

Raven Products – Doors and Window Sealing Systems

Overview

An extensive range of sealing systems including perimeter frame seals, door bottom seals, disabled access thresholds, brush strips, pile and fringe weather-stripping for all door and window types to contain energy and exclude weather, noise, fire, smoke, insects and vermin.



Product Description

Raven Sealing Systems seal gaps around doors and windows against a combination of intrusions and leakages. They can provide a complete and continuous seal for all door and window types without impeding normal use. The sealing systems provide sealing against the intrusion of sound, fire and smoke, rain, cold draughts, dust, embers, light, insects and vermin. They also prevent leakage of heating and air-conditioning energy to allow energy savings.

Raven Sealing Systems are tested and proven against sound, weather, smoke and fire. Seals have been designed to accommodate light, medium and heavy duty levels to suit applications in domestic, commercial and industrial buildings.

Product consists of a two part aluminium seal; the aluminium carrier and a flexible seal insert. Depending on the function, the inserts can be solid and closed cell sponge EPDM (synthetic rubber), flexible PVC, nylon brush filaments, polypropylene pile, silicon rubber or TPE thermo-plastic rubber. Many of the seals also incorporate a cover strip which conceals the fasteners.

PRODUCT SPECIFICATIONS

Options	Products for all door and window types. Door seal sizes cover all standard door dimensions and each length may be cut down to the next smaller standard length and/or between standard lengths as required. Range includes: <ul style="list-style-type: none">• Acoustic door sealing systems that provide a barrier to airborne sound.• Fire and smoke sealing systems that meet building regulation levels for fire resistance and can be used in conjunction with fire doors.• Weather/Energy sealing systems that prevent draught and rainwater infiltration as well as heat loss and heat gain. Additionally they will stop the ingress of airborne dust, insects, rodents, and windblown embers in bushfire areas.• Door bottom seals of two types; mechanically lifting automatic seal and sweep seal. Used in conjunction with a threshold plate.• Threshold plate seals independent of door bottom seals.• Door frame or perimeter seals.• Astragals seals that seal the joint between two swinging doors.• Self adhesive seals for DIY applications.• Brush strip seals suitable for sealing difficult applications.• Silicon weather stripping for door and window joinery systems that require premium quality, low closing force compression seals.• Pile weather stripping made from multi-filament polypropylene yarn.
Colours	Finishes available include:



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

	<ul style="list-style-type: none"> • <i>Hard anodized</i> - 15 and 25 microns, anodized finishes include satin silver and medium bronze; • <i>Mill</i> - the raw finish of the aluminum; and • <i>Color</i> - Color finishes are available on special request. Color matching is also available. <p>Flexible seal inserts are generally black. The plastic trim covering is available in special request colours.</p>
Warranty	2 years against defects in workmanship and materials, if installed according to manufacturer's specifications.
Expected Life	<p>Mechanical seals lab tested to over 2 million cycles. Compression door frame/perimeter seals lab tested to over 10 million cycles. These simulations prove life expectancy of more than 50 years.</p> <p>Flexible seal inserts will receive wear and are replaceable.</p>
Indicative Costs	Contact supplier; indicative cost less than USD 100.00 per single door opening (perimeter seal and auto door bottom seal). Contact Raven distributor for pricing.
Purchase Options	Purchase only.
Constituents	<p>Within the various product ranges, all products essentially perform the same function and are made from the same range of materials and components.</p> <p>Products often consist of two parts; an extruded aluminium carrier and a flexible seal insert. Dependant on the function, the seal inserts can be: solid and closed cell sponge, EPDM (synthetic rubber), flexible PVC, nylon brush filaments, felt, polypropylene pile, silicon rubber or thermo-plastic rubber. Many of the seals also incorporate a cover strip which conceals the fasteners. Fasteners are zinc plated steel, self tapping screws. Some seals consist of solid materials suitable for inserting into rebates.</p> <p>The materials of different products deviate in mass and volume, however an indication from an example product show constituents as follows. Constituents of RP78 Si Door Perimeter Seal, percentage by weight (total weight 0.93kg) of product:</p> <ul style="list-style-type: none"> • Aluminum extrusion 60% • Extruded silicon rubber 20% • Steel mounting screws 2% • Extruded PVC 10% (decorative cover) • Polyester molding 2% <p>General packaging:</p> <ul style="list-style-type: none"> • Packaging polyethylene – low density • Packaging cardboard • Clear adhesive tape



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

National & International Standards	Raven are quality certified under ISO9001:2008 and operate to: <ul style="list-style-type: none"> • Environmental ISO 14001 and • OH&S AS 4801 • In Australia, Raven products comply with all Building Council of Australia, New Zealand NZ BIA and UK building regulations requirements for door & window sealing as specified in the Raven catalogue. Smoke seals: tested to AS/NZS1530.7 • Fire door seals: tested to AS1530.4 for compliance to AS1905.1 • Acoustic seals: tested to AS1191 and AS1276
Country of Origin	<ul style="list-style-type: none"> • Aluminum – China extruded product • Silicon rubber – China extruded product • Polyester – China molded product • Steel mounting screws – China supplied product • PVC decorative cover – China supplied product • Products are assembled in China and Australia.
Projects	<p><i>Raven Sealing Systems</i> have been chosen for public and commercial buildings as diverse as:</p> <p>Changi Airport, Singapore Sydney Opera House, Australia Parliament House, Australia Shatin Hospital, Hong Kong Royal College of Music, London New Zealand Broadcasting Headquarters, New Zealand Queen Sirikit National Convention Center, Bangkok Indosiar Visual Mandri Television Studios, Indonesia</p>
Preparation	The majority of seals are fastened using zinc plated self tapping screws. Fixing holes are usually predrilled and many are slotted to allow the seals to be fitted accurately.

ECOSPECIFIER LIFE-CYCLE ASSESSMENT

INTEGRATED DESIGN AND POLICY ISSUES

Door and window seals are one of the most cost effective methods for saving energy and improving climate control. In combination with window double glazing and building insulation, they provide effective energy savings and climate control, particularly if using mechanical heating or cooling in any climate.

Apart from improving energy efficiency, sealing provides weatherproofing, acoustic barrier, fire protection and obstruction to the ingress of insects, vermin, dust and fire embers. Sealing can provide specific human health benefits by reducing airborne contamination of food in warehouse storage buildings, including insects and vermin attack. Sealing doors and windows in such buildings also creates significant indirect energy saving benefits. Less food spoilage eliminates additional supply chain energy use in food growing and the subsequent replacement.



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

The Building Council of Australia requires all buildings with mechanical heating or cooling to install seals to external windows and doors, as their inclusion reduces heating and cooling energy costs by up to 15%. Sealing windows and doors may reduce background ventilation in new or retro-fitted non-mechanically ventilated buildings. New and retro-fit buildings should therefore be designed to be able to be sealed for energy efficiency but still must be able to be efficiently ventilated when required or desired by the occupants. This will avoid the potential for poor Indoor Air Quality and raised humidity levels. Poor ventilation, in combination with poor hygiene and large surface area of soft furnishings (e.g. carpet), can increase dust mite populations, Volatile Organic Compounds (VOC's) and dust levels causing health complaints like Sick Building Syndrome (SBS), chemical sensitivities and asthma.

The door and window sealing requirement is addressed by building authorities around the world and cover energy efficiency, protection from fire and smoke, prevention of noise pollution and protection against weather and draught. Items of relevance include the "International Building Code" document prepared by the Building Officials Code Administrators (BOCA), the UK Approved Document B and L1 & L2, as well as other similar European Community Directives, New Zealand Approved Document and others.

HUMAN HEALTH

Health

Raven Sealing Systems seal against the intrusion and leakage of various elements which may impact on human health. Weather/energy sealing reduces the intrusion of dust and other particulates which may impact on the respiratory systems of occupants. These seals are also a barrier for insects and vermin thus reducing the presence of spiders, ants and other potentially dangerous insects and vermin.

Another benefit for human health achieved by the installation of sealing systems is the reduction of airborne contamination of food in warehouse storage buildings.

Although aluminium is a minor component in many of these seals, aluminium smelting in the production of aluminium is a known cause of fluoride emissions that can cause a variety of health impacts. The aluminium holder has a long service life exceeding 50 years which reduces the negative impact of aluminium production.

Raven also produces door seal holders from plantation timber. Life cycle impacts of plantation timber are significantly less than aluminium.

Product contains Polyvinyl Chloride (PVC) which is a controversial material from a long term eco and health preferable stance. However PVC's durability, long performance life, resilience to moisture and ease of maintenance make it a commonly used product.

The first step in production of PVC is making the monomer, vinyl chloride. This process involves chlorine gas and may involve mercury (see **Glossary**). Vinyl Chloride monomer is a Category 1 carcinogen with potential worker health impacts during manufacture. Contemporary air filtration minimises OH&S implications. Disposal via incineration (unlikely in Australia) can produce dioxins.



Comfort

Raven Sealing Systems seal against the intrusion and leakage of noise, heating/cooling energy, light, ambient smoke, insect and vermin, draughts, dust, and rain and therefore improve the thermal and physical comfort of occupants.

Indoor Environment Quality

Raven Sealing Systems seal against the intrusion of various elements which may reduce indoor environment quality. Acoustic sealing reduces unwanted noise intrusion into buildings. Weather/energy sealing reduces draughts and heat-loss/heat-gain to maintain climate control. Weather/energy sealing also reduces the intrusion of dust and other particulates which may impact on occupants.



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Electromagnetic Radiation

Not applicable.

Safety

Raven fire and smoke sealing systems, including intumescent seals, meet building fire regulations and standards and can be used in conjunction with fire doors to give fire protection and stop smoke penetration. When incorporated with fire doors, these seals can improve the safety of building occupants.

Raven Weather/energy sealing systems prevent rainwater infiltration, thus reducing the risk of injury to occupants. Additionally they will stop the ingress of airborne toxins and windblown embers in bushfire areas.

Accessibility

Selected products (threshold plates) provide improved building access for people with a disability.

ECOLOGICAL QUALITY

Note: The installation of Raven sealing systems can reduce heating and cooling energy costs by up to 15%. The energy savings associated with the installation of these systems means reduced terrestrial and atmospheric emissions due to electricity generation. The major benefit gained by the use of an individual products significantly outweighs the impacts associated with the small quantities of the individual materials used to make up the products.

Terrestrial

Emissions – Product contains aluminium. The production of alumina from bauxite ores uses a chemical treatment, known as the Bayer Process (see [Glossary](#)). The alkaline mist associated with this process may have adverse land and vegetation impacts.

Product also contains petrochemical products. The extraction of oil results in the release of toxic drilling by-products. The production of plastics and elastomers also has associated emissions to terrestrial environments.

Physical – Mineral extraction of bauxite will disrupt landscapes and alter ecosystems. Bauxite deposits are found near the Earth's surface, therefore mining requires the removal of topsoil and overburden before deeper excavation occurs.

The extraction of oil is responsible for the deforestation, degradation, and destruction of lands across the globe. In addition, the construction of roads for accessing remote oil sites opens wild lands to colonists and land developers.

Aquatic

Emissions – The oil extraction process and the production of plastics and elastomers have associated emissions to aquatic environments that have localised impacts around production facilities.

Physical – Bauxite residues of red mud are disposed of in dams. The excess alumina-rich water is discharged into marine environments.

Atmosphere

Greenhouse (GHG) – Raven Sealing Systems seal against leakage of heated/cooled air and the loss of the energy expended to achieve temperature modification. This has a significant benefit in reducing loads on heating and air-conditioning systems, hence reducing energy consumption and associated GHG and other pollutant emissions.



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

The installation of sealing systems in food warehouse storage buildings also creates a significant indirect energy saving benefit. Less food spoilage eliminates additional supply chain energy use in food growing and the subsequent replacement.

Aluminium processing requires high energy consumption and therefore greenhouse gas emissions are associated with the production of refined alumina.

Greenhouse intensity - Information not available, however product ranges will be net positive in greenhouse emissions saved over the lifetime of the seals due to energy efficiency, dematerialization of building services and potent refrigerant gases.

Transport intensity – Product is manufactured in China. GHG intensities for shipping product are shown below. Shipping port from country of origin is Shanghai. Destination port is Adelaide, Australia.

- Energy intensity for Container Shipping of *Raven Sealing Systems RP78 Si Door Perimeter Seal* is 0.099kgCO_{2e}/kg

Table below provides land transportation greenhouse intensity figures to help calculate the greenhouse gas intensity of land transportation from shipping port.

Light commercial vehicle	Rigid Truck	Articulated Truck
0.001451 kgCO _{2e} / kg.km	0.000195 kgCO _{2e} / kg.km	0.000169 kgCO _{2e} / kg.km

*Transport intensity figures sourced from Australian National Greenhouse Gas Inventory 1990, 1995 and 1999 and WWF International, Inland Navigations and Emissions, 2005.

Operational efficiency – *Raven Sealing Systems* lead to reduced heating/cooling energy loads by sealing against the leakage thus improving operational efficiency of air conditioning and heating systems.

Re-use Efficiency – Recycling of components dramatically lowers emissions of remanufacture/recovery.

Toxics and Pollutants – The process of alumina refinement generates localised dust emissions around plant and smelters generate fluoride emissions that can affect animals and plants.

Ozone Depletion – The reduction of loads on refrigerant based heating and airconditioning systems achieved by employing *Raven Sealing Systems* will potentially lead to less ozone depleting substances entering the atmosphere.

Urban Heat Island Effects – Not applicable.

Noise – *Raven Sealing Systems* seal against the intrusion and leakage of noise resulting in less atmospheric noise.

Biodiversity

The pollutant emissions avoided by the energy savings generated by the use of seals is a significant benefit. Both bauxite and sand mining lead to modified soil profiles, topography and drainage which impacts natural vegetation and biodiversity. The oil extraction process results in the release of toxic drilling by-products into local rivers, while broken pipelines and leakage result in persistent oil spillage.

In addition, *Raven Sealing Systems* seal against the leakage of light thus reducing light pollution.



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

RESOURCE DEPLETION

Note: The reduction in fossil fuel consumption as a result of the energy efficiency measures introduced into buildings provides positive offsets against minor resource consumption during manufacture.

Resource Efficiency

Bauxite is a non-renewable mineral resource with an estimated 200 year supply. Crude oil is also a finite resource and although reserve estimates vary, all agree that supply is rapidly dwindling and most predict that the world has less than 100 years supply of easily accessible crude oil.

Aluminium extrusions, plastic and rubber products with recycled content can improve resource efficiency.

Embodied Fossil Fuel Energy

Aluminium is a high embodied energy material (approximately 180 MJ/kg). When aluminium extrusions with recycled content are used, the products' embodied energy is reduced. The volumes used in these products are small and warranted given the exposure to wear conditions.

Embodied Water

Information not available.

Durability

The *Raven Sealing System* range of products is highly durable with an expected life for both residential and light commercial applications of 50 years (and more). Some replacement of flexible seals may be required.

Reusability

Can be reused on different doors of the same size or smaller.

Repairability

Spare parts are available and flexible seal inserts are fully replaceable. Contact supplier.

Design for Dematerialisation

The use of *Raven Sealing Systems* can reduce heating and air conditioning requirements allowing for possible downsizing of systems.

Design for Disassembly

Can easily be disassembled and re-used elsewhere. However due to long life expectancy this is not likely before building renovations or demolition.

Recyclability

All packaging including cardboard and plastic are recyclable. The anodised aluminium components are fully recyclable if separated from demolition stream and sent to appropriate recycling facility. Powder coated aluminium is not as easily recyclable. Likewise, the silicone EPDM rubber is not easily recycled. All other plastic and rubber products are recyclable.



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Maintenance

Periodic inspection, adjustment and cleaning are recommended for all styles and systems. Under normal conditions an annual inspection is sufficient. Any high wear rubber or plastic surfaces need to be maintained to ensure a good seal, and therefore continued energy savings. For fire and smoke sealing applications, refer to local regulatory authority standards for maintenance requirements.

Product Takeback Scheme

No.

Extended Producer Responsibility (EPR)

No.

CORPORATE AND SOCIAL SUSTAINABILITY**Audits and Environmental Reporting**

Yes.

Convictions

No.

Environmental Policy

Yes.

Social Enhancement Programs

No.

Technology Transfer Programs

Yes.

Environmental Management Systems (EMS)

Yes.

ECOSPECIFIER ISSUES OF CONCERN / RED LIGHTS

None.



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

ECOSPECIFIER GREENRATE GREEN BUILDING SCHEME PRE-ASSESSMENT

LEED® for Commercial Interiors - Version 3 (see disclaimer below)

ENERGY AND ATMOSPHERE

EA Prerequisite 2: Minimum Energy Performance

Product may assist a project to comply with the ANSI/ASHRAE/IESNA Standard 90.1-2007 for the tenant’s scope or works, when appropriately included in combination with other elements, to establish the minimum energy efficiency of a tenant space in accordance with prescribed requirements.

Required

INDOOR ENVIRONMENT QUALITY

IEQ Credit 7.1: Thermal Comfort: Design

Product is likely to assist in a project obtaining this credit, when appropriately designed in combination with other elements, such that the project complies with ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy with Section 6.1.1 documentation.

Points Available
1

LEED® for New Construction & Major Renovations - Version 3 (see disclaimer below)

ENERGY AND ATMOSPHERE

EA Prerequisite 2: Minimum Energy Performance

Product may assist in combination with other systems in a project meeting the energy performance rating goal established using the EPA’s Target Finder Rating Tool through a variety of options.

Required

INDOOR ENVIRONMENT QUALITY

IEQ Credit 7.1: Thermal Comfort: Design

Product is likely to assist in a project obtaining this credit, when appropriately designed in combination with other elements, such that the project complies with ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy with Section 6.1.1 documentation.

Points Available
1

LEED® is a registered mark of the U.S Green Building Council (USGBC). The listing constitutes an ecospecifier Technical Opinion and is not endorsed by the USGBC or its agents. For detailed technical information about Credit requirements refer to the relevant LEED® Reference Guide. Rating Systems and Reference Guides are subject to change by the USGBC and any decision regarding the award of credits towards a LEED® rating is at the sole discretion of the USGBC.

BCA Greenmark Landed Houses v1 (see disclaimer below)

Product does not assist in the achievement of credits in this rating tool.

BCA Greenmark Non-Residential Buildings v3 (see disclaimer below)

MANDATORY REQUIREMENTS

M1 Building Envelope – ETTV

Product is likely to assist in a project complying with mandatory requirement by reducing heat conduction and radiation through walls and fenestrations. In order to comply, the envelope thermal transfer value (ETTV) of the building shall not exceed 50 W/m2.

Mandatory

M5 Air Tightness and Leakage

Product is likely to assist in a project complying with mandatory requirements by reducing or achieving air leakage rates below the specified maximums.

Mandatory



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

ENERGY EFFICIENCY

<p>1-1 Building Envelope - ETTV</p> <p>Product is likely to assist in a project obtaining credit points by improving the overall thermal performance of the building envelope by reducing the envelope thermal transfer value (ETTV). Two points are awarded for every reduction of 1 W/m² from the 50 W/m² baseline.</p>	<p>Points Available</p> <p>15</p>
--	--

INDOOR ENVIRONMENT QUALITY

<p>4-2 Noise level</p> <p>Product is likely to assist in a project obtaining credit points by assisting in the achievement of ambient sound levels recommended in the prescribed standard.</p>	<p>Points Available</p> <p>2</p>
---	---

BCA Greenmark Office Interior v1 (see disclaimer below)

ENERGY EFFICIENCY

<p>1-6 Energy Efficient Features</p> <p>Product is likely to assist in a project obtaining credit points by providing an innovative energy efficient feature that has a positive environmental impact.</p>	<p>Points Available</p> <p>7</p>
---	---

INDOOR ENVIRONMENT QUALITY

<p>4-5 Internal Noise Level</p> <p>Product is likely to assist in a project obtaining credit points by assisting in the achievement of ambient sound levels recommended in the prescribed standard.</p>	<p>Points Available</p> <p>2</p>
--	---

BCA Greenmark Infrastructure v1 (see disclaimer below)

ENERGY

<p>2a-1 Energy Efficiency</p> <p>Product is likely to assist in a project obtaining credit points by improving the energy efficiency of the project compared to code compliance facility or industry norm. Number of points awarded is determined by the percentage energy savings from the norm.</p>	<p>Points Available</p> <p>13</p>
--	--

BCA Greenmark Residential Buildings v3 (see disclaimer below)

MANDATORY REQUIREMENTS

<p>M1 Building Envelope – RETV</p> <p>Product is likely to assist in a project complying with mandatory requirement by reducing heat conduction and radiation through walls and fenestrations. In order to comply, the residential envelope thermal transmittance value (RETV) of the building shall not exceed 25 W/m².</p>	<p>Mandatory</p>
<p>M4 Air Tightness and Leakage</p> <p>Product is likely to assist in a project complying with mandatory requirements by reducing or achieving air leakage rates below the specified maximums.</p>	<p>Mandatory</p>



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

ENERGY EFFICIENCY

1-1 Building Envelope - RETV

Product is likely to assist in a project obtaining credit points by improving the overall thermal performance of the building envelope by reducing the residential envelope thermal transmittance value (RETV). Two points are awarded for every reduction of 1 W/m² from the 25 W/m² baseline.

Points Available
15

INDOOR ENVIRONMENT QUALITY

4-1 Noise level

Product is likely to assist in a project obtaining credit points by assisting in the achievement of ambient internal noise levels at or below the specified levels.

Points Available
1

BCA Greenmark Non-Residential Existing Buildings v2 (see disclaimer below)

ENERGY EFFICIENCY

Energy Efficiency

Product is likely to assist in a project obtaining credit points by contributing to increased energy efficiency of the building. Number of points awarded is determined by the percentage improvement from the specified benchmarks.

Points Available
22

INDOOR ENVIRONMENT QUALITY

4-5 Internal Noise Level

Product is likely to assist in a project obtaining credit points by assisting in the achievement of ambient sound levels recommended in the prescribed standard.

Points Available
2

BCA Green Mark is a copyright of the Building & Construction Authority (BCA). The listing constitutes an ecospecifier Technical Opinion and is not endorsed by the BCA or its agents. For detailed technical information about Credit requirements refer to the relevant BCA Reference Guide. Rating Systems and Reference Guides are subject to change by the BCA and any decision regarding the award of credits towards a BCA Green Mark rating is at the sole discretion of the BCA.

Green Building Index Non-Residential New Construction Version 1 (see disclaimer below)

ENERGY EFFICIENCY

EE1 Minimum EE Performance

Product is likely to assist in a project obtaining credit point by improving thermal performance and contributing to a maximum Overall Thermal Transmittance Value of 50, and a maximum Roof Thermal Transmittance Value 25.

Points available
1

INDOOR ENVIRONMENT QUALITY

EQ13 Internal Noise Levels

Product is likely to assist in a project obtaining credit points by directly reducing and maintaining internal noise levels below the specified sound levels.

Points Available
1



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Green Building Index Residential New Construction Version 1 (see disclaimer below)

ENERGY EFFICIENCY

EE1 Minimum EE Performance

Product is likely to assist in a project obtaining credit points by improving thermal performance and contributing to a maximum Overall Thermal Transmittance Value of 50, and a maximum Roof Thermal Transmittance Value 25, and appropriate roof U values depending on weight.

Points available
3

INDOOR ENVIRONMENT QUALITY

EQ3 Sound Insulation

Product is likely to assist in a project obtaining credit points by assisting in the reduction of sound penetration between dwelling units and intra dwelling walls to levels below the established benchmarks.

Points Available
2

Green Building Index and GBI is a copyright of Greenbuildingindex Sdn Bhd (GSB). The listing constitutes an ecospecifier Technical Opinion and is not endorsed by the GSB or its agents. For detailed technical information about Credit requirements refer to the relevant Reference Guide. Rating Systems and Reference Guides are subject to change by the GSB and any decision regarding the award of credits towards a Green Building Index rating is at the sole discretion of the GSB.

National Australian Built Environment Rating System (NABERS) Compatibility

Product may assist in the achievement of Energy credits in this rating tool.

BASIX Building Sustainability Compatibility

Product may assist in the achievement of Thermal Comfort credit in this rating tool.

Green Star™ Office Interiors Version 1.1 Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-10: Internal Noise Levels

Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels through sound control or minimising noise generation. Credit points are achieved where ambient internal noise levels and reverberation times meet the prescribed requirements.

Points Available
1

ENERGY

Ene-1: Energy Efficiency

Product is likely to assist in a project obtaining the conditional requirement for the design of a base building that achieves a predicted rating of 4 stars or greater using the Australian Building Greenhouse Rating (ABGR) scheme's Validation Protocol for Tenancy Energy Estimation Version 2005-02.

Conditional

Ene-2: Energy Improvements

Product is likely to assist obtaining credits for improvement in the overall energy efficiency of a project. Credit points achieved are determined by the star rating achieved above the conditional 4 star Australian Building Greenhouse Rating (ABGR). Product contribution to credit points is determined by project energy load simulation and needs to be included in the model to provide beneficial credits.

Points Available
12



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Green Star™ Office Design Version 2 Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-12: Internal Noise Levels

Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels of Building Services Design or Overall Building. One Credit point is achieved where the Building Services Design meets the prescribed standards. One point is also achieved where the Overall Building meets the prescribed standards.

Points Available
2

ENERGY

Ene-1: Conditional

Product is likely to assist in a project obtaining the conditional requirement for the design of a base building in which the project's greenhouse gas emissions do not exceed 110 kgCO₂/m²/annum as determined using the Australian Building Greenhouse Rating (ABGR) Validation Protocol for Computer Simulations or by using the final and current version of the Green Star™ Energy Calculator.

Conditional

Ene-2: Energy Improvement

Product is likely to assist in obtaining credits for minimising the greenhouse gas emissions of a project. Credit points achieved are determined by determining the reduction in predicted greenhouse gas emissions below the Conditional Requirement of 110 kgCO₂/m²/annum. Full points are available for carbon-neutral base buildings.

Points Available
15

Green Star™ Office Design Version 3 Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-12: Internal Noise Levels

Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels of Building Services Design or Overall Building. One Credit point is achieved where the Building Services Design meets the prescribed standards. One point is also achieved where the Overall Building meets the prescribed standards.

Points Available
2

ENERGY

Ene: Conditional

Product is likely to assist in a project obtaining the conditional requirement for the design of a base building in which the project's greenhouse gas emissions do not exceed 110 kgCO₂/m²/annum as determined using the Australian Building Greenhouse Rating (ABGR) Validation Protocol for Computer Simulations or by using the final and current version of the Green Star™ Energy Calculator.

Conditional

Ene-1: Greenhouse Gas Emissions

Product is likely to assist in obtaining credits for minimising the greenhouse gas emissions of a project. Credit points achieved are determined by determining the reduction in predicted greenhouse gas emissions below the Conditional Requirement of 110 kgCO₂/m²/annum. Full points are available for carbon-neutral base buildings.

Points Available
20



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Green Star™ Retail Centre Version 1 Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-7: Internal Noise Levels Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels for 95% of the projects nominated area (GLA and common area) in accordance with levels of Table 1 of AS/NZS 107:2000.	Points Available 1
--	------------------------------

ENERGY

Ene-1: Greenhouse Gas Emissions Product is likely to assist obtaining credits for improvement in the operational energy consumption of a project. Credit points achieved are determined by the predicted percentage of greenhouse gas emissions reduction below the “standard practice benchmark”. This benchmark is determined by the Retail Centre V1 Energy Calculator.	Points Available 20
--	-------------------------------

Green Star™ Education Version 1 Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-7: Internal Noise Levels Product is likely to assist in a project obtaining this credit by improving ambient noise levels in accordance with AS/NZS2107:2000 for the building services design and the overall building.	Points Available 2
---	------------------------------

ENERGY

Ene: Conditional Requirement Product is likely to assist in a project obtaining the conditional requirement by meeting the green house gas emissions ‘benchmark’ determined by the energy calculator.	Conditional
---	--------------------

Ene-1: Greenhouse Gas Emissions Product is likely to assist obtaining in a project obtaining credits for designs that minimise greenhouse gas emissions associated with operational energy consumption. Credit points achieved are determined by the predicted % reduction of greenhouse gas emissions below the conditional requirement.	Points Available 20
---	-------------------------------

Green Star™ Industrial Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-7: Internal Noise Levels Product is likely to assist in a project obtaining this credit by maintaining internal noise levels at an appropriate level when appropriately designed in combination with other materials/elements. Two credits point are achieved when 95% of the GLA does not exceed satisfactory ambient internal noise levels in accordance with prescribed requirements.	Points Available 2
--	------------------------------

ENERGY

Ene Conditional Requirement Product is likely to assist in a project obtaining the conditional requirement by meeting the green house gas emissions bench mark, determined by the Green Star Industrial Pilot Energy Calculator.	Conditional
--	-------------



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

<p>Ene-1: Greenhouse Gas Emissions</p> <p>Product is likely to assist obtaining credits for improvement in the operational energy efficiency of a project. Credit points achieved are by the further reduction below the conditional requirement determined by the Energy Calculator.</p>	<p>Points Available</p> <p>20</p>
<p>Green Star™ Multi Residential Unit Compatibility (see disclaimer below)</p> <p>INDOOR ENVIRONMENT QUALITY</p>	
<p>IEQ-7: Internal Noise Levels</p> <p>Product is likely to assist in a project obtaining this credit by maintaining internal noise levels at an appropriate level when appropriately designed in combination with other materials/elements. One credit point is achieved when building services noise meets satisfactory design sound levels and one point is achieved where building construction exceeds the Building Code of Australia in accordance with prescribed requirements.</p>	<p>Points Available</p> <p>2</p>
<p>ENERGY</p>	
<p>Ene: Conditional Requirement</p> <p>Product is likely to assist in a project obtaining the conditional requirement for energy consumption and minimisation of greenhouse gases, through improved thermal performance. Average thermal performance for dwellings must be improved by 10% compared to the thermal performance standard in the relevant jurisdiction.</p>	<p>Conditional</p>
<p>Ene-1: Greenhouse Gas Emissions</p> <p>Product is likely to assist obtaining credits for improvement in the operational energy efficiency of a project. Credit points achieved are determined by the predicted percentage of greenhouse gas emissions reduction below the “standard practice benchmark”. This benchmark is determined by the Multi Unit Residential Centre V1 Energy Calculator.</p>	<p>Points Available</p> <p>20</p>
<p>Green Star™ Healthcare Compatibility (see disclaimer below)</p> <p>INDOOR ENVIRONMENT QUALITY</p>	
<p>IEQ-7: Internal Noise Levels</p> <p>Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels for 95% of the OFA in accordance with Table 1 of the AS/NZS 2107:2000.</p>	<p>Points Available</p> <p>1</p>
<p>ENERGY</p>	
<p>Ene: Energy Conditional Requirement</p> <p>Product is likely to assist in a project meeting the energy conditional requirement. The project’s predicted greenhouse gas emissions must be equal to or an improvement, in the ‘bench mark’ building determined using Healthcare v1 Greenhouse Gas Emissions Calculator.</p>	<p>Conditional</p>
<p>Ene-1: Greenhouse Gas Emissions</p> <p>Product is likely to assist in a project obtaining credits for reduction in operational energy consumption and greenhouse gas emissions of the base building. One point is achieved for every 5% reduction against the ‘bench mark’ building and zero net operating buildings receive 20 credit points.</p>	<p>Points Available</p> <p>20</p>



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Green Star SA™ Office Version 1 Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-12: Internal Noise Levels

Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels of Building Services Design or Overall Building. One Credit point is achieved where the Building Services Design meets the prescribed standards. One point is also achieved where the Overall Building meets the prescribed standards.

Points Available
2

ENERGY

Ene: Conditional Requirement

Product is likely to assist in a project obtaining the conditional requirement by improving energy performance equal to or better than a notional building constructed to the 'deemed to comply' fabric and building services clauses of SANS 204:2008 Energy Efficiency in Buildings demonstrated by using the Green Star SA energy calculator or fully comply with ASHRAE Advanced Energy Design Guide for Small Office Buildings.

Conditional

Ene-1: Greenhouse Gas Emissions

Product is likely to assist in obtaining credits for minimising the greenhouse gas emissions of a project. Credit points achieved are determined by demonstrating the reduction in predicted greenhouse gas emissions below the Conditional Requirement. Full points are available for carbon-neutral base buildings.

Points Available

20

or

4

Alternatively this product may assist in a project obtaining 4 points for offices smaller than 2,000m² UA by assisting in demonstration of compliance with ASHRAE Advanced Energy Design Guide for Small Office Buildings.

Green Star SA™ Retail Pilot Compatibility (see disclaimer below)

INDOOR ENVIRONMENT QUALITY

IEQ-7: Internal Noise Levels

Product is likely to assist in a project obtaining this credit by directly reducing internal noise levels for 95% of the projects nominated area (GLA and common area) in accordance with levels of Table 1 of SANS 10103:2004 Edition 5.1.

Points Available

1

ENERGY

Ene: Conditional Requirement

Product is likely to assist in a project obtaining credits by reducing operational energy consumption and maximising operational energy efficiency so that the predicted carbon emissions of the building are less than or equal to the predicted carbon emissions of the notational building in the same location established by the requirements of the Retail Centre PILOT Energy Calculator and the Modelling Protocol Guide.

Conditional



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

Ene-1: Greenhouse Gas Emissions

Product is likely to assist in a project obtaining credits for improvement in the operational energy consumption of a project. Credit points achieved are determined by the predicted percentage of greenhouse gas emissions reduction below the “standard practice benchmark”. This benchmark is determined by the Retail Centre PILOT Energy Calculator.

Points Available
20

Green Star™ is a registered mark of the Green Building Council of Australia (GBCA). Assessments shall not be reproduced in part at any time. This listing constitutes an ecospecifier Technical Opinion and is not endorsed by the GBCA or its agents. For detailed technical information about Credit requirements refer to the Green Star™ Technical Manuals. Rating Tools and Technical Manuals are subject to change by the GBCA, and any decision regarding the award of credits towards a Green Star™ rating is at the sole discretion of the GBCA.

BREEAM Gulf**HEALTH & WELLBEING****Hea 13 – Acoustic performance**

Product is likely to assist in a project obtaining credits by providing acoustic insulation so that the building meets the appropriate acoustic performance standards for its purpose and meets the required sound insulation between acoustically sensitive rooms. The second point can be independently awarded when areas used for speech achieve reverberation times compliant with the prescribed standard.

Points Available
2

ENERGY**Ene 1 – Reduction of CO2 emissions**

Product is likely to assist in a project obtaining credits as it demonstrates an improvement in the energy efficiency of a building’s systems and therefore achieves lower operational related CO2 emissions. Number of points awarded is dependent on percentage improvement over the established baseline.

Points Available
15

Ene 7 – Cold storage

Product is likely to assist in a project obtaining credits as it provides a technology to increase the energy efficiency of cold storage systems. One credit point deals with the ability of the system to monitor operational variables, the next deals with minimised energy consumption in operation, and the third point can be achieved where heat recovery, free cooling or thermal storage are implemented. Points are mutually exclusive and can be awarded independently.

Points Available
3

BREEAM Issue 3 (see disclaimer below)**HEALTH & WELLBEING****Hea 13 – Acoustic performance**

Product is likely to assist in a project obtaining credits by providing acoustic insulation so that the building meets the appropriate acoustic performance standards for its purpose and meets the required sound insulation between acoustically sensitive rooms. The second point can be independently awarded when areas used for speech achieve reverberation times compliant with the prescribed standard.

Points Available
2



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

ENERGY

Ene 1 – Reduction of CO2 emissions

Product is likely to assist in a project obtaining credits as it demonstrates an improvement in the energy efficiency of a building's systems and therefore achieves lower operational related CO2 emissions. Number of points awarded is dependent on percentage improvement over the established baseline.

Points Available
15

Ene 7 – Cold storage

Product is likely to assist in a project obtaining credits as it provides a technology to increase the energy efficiency of cold storage systems. One credit point deals with the ability of the system to monitor operational variables, the next deals with minimised energy consumption in operation, and the third point can be achieved where heat recovery, free cooling or thermal storage are implemented. Points are mutually exclusive and can be awarded independently.

Points Available
3

BREEAM name and logo are registered trademark of the Building Research Establishment Ltd. The listing constitutes an ecospecifier Technical Opinion and is not endorsed by the BRE or its agents. For detailed technical information about Credit requirements refer to the relevant BREEAM Assessor Manual. Rating Systems and Reference Guides are subject to change by the BRE and any decision regarding the award of credits towards a BREEAM rating is at the sole discretion of the BRE.

ESTIDAMA Pearls New Buildings Issue: July 2009 Pilot Version

LIVEABLE BUILDINGS

LB-34: Indoor Noise Pollution

Product may assist in a project obtaining this credit by improving the noise isolation of normally occupied premises/rooms to reduce impact of unwanted noise. Credit point is achieved if internal ambient noise levels do not exceed 40 dBA for 95% of the occupied area.

Points Available
1

LB-35: Outdoor Noise Pollution

Product may assist in a project obtaining this credit by minimising noise pollution associated with the building that may affect neighbouring buildings, amenities or wildlife. Credit point is achieved if the level of intruding noise at the facade of the nearest noise sensitive premises is minimised to less than 55 dB(A).

Points Available
1

RESOURCEFUL ENERGY

RE-r1: Energy Conservation: Minimum

Product may assist in a project obtaining this requirement if the building meets the prescribed energy performance requirements, such as the required Prescriptive or Performance Requirements.

Requirement

RE-1: Energy Conservation Improvement: Carbon Reduction

Product may assist in a project obtaining this credit by contributing to a percentage reduction in energy consumption over the Budget Building or relevant Building Benchmark.

Points Available
20



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

ASSESSMENT COMPARISON

External windows and doors without seals.

KEYWORDS / ALTERNATIVES

Air seal; butyl rubber door seals; door; draught excluder; fire safety; gaskets; seal; sealer; sealing; seals; soundproofing; stripping; thresholds; ventilation; vermin; weather strip; window; window seal.

RELATED TOPICS

Climate Control; soundproofing; fire safety

CSI CATEGORY & NUMBER

08 71 00 Door Hardware

08 75 00 Window Hardware

NBS CATEGORY & NUMBER

Building and Residential Services

L10 Windows/Roof-lights/Screen/Louvres

L20 Doors/Shutters/Hatches

Commercial Engineering & Services

Z20 Fixings and adhesives

Landscaping

G20 Carpentry/Timber framing/First fixing

Z20 Fixings/Adhesives

ASSESSMENT CRITERIA SATISFIED

WORKPLACE OH&S, OCCUPANT HEALTH, HUMAN WELL-BEING	
<input checked="" type="checkbox"/>	Reduced, or no toxicity/ carcinogens/mutagens/teratogens or ionizing agents through life cycle
<input checked="" type="checkbox"/>	Improved indoor environment
HABITAT & BIODIVERSITY CONSERVATION	
<input checked="" type="checkbox"/>	Reduced terrestrial impacts
<input checked="" type="checkbox"/>	Reduced aquatic impacts
AIR POLLUTION	
<input checked="" type="checkbox"/>	Reduced, or no toxicity/ carcinogens/mutagens/teratogens or ionizing agents through life cycle
<input checked="" type="checkbox"/>	Reduced smog-forming potential
RESOURCE DEPLETION	
<input checked="" type="checkbox"/>	Durability
ENERGY RESOURCES	
<input checked="" type="checkbox"/>	Contributes to downstream reduction of energy use
CORPORATE SOCIAL RESPONSIBILITY, ENVIRONMENTAL MANAGEMENT AND REPORTING	
<input checked="" type="checkbox"/>	Certified EMS
<input checked="" type="checkbox"/>	Environmental policy
OTHER VITAL SIGNS	
<input checked="" type="checkbox"/>	Material Safety Data Sheet (MSDS)
<input checked="" type="checkbox"/>	Quality Management System
<input checked="" type="checkbox"/>	Documented manufacturer claims
<input checked="" type="checkbox"/>	Expert Assessment



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012

MANUFACTURER DETAILS

Raven Products Pty Ltd
18-22 Aldershot Road
Lonsdale, Adelaide, South Australia 5160
Australia

Telephone: +61 8 8384 5455

Fax: +61 8 8382 8885

Email: sales@raven.com.au

Web: www.raven.com.au

This is a Certified Copy of an ecospecifier.com listing. Certified by **ecospecifier** Pty Ltd *per*



David Baggs | Technical Director & Principal Consultant
Chartered Architect, FAIA, ABSA, Green Star AP, LEED AP, MRoySocAS



This assessment is current only to the valid date and shall not be reproduced in part at any time. Please refer to the ecospecifier website for current detailed product listing information. © Ecospecifier 2012