SAFIERA

South African Fenestration & Insulation Energy Rating Authority

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The AAAMSA Group established the South African Fenestration and Insulation Energy Rating Association (SAFIERA) to support its drive to promote energy efficiency in the building industry. SAFIERA's primary goal is to provide a fair, accurate, and reliable energy performance rating system.

The energy performance rating process is based on the complementary use of computer simulation and physical system testing to establish energy performance ratings for fenestration and thermal insulated building envelope systems.

The formation of the association has led to an investment by the AAAMSA Group for the construction and commissioning of its flagship RGHB test facility. The RGHB, located at the Thermal Test Laboratory (TLL) on the CSIR campus, can be used to determine the heat transmission values (U-values) of most building envelope systems in accordance with ASTM C 1363-05 and ASTM 1199.

Test specimens are mounted in a test frame between two climatic chambers, exposing the one side of the test specimen to typical room conditions and the other side to typical cold external conditions respectively.

Room conditions are typically 21°C and airflow conditions representing natural convection, while the cold external conditions are typically -18°C and airflow velocities of up to 20 km/hr.

By carefully calibrating and characterizing the RGHB, it is possible to determine the comparative and absolute U-values of various specimens in a controlled environment.

Although the RGHB is currently configured to test fenestration elements, it can easily be reconfigured to test practically any other insulated building envelope system. Tests are normally performed for building envelope systems in a vertical orientation, but by rotating the RGHB, measurements can also be performed for the test specimen at any inclination in between vertical and horizontal.

To allow comparison of the results of the fenestration testing, the standard dimensions for fenestration specimens are 1195mm wide x 1495mm high; with a tolerance of 2mm. Manufacturers should ensure that the specimens presented for testing have been successfully tested for air leakage.

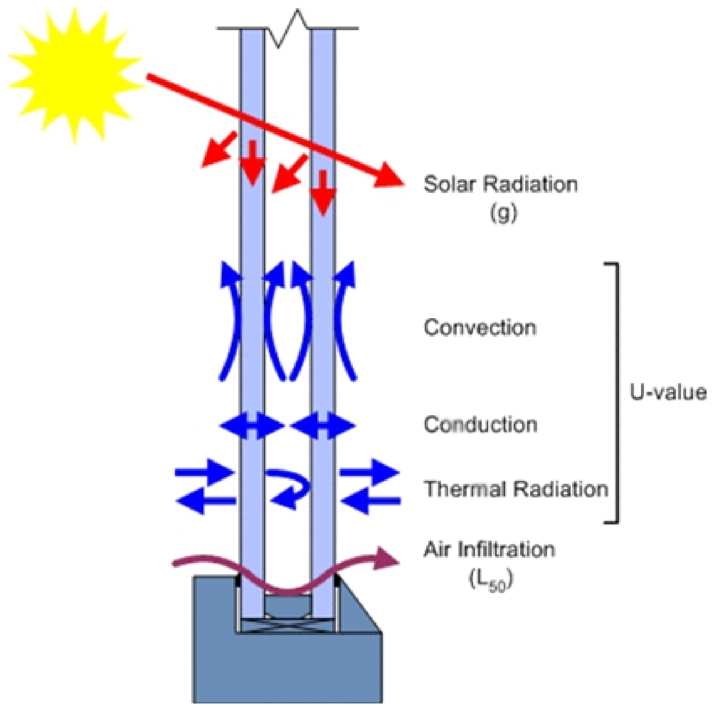
The maximum specimen dimension that can be tested in the RGHB is 4100mm wide x 3600mm high. For non-standard test specimens and tests, it is important for manufacturers to consult with TTL prior to the manufacturing.

SAFIERA's primary goal is to provide accurate and reliable energy performance rating system.

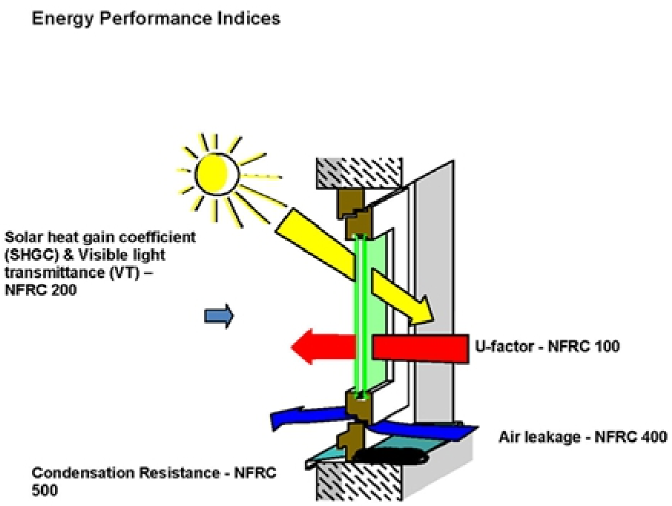
Fenestration

What is fenestration?
Any light-transmitting section in a building wall or roof, including glazing material (which may be glass or plastic), framing (mullions, mullions and dividers), external shading devices, internal shading devices and integral (between glasses) shading devices.

Explaining energy flows for a window



Energy performance indices



Technical Information

Fenestration

What is a building envelope?
Building envelope is a term used to describe the elements of a building that separate a habitable room from the exterior of a building or a garage or storage area.

The building envelope provides the thermal barrier between the indoor and outdoor environment, and its elements are the key determinants of a building's energy requirements that result from the climate where it is located. The envelope controls heat gain in summer and heat loss in winter.

What is a U-Value?
The U-value measures the transfer of heat through a material or a building element (thermal transmittance), whereas the R-value measures the resistance to heat transfer. The total heat flow through a window is converted to a heat transmission coefficient, or U-factor. The U-value is expressed using the metric units ($W/m^2.K$)

The lower (smaller) the U-value results the lower the heat flow, and therefore less heat loss. Higher U-values mean greater heat loss.

How is heat loss measured?

- The U-value is expressed using the metric units ($W/m^2.K$) where:
- W refers to the amount of heat transmitted across the face or through the material in watts;
- m2 refers to one meter squared of the material of a specified thickness; and
- K or 'degree Kelvin' refers to each °C temperature difference across the face of the materials or through the material

5 Steps to Thermal Performance Ratings
The Thermal Performance Rating is the rating which is based on the following:

U-value (U-factor) measures the rate of heat loss of a window system (assembly) how well a product prevents heat from escaping. The insulating value is indicated by the R-value which is the inverse of the U-value. The lower the U-value, the greater a window's resistance to heat flow and the better its insulating value.

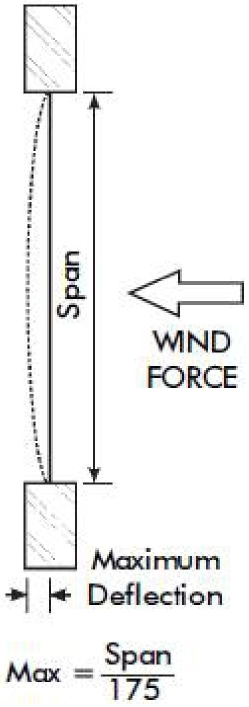
Solar Heat Gain Coefficient (SHGC) is the fraction of incident solar radiation admitted through a window, both directly transmitted, and absorbed and subsequently released inward. In plain English it measures how well a product blocks heat from the sun. The lower the SHGC, the better a product is at blocking unwanted heat gain. SHGC is expressed as a number between 0 and 1; values typically range from 0.25 to 0.80. The lower a window's solar heat gain coefficient, the less solar heat it transmits.

Air Leakage (AL) measures how much outside air come into a home or building through a product. AL rates typically fall in a range between 0.1 and 0.3. The lower the AL, the better a product is at keeping air out.

Visible Transmittance (VT) is an optical property that indicates the amount of visible light transmitted through a product. The SAFIERA VT is a whole window rating and includes the impact of the frame which does not transmit any visible light. While VT theoretically varies between 0 and 1, most values are between 0.3 and 0.8. The higher the VT, the lighter it's transmitted. A high VT is desirable to maximize daylight. Select windows with a higher VT to maximize daylight and view.

Condensation Resistance (CR) measures how well a product resists the formation of condensation. CR is expressed as a number between 1 and 100. The higher the number, the better a product is able to resist condensation.

Deflection Law
Maximum Deflection 1/175th of Span

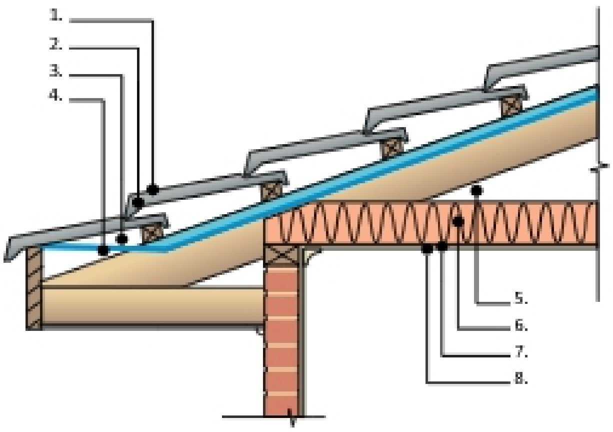


Insulation Systems Roofs & Ceilings

Insulation Systems

Examples of Insulation Systems

Pitched Tiled or metal roof with flat ceiling:



No	Description
1	Outdoor Air Film
2	Tiled Roof (example 25mm cement tile)
3	Un-ventilated 38mm air space (batten)
4	Reflective Foil Insulation or bulk RFL
5	Attic space (100mm)
6	Bulk Ceiling Insulation
7	Plaster/Ceiling board (10mm thick)
8	Indoor air-film (non-reflective)

Structure
Concrete or Terracotta tiled roof between 18degree and 35gegree pitch, 38mm battens, reflective foil insulation, reflective attic space, 10mm plasterboard flat ceiling and bulk insulation.

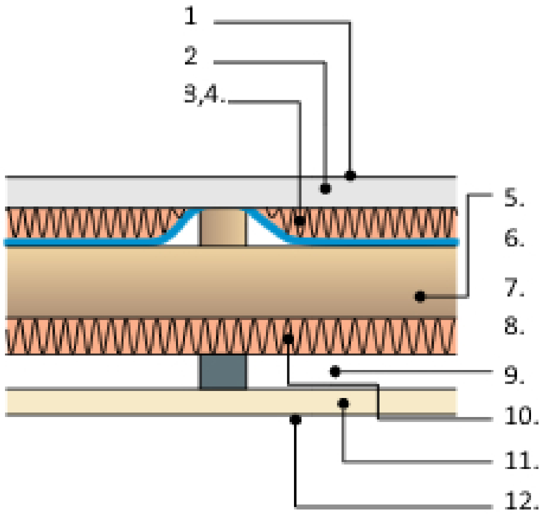
Insulation Installation

Option 1.1: Reflective bulk insulation shall be installed over rafters and under 38mm battens, thus creating an air space, anti-glare side facing outwards and foil side facing inwards. When used reflective foil insulation shall have a 100mm or 150mm overlap in accordance with the manufacturer's installation specification. Install the bulk insulation between the ceiling joists on the ceiling board in accordance with the manufacturer's installation.

Option 1.2: Install bulk insulation between the ceiling joists on the ceiling board in accordance with the manufacturer's installation specification.

Option 1.3: Reflective insulation or reflective bulk insulation shall be installed over rafters and under 38mm battens, thus creating an air space, anti-glare side facing outwards and foil side facing inwards. When used reflective foil insulation shall have a 100mm or 150mm overlap in accordance with the manufacturer's installation specification. Install reflective insulation under rafters between the battens and ceiling board in accordance with the manufacturer's installation specifications.

Flat metal roof with plasterboard ceiling (concealed 190mm rafters)
Option 2:



No	Description
1	Outdoor Air Film
2	Flat Metal Roof
3	Un-ventilated 38mm air space (batten)
4	Reflective Foil Insulation or bulk RFL
5	Unventilated Reflective 200mm Air Space
6	Unventilated Reflective 80mm Air Space
7	Foil faced board (foil to roof/vinyl down)
8	Unventilated Reflective 80mm Air Space
9	Unventilated Reflective 25m Air Space
10	Bulk Ceiling Insulation
11	Plaster/ceiling board 10mm
12	Indoor air-film (non-reflective surface)

Structure

Flat metal roof between 0degrees and 5degree pitch with reflective foil or bulk reflective foil draped over or under roof battens providing 38mm air space with anti-glare of reflective foil facing the metal roof. Rafter sixe to allow minimum 190mm air space with 10mm plasterboard fixed directly to base of rafters or on battens to rafters (no thermal gain allowed for by plaster batten space). Above foil, 38mm air space, below foil, 100mm air space.

Insulation installation

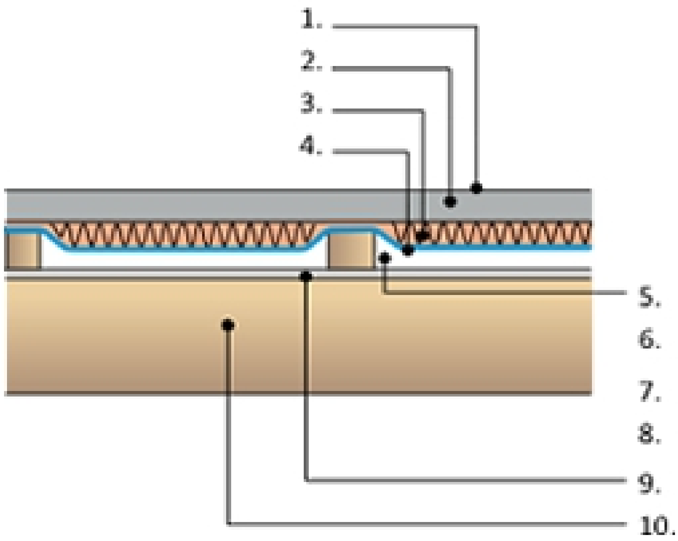
Option 2.1: Foil faced blanket draped over battens or under batten with foil facing downwards. Assume foil faced blanket example sagged but no air space above bulk. Assume minimum 25mm air space below foil prior or blanket surface. In all cases bulk insulation shall be positioned between ceiling joists/ceiling.

Option 2.2: Where bulk is used it is placed between rafters on ceiling. Bulk insulation installed with 25mm airspace between foil above and top of bulk.

Option 2.3: For board or reflective board: 38mm air space above double sided anti-glare side facing metal, board positioned to span between rafters and located at mid height of air space providing 80mm air space above and below board.

Options 2.4: Double sided anti-glare or bubble foil draped over or under roof battens providing 38mm airspace (bright side of foil facing down) between cladding and foil.

Flat metal roof with plasterboard ceiling (exposed rafters)
Option 3:



No	Description
1	Outdoor Air Film
2	Flat Metal Roof
3	Un-ventilated 40mm air space (batten)
4	Reflective Foil Insulation or bulk RFL
5	Unventilated Reflective 50mm Air Space
	Unventilated Reflective 20mm Air Space
6	Foil faced board
7	Unventilated Reflective 20mm Air Space
	Unventilated Reflective 15m Air Space
8	Ceiling Insulation
9	Plaster/ceiling board
10	Indoor air-film (non-reflective surface)

Structure

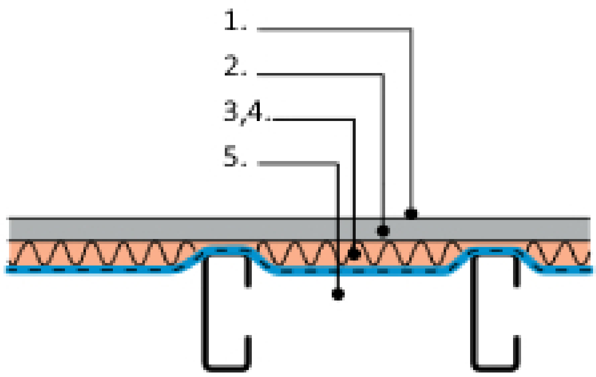
- Flat metal roof between 0 and 5degree pitch with foil faced blanket product draped over minimum 110mm high batten which is located over ceiling lining and roof rafter
- Foil facing downwards to minimum 15mm air space, 10mm plasterboard ceiling fixed between batten and exposed rafter

Insulation Installation
Option 3.1: Double side anti-glare foil positioned over minimum 110mm batten. 70mm air space below double sided anti-glare foil replaced with 20mm air space and bulk insulation. Bulk insulation laid over ceiling lining.

Option 3.2: Double sided anti-glare foil draped over minimum 110mm batten providing 40mm air space with anti-glare side of foil facing metal roof. Reflective board positioned at mid height of remaining 70mm air space providing 20mm air space and below reflective board.

Option 3.3: Double sided anti-glare or bubble foil draped over 90mm batten providing 40mm batten providing 40mm air space between metal roofing and foil. 50mm air space between foil and plaster ceiling.

Flat metal roof with no ceiling: (example warehouse)
Option 4



No	Description
1	Outdoor Air Film
2	Flat Metal Roof
3	Un-ventilated 40mm air space
4	Reflective Foil Insulation or RFL bulk insulation
5	Indoor air film (Reflective surface)

Structure
Metal roof at 0 to 5degree pitch, purloins may be various centers. Reflective foil or reflective foil faced blanket laid over wires with airspace between foil and metal roof ranging from 0mm to 40mm.

Insulation Installation
Foil faced blanket insulation laid over safety mesh. Laps in foil should be 100mm or 150mm, in accordance with the manufacturers' installation specifications and any tears or holes in the reflective foil should be repaired with foil tape. Foil side of blanket should face into the airspace below. Tight installation of insulation denotes no airspace between reflective insulation and flat metal roof, hence no contribution from an air space.

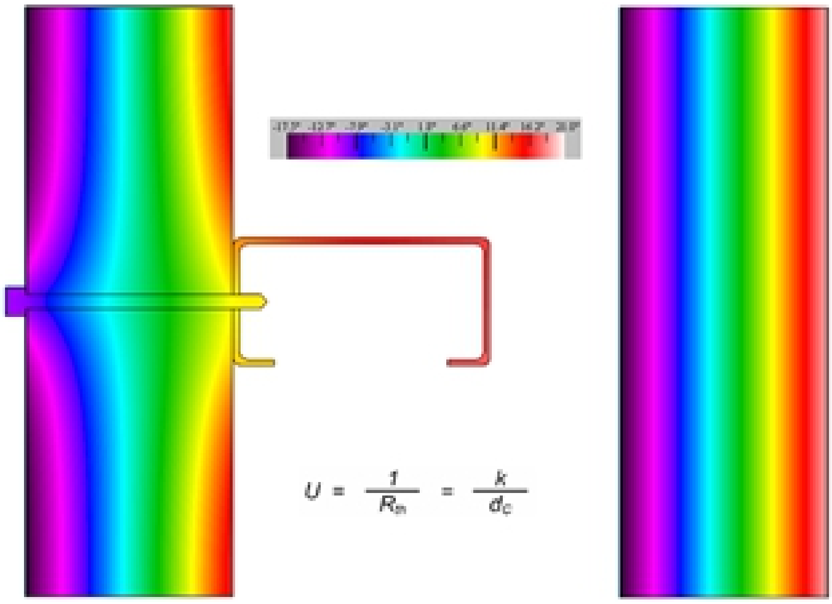
Flat metal roof with suspended ceiling

Structure
Flat metal roof at 0 to 5degree pitch with foil faced blanket installation over straining wires. Purlins may be at various centers. 10mm plasterboard ceiling fixed to the suspended ceiling grid to form a 100-600mm ventilated air space.

Insulation Installation
Reflective Foil or reflective bulk insulation laid over straining wires with the bright side facing downwards. Over laps in foil should be 100mm or 150mm, in accordance with the manufacturers installation specifications. Any tears or holes should be repaired with foil tape. Where blanket/foil is used the blanket is compressed over purloins, the blanket should be allowed to fully recover to design thickness. Foil side of blanket should face into the airspace below. Tight installation denotes no airspace between reflective insulation and flat metal roof, hence no contribution from an air space.

Thermal bridging

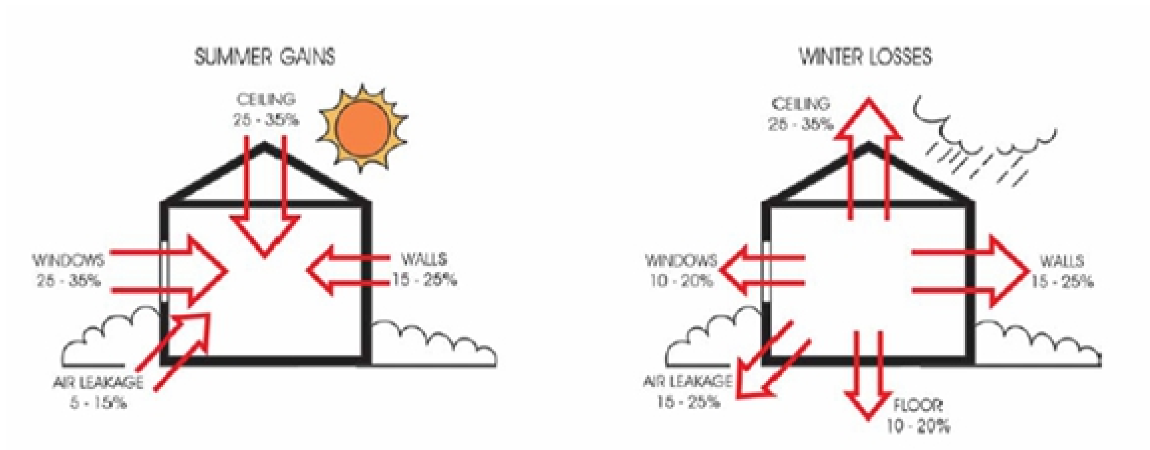
Thermal bridging is the transfer of heat across building elements, which have less thermal resistance than the added insulation. This decreases the overall R value. Wall frames and ceiling beams are examples of thermal bridges, having a lower R value than the insulating material placed between them. Because of this, the overall R value of a typical ceiling is reduced.



Technical Information – Insulation

How does insulation work?

An un-insulated home is subject to considerable winter heat losses and summer heat gains.



The term 'insulation' refers to materials or a combination thereof which provide resistance to heat flow.

What is an R-value?

Insulation materials are rated for their performance in restricting heat transfer. This is expressed as the R value, also known as thermal resistance. The R value is a guide to its performance as an insulator – the higher the R value, the better insulation (i.e. Resistance to heat flow) it provides.

R values are expressed using the metric units' m2/K/W, where:

- M2 refers to one meter squared of the material of a specified thickness;
- K refers to a one degree temperature difference (Kelvin or Celsius) across the material;
- W refers to the amount of heat flow across the material in watts.

What is a U-Value?

Sometimes insulation or systems are rated in terms of its U-value, rather than its R-Value. The U-value measures the transfer of heat through a material or a building element (thermal transmittance), whereas the R-value measures the resistance to heat transfer. U-values are often used in technical literature, especially to indicate the thermal properties of glass and to calculate heat losses and gains.

The U-value is the reciprocal of the R-value, R=l/U or U=l/R. For example, with an R-value of 2.0, the U-value is ½ or 0.5.

The U-value is expressed using the metric units (W/m2, K) where:

- W refers to the amount of heat transmitted across the face or through the material in watts;
- M2 refers to one meter squared of the material of a specified thickness; and
- K or 'degree Kelvin' refers to each degree Celsius temperature difference across the face of the material.

A smaller U-value results in lower heat flow, and therefore less heat loss. Higher U-values mean greater heat loss.

What is Intervention or Added R-Value?
The intervention added R-value or added thermal resistance is the value of the insulating material alone. This is the term most used when buying insulation.

The manufacturer should provide the R-value of the insulation on the packaging. Some products will have a higher R-value for a specified thickness For example, a 70mm thick extruded polystyrene board and 100mm thick extruded polystyrene board and 100mm thick glass wool blanket may have the same apparent R-value.

Reflective insulation must work in conjunction with air spaces between surfaces, and membranes can't be said to have an R-value by it self

To compare the performance of bulk and reflective insulation, the resistance of such membrane in combination with air space(s) must be calculated. Reputable manufacturers can supply this information. Note that the effectiveness of reflective insulation installed on horizontal or sloping surfaces may eventually be reduced due to dust build-up, which reduces reflectivity, thereby increasing absorption.

Testing & Simulation
The AAAMSA Group has entered into a joint venture with the Thermal Test Laboratory (TTL) to exclusively conduct testing and product simulation for SAFIERA. The testing of fenestration systems will be conducted by TTL in accordance with the protocols of the National Fenestration Rating Council (NFRC) in America. The institution is recognized internationally.
The Thermal Test Laboratory is a SANAS and NFRC accredited testing laboratory.

SAFIERA combines testing and computer simulation to determine actual values used to characterize the thermal performance of a particular fenestration system.

The solar optical properties of glazing materials are determined first. The data is submitted to Lawrence Berkeley National Laboratory (LBNL) for spectral data verification. Upon completion of peer review, LBNL shall mark the data files with the # sign indicating that the data has met the technical requirements of NFRC and may be made part of the WINDOW 5.2 glass data library.

Testing

1. **Mechanical Performance Testing**
   Firstly the mechanical performance is determined by testing for air leakage, wind deflection, water penetration and structural strength of fenestration systems are conducted.

This includes:

- Air leakage through specimen not exceeding 2 L/s/m² under a pressure difference of 75 Pa
- Water resistance under a pressure - No leakage when subjected to a flow of 0.05 l/s.m2
- Deflection (positive and negative) under uniform loading 1000Pa- 3500Pa Maximum deflection allowed 1/175 of span or 20mm, whichever is less;

Structural proof loading 1.5 x Uniform loading - No structural failure or permanent deformation allowed.
Tests are conducted in accordance with SANS 613:2011

2. **Rotatable Guarded Hot Box (RGHB) Testing**
   A Rotatable Guarded Hot Box (RGHB) is a testing facility for determining the heat transmission values of virtually any building envelope system.

The RGHB is situated at the Thermal Test Laboratory (TTL) on the CSIR campus in Pretoria, a research facility devoted to developing technologies that improve the energy efficiency and environmental compatibility of commercial, industrial and residential buildings.

The RGHB can determine the thermal transmittance or U-factor (in W/m².K) of building envelope systems for any angle of application from vertical to horizontal in accordance with ASTM C 1199 and ASTM C 1363. In addition to fenestration systems, thermal insulation products, wall claddings and roof assemblies can also be tested.

Over and above the contribution of the building envelope to the energy efficiency of a building, additions to the envelope such as fenestration systems also contribute significantly. The thermal efficiency of a building is determined by the design and application of the building envelope which influence the productivity and comfort of its occupants.

The RGHB will not only be of immense benefit to professionals in the building industry but equally to the members of the related Associations in the construction industry. Architects and engineers can now make accurate assessments of a building's energy efficiency before it is built, while members can confidently recommend their products for specific building envelopes.

Testing of a building envelope system by means of a Hot Box is still is the most reliable method to determine its thermal performance.

The RGHB has two main chambers, a room side chamber (also referred to as the indoor or warm chamber) and a climate side chamber (also referred to as the environmental or cold chamber). The two chambers sandwich a surround panel with an opening in which the test specimen is mounted during testing. The surround panel separates the different thermal and air flow regimes in the two chambers.

The highly insulated construction of the RGHB eliminates energy losses to, or from the outside environment. The RGHB is calibrated and characterized according to NFRC standards to account for all losses or gains not applicable to the specimen being tested.

Testing Building Envelope Systems (Wall cladding, Roof systems, Fenestration and Doors)
To determine the thermal efficiency of a building, a representative section or specimen of the assembly is installed into the 1.5 meter high and 1.2 meter wide opening of the surround panel. The specimen's thermal transmittance is calculated from the various measured air and surface temperatures, air flow rates and energy consumption measurements. All forms of heat transfer, conduction, convection and radiation) is taken into account when determining the heat transmission of the specimen.

Simulation
Before the availability of user friendly computer programs for simulating heat transfer, physical testing was the primary means of determining indices of thermal performance, like U-factors.

It is necessary to validate computer-modeling results against physical testing as a means of reality checking. Simulation can also address the many permutations of size and configuration which exist within any range of products. Simulation is carried out via the computer modeling program THERM.

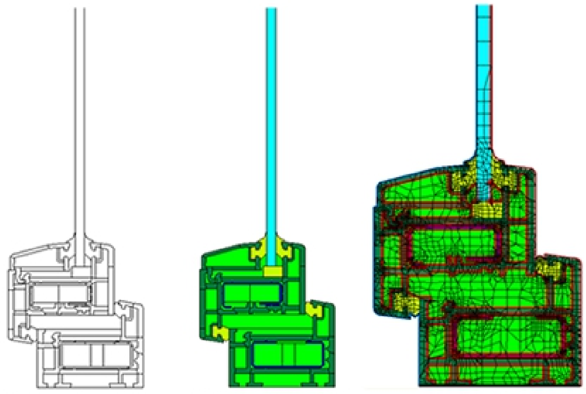
In order to carry out a simulation the manufacturer needs to supply details of the product (see checklist).

Thermal Simulation Checklist

Thermal simulation is fast, accurate, flexible and straight forward, the requirements are as following:

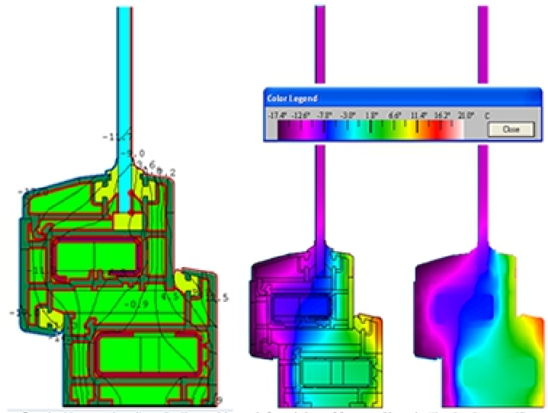
- Drawing of internal elevation of window or door
- Electronic drawings of cross sections in AutoCAD 2000, R13 or R14 drawing files (*.dwg)
- Electronic drawing of glazing spacer bar (if not incorporated in cross sectional drawings)
- Internal and external environments labeled
- All frame material/conductance labeled
- All weather seals material/conductance labeled
- All sealant material/conductance labeled
- Glazing system type (e.g. 4-16-4) and any Low-E coatings used, whether the value is corrected or not and material/conductance attributed to the glazing spacers

uPVC sill and sash frame profile with 4 mm LowE glazing



Outline drawing of frame | Simulated frame and voids | Finite element mesh

Temperature profiles for a uPVC sill & sash frame profile with 4 mm LowE glazing



Constant temperature lines (isotherms) | Infrared view of frame, with and without polygon outlines

The THERM Program is a two-dimensional (2-D) finite element program for calculating heat transfer in fenestration systems and other building envelope constructions. In addition to conduction heat transfer, the program also handles detailed radiation heat transfer, based on view factors. It also incorporates convection heat transfer modeling in glazing cavities.

The WINDOW program serves two purposes. To calculate "center of glass" one dimensional (1-D) heat transfer and solar optical properties of glazing systems. Glazing configurations can be arbitrary constructed and can have up to 6 glazing layers, consisting of either glass or plastic.

Results are imported from THERM program for frame and "edge-of-glass" components, which are combined with glazing layers into complete fenestration system (window, skylight, curtain wall, etc.) The WINDOW program incorporates a large glass library with over 1,000 entries from every leading glass, laminate, or applied film manufacturer in the United States. The program also incorporates libraries of environmental conditions and gas properties. The underlying data structure is in Microsoft Access format.

Verification & Certification

SAFIERA is independent of any one manufacturer and acts as a rigorous and credible Authority for testing performance claims. SAFIERA-rated fenestration and insulation products must meet all relevant standards. The scheme forms part of the quality assurance that smart manufacturers offer their customers. It is all about certified performance.

To participate, window manufacturers must obtain energy ratings for their products from SAFIERA that is accredited by the NFRC. The Rating System employs computer simulation and physical testing by NFRC-accredited laboratories to establish energy performance ratings for fenestration product types. The Rating System determines the U-factor, Air Leakage (AL), Solar Heat Gain Coefficient (SHGC) of a product, which are mandatory ratings for labeling of SAFIERA certified products.

The Energy Rating Scheme enables building envelope systems to be rated and labeled for their annual energy impact on a whole house or building, in any climate of South Africa.

Energy Rating & Labeling

Rated products & systems will display the AAAMSA/SAFIERA logos. Each rated product & system will have a certificate which certifies that it has been energy rated. The ratings apply to the effect of the whole system including the relative contributions of glass and frame.

What does the SAFIERA Label mean?

SAFIERA Ratings – Energy rating that you need & can trust

The energy performance of all systems used in the Building Envelope, i.e. windows, doors, skylights and thermal insulation in roofs, walls and floors must be independently tested and certified. This is done in accordance to testing procedures established by the NFRC.

SAFIERA provides certified rating and labeling that enable consumers to compare the energy and performance features of windows, doors, skylights and thermal insulation in roofs, walls and floors so they can make the best purchasing decisions.

SAFIERA, however, do not distinguish between “good” and “bad” windows, set minimum performance standards, or mandate performance levels. This is where rating comes in. SAFIERA helps consumers to easily identify the energy performance characteristics of SAFIERA-certified products. By using the information contained on the label, builders and consumers can reliably compare one product with another.

Example of a SAFIERA label

AAAMSA Group

SAFIERA

South African Fenestration & Insulation Energy Rating Association

Company Name Product Type	
ENERGY PERFORMANCE RATINGS	
U-Value ($W/m^2.K$) **3.87**	Solar Heat Gain Coefficient **0.54**
ADDITIONAL PERFORMANCE RATINGS	
Air Infiltration **0.67 ℓ/m^2/s**	Visible Transmittance **0.58**
MECHANICAL PROPERTIES	
Category	Design Wind load
A4	**2000Pa**

The Manufacturer stipulates that these ratings conform to applicable SAFIERA procedures for determining whole product performance. SAFIERA ratings are determined for a fixed set of environmental conditions and a specific product size. SAFIERA does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information.

No label – No performance guarantee

SAFIERA South African Fenestration & Insulation Energy Rating Association

SAFIERA ENERGY RATING CERTIFICATE

Hulamin Building Systems Technal Turn & Tilt	
ENERGY PERFORMANCE RATINGS	
U-Value (W/m².K)	Solar Heat Gain Coefficient
3.87	0.54
ADDITIONAL PERFORMANCE RATINGS	
Air Infiltration	Visible Transmittance
0.67 ℓ/m²/s	0.58
MECHANICAL PROPERTIES	
Category	Design Wind load
A4	2000Pa

The Manufacturer stipulates that these ratings conform to applicable SAFIERA procedures for determining whole product performance. SAFIERA ratings are determined for a fixed set of environmental conditions and a specific product size. SAFIERA does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information.

NFRC MEMBER National Fenestration Rating Council ® Country Representative

Applicant:
Hulamin Building Systems
P O Box 75734
Gardenview
2047

Product Information:
Frame material: Aluminium
Product name: Technal Turn & Tilt
Dimensions: 1200 wide x 1500 high
Drawing #: W2
Glass: Double glazing 6 + 12 + 6
Glass type: 6mm clear float inside & outside
Air Space: Dehydrated air

Postal Address:
P O Box 7861
Halfway House
1685

Tel: (011) 805-5002
Fax: (011) 805-5033

Testing Protocol
Thermal Transmittance: ASTM C 1199-97 NFRC 102-2004
Mechanical Properties: SANS 613:2009
Computer Simulation: NFRC 100:2004, NFRC 200:2004, NFRC 500:2004

Certification Authority:

Thermal Testing Facility:	Mechanical Testing Facility:	Computer Simulator:
TTL	TTL	Peter Lyons & Associates
Report # RGHB 09-001	Report #: D0742	Report #: PLA-0904-03
Date: 27 May 2009	Date: 1 September 2009	Date: 20 May 2009

Administered by AAAMSA Group

Date of Issue: 1 September 2009

CERTIFICATE #
FS 0001

SAFIERA Administrator

NFRC Country Representative

Note:
This certificate is not transferable and applies only to the test unit provided for testing by the applicant. Fenestration manufacturers must

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Who benefits from SAFIERA Membership?

- Window, door, skylight and insulation manufacturers who want to stay on top of the latest rating methodologies
- Architects, builders, and specifiers who want to select or specify energy-efficient fenestration & insulation products and systems
- Utilities that run energy efficiency rebate and other incentive programs and want to be assured of a return for their investment
- Higher education institutions that perform energy efficiency research
- Building officials and other government workers who develop and enforce energy codes
- Public interest and consumer organizations promoting energy efficiency or seeking a cleaner environment

Benefits

What do members receive in exchange for their annual dues?

Consumer Trust: Consumers will value and recognize your membership, knowing this support is a commitment to SAFIERA's focus on energy efficient research & development and trust the independent/non-biased nature of its structure

Cutting Edge Information: Members also receive continuing electronic updates on activities of interest that affect the fenestration or insulation industry.

Your Voice will be Heard: Influence how the SAFIERA rating and labeling system works. Only members may vote on issues and documents at the subcommittee and committee levels, or be elected to leadership positions.

Save your Organization Money: Receive discounted testing rates and, in the case of manufacturers, reduced charges for certifying products.

Performance Requirements
The maximum energy demand and maximum energy consumption per building classification shall be established in accordance with the climatic zones in figure 1 and occupancy or building classification (refer SANS 10400:A and SANS 10400:XA)