications where direct or reflected sunlight will fall on the board, to protect from the effects of UV rays which accelerate the board aging process.
- P Handle and install the board with care to prevent damage to board edges. Store out of the sun and weather in original packaging.

Please consult our website or representatives for additional installation specifications where necessary.

How Does Moisture Affect Thermal Insulation?



Reference: New Wetting Curves for Common Roof Insulations. Tobiason, Greatorex, Van Pelt 1991

IsoBoard thermal conductivity (k value) changes as the gas used to form the board exchanges with air over time. This exchange is initially rapid with fresh board, stabilising approximately five years after manufacture. The k value of IsoBoard increases during this process, reaching k = 0.0028 W/m°C. We recommend IsoBoard insulation systems are design using a k value of 0.03 W/m°C. This caters for the highest heat flow expected over the lifetime of the IsoBoard, including any effects from high humidity applications.

IsoBoard is the thermal insulator least affected by moisture.

Contact Details

Gauteng Sales t. 012 653 8204
northsales@isoboard.com

Cape Sales
t. 021 983 1140
capestores@isoboard.com

Atlantic Hills
t. 021 495 8999
southsales@isoboard.com

KwaZulu Natal Sales
t. 031 569 1800
dbnsales@isoboard.com

Bloemfontein
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bloemoutlet@isoboard.com

Port Elizabeth
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Retreat Cape
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Nelspruit
t. 013 752 2558
nelspruitoutlet@isoboard.com

Northgate Cape
t. 021 510 0913
northgateoutlet@isoboard.com

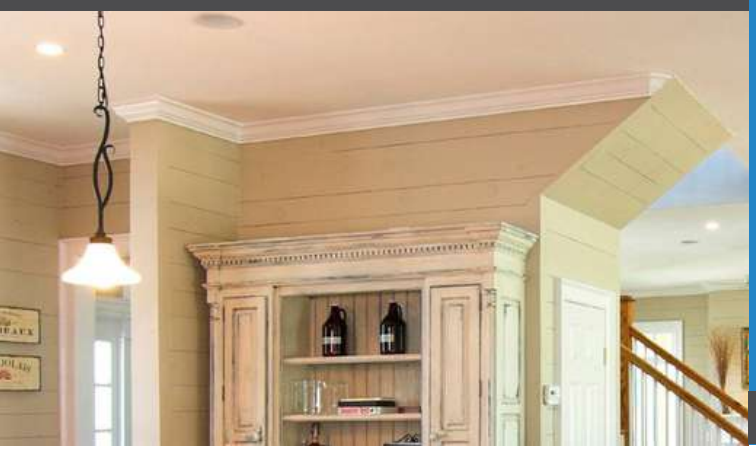
IsoBoard is also available through a variety of merchants and resellers.
Please visit our website for updated stockist information.

Follow IsoBoard on Facebook for latest product developments.

www.isoboard.com

Installation Guidelines

1. Ensure all surfaces are clean, free of dust and grease.
2. Cornices should be cut using a fine tooth panel saw or hacksaw. Please cut corners using a mitre-box for best results.
3. Expect to use approximately 50ml adhesive per m for smaller profiles, and 100ml per m for larger profiles. Double the amount of adhesive anticipated if the wall surfaces are uneven.
4. Apply a liberal bead of adhesive to top and bottom of cornice. Press firmly to hold in position.
5. Wipe away excess adhesive with damp cloth or sponge.
6. Large profiles may require additional support on either the vertical or horizontal surface for positive fixing.
7. Leave a 2mm space between adjacent cornices on long runs.Fill with adhesive.
8. Repair dents, chips and marks with adhesive diluted with water to paint consistency. Apply with brush.
9. Paint profiles with water based paints or stains.
10. Profiles are water resistant and can readily be installed in bathrooms and kitchens.
11. Large profiles can be used to cover existing installed cor nices.
12. Cornices are heat sensitive to temperatures above 60°C and will shrink away from direct contact with such heat sources.



Contact Details

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Nelspruit
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KwaZulu Natal Sales
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dbnsales@isoboard.com

Northgate Cape
t. 021 510 0913
northgateoutlet@isoboard.com

Bloemfontein
t. 051 430 1953
bloemoutlet@isoboard.com

IsoBoard is also available through a variety of merchants and resellers.
Please visit our website for updated stockist information.

Follow IsoBoard on Facebook for latest product developments.

Cornice Options

Cornice Codes and Dimensions

Cornices are available in 2m lengths only.

Reg. No. 95/03958/07

HEAD OFFICE
ACCOUNTS & FACTORY
P.O. Box 1584
DASSENBERG, 7350
Tel: (021) 577-1105
Fax: (021) 577-1182

ISOFOAM SOUTH AFRICA (PTY) LTD

SALES & DISTRIBUTION
GAUTENG SALES: (012) 653-8204
CAPE SALES: (021) 983-1140
KZN SALES: (031) 569-1800

5. AGRÉMENT SOUTH AFRICA CERTIFICATES

.....0.0.0.....

AGRÉMENT SOUTH AFRICA

CERTIFICATE NO:
2001/287
(Amended Oct 2018)

CONFIRMATION OF CERTIFICATION

AGRÉMENT CERTIFICATE

is awarded to:

Isofoam South Africa (Pty) Ltd

in recognition of:

Isoboard® Over Purlin Roof Insulation

Which certificate provides detailed information on the performance in use and the uses of the subject of the certificate. When presented as proof of certification this document must be accompanied by the original certificate or by a certified copy of the typescript of the certificate approved by the Board.

Dr Jeffrey Mahachi

CHAIRPERSON

AGRÉMENT SOUTH AFRICA

CERTIFICATE NO:
2006/323
(Amended Oct 2018)

CONFIRMATION OF CERTIFICATION

AGRÉMENT CERTIFICATE

is awarded to:

Isofoam South Africa (Pty) Ltd

in recognition of:

Isoboard® Nail Up Insulated Ceilings

Which certificate provides detailed information on the performance in use and the uses of the subject of the certificate. When presented as proof of certification this document must be accompanied by the original certificate or by a certified copy of the typescript of the certificate approved by the Board.

Dr Jeffrey Mahachi

CHAIRPERSON

AGRÉMENT SOUTH AFRICA

CERTIFICATE NO:
2000/276
(Amended Oct 2018)

CONFIRMATION OF CERTIFICATION

AGRÉMENT CERTIFICATE

is awarded to:

Isofoam South Africa (Pty) Ltd

in recognition of:

Isoboard® Cavity Wall Insulation

Which certificate provides detailed information on the performance in use and the uses of the subject of the certificate. When presented as proof of certification this document must be accompanied by the original certificate or by a certified copy of the typescript of the certificate approved by the Board.

Dr Jeffrey Mahachi

CHAIRPERSON

FIRELAB

TITLE	:	Report on the evaluation of the fire propagation properties of the **IsoBoard** Extruded Polystyrene insulation system product range using the **SANS 10177 – Part 5, 10 and 11 (H & V)** test protocol in terms of **SANS 428**
REQUESTED BY	:	Isofoam South Africa (Pty) Ltd. PO Box 1002 **Cape Gate** 7562
CONTRACT No	:	FTC15/029
AUTHOR(S)	:	J.S. Strydom, P.J. Strydom
DATE	:	24 August 2015

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FIRELAB

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FIRELAB

1. INTRODUCTION

The purpose of the investigation was to evaluate the fire propagation properties of the **IsoBoard** Extruded Polystyrene product range for industrial and commercial buildings in terms of **SANS 428** as supplied by **Isofoam South Africa (Pty) Ltd**.

2. SAMPLE DESCRIPTION

The **IsoBoard** products had the following characteristics:

Physical Properties:

Mass:	32 – 36	kg/m3
Thickness:	25 – 80	mm mm
Width:	600	mm
Length:	6 000	*Unknown*
Batch Number:		*Unknown*
Manufacturing Date:		

Product Composition:

Material:	32 – 36 kg/m3 Extruded Polystyrene (XPS)
Facings:	– *None*

Joint details:

Joint (25 – 50 mm):	Tongue and Groove (T & G)
Joint (60 – 80 mm):	Shiplap

Intended usage:

Over-purlin under-roof insulation in industrial and commercial buildings using profiled metal roof sheeting.

Generic Identification:

White high density Extruded Polystyrene (XPS)

Product information as supplied by **Isofoam South Africa (Pty) Ltd** can be found in **Annexure "A"**.

3. TEST PROCEDURES

3.1. SANS 10177 – PART 5: 2012 (COMBUSTIBILITY)

For this evaluation, a number of 40 x 40 mm samples was prepared and in turn placed on a sample holder and lowered into the standard **SANS 10177-5** electrically-heated furnace, which has been pre-set to have a furnace enclosure temperature of 750 °C. The standard test duration is 10 minutes. The test criteria for non-combustibility are that the specimen should neither increase the furnace enclosure temperature by more than 50 °C nor support flaming continuously for more than 10 seconds during the exposure period. Should either of these criteria not be met, the material will be regarded as combustible at 750 °C.

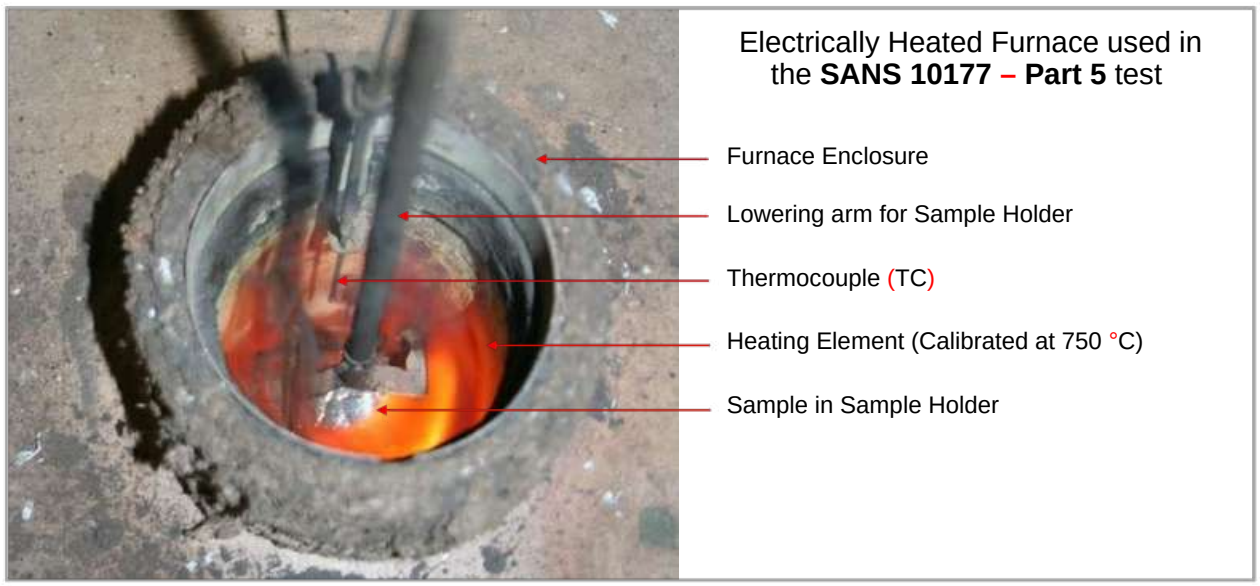

*Figure 3.1.1: Electrically Heated Furnace used in the **SANS 10177 – Part 5** test*

3.2. SANS 10177 – PART 10 (FLAME SPREAD)

The installation was representative as would normally be done in practice for an over-purlin under-roof installation in buildings using profiled roof sheeting. The specimens were installed according to manufacturer's installation instructions in the channel tunnel facility shown in Figure 3.2.1.
The fire-spread properties of the insulation material tested, envisaged for use in buildings, are classified according to **Annex C** of **SANS 428**, Surface fire properties, also taking in consideration the limitations regarding the use of non-combustible materials described in **SANS 10400 – T**.
Temperatures were measured during the investigation with thermocouples located 20 mm below the installation at 1 m centres. The test installation was exposed to the thermal output of three litres of n-hexane, which was placed in the fire source tray. Temperatures were continuously recorded and observations were noted of the behaviour of the material.

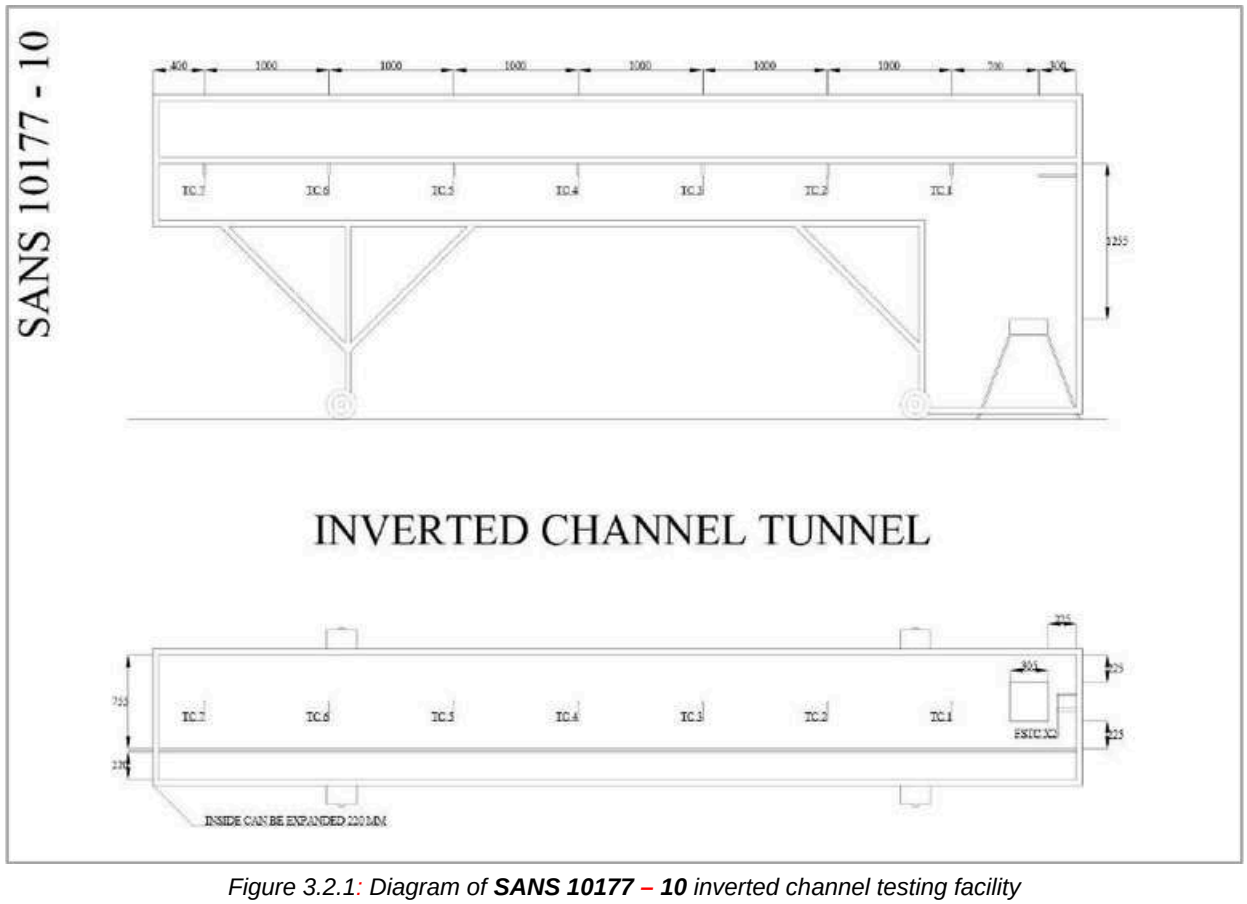

*Figure 3.2.1: Diagram of **SANS 10177 – 10** inverted channel testing facility*

3.3. SANS 10177 – PART 11, HORIZONTAL (CLASSIFICATION)

The large-scale fire propagation properties of the system were evaluated by performing a test in the **FIRELAB** large-scale roof insulation test facility. A schematic diagram of the test facility with the specimen frames are shown in Figure 3.3.1 and 3.3.2.
The ignition source for the under-roof evaluation was constructed from 60 kg dry 38 mm x 38 mm SA Pine sticks stacked in an open-crib configuration to form a 1 000 mm x 750 mm x 480 mm high crib. The pack was ignited with commercial firelighters at each corner, in order to simulate a fire with slow heat build-up. The maximum heat output of the fire source (approximately 2.5 MW based on previous research) occurred after approximately 12 minutes.
The fire source was located at one end of the facility, approximately 1.5 m from the front end, 1.5 m from the side and 1.5 m from the center line of the specimen frame. The position of the crib is indicated on Figure 3.3.1. No mass loss measurements were taken during the evaluations.
This test was performed simulating a roof insulation system. This evaluation investigated the fire propagation properties of the Expanded Polystyrene insulation with the purlins positioned across the width of the test facility. A schematic side view of a typical roof test installation is shown in Figure 3.3.2.
For this evaluation the specimen frames were aligned in such a way that the roof slope was equal to 3 degrees. The distance between the top of the fire source and the roof directly above it was 2.7 metres.

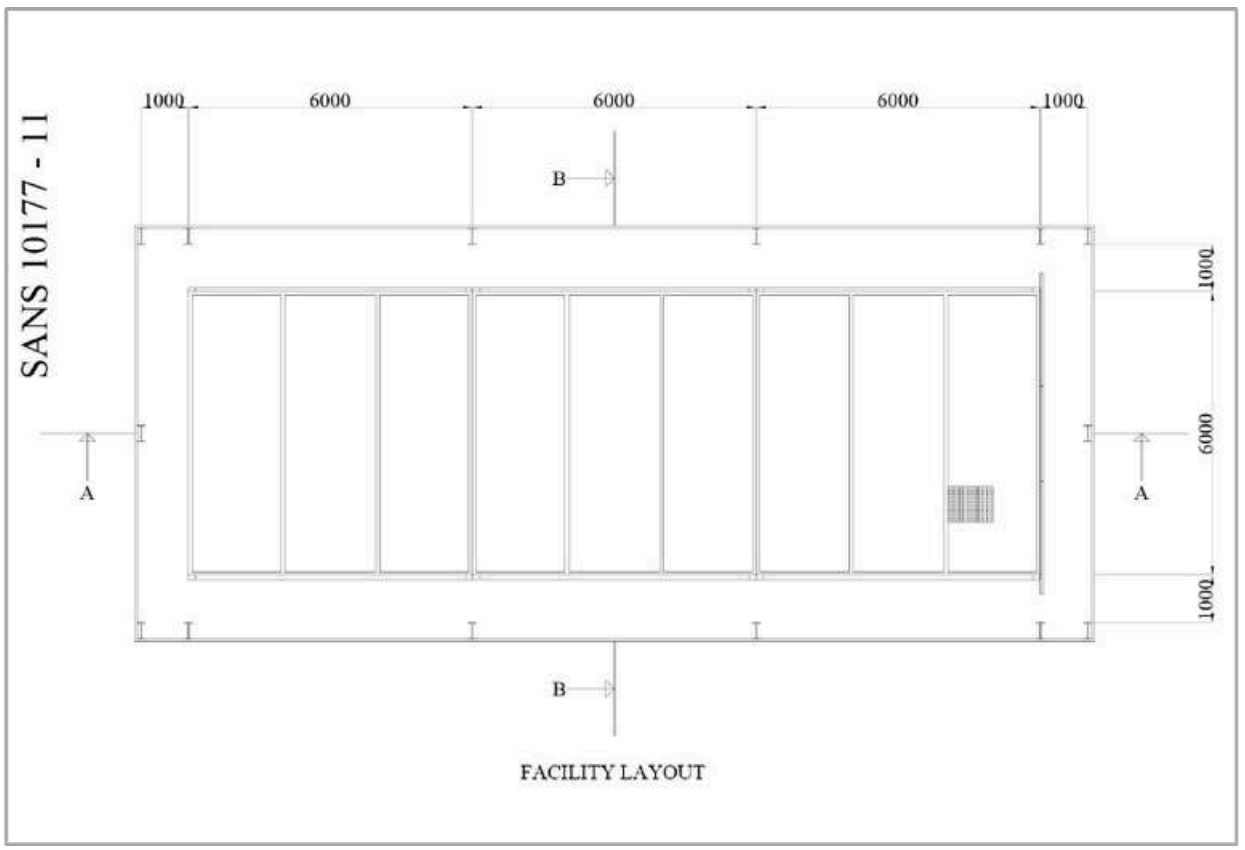

*Figure 3.3.1: **SANS 10177 – Part 11** test facility with specimen frames*

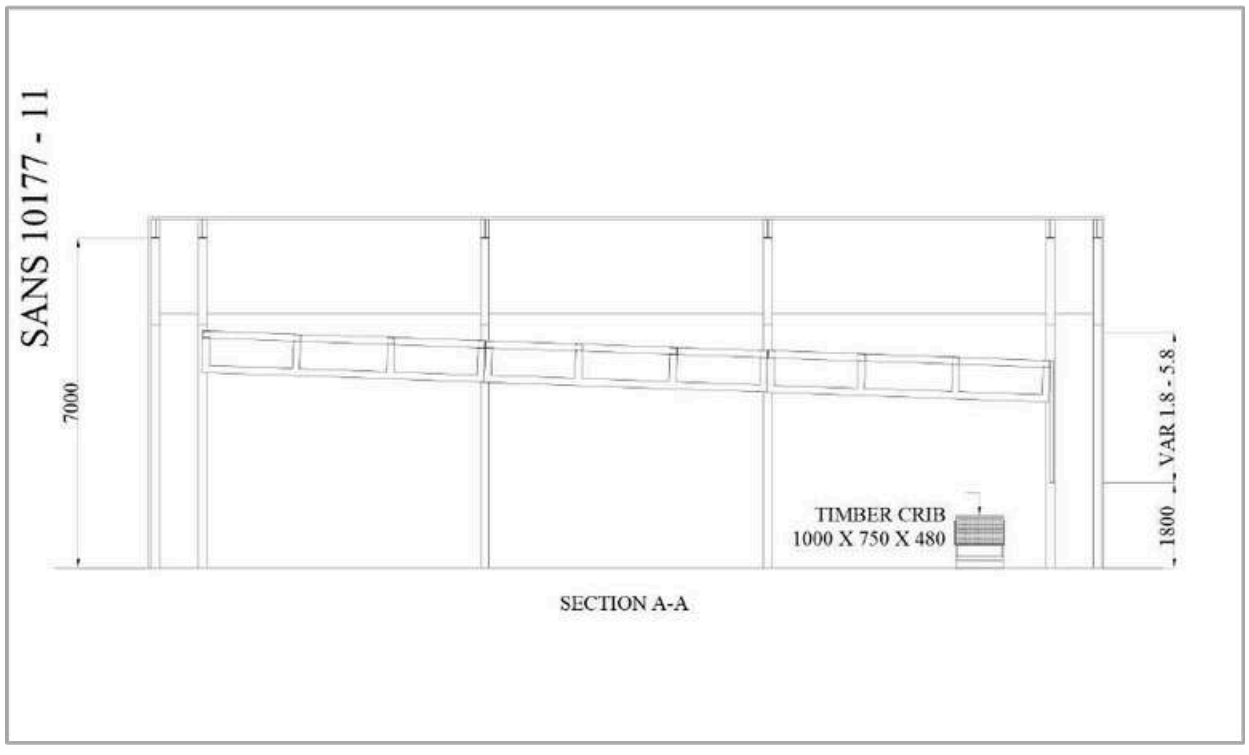

*Figure 3.3.2: Typical roof test installation in the **SANS 10177 – Part 11** facility*

3.4. SANS 10177 – PART 11, VERTICAL (CLASSIFICATION)

The fire propagation properties associated with the use of this insulation system in a side cladding application were investigated in terms of the relevant section of **SANS 10177-11**.

A vertical specimen frame was fitted to the front end of the test installation against the first horizontal hanging frame. The insulation material was installed onto the inside between the horizontal purlins. The fire source was placed 600 mm either side of the center of the vertical frame. A typical installation is shown schematically in Figure 3.4.1 and Figure 3.4.2.

The fire source consisted of two packs of 7.5 kg consisting of 38 mm x 38 mm pine sticks, each 300 mm in length, four per layer and ten layers high.

No temperatures were recorded during this evaluation. The criterion that will be applied when assessing whether the material is suitable for vertical applications is that flame spread onto the roof portion will not be allowed.

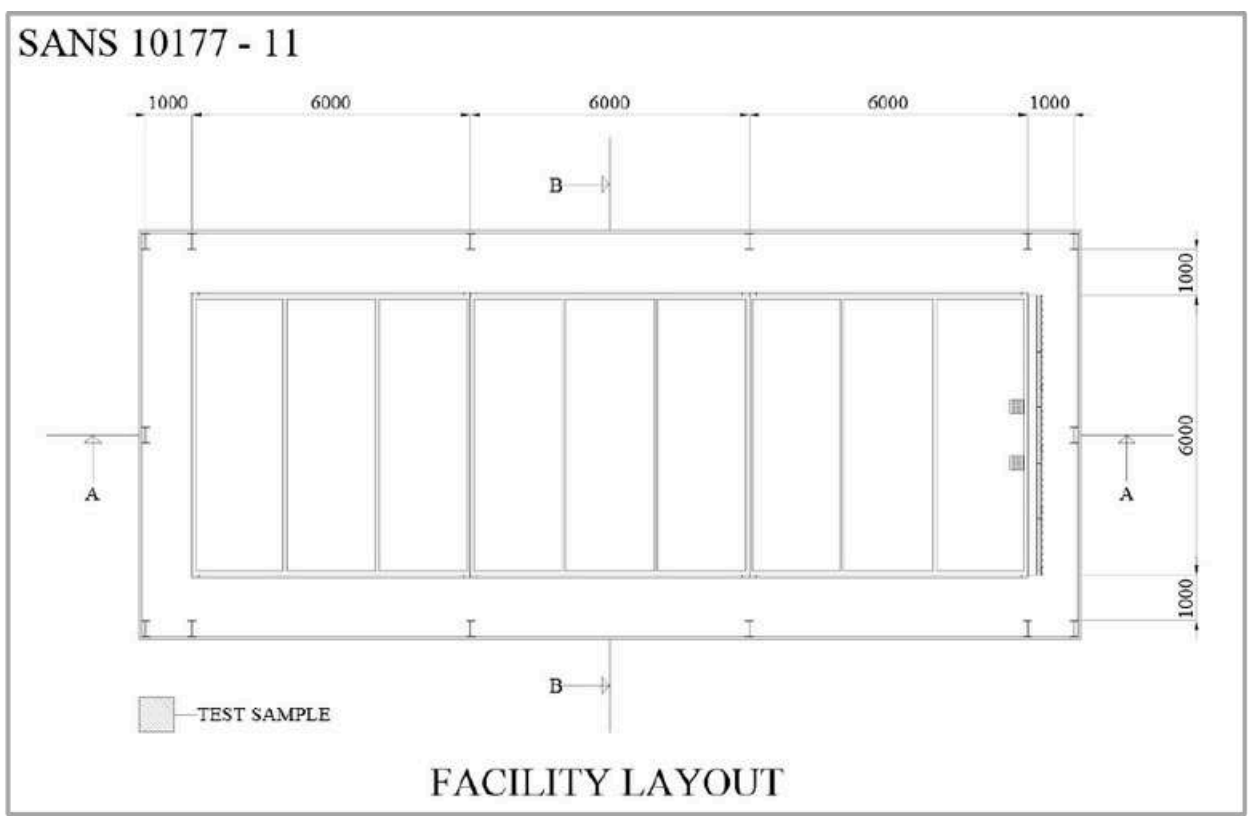

*Figure 3.4.1: **SANS 10177-11** facility plan view for vertical test*

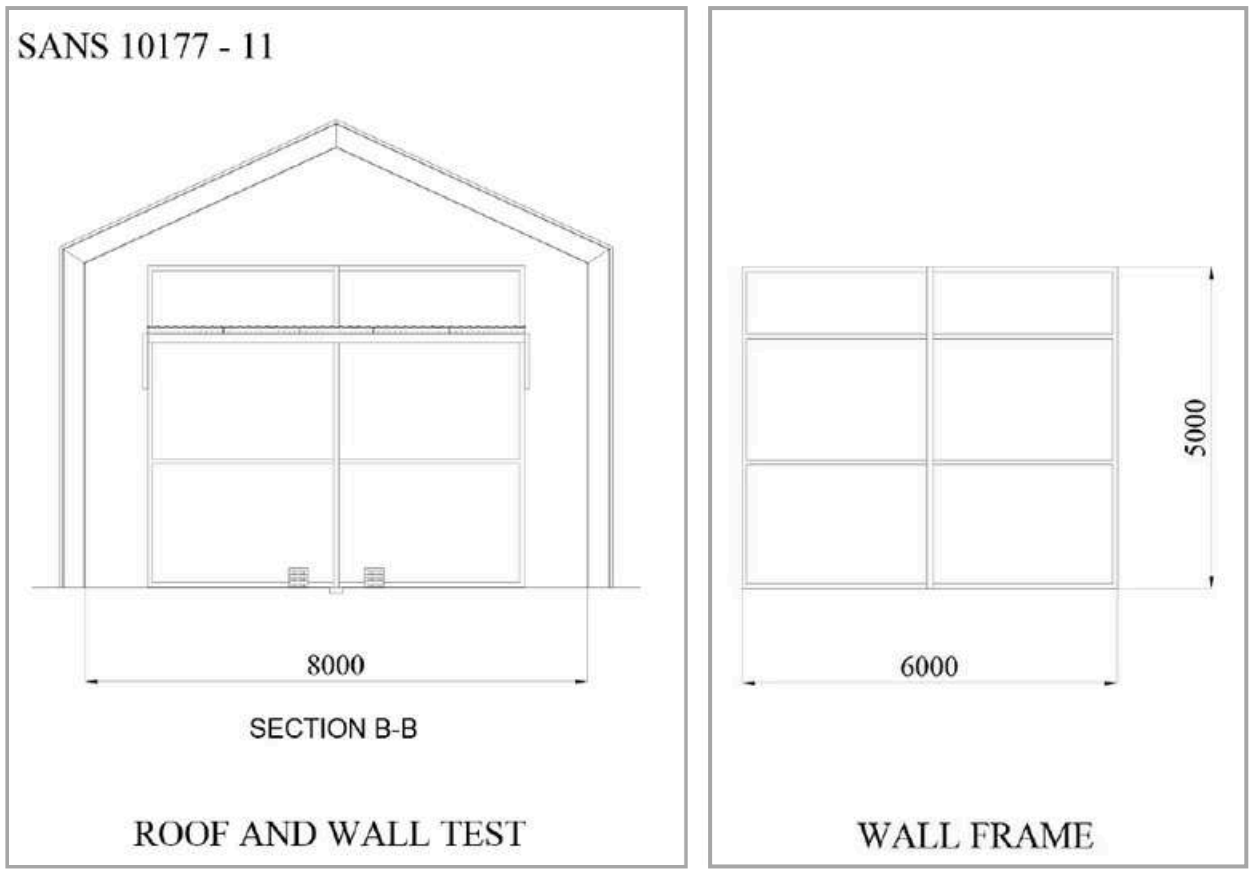

*Figure 3.4.2: Typical side-cladding installation in **SANS 10177-11** facility*

4. TEST RESULTS

4.1. SANS 10177 – PART 5: 2012 (COMBUSTIBILITY)

Should the furnace enclosure temperature be raised above 800 °C or the material support flaming for longer than 10 seconds during the exposure period, the material will be regarded as combustible at 750 °C.

Table 4.1.1 below gives the individual burn times and heat contribution for the 6 specimens tested within the **SANS 10177 – Part 5** facility.

Isofoam South Africa (Pty) Ltd – IsoBoard (32 – 36 kg/m)^3				
Sample number	**Time to ignition (mm:ss)**	**Time to extinguishment (mm:ss)**	**Burn time (mm:ss)**	**Heat Contribution (°C)**
1	00:03	00:30	00:27	< 50
2	00:02	00:32	00:30	< 50
3	00:06	00:34	00:28	< 50
4	00:06	00:34	00:28	< 50
5	00:07	00:39	00:32	< 50
	Classification:	**Combustible**		

*Table 4.1.1: Combustibility results from the **SANS 10177-5** test*

The material would therefore be regarded as combustible at 750 °C given that the burn times did exceed 10 seconds. The furnace enclosure temperature was not however increased by more than 50 °C.

4.2. SANS 10177 – PART 10 (FLAME SPREAD)

4.2.1. 25 MM ISOBOARD PANEL

The test installation in the **SANS 10177 – Part 10** facility prior to ignition of the fire source is shown in Figure 4.2.1.1 and at the conclusion of the test in Figure 4.2.1.8.

Observations made during **SANS 10177-10** test are depicted in Table 4.2.1.1 below:

Isofoam South Africa (Pty) Ltd – 25 mm IsoBoard	
OBSERVATIONS DURING THE **SANS 10177 – PART 10** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
00:35	Joint started opening
01:10	Material shrinking away
01:25	Joint open
01:50	Softened material draping and dropping down
05:40	Material drape up to 2 meters
06:00	Heat damage up to 3 meters
08:50	Material drape up to 4 meters and starting to drop down
09:20	Heat damage past 4 meters
10:40	Molten droplets up to 2 meters (trapped material)
12:00	Material draped up to 6 meters
13:15	Fire Source consumed **– Test end –**
Note(s):	Molten debris above Fire Source No ignition during test

*Table 4.2.1.1: Observations made during the **SANS 10177 – Part 10** test*

The temperatures recorded during the test in the **SANS 10177-10** facility are depicted graphically in Figure 4.2.1.9.

Figure 4.2.1.1: The test installation prior to ignition of the Fire Source

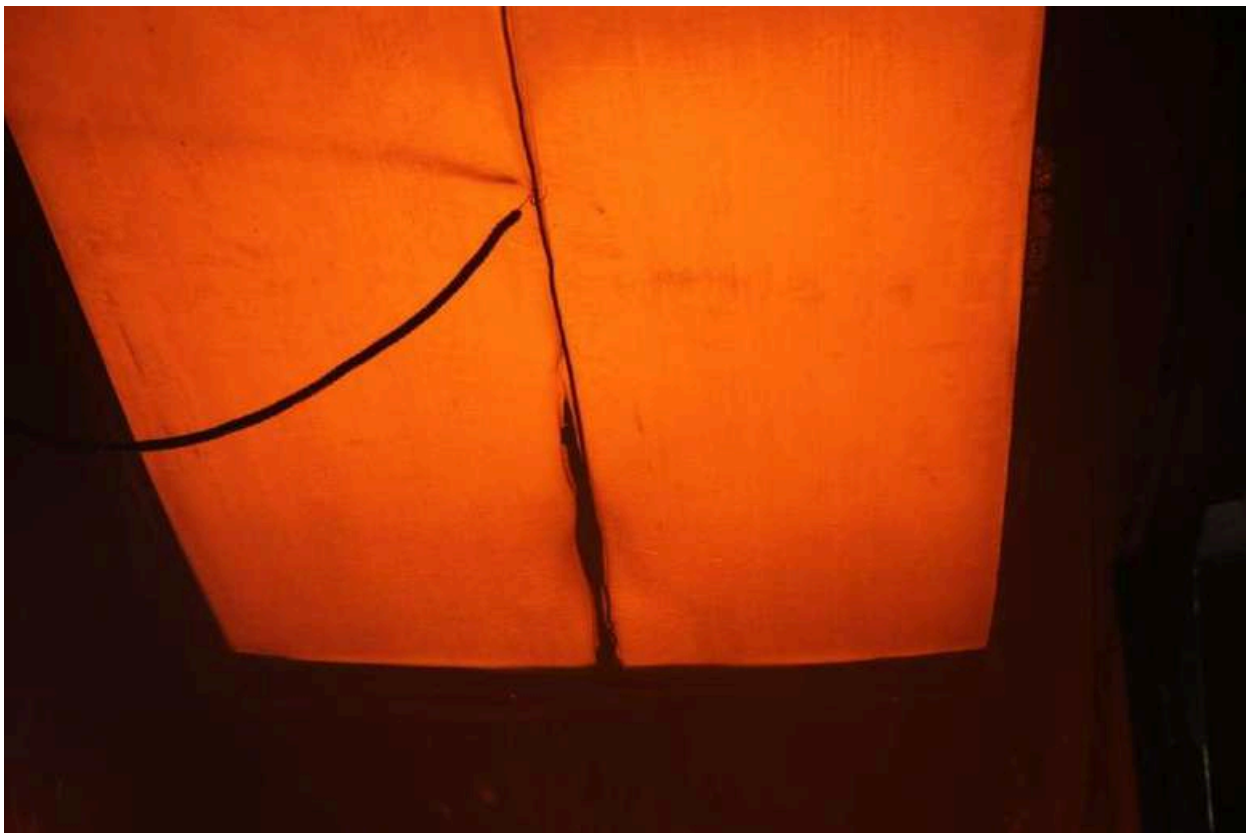

Figure 4.2.1.2: Joint opening up above Fire Source

Figure 4.2.1.3: Material softening and starting to drape and drop out above the Fire Source

Figure 4.2.1.4: Heat damage and material draping up to 2 meters

Figure 4.2.1.5: Material dropping out to 2 meter mark and draping up to 4 meters

Figure 4.2.1.6: Heat damage up to 6 meter mark and dropping out up to 4 meters

Figure 4.2.1.7: Full length heat damage with material dropping out to 4 meters

*Figure 4.2.1.8: Test specimen at conclusion of **SANS 10177 – 10** test*

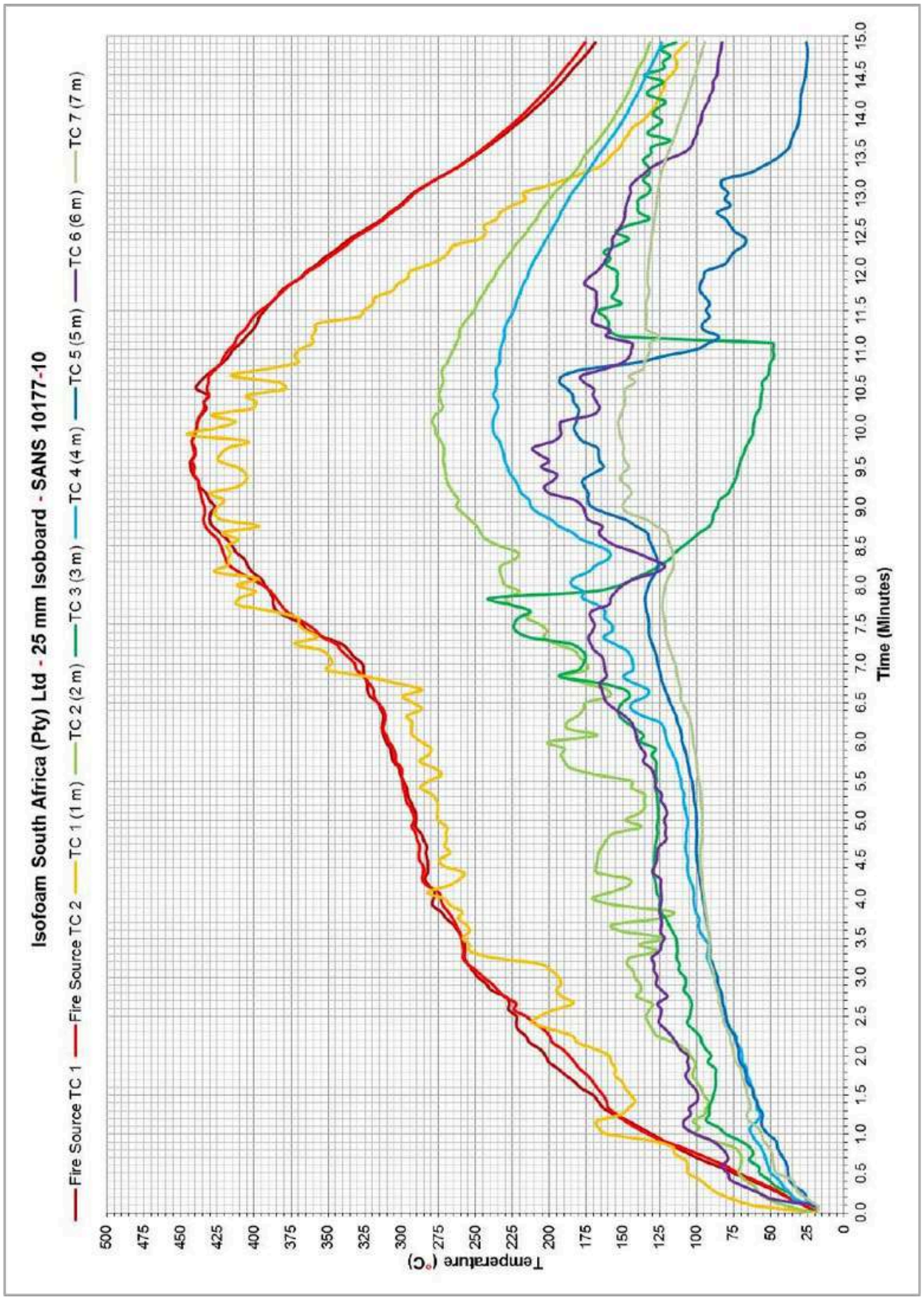

*Figure 4.2.1.9: Temperatures recorded during the **SANS 10177 – Part 10** test*

4.2.2. 30 MM ISOBOARD PANEL

The test installation in the **SANS 10177 – Part 10** facility prior to ignition of the fire source is shown in Figure 4.2.2.1 and at the conclusion of the test in Figure 4.2.2.6.

Observations made during **SANS 10177-10** test are depicted in Table 4.2.2.1 below:

Isofoam South Africa (Pty) Ltd – 30 mm IsoBoard	
OBSERVATIONS DURING THE **SANS 10177 – PART 10** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
00:50	Material started shrinking and joint open
02:00	Joint completely open above Fire Source
02:25	Material starts draping and dropping out
04:00	Heat damage and material dropping out up to 2 meters
06:15	Material draping past 2 meter mark
09:35	Material dropping out up to 4 meters and draping up to 6 meters
14:17	Fire Source consumed **– Test end –**
Note(s):	Molten debris above Fire Source No ignition during test

*Table 4.2.2.1: Observations made during the **SANS 10177 – Part 10** test*

The temperatures recorded during the test in the **SANS 10177-10** facility are depicted graphically in Figure 4.2.2.7.

Figure 4.2.1.1: The test installation prior to ignition of the Fire Source

Figure 4.2.1.2: Heat damage above Fire Source with joint opening

Figure 4.2.1.3: Material draping up to 2 meters

Figure 4.2.1.4: Material dropping out and draping up to 4 meters

Figure 4.2.1.5: Full length heat damage with material draping out up to 6 meters

*Figure 4.2.1.6: Test specimen at conclusion of **SANS 10177 – 10** test*

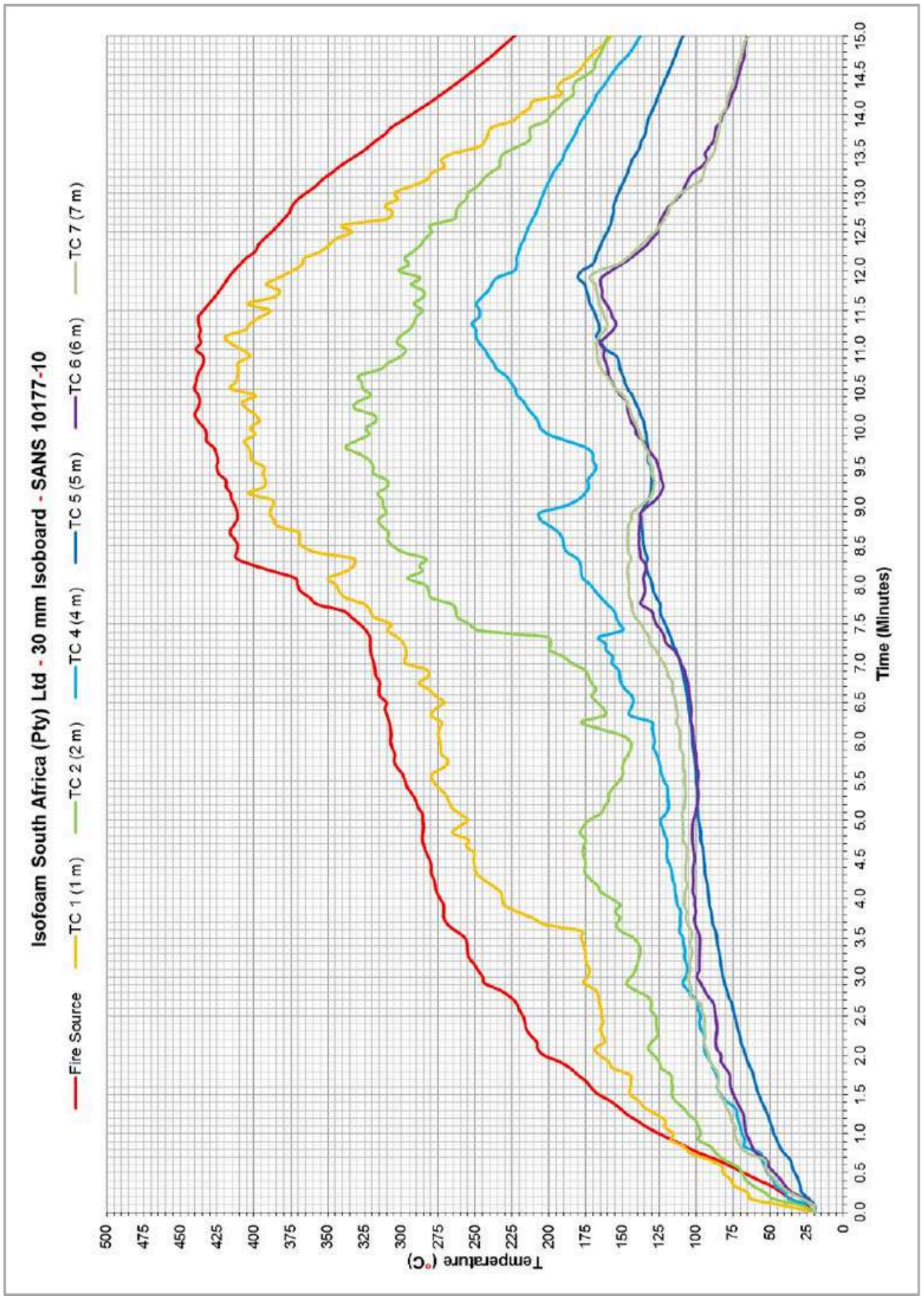

*Figure 4.2.2.7: Temperatures recorded during the **SANS 10177 – Part 10** test*

4.2.3. 40 MM ISOBOARD PANEL

The test installation in the **SANS 10177 – Part 10** facility prior to ignition of the fire source is shown in Figure 4.2.3.1 and at the conclusion of the test in Figure 4.2.3.8.

Observations made during **SANS 10177-10** test are depicted in Table 4.2.3.1 below:

Isofoam South Africa (Pty) Ltd – 40 mm IsoBoard	
OBSERVATIONS DURING THE **SANS 10177 – PART 10** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
01:00	Material starts shrinking above Fire Source
01:20	Joint starts to pull open
01:50	Discoloration of material started above Fire Source
02:10	Joint completely open
03:00	Material softening and flowing down
04:15	Molten material draping down
08:00	Material continue to flow down
09:00	Material draping over purlin at 2 meter mark
09:40	Softening of material continue past 2 meter mark and draping down
09:45	Material trapped on purlin in Ignition Source Area starts burning
13:00	Fire Source starting to decay
14:00	Fire Source consumed – **Test end** –
Note(s):	–

*Table 4.2.3.1: Observations made during the **SANS 10177 – Part 10** test*

The temperatures recorded during the test in the **SANS 10177-10** facility are depicted graphically in Figure 4.2.3.9.

Figure 4.2.3.1: The test installation prior to ignition of the Fire Source

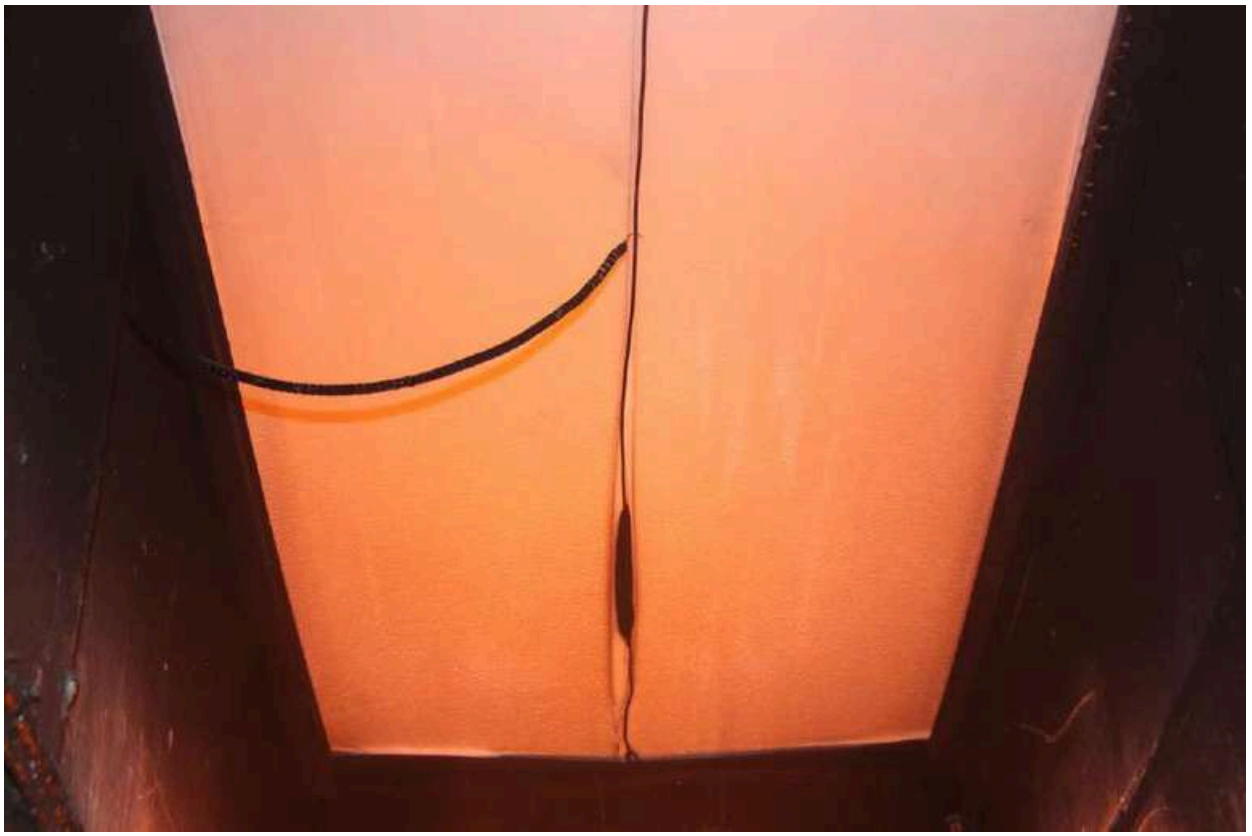

Figure 4.2.3.2: Material shrinking and joint starting to open up

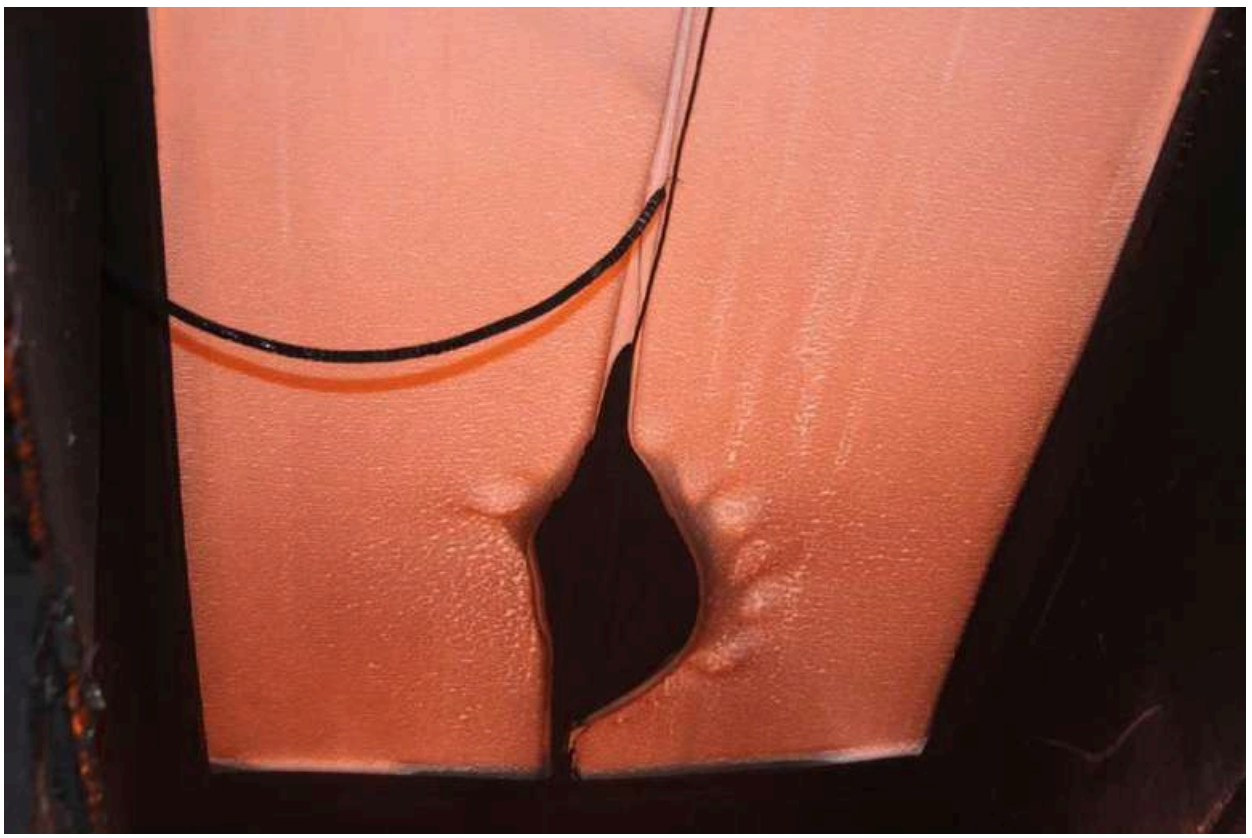

Figure 4.2.3.3: Material discolouring with joint opening above Fire Source

Figure 4.2.3.4: Material softening and flowing down in Ignition Source Area

Figure 4.2.3.5: Material draping and dropping out up to 2 meter mark

Figure 4.2.3.6: Material draping up to 4 meter mark

Figure 4.2.3.7: Heat damage up to 6 meter mark with material dropping out

*Figure 4.2.3.8: Test specimen at conclusion of **SANS 10177 – 10** test*

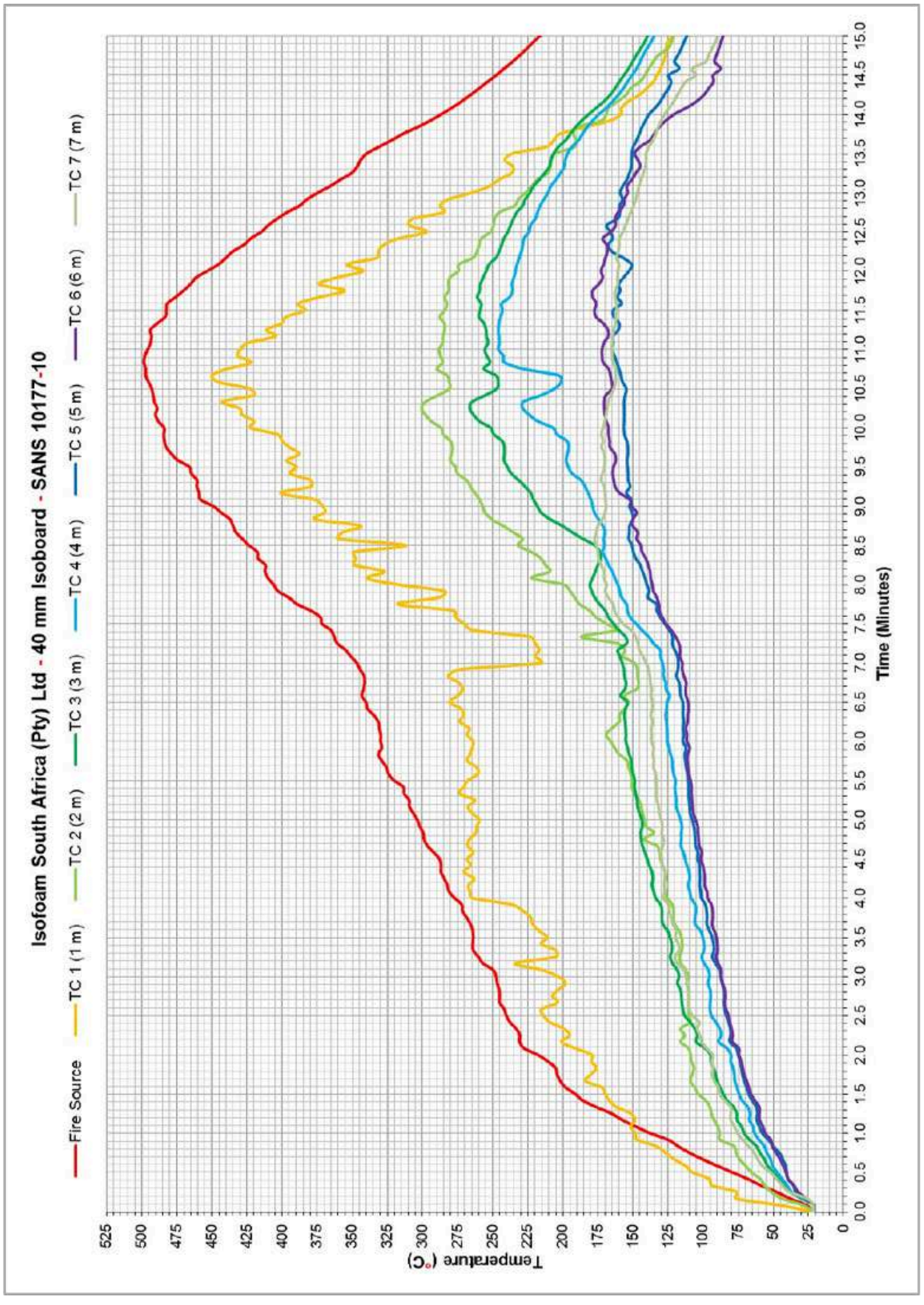

*Figure 4.2.3.9: Temperatures recorded during the **SANS 10177 – Part 10** test*

4.2.4. 50 MM ISOBOARD PANEL

The test installation in the **SANS 10177 – Part 10** facility prior to ignition of the fire source is shown in Figure 4.2.4.1 and at the conclusion of the test in Figure 4.2.4.8.

Observations made during **SANS 10177-10** test are depicted in Table 4.2.4.1 below:

Isofoam South Africa (Pty) Ltd – 50 mm IsoBoard	
OBSERVATIONS DURING THE **SANS 10177 – PART 10** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
00:35	Material softening and shrinking away at joint
00:55	Material started shrinking on joint above Fire Source
01:15	Softening and shrinking of material surface above Fire Source
01:50	Joint opens up completely
02:57	Molten droplets within the Fire Source Area
03:50	Softened debris dropping out – Joint separate up to 1 meter mark
08:35	Draping material drops out to 2 meter mark
10:55	Draping material drops out to 3 meter mark
12:35	Draping material drops out to 4 meter mark
13:10	Fire Source starting to decay
14:00	Fire Source consumed **– Test end –**
Note(s):	Molten droplets within Fire Source Area (0 to 2 meters) Heat damage on joint full length (0 to 7 meters)

*Table 4.2.4.1: Observations made during the **SANS 10177 – Part 10** test*

The temperatures recorded during the test in the **SANS 10177-10** facility are depicted graphically in Figure 4.2.4.9.

Figure 4.2.4.1: The test installation prior to ignition of the Fire Source

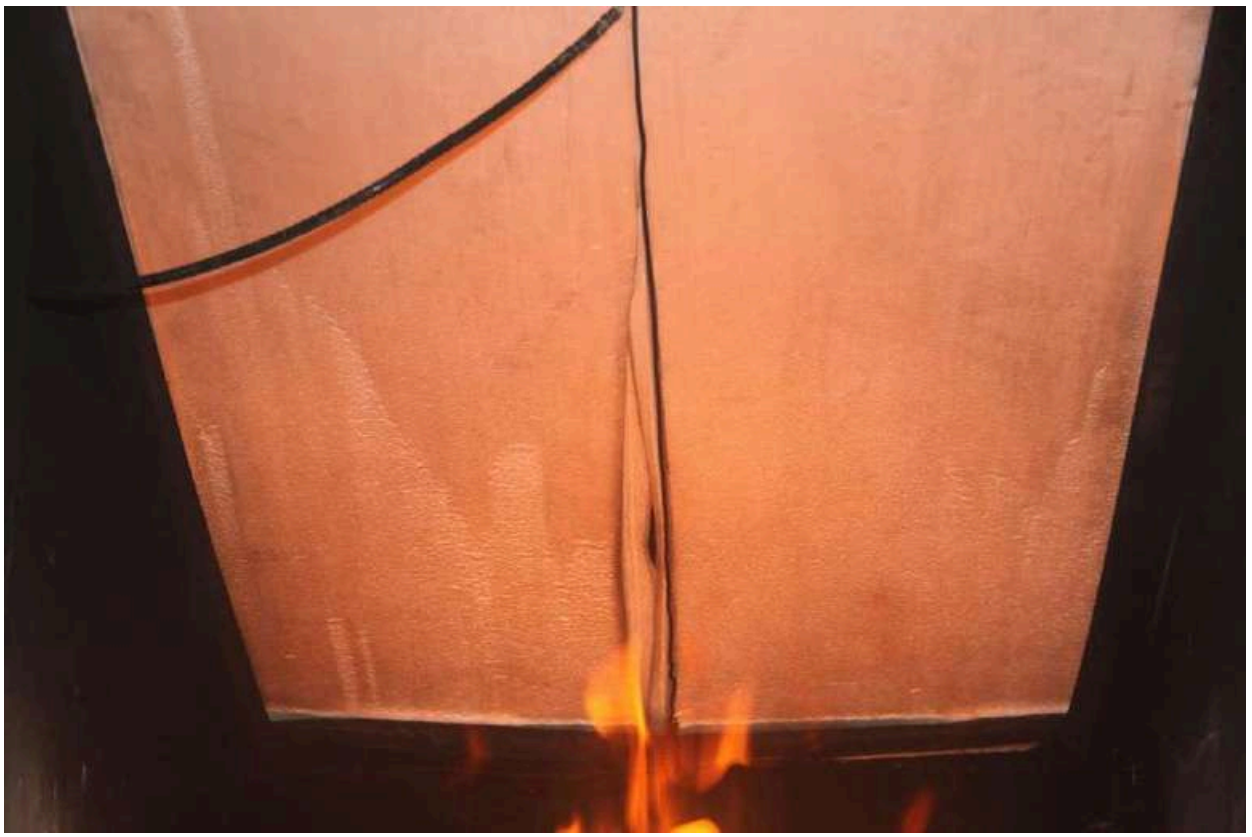

Figure 4.2.4.2: Shrinking of material visible and joint separating above Fire Source

Figure 4.2.4.3: Molten material dropping out within Fire Source Area

Figure 4.2.4.4: Softened material dropping out up to 2 meter mark

Figure 4.2.4.5: Material draping and dropping out up to 4 meter mark

Figure 4.2.4.6: Heat damage on joint full length (0 to 7 meters)

Figure 4.2.4.7: Material draping and dropping out up to 5 meter mark

*Figure 4.2.4.8: Test specimen at conclusion of **SANS 10177 – 10** test*

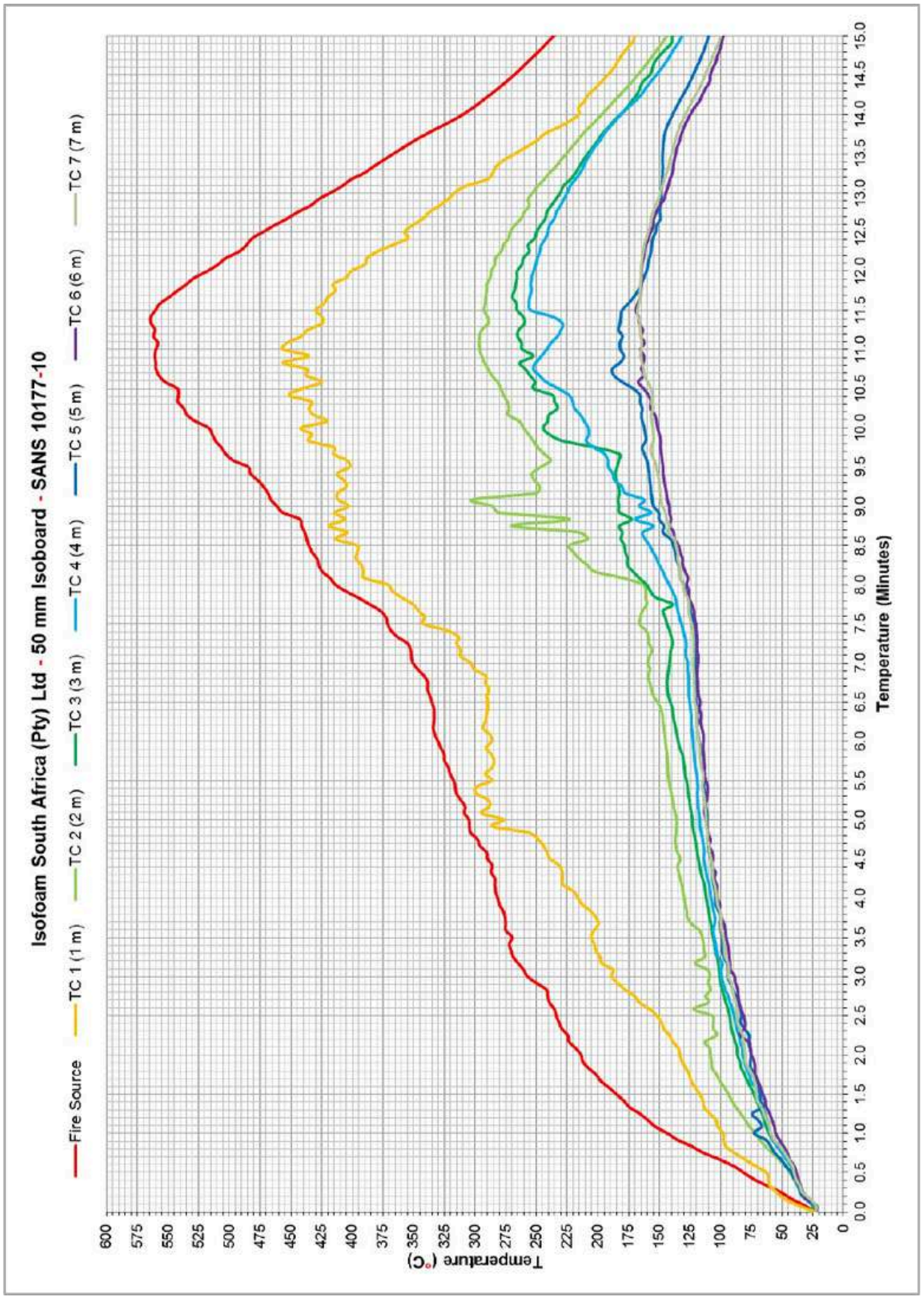

*Figure 4.2.4.9: Temperatures recorded during the **SANS 10177 – Part 10** test*

4.2.5. 80 MM ISOBOARD PANEL

The test installation in the **SANS 10177 – Part 10** facility prior to ignition of the fire source is shown in Figure 4.2.5.1 and at the conclusion of the test in Figure 4.2.5.8.

Observations made during **SANS 10177-10** test are depicted in Table 4.2.5.1 below:

Isofoam South Africa (Pty) Ltd – 80 mm IsoBoard	
OBSERVATIONS DURING THE **SANS 10177 – PART 10** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
00:45	Joint start to shrink away
01:00	Material surface texture start to change above Fire Source
04:05	Charring/darkening of material surface above Fire Source
04:30	Material starts draping along the joint
05:40	Material starts dropping out up to 2 meter mark
11:00	Joint fully separated over entire length (0 to 7 meters)
14:00	Fire Source consumed **– Test end –**
Note(s):	–

*Table 4.2.5.1: Observations made during the **SANS 10177 – Part 10** test*

The temperatures recorded during the test in the **SANS 10177-10** facility are depicted graphically in Figure 4.2.5.9.

Figure 4.2.5.1: The test installation prior to ignition of the Fire Source

Figure 4.2.5.2: Material surface changing with joint separating above Fire Source

Figure 4.2.5.3: Molten material at joint starts to drape

Figure 4.2.5.4: Molten material flowing out above Fire Source – Joint separated up to 2 meter mark

Figure 4.2.5.5: Material draping and dropping out up to 2 meter mark

Figure 4.2.5.6: Separation of joint reaches full length (0 to 7 meters)

Figure 4.2.5.7: All material up to 2 meter mark dropped out

*Figure 4.2.5.8: Test specimen at conclusion of **SANS 10177 – 10** test*

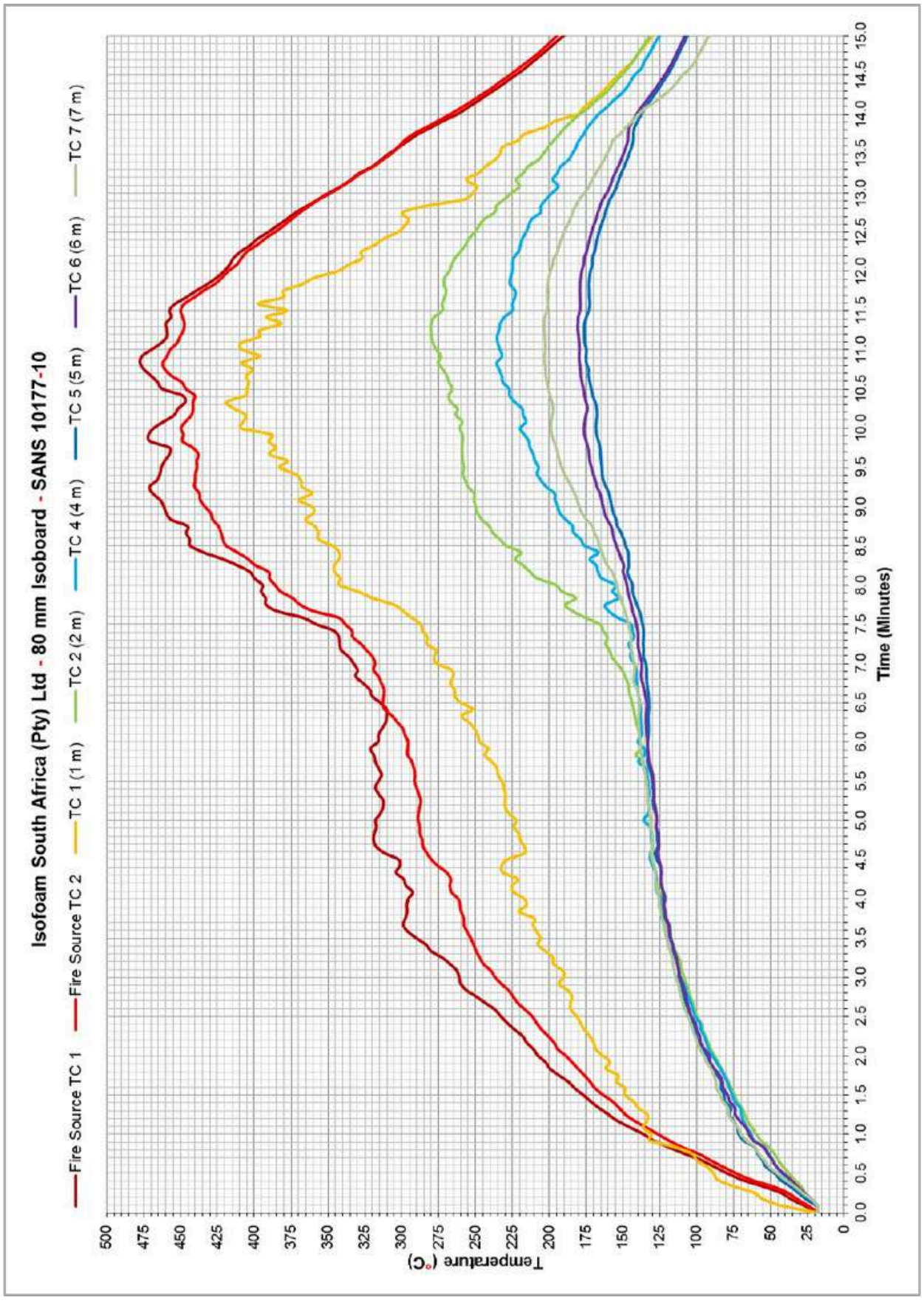

*Figure 4.2.5.9: Temperatures recorded during the **SANS 10177 – Part 10** test*

4.3. SANS 10177 – PART 11, HORIZONTAL (CLASSIFICATION)

Observations made during the **SANS 10177-11** test are depicted in Table 4.3.1 below:

Isofoam South Africa (Pty) Ltd – 80 mm IsoBoard	
OBSERVATIONS MADE DURING THE **SANS 10177 – PART 11** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
03:35	Shrinkage occurs rounding edges of joint
04:55	Surface coagulation started on material above Fire Source
05:50	Joints start shrinking in 2nd bay (2 to 4 meters)
07:05	Discoloration/Charring of joint above Fire Source
08:00	Joint completely separates above the Fire Source
08:45	Sample starts softening and flowing above Fire Source
09:15	Molten debris starts dropping out
12:05	Boards in 2nd bay (2 to 4 meters) starting to drape
13:25	Fire Source (Crib) starting to collapse
14:40	Joints up to 4th bay (0 to 8 meters) starts to shrink
26:00	Fire Source (Crib) consumed – End of Test –
Note(s):	No ignition occurred during the test

*Table 4.3.1: Observations recorded during the **SANS 10177-11** test*

The test installation in the **SANS 10177-11** facility prior to ignition of the Fire Source (Crib) and after the test was concluded is shown in Figure 4.3.1 and 4.3.10 respectively. The temperatures recorded by the thermocouples (TC) during the test are depicted graphically in Figures 4.3.11 and 4.3.12.

*Figure 4.3.1: The **SANS 10177-11** test installation prior to ignition of the Fire Source*

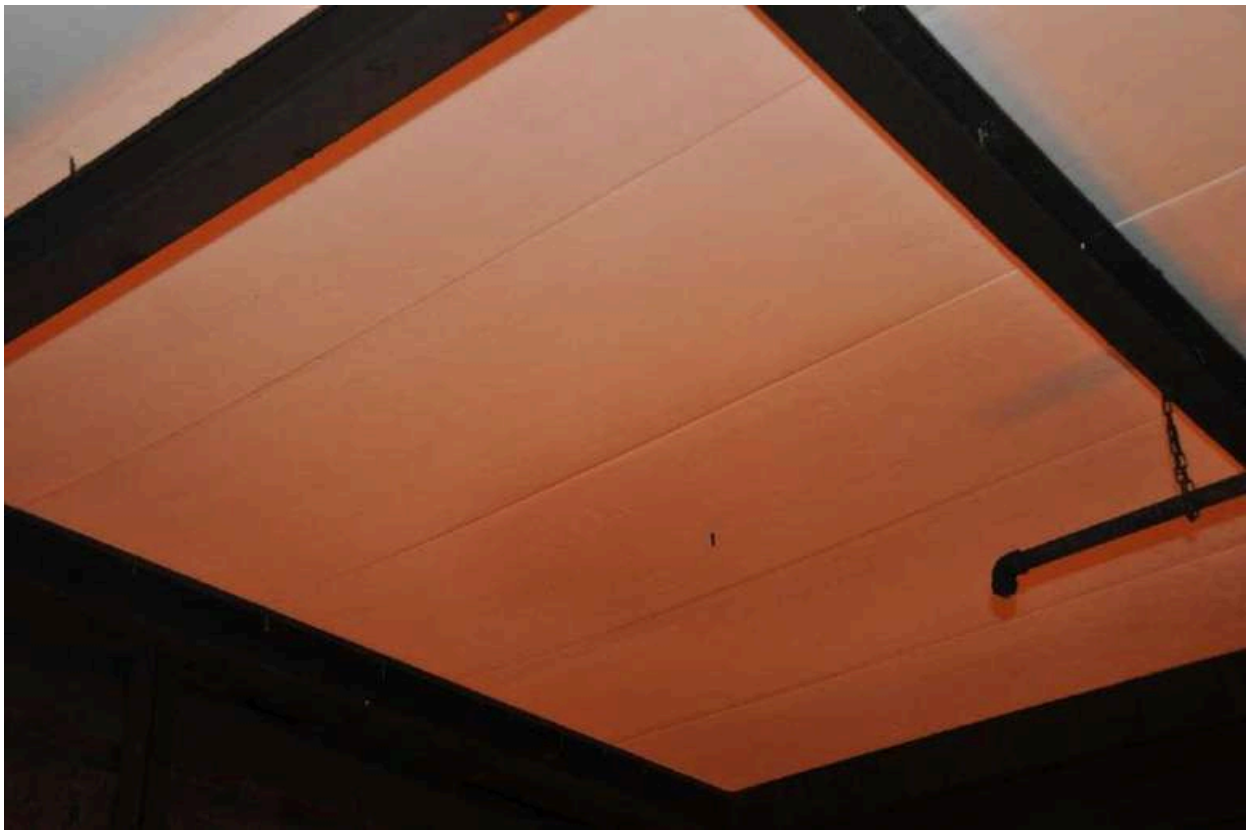

Figure 4.3.2: Edges of joints above Fire Source becomes rounded due to shrinkage

Figure 4.3.3: Surface coagulation visible and joints separating due to shrinkage

Figure 4.3.4: Molten material above Fire Source starts to flow

Figure 4.3.5: Material above Fire Source draping and dropping out

Figure 4.3.6: Boards in 2nd bay (2 to 4 meters) starts to drape

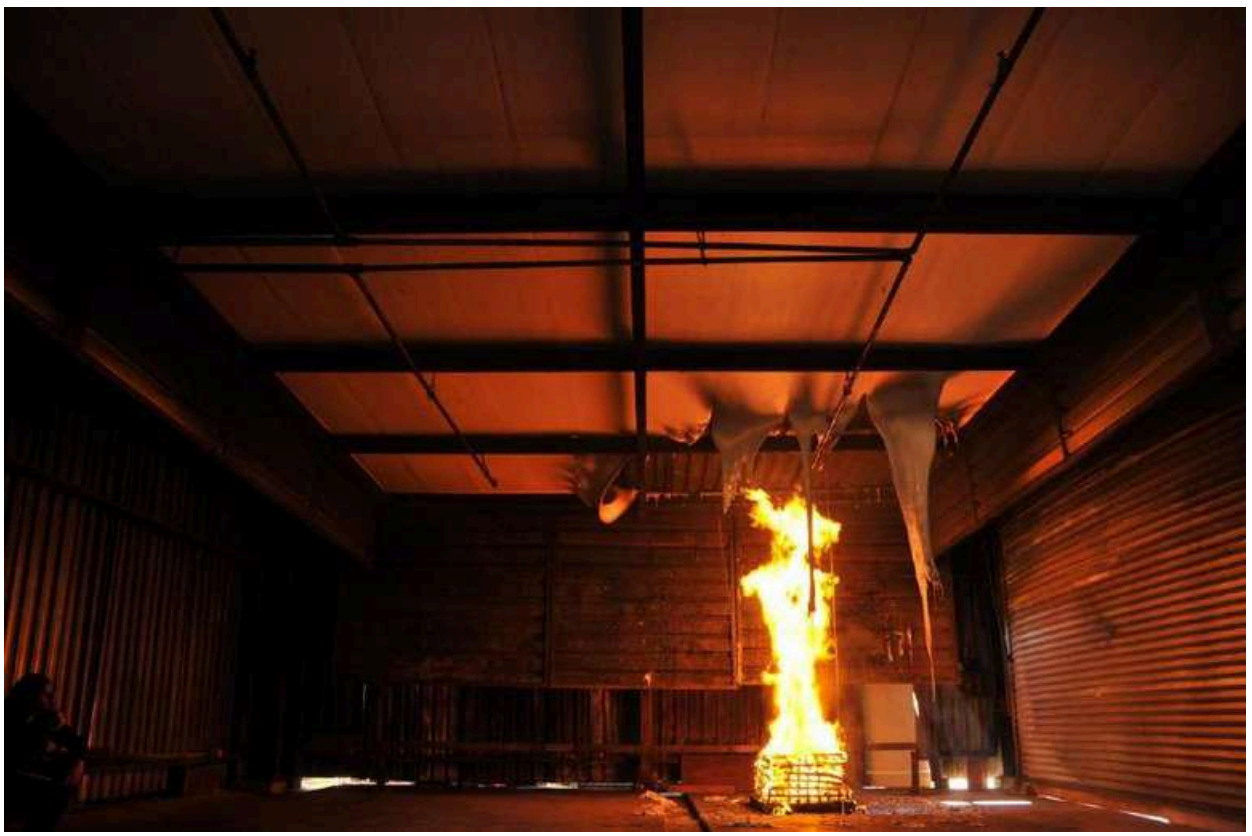

Figure 4.3.7: Fire Source (Crib) starting to collapse – Boards draping up to 3 meter mark

Figure 4.3.8: Fire Source (Crib) completely collapsed – Boards draping up to 4 meter mark

Figure 4.3.9: Material draping close to sprinkler head and over sprinkler pipes in rear

*Figure 4.3.10: Test installation at conclusion of **SANS 10177 – Part 11 (Horizontal)** test*

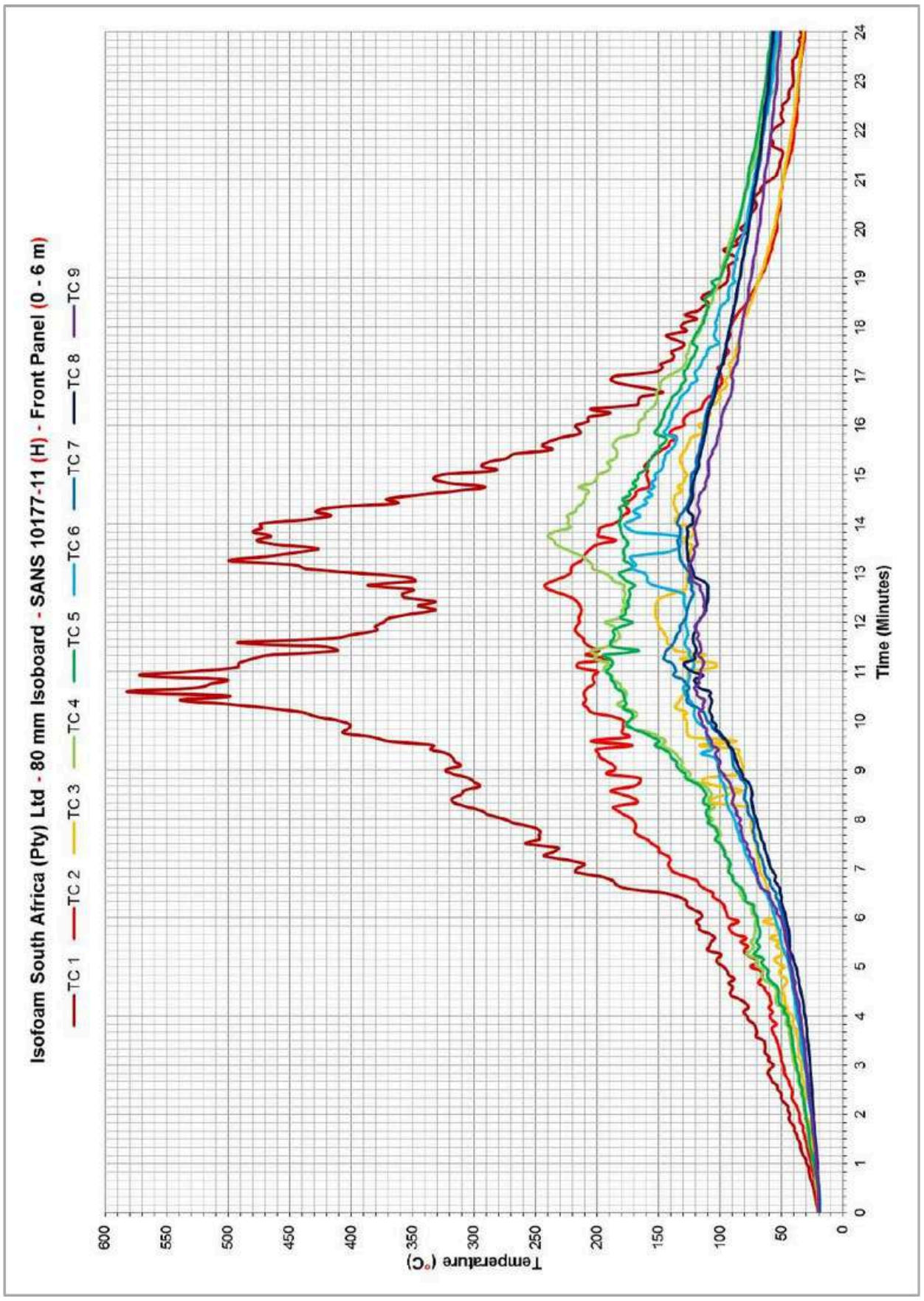

*Figure 4.3.11: Temperatures recorded on the front sample frame during the **SANS 10177-11** test*

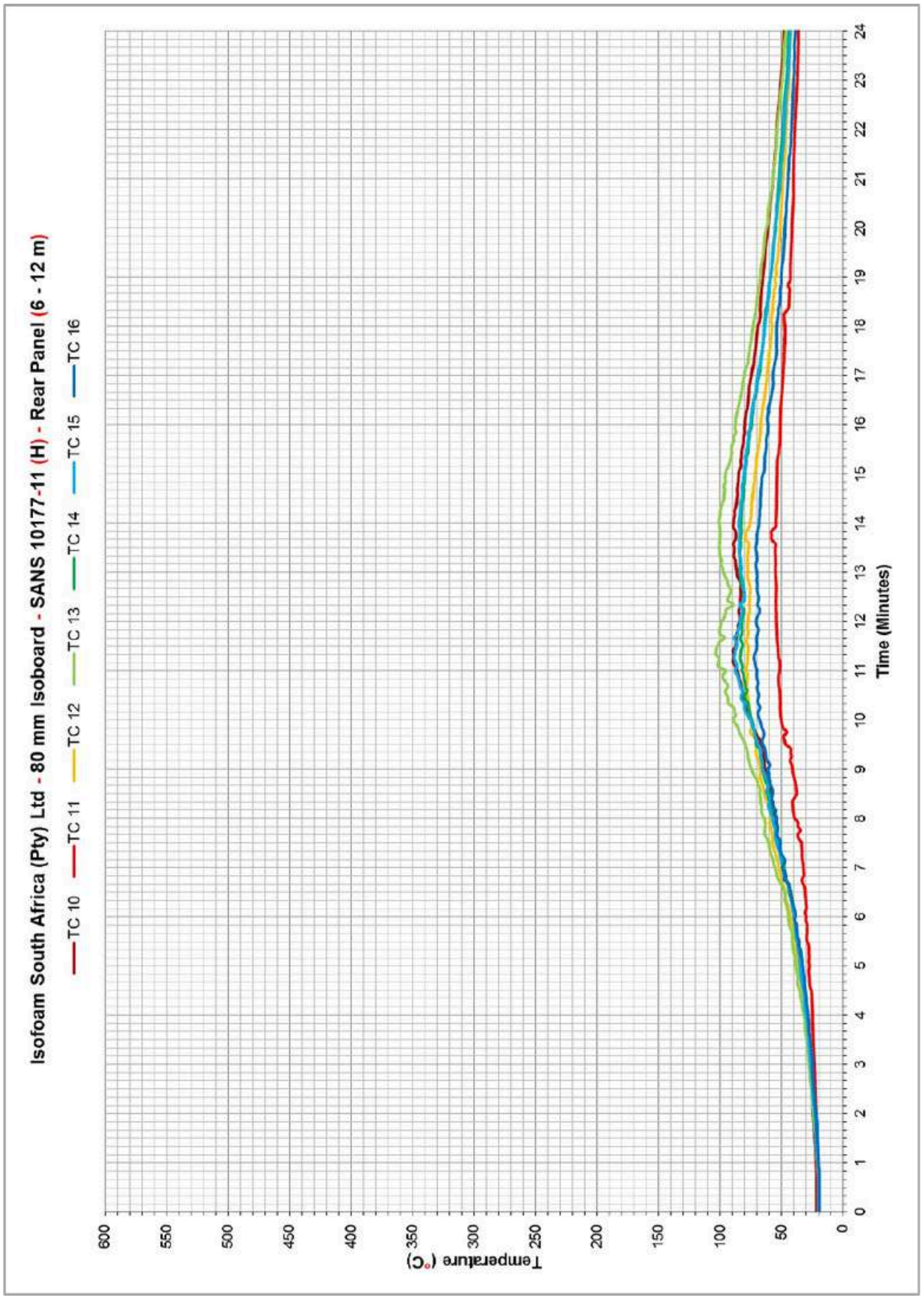

*Figure 4.3.12: Temperatures recorded on the rear sample frame during the **SANS 10177-11** test*

4.4. SANS 10177 – PART 11, VERTICAL (CLASSIFICATION)

Observations made during the **SANS 10177-11** test are depicted in Table 4.4.1 below:

Isofoam South Africa (Pty) Ltd – 80 mm IsoBoard	
OBSERVATIONS MADE DURING THE **SANS 10177 – PART 11 (VERTICAL)** TEST	
TIME	**OBSERVATION**
00:00	– Test Started –
01:50	Bubbles forming on surface and shrinking started
03:30	Discoloration of panel surface started
05:15	Coagulation of material exposing cladding
06:10	Molten material start to flow down
06:50	Heat exposure visible on horizontal roof cladding
09:30	Horizontal roof cladding above left crib starting to deform
12:00	Left crib starting to collapse
13:50	Right crib starting to collapse
15:15	Right crib collapses
18:25	Left crib collapses – End of Test –
Note(s):	No ignition or burning of the sample occurred during the entire test period

*Table 4.4.1: Observations recorded during the **SANS 10177-11** test*

The test installation in the **SANS 10177-11** facility prior to ignition of the two Fire Source cribs and after the test was concluded is shown in Figure 4.1.1 and 4.1.8 respectively.

Figure 4.4.1: Test installation prior to ignition of the two Fire Source cribs

Figure 4.4.2: Material melting and bubble forming behind Crib

Figure 4.4.3: Coagulation of material behind Cribs

Figure 4.4.4: Coagulation of material exposing sheeting

Figure 4.4.5: Molten material starting to flow down

Figure 4.4.6: Heat damage visible on horizontally installed material

Figure 4.4.7: Cribs starting to collapse – No ignition occurred

*Figure 4.4.8: Test installation after the **SANS 10177-11 (V)** test was concluded*

5. DISCUSSION OF RESULTS

The product classification when tested in accordance with the **SANS 10177 – Part 5** test protocol is:

- **IsoBoard (25 – 80 mm)** » **B (Combustible)**

The provisional classification for the various thicknesses when tested in accordance with **SANS 10177 – Part 10** is:

- **25 mm IsoBoard** » **B/ B1/ 2**
- **30 mm IsoBoard** » **B/ B1/ 2**
- **40 mm IsoBoard** » **B/ B1/ 2**
- **50 mm IsoBoard** » **B/ B1/ 2**
- **80 mm IsoBoard** » **B/ B1/ 2**

As a result of the outcome obtained from the **SANS 10177 – Part 10** tests it was decided to use the worst case scenario (most material), the 80 mm-thick, **IsoBoard** panels for evaluation in the **SANS 10177 – Part 11, Horizontal and Vertical**, tests to be sufficiently representative of all lesser thicknesses within the product range.

The classification in terms of **SANS 428** for the 80 mm-thick **IsoBoard** when tested in accordance with the **SANS 10177 – Part 11, Horizontal (H) and Vertical (V)**, test protocols are:

- **80 mm IsoBoard** » **B/ B1/ 2/ H & V (SP and USP)**

6. CONCLUSIONS

The **IsoBoard** product range, which includes all thicknesses from 25 mm up to 80 mm, as supplied by **Isofoam South Africa (Pty) Ltd** is classified as follows in terms of **SANS 428**:

Classification according to **SANS 428**:

- **IsoBoard (25 – 80 mm) »** **B/ B1/ 2/ H & V (SP and USP)**

The above results does not relate to fire resistance. In instances where fire resistance is a requirement, this property needs to be determined in terms of **SANS 10177-2**.

FIRELAB

ANNEXURE "A"

– Company Information –	FIRELAB
Company Name:	Isofoam South Africa (Pty) Ltd.
Company Registration Nr.:	95/03958/07
Company VAT Nr.:	4140154644
Core Business Activities:	Manufacturing & Sales
Physical Address:	23 Kenwill Drive, Okavango Park, Brackenfell, 7560
Postal Address:	P O Box 1002 Cape Gate 7562
Contact details	
Telephone number:	021 983-1140
Facsimile number:	021 981-6099
Cellphone number:	082 815 0994 / 082 347 0186
Email address:	gm@isoboard.com
Name of Contact Person	
Technical:	Conrad Smith / Mark Russell
Financial:	Beth Hewitt-Coleman
– Test information & Sample/Product Description –	
Type of Test:	
Sample/Product Name:	
Manufacturing Date:	
Batch/Product Number:	
Sample/Product Description: *(Short description of sample or product submitted for testing)*	

Requisition GTN-SAM

Order No (FGR): 700320
Date : 03/06/2015
Page : 1

ISOBOARD

Item	Wh	Brd Qty	LenOrd	LenChg	W(mm)	T(mm)	m2	m3
ISOBOARD	GTN-FGR	2	8.00	8.00	600	25	9.60	0.240
ISOBOARD	GTN-FGR	2	8.00	8.00	600	30	9.60	0.290
ISOBOARD	GTN-FGR	2	8.00	8.00	600	40	9.60	0.380
ISOBOARD	GTN-FGR	2	8.00	8.00	600	50	9.60	0.480
ISOBOARD TI	GTN-FGR	2	8.00	8.00	600	80	9.60	0.770
ISOBOARD TI	GTN-FGR	30	6.00	6.00	600	80	108.00	8.640
ISOBOARD TI	GTN-FGR	10	4.00	4.00	600	80	24.00	1.920
							180.00	12.72

Client Details:

Client Name: CSIR
Order No:
Tel No: 082 305 8559
Fax No:
Contact Name: KOBUS STRYDOM

Delivery Details:

Required On: 2015/06/03 12:00:00
Del Method: COLLECT
From/To:

35 Venturie Crescent, Hennops Park
Centurion
Pretoria

RDC Details

Phone: +27 (012) 653 8204
Fax: +21 (012) 653 0282
Email: northsales@isoboard.com
Consultant: Gauteng Sales

35 Venturie Crescent
Hennops Park
Centurion

Generated by: Mari-Louise Har

Other Requirements:

Short Edge: SE **Long Edge:** TG
Finish: Plain **Laminated:** N
Application: OTH

Comments:

Based On Sales Quotations 529758.

Reg. No. 95/03958/07

HEAD OFFICE
ACCOUNTS & FACTORY
P.O. Box 1584
DASSENBERG, 7350
Tel: (021) 577-1105
Fax: (021) 577-1182

SOUTH AFRICA (PTY) LTD

SALES & DISTRIBUTION
GAUTENG SALES: (012) 653-8204
CAPE SALES: (021) 983-1140
KZN SALES: (031) 569-1800

7. ISOBOARD's

Job List in South Africa

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SUMMARY OF PROMINENT PROJECTS IN SOUTHERN AFRICAN WHERE ISOFOAM - "ISOBOARD" XPS THERMAL INSULATION PRODUCT IS SUPPLIED

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
1	Plasson	Chicken houses	Over purlin	North West	2024
2	Maverick	LCH	Nail-up	South coast	2024
3	Dynamic automation	Chicken houses	Over purlin	Balgowan	2024
4	Rubro	Church	Inverted roof	Durban	2024
5	Span Africa	Warehouse	Over purlin	PMB	2024
6	Construction id	Showroom and service	Under floor	Hillcrest	2024
7	GWR	School	Over purlin	Durban	2024
8	Moteko	LCH	Nail-up	Greytown	2024
9	Outa Africa	Warehouse	Over purlin	Waterfall	2024
10	Span Africa	Pack shed	Over purlin	Port Edward	2024
11	Winterton structural steel	Hanger	Over purlin	Marble hall	2024
12	Rubro	Hospital	Under floor	Hillcrest	2024
13	Topdog	Checkers	Inverted roof	Westville	2024
14	Outa Africa	Showroom and service	Over purlin	Greytown	2024
15	Mayfield broiler breeders	Chicken houses	Over purlin	Richmond	2024
16	Moteko	LCH	Nail-up	Newcastle	2024
17	Moteko	LCH	Nail-up	Newcastle	2023
18	Junk hardware	Warehouse	Nail-up	Pongola	2023
19	D & D roof insulation	Water Treatment	Over Purlin	Cape Town	2023
No	**CLIENT NAME**	**PROJECT**	**APPLICATION TYPE**	**LOCATION**	**YEAR OF EXECUTION**
20	NU Tape	Hospital	Over Purlin	Tzaneen	2023
21	WJ Smit Staalbou	Warehouse	Over Purlin	Rustenburg	2023
22	Combrinck Plafonne	Housing Project	Nail up ceiling	Rustenburg	2023
23	Potwyk Bouers	Ruby Estate	Nail up ceiling	Secunda	2023
24	Vosbreet boerdery	Piggery	Over Purlin	Bethal	2023
25	Wasserman	Poultry	Retrofit Ceiling	Standerton	2023
26	Stickman	Radisson Hotel	Inverted roof	Middelburg	2023
27	Winsen International	Warehouse	Over Purlin	Zambia	2023
28	D & D roof insulation	Irene link	Nail up ceiling walkways	Centurion	2023
29	Phumalani Group	EZGO warehouse	Retrofit	Kempton Park	2023
30	Trencor construction	Poultry	Over Purlin	Zambia	2023
31	Zimbabwe Agricultural Society	Community hall	Retrofit	Zimbabwe	2023
32	Patt Dunn	Shopping Centre	Retrofit	Zimbabwe	2023
33	Stickman	Val De Vie	Surface Bed	Cape Town	2023
34	Chartwell Roofing	Checkers Somerset Mall	Over Purlin	Cape Town	2023
35	Chartwell Roofing	Vergelegen Plein	Nail up ceiling walkways	Cape Town	2023
36	Scheltama	Joostenberg Vlakte	Over Purlin	Cape Town	2022
37	Cladcon	49 Auckland st	Over Purlin	Cape Town	2022
38	Netstall	Brex Paarl	Over Purlin	Cape Town	2022
39	Lemco	Piggeries	Over Purlin	Cape Town	2022
40	D & D roof insulation	SEW warehouse	Side cladding	Germiston	2022

SUMMARY OF PROMINENT PROJECTS IN SOUTHERN AFRICAN WHERE ISOFOAM - "ISOBOARD" XPS THERMAL INSULATION PRODUCT IS SUPPLIED

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
41	Kunye Properties	Subsidy Housing Project	Over Truss & Nail Up	Porterville	2021
42	Kaap Agri	Glen Lily Estate	Nail Up	Malmesbury	2021
43	Kaap Agri	Mount Royal Golf & Country Estate	Nail Up	Malmesbury	2021
44	Snowdove (Pty) Ltd	Graceland Estate	Nail Up	Kraaifontein	2021
45	Grinaker	Nelson Mandela University	Inverted Roof	Summerstrand	2021
46	Centrifuge	Buffalo Breeding Farm	Nail Up	Standens	2021
47	Its Fencing	Centrifuge Buffalo Farm	Nail Up	Standens	2021
48	William Scott Contractors	St Francis Canal Homes	Over Purlin	St Francis	2021
49	Checkers	Checkers Blue Valley Mall	Over Purlin	Roodepoort	2021
50	Government - Solplaaitjie	SPU South Campus	Cavity Walling	Kimberley	2021
51	Raubex Construction	Beitbridge Zimbabwe Border	Nail Up Ceiling & O/Purlin	Musina / Zimbabwe	2021
52	Government	Letaba Clinic	Over Purlin	Tzaneen	2021
53	Mike Buyskes Construction	Zambesi Grande	Nail Up Ceiling	Zambia	2021
54	Sabi Construction	Rustenburg Shoprite	Over Purlin	Rustenburg	2020
55	Eezibuild	Phandulwazi SSS Crossroads	Over Purlin	Ngqwangi Dr	2020
56	Lemco	Piggeries	Over Purlin	Peninsula	2020
57	Jam Tech Projects	Revelstone Warehouse	Nail Up	Lansdowne	2020
58	Dracon National	3 Storey House	Nail Up	Fresnaye	2020
59	Rome Roofing	Hazendal Wine Estate	Over Purlin	Stellenbosch	2020
60	Rome Roofing	Hazendal Gold Maintenance Store	Over Purlin	Stellenbosch	2020
61	The Cornice Company	Belhar Housing Project	Nail Up	Belhar	2020
62	Exclusive Interiors	Middestad Mall - Top Floor	Over Purlin	Bellville	2020
63	Executive Interiors	Fire Station	Nail Up	Lwandle	2020
64	Ids Insulation	Queenstown Warehouse	Nail Up	Queenstown	2020
65	Executive Interiors	Warehouse	Nail Up	Port Elizabeth	2020
66	Pharos Finishing	Raceway Primary School	Nail Up	Bloemfontein	2020
67	A & E Ceilings	Black Rock Asmang Mine	Nail Up	Kathu	2020
68	Beaconplate	Naval View	Nail Up	Bloemfontein	2020
69	WBHO	KZN	Subsidy Housing	Greytown	2020
70	WBHO	KZN	Subsidy Housing	Umzumbe	2020
71	Ceiling @ Cornice Shop	Subsidy Housing	Nail-Up	Vulamethlu	2020
72	Buco	Chalets - Mozambique	Nail-Up	Mozambique	2020
73	Dynamic Automation	Chicken Houses	Over Purlin	Tongaat	2020
74	Louise – O Architects	The Glass House	Outside Cladding	Bryanston	2020
75	GVK Construction	African Data Centre	Cavity Walling	Midrand	2020
76	CTU College	CTU College	Nail Up Ceiling	Centurion	2020
77	Dryceil Projects	Chrissies Meer Shopfront	Nail Up Ceiling	Chrissiesmeer	2020
78	Balwin Property Group	Munyaka Development	Nail Up Ceiling	Midrand	2020
79	Government	Christiana Primary	Over Purlin	Christiana	2020
80	Century Properties	Mushroom Farm	Nail Up Ceiling	Midrand	2020
81	Monroe Roofing	Sportsmans Warehouse	Over Purlin	Rustenburg	2020
82	Arrie Nel Apteek	Arrie Nel Warehouse	Over Purlin	Silverton	2020

SUMMARY OF PROMINENT PROJECTS IN SOUTHERN AFRICAN WHERE ISOFOAM - "ISOBOARD" XPS THERMAL INSULATION PRODUCT IS SUPPLIED

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
83	Esmoene Construction	Polo Fields Mall	Nail Up Ceiling	Midrand	2020
84	Bhika Optometrist	Ermelo Medical Centre	Over Purlin	Ermelo	2020
85	Steffanuti Stocks	Private Clinic	Under Screet	Swaziland	2020
86	Bananaworld	Banana World Warehouse	Over Truss	Mozambique	2020
87	New Designs	Kruger National Park Station	Over Truss	Kruger National Park	2020
88	New Designs	Ngumi Logdge	Nail Up Ceiling	Kruger National Park	2020
89	Scheltema	Checkers Constantia	Over Purlin	Constantia	2019
90	Scheltema	Brights Brackengate	Over Purlin	Brackengate	2019
91	Scheltema	Stellenbosch Vineyards	Over Purlin	Stellenbosch	2019
92	Eezibuild	Philippi High School	Over Purlin	Philippi	2019
93	Cladcon	Checkers De Grendel	Over Purlin	Burgundy Estate	2019
94	SA Steel Structure	Durbanville High School	Over Purlin	Durbanville	2019
95	Francisco Projects	Sanlam Head Office	Retro-Fit To Concrete	Belville	2019
96	Nigiro Tea	Nigiro Tea Warehouse	Nail Up Between Rafter	Wynberg	2019
97	Rome Roofing	Truth Coffee	Over Rafter	Cape Town	2019
98	Rome Roofing	Old Bank Building	Over Rafter	Cape Town	2019
99	The Cornice Company	Sitari Country Estate	Nail Up	Sitari	2019
100	RV Smith	Longlee Manor Shamwari	Nail Up	Paterson	2019
101	Domani Bouers	Hillside View - Rpd Housing	Nail Up	Bloemfontein	2019
102	Pharos Finishing	Hillside View - Rpd Housing	Nail Up	Bloemfontein	2019
103	Karoo Eisteddfod Trust	Ikhwezi Preparatory School	Under Floor	De Aar	2019
No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
104	Innova Turnkey (Pty) Ltd	Onomo Hotel	Over Purlin	Durban	2019
105	Builders Trade Depot	John Williams Motors	Under Floor	Bloemfontein	2019
106	Pharos Fishing	JS Beef	Nail Up	Botswana	2019
107	Beaconplate	North West University	Nail Up	Mafikeng	2019
108	Winterton Structural Steel	Piggery	Over Purlin	Wakkerstroom	2019
109	Sutherland Home Finishers	Leroy Marlin	Over Purlin	Boksburg	2019
110	Klaas Witte Arch	Monument Office Block	Inverted Roof	Monument Park	2019
111	WBHO	Steyn City Phase 2	Inverted Roof	Steyn City	2019
112	Curro Private School	CURRO PHASE 1	Over Purlin	Midrand	2019
113	Makhado Projects	Letaba Hospital	Over Purlin	Tzaneen	2019
114	Fruit & Veg Sa	Fruit & Veg Potgietersrus	Retrofitted	Potgietersrus	2019
115	WP Steel	Introlab	Over Purlin	Wellington	2018
116	Eezibuild	Voorbrug Str.	Over Purlin	Delft	2018
117	Cladcon	Red Cross Hospital	Over Purlin	Rondebosch	2018
118	Madron Farming	Hydro Aqaponics	Over Purlin	Hermanus	2018
119	Schoeman Boerdery	Marble Mall	Over Purlin	Mooiriver	2018
120	Jordan Wine Estate	Restaurant And Cellar	Nail Up	Stellenbosch	2018
121	Canto Wines	Wine/ Function Building	Over Purlin	Durbanville	2018
122	Rome Roofing	House - Sunset Way	Over Rafter	Llandudno	2018
123	RV Smith	Kidds Beach Retail Centre	Over Purlin	East London	2018
124	Timberblock	Shamwari Game Reserve	Underfloor	Patterson	2018

SUMMARY OF PROMINENT PROJECTS IN SOUTHERN AFRICAN WHERE ISOFOAM - "ISOBOARD" XPS THERMAL INSULATION PRODUCT IS SUPPLIED

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
125	Ace Ceilings	Woodridge College	Nail Up	Thornhill	2018
126	Jordilinx (Pty) Ltd	Organic Farm	Nail Up	Addo	2018
127	Pharos Finishing	Military Basis	Nail Up	Kroonstad	2018
128	Pharos Fishing	Robert Wigget House	Nail Up	Bloemfontein	2018
129	Hofina	Chicken Houses	Over Purlin	Newcastle	2018
130	Lanprop	Burger King Montana	Cavity Walling	Montana Pretoria	2018
131	Andrew Dunn Art Gallery	HD Maintenance	Retrofit / Nail Up	Oxford JHB	2018
132	Science Of The Soul Centre	Science Centre	Between Purlins	Randburg	2018
133	CSS Builders	Rosebank Fire Station	Between Truss	Rosebank	2018
134	Cedar Retail Park	Cedar Retail Park	Nail Up Ceiling	Cedar Rd	2018
135	Double Jack Construction	BRT Bus Stations	Over Purlin	Johannesburg	2018
136	Datri Construction	Heidelberg Train Station	Between Truss	Heidelberg	2018
137	Sedtrade	Lady Frere Phase 2	Surface Bed	Eastern Cape	2018
138	Tri Star Construction	Irene Corporate Park	Between Steel Trusses	Irene Centurion	2018
139	Pick & Pay	Pick & Pay Pta North	Between Purlins	PTA North	2018
140	Asap Exporters	Zambia Private School	Over Purlin	Zambia	2018
141	Robert Skinner Construction	Turkish Embassy	Inverted Roof	Waterkloof	2018
142	Deltacon Projects	Wilmot Residential	Suspended Ceilings	Parkmore	2018
143	Mpumelelo Construction	Westpack Lifestyle Group	Between Purlins	Randburg Roodepoort	2018
144	Dept Of Justice – Government	Nelspruit High Court	Nail Up Ceiling	Nelspruit	2018
145	Scheltema	Rylands Village	Over Purlin	Rylands Village	2017

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
146	Scheltema	Watergate Centre	Over Purlin	Mitchells Plain	2017
147	Scheltema	Gordons Bay Mall	Over Purlin	Gordons Bay	2017
148	Scheltema	Rhodes Foods	Over Purlin	Pniel	2017
149	WBHO	Shoprite	Suspended Ceiling	Ghana	2017
150	Heating & Cooling Solutions	CTM	Over Purlin	Somerset West	2017
151	Tommy Ferreira Building Contractors	Royalston Coastal Wildlife Estate	Nail Up & Over Purlin	Colleen Glenn	2017
152	Pharos Finishing	Supermark	Over Purlin	Groblershoop	2017
153	Checkers	Checker Hyper Forest Hill	Over Purlin	Centurion	2017
154	Pro Developments	Adapt It	Inverted Roof	Midrand	2017
155	De Voetpad Kloof	Entertainment Centre	Nail Up Ceiling	Middelburg	2017
156	Kriel Mining	Kriel Community Centre	Nail Up Ceiling	Kriel	2017
157	The Beekman Group	Kingdom Resort	Over Truss	Sun City/ Pilansberg	2017
158	Beckers Plumbman	Century Properties	Surface Bed	Midrand	2017
159	Timeless Sheeting	Kimberley Mall	Over Purlin	Kimberley	2017
160	Rainbow Sheeters	Kyalami Corner	Between Trusses	Kyalami	2017
161	American Ambassy	Embassy House	Nail Up Ceiling	Waterkloof	2017
162	Serengeti	Serengeti Estate	Nail Up Ceiling	Kempton Park	2017
163	Mojeba Projects	Montana Lifestyle	Over Purlin	Montana	2017
164	Scheltema	Grenco Projects	Over Purlin	Philippi	2016
165	Scheltema	Okavango Crossroads	Over Purlin	Brackenfell	2016

SUMMARY OF PROMINENT PROJECTS IN SOUTHERN AFRICAN WHERE ISOFOAM - "ISOBOARD" XPS THERMAL INSULATION PRODUCT IS SUPPLIED

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
166	Cladcon	PG Glass	Over Purlin	Epping	2016
167	Power Construction	Subsidy Housing	Nail Up	N2 Housing Project	2016
168	Build It J-Bay	St Francis Canal Home Projects	Over Purlin	St Francis	2016
169	Fleur Du Vin	Wine And Flower Farm	Nail Up	Stutterheim	2016
170	Buco Port Alfred	Huis Schoon	Over Purin & Nail Up	Bushmans	2016
171	Beaconplate	Bloemfontein Airport	Under Floor	Bloemfontein	2016
172	Heating & Cooling Solutions	CTM	Over Purlin	Tokai	2016
173	Limpopo	Thabazimbi	Subsidy Housing	Fetakgomo Municipality	2016
174	WBHO	KZN	Subsidy Housing	Nongoma	2016
175	CTM	CTM Tzaneen	Over Purlin	Tzaneen – Letaba	2016
176	British Embassy	British Embassy School	Nail Up Ceiling	Fourways	2016
177	Coca Cola	Coca Cola Botswana	Inverted Roof	Botswana	2016
178	Government – Dept Of Health	Community Health Clinic	Surface Bed	Bethal	2016
179	Abland	Loftus Park	Over Purlin	Pretoria	2016
180	GM Motors	Ford Alberton	Between Purlins	Alberton	2016
181	Buco Worcester	Worcester Woonstelle	Over Purlin	Worcester	2015
182	Scheltema	Okavango Centre	Over Purlin	Brackenfell	2015
183	Cladcon	Cpt Flexibles	Over Purlin	Ndabeni	2015
184	Superway	Wynberg Military Hospital	Inverted Roof	Wynberg	2015
185	Beaconplate	Engen	Nail Up	Thaba Nchu	2015
186	4972 Vowe Str	Ruwacon	Under Floor	Harrismith	2015
187	Reddam College	Reddam College	Surface Bed	Johannesburg	2015
188	Sasol	Sasol Warehouses	Over Purlin	Secunda	2015
189	Dept Of Education – Government	University Of Mpumalanga	Inverted Roof	Nelspruit	2015
190	RV Smith	CTM	Over Purlin	Queenstown	2014
191	Western Cape	Pacaltsdorp – George	Subsidy Housing	City Of Cape Town	2014
192	Western Cape	Kanonkop Atlantis	Subsidy Housing	City Of Cape Town	2014
193	Matlosana Mall	Matlosana Mall	Nail Up Ceiling	Klerksdorp	2014
194	Inverskye	Wine Cellar	Over Purlin	Ladysmith	2013
195	Signal Gun	Restaurant	Over Rafter	Durbanville	2013
196	Klawer Cellar	Warehouse	Over Purlin	Northern Cape	2013
197	Gauteng	Cosmo City	Subsidy Housing	Johannesburg Metro	2013
198	Western Cape	Pacaltsdorp – George	Subsidy Housing	City Of Cape Town	2013
199	Northern Cape	Hospital	Hospital	Phokwane	2013
200	Limpopo	Tzaneen	Subsidy Housing	Tzaneen	2013
201	Gauteng	Centurion	Clinic	Tshwane	2013
202	Rosebank Mall	Rosebank Mall	Inverted Roof	Rosebank	2013
203	Cladcon	Devils Peak Brewery	Over Purlin	Epping	2012
204	RV Smith	CTM	Over Purlin	East London	2012
205	Western Cape	Kuyasa CDM	Subsidy Housing	City Of Cape Town	2012
206	Eastern Cape	Butterworth	Subsidy Housing	East London	2012

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No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
207	JH Delarey Boerdery	Poultry Houses	Over Purlin	Balfour / Greylingstad	2012
208	Inverskye	Lansdowne Shopping Centre	Over Purlin	Lansdowne	2011
209	Mpumelelo	Subsidy Housing	Nail Up	KwaZulu Natal	2011
210	Limpopo	Maone Clinic	Clinic	Maone	2011
211	WP Steel	Knollefontein Plaas	Over Purlin	Knollefontein Plaas	2010
212	Longworth & Faul	Paarl Gravure	Over Purlin	Milnerton	2010
213	CC George Roofing	Paarl Gravure	Suspended Ceiling	Milnerton	2010
214	Noorsveld Hoenders	Chicken Farm	Nail Up	Jansenville	2010
215	Heating & Cooling Solutions	Paarl Media	Over Purlin	Paarl	2010
216	Eastern Cape	Solomon Mahlangu	Subsidy Housing	Nelson Mandela Bay	2010
217	Western Cape	Philipe, Kayamandi	Subsidy Housing	City Of Cape Town	2010
218	Western Cape	N2 Gateway	Subsidy Housing	City Of Cape Town	2010
219	Eastern Cape	Reeston	Subsidy Housing	Buffalo City	2010
220	Power Construction	Subsidy Housing	Over Truss	Delft	2009
221	Africa Export Capital	Airport City	Nail Up	Airport City	2009
222	Landstaal Dandarach Poultry	Poultry	Over Purlin	Paardeberg	2009
223	Eastern Cape	Khabah Langa	Subsidy Housing	Nelson Mandela Bay	2009
224	Limpopo	Clinic	Clinic	Vhembe Municipality	2009
225	SSN Consulting	Kuyasa	Nail Up	Hopefield	2008
226	Mpumelelo	Seakay N2	Nail Up	Gateway KZN	2008
227	Hydrocape	Asrin Construction Site	Inverted Roof	Big Bay - Blouberg	2008

No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
228	Western Cape	N2 Gateway	Subsidy Housing	City Of Cape Town	2008
229	Western Cape	N2 Gateway	Subsidy Housing	City Of Cape Town	2008
230	Western Cape	N2 Gateway	Subsidy Housing	City Of Cape Town	2008
231	Eastern Cape	Khabah Langa	Subsidy Housing	Nelson Mandela Bay	2008
232	Eastern Cape	Solomon Mahlangu	Subsidy Housing	Nelson Mandela Bay	2008
233	Eastern Cape	Solomon Mahlangu	Subsidy Housing	Nelson Mandela Bay	2008
234	Cladcon	Mercedes Benz	Over Purlin	Klapmuts	2007
235	Willowbridge	Retail Precinct	Over Purlin	Cape Town	2006
236	Eden Aquaponics	Aquaponic Farm	Floating Substrate	George	2006
237	Investec Head Office	Investec	Inverted Roof	Cape Town	2005
238	Bergriver Textiles	Warehouse	Retrofit Ceiling	Paarl	2005
239	US Embassy	Administration Block	Inverted Roof	Cape Town	2005
240	Virgin Active	Gymnasium & Swimming Pool	Over Purlin	Cape Town	2005
241	Afriski	Resort Chalets	Over Purlin	Lesotho	2004
242	Eskom	Offices	Inverted Roof	Gauteng	2004
243	Dept Of Health	Maun District Hospital	Inverted Roof	Botswana	2003
244	Fresenius Kabi	Distribution Warehouse	Over Purlin	Gauteng	2003
245	Dept Trade & Industry	Campus	Inverted Roof	Gauteng	2003
246	Pretoria Fresh Produce	Market	Over Purlin	Gauteng	2003
247	Barlow World	Showroom And Service	Over Purlin	Mpumalanga	2003
248	Flagstone Winery	Cellar	Retrofit Ceiling	Cape Town	2003

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No	CLIENT NAME	PROJECT	APPLICATION TYPE	LOCATION	YEAR OF EXECUTION
249	Melrose Arch	Accommodation	Under Soffit	Gauteng	2003
250	Cladcon	Zanvliet WWTW	Over Purlin	Macassar	2002
251	Game City	Retail Centre	Over Purlin	Botswana	2001
252	Century City	Canal Walk	Under Soffit	Cape Town	2000
253	Gateway	Gateway Shopping Centre	Over Purlin	Durban	2000
254	Ice Station	Ice Rink	Under Floor	Cape Town	2000
255	Lourensford	Cellar	Over Purlin	Cape Town	2000
256	Rainbow Chicken	Broiler Housing	Over Purlin	Standerton	2000
257	BP Head Office	British Petroleum	Inverted Roof	Cape Town	1999
258	Clocktower Precinct	Waterfront	Over Purlin	Cape Town	1999
259	Scorpion Mine	Accommodation	Nail Up	Namibia	1998
260	Sheraton	Hotel	Inverted Roof	Gauteng	1998
261	Rainbow Chickens	Broiler Housing	Over Purlin	Malmesbury	1998
262	Pretoria Academic Hospital	Parking Deck	Inverted Roof	Gauteng	1997
263	Darling Cellar	Warehouse	Nail up	Darling	1996
264	Rainbow Chickens	Broiler Housing	Over Purlin	Heuningdal	1995