

BRADFORD COMMERCIAL ROOFING





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This product manual contains all the information you need to design, specify and install roofing systems to meet local building code requirements.

This manual was developed to serve as a guide for those who specify, use and/or install our products. Bradford Insulation makes every effort to ensure that the information in this manual is up to date. However, as building codes are subject to change it is the responsibility of the specifier and installer to confirm that the products selected for their application meet the requirements of all aspects of the relevant local building codes and their project.

To keep up to date with changes to building codes, energy efficiency and product innovation our manuals are subject to periodic change. Ensure you have the latest revision of this manual by visiting www.bradfordinsulation.com.au or contacting us on 1300 664 653.

Please note that this brochure was developed in line with the requirements of the Building Code of Australia (2008).

1. OVERVIEW

1.1. Introduction

The roof of any commercial project constitutes a major surface that is subject to the effects of climate and temperature. This can have a major effect on the comfort and energy efficiency of the building as a whole.

The addition of roof insulation and ventilation can improve the overall performance of a building, leading to greater comfort for occupants, cost reductions and even impact on the environment.

Bradford has always been at the forefront of insulation design and our aim is to help our customers make smarter choices when designing and constructing their buildings.

Bradford was the first Australian insulation company to combine the benefits of reflective foil with building blanket to create Anticon™, (anti-condensation) the most effective insulation for under metal roofing and wall cladding. For over 30 years Anticon has provided cost effective thermal and acoustic insulation and condensation control to help make homes and commercial buildings energy efficient and more comfortable to live and work in.

Over the years we have developed our product offering to be able to provide even more effective solutions across a wide range of applications. Now with the inclusion of Edmonds roof ventilation, Bradford offers the most comprehensive systems to assist you to develop energy efficient and cost effective buildings.

This manual helps to clarify the regulatory requirements and simplify the product selection.

We are committed to continuous improvement and welcome our customers for feedback on our products and literature.

1.2. The DesignSmart Program

Bradford has always had a philosophy of making our products simple and quick to specify and recognize that this is required now more than ever.

We realise that our customers are under pressure to design new and innovative projects, while ensuring conformance to relevant standards and codes and also making their designs simple to install.

Now we are wrapping this philosophy up in a new program: Bradford DesignSmart, where we help you make your design easier, smarter and more reliable.

Our aim is to help you find the right product for your application quickly and easily, resulting in reduced design time and peace of mind. We also want to provide you with the key information you need to easily communicate benefits and project requirements to owners, designers, builders, and contractors.

1.3. Using this Manual

This manual is designed to provide all the information you need to develop an informed specification for a commercial metal roof. It has been structured in a number of sections to lead you through the specification process.

- **Section 2: Designing & Specifying Insulation;** discusses the key considerations which need to be taken into account when developing a specification.
- **Section 3: Roofing Design:** helps you select the minimum required insulation and ventilation requirements to meet the energy efficiency requirements of the BCA for your class of building.
- **Section 4: Applications and Products:** allows you to refine your selection to meet your specific project needs.
- **Section 5: Installation:** ensures your specified insulation will perform as intended when your project is complete.
- **Section 6: Technical information:** enables you to find specific technical information on your selected product.
- **Section 7 & 8: Products:** lists available products referred to in this technical manual.

This is supported by additional information that can help simplify your project.



2. DESIGNING AND SPECIFYING INSULATION

2.1. The Benefits of Using Insulation

- Helps meet Energy Efficiency requirements, by providing thermal insulation. By meeting these requirements your smart design helps reduce greenhouse gas emissions.
- A more comfortable working environment, by reducing heat flow in and out of the building
- A better working environment, by reducing rain and other external noise and by deadening internal noise.
- A safer environment, as it reduces the possibility of fire spread in the event of a roof-space fire
- Prevents damage to roof sheeting and internal ceiling linings by stopping condensation forming under the roof.
- Reduced building running costs, by reducing load required to heat and cool the space and/or the size of the plant.
- Reduced “metal creep” – creaking noises which occur when there are sudden external temperature changes

2.2. Designing for BCA Section J and Green Star

The Building Code of Australia (BCA) provides the minimum total thermal performance required for roofs. Insulation plays a major role in achieving these minimum values.

In GreenStar buildings one of the highest factors that contribute to GreenStar points is energy improvement. The upgrade of passive insulation within a building can result in significant energy savings.

Regardless of the building achieving a GreenStar rating or meeting deemed to satisfy provisions of the BCA there is a strong case to increase specified insulation performance, as the energy savings can quickly pay for the increase in marginal costs.

Additionally Bradford is committed to improving the sustainability of commercial buildings by becoming a member of the Green Building Council of Australia in 2009. We believe Bradford Insulation can add substantial value to the long term sustainable future of commercial premises.

Bradford Insulation is
a member of the Green
Building Council of Australia



2.3. Designing for Condensation Control

Condensation can become a problem when warm, moist air comes in contact with a colder metal roof. This can lead to damage of the roof sheeting and internal linings and potential adverse health effects from mould and mildew. Correct specification of insulation will prevent condensation occurring underneath metal roofs.

In most cases the thickness required to meet the energy efficiency requirements will be sufficient for condensation control in most climate zones. Additional care should be taken to ensure the Anticon™ thickness selected for the climate zone is suitable to prevent condensation occurring, particularly in tropical and alpine climates, as the BCA does not consider condensation. Even when buildings are not required to meet the BCA insulation should still be considered to reduce the potential of condensation occurring in a building.

For applications in tropical climates an additional foil layer against the roof sheeting is required.

2.4. Designing for Noise Control

Anticon can provide considerable acoustic benefits. While reflective foil laminates provide little resistance to noise transfer, the bulk glasswool insulation component of Anticon against the roof metal not only reduces airborne noise, it provides a damping effect to reduce impact noise. In fact, Bradford have developed a specific product, Acousticon™, with scientifically optimised acoustic characteristics. Acousticon™ reduces rain noise and even tropical storm noise by up to 18 dB(A), which is around a 75% reduction in loudness, compared to an uninsulated metal roof.

2.5. Designing for Fire Risk

Bradford Insulation offers a range of sarking and bulk insulation products that can meet the requirements of Specification C1.10 and C1.10a and your project needs. For further information contact Bradford Insulation.

Insulation Fire Hazard Properties AS1530 Pt3	
Ignitability	0
Spread of Flame	0
Heat Evolved	0
Smoke Developed	0

Sarking Fire Hazard Properties AS1530 Pt2	
Spread Factor	2
Speed Factor	2
Heat Factor	2
Flammability Index	≤5

2.6. Designing for Sustainability

Bradford Insulation glasswool is manufactured from up to 80%, recycled glass. Much of this glass is not suitable for recycling in flat or container glass manufacture. All water used in the manufacture of our glasswool products is also recycled.

Bradford Insulation has undertaken an audit of our glasswool, rockwool and reflective foil laminate insulation manufacturing processes referencing the US EPA List of Ozone Depleting Substances (Class 1 and Class 2). This audit found that no ozone depleting substances are involved in either the manufacture or composition of these products.

Our conclusion is that Bradford Insulation's glasswool, rockwool and reflective foil laminates have an Ozone Depleting Potential of zero.

Environmental studies have shown that glasswool rockwool products have low embodied energy. Bradford recognises that, as an insulation supplier, we have a significant role to play in the passive reduction of energy use in our world.

2.7. Designing for Installed Cost

Bradford offers a Cut to Length service, where our roof blanket is delivered to site pre-cut to size. This results in a significant reduction in time and waste, leading to lower installation costs. Bradford offers a range of heavier duty foils which help to reduce damage and rework during installation.

2.8. Designing for Indoor Air Quality

Bradford and Edmonds offer a range of roof vents that can improve the overall performance of a building. Edmonds can carry out design calculations to show how the addition of vents will improve the building's thermal performance and improve the air quality for personnel within the building. Bradford's glasswool and rockwool insulation have been tested and found to have low VOC. For more information contact Bradford Insulation.

2.9. Designing for Agricultural Use

Bradford offers a range of products designed to resist the conditions found in agricultural use. Bradford Agricon™ is specially designed for areas with a corrosive environment or which require washdown such as poultry and animal husbandry applications and is available in two colours: off white and forest green.

2.10. Designing for Aesthetics

Use of the right foil facing on your Anticon can contribute to the aesthetic finish of your building. Bradford's premium foil range can ensure that you achieve the right finish. Contact Bradford for further information.

2.11. Why Use CSR Roofing Products

2.11.1. Bradford Insulation

CSR Bradford has been at the forefront of insulation innovation. In developing the Anticon range Bradford was the first insulation company to combine thermal insulation with condensation control.

Bradford is part of the CSR group that provides specialist building products to the Australasian market. Bradford is able to leverage the combined resources of the CSR building products division to develop new and innovative products and systems that are thoroughly tested. So you can be sure with CSR

Bradford also has significant local knowledge and a comprehensive support network including a comprehensive network of branches, account managers and technical representatives across Australia that can support its customers on site.

Bradford is the only locally owned glasswool and rockwool producer in Australia and is committed to expanding its capacity to meet the needs of the market with plants located along the eastern seaboard.

2.11.2. Edmonds Vents

A well designed building ventilation system will contribute to improved productivity and a safer work environment. It can also help reduce energy usage, condensation for humidity build up in the roof space and greenhouse gas emissions.

Edmonds offer a wide range of naturally wind driven and powered hybrid vent solutions. Edmonds invests significant resource into research and development to invent, manufacture and market significantly better performing products.

2.11.3. Bradford Foils

Bradford manufactures and supplies an extensive range of foil products suitable for sarking and facing applications. These products have been developed using the latest technology from around the world to deliver superior performance and great value for money. Each product has been designed to provide you with the optimum performance for each application and to make it easier for you to get the best result, every time.

3. ROOFING DESIGN TO MEET SECTION J OF THE BCA

3.1. Making the BCA as simple as ABC

The following tables are based on the ICANZ Thermal Performance Total R value calculations for typical building components and the requirements of the BCA. For each roof system there are tables for each scenario based on the Building Code of Australia (2008)

To select the correct insulation for the application carry out the following 3 simple steps;

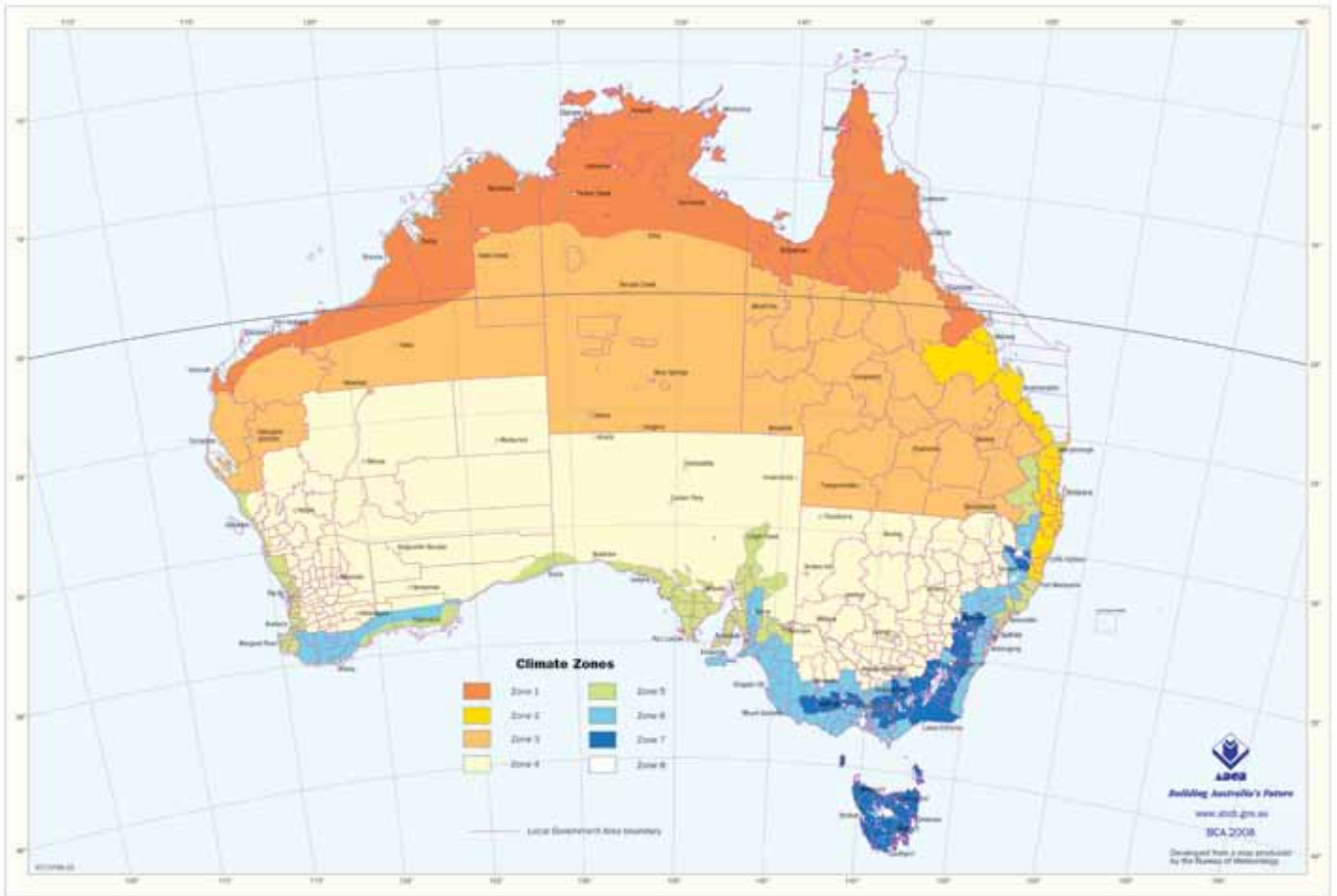
- A. **Select the climate zone for your project location from the BCA map**
- B. **Select the appropriate project Building Class**
- C. **For your roofing system read off minimum required insulation product**

Please note that the tables are only designed for light, medium and heavy foil facings – for other facings contact Bradford Insulation or refer to Bradford website: www.bradfordinsulation.com.au



STEP A. Select the Climate Zone

The BCA specifies minimum deemed to satisfy performance for roofs and is dependent on the climate zone your building is in. Locate the climate zone your building is in from the following map.



STEP B. Select the Building Class

The following table outlines the minimum total system R value required for major elements of the building envelope for each climate zone.

Class	Description	Climate Zones								
		1	2	2	3	4	5	6	7	8
			<300m	>300m						
2	Multi residential	R2.2	R2.2	R2.5	R2.2	R3.0	R2.7	R3.2	R3.8	R4.3
3	Residential Hotels, Hostels, Schools and Aged Care	R2.2	R2.2	R2.5	R2.2	R3.0	R2.7	R3.2	R3.8	R4.3
4	Other Residential	R2.2	R2.2	R2.5	R2.2	R3.0	R2.7	R3.2	R3.8	R4.3
9c	Aged Care	R2.2	R2.2	R2.5	R2.2	R3.0	R2.7	R3.2	R3.8	R4.3
	Direction of Heatflow	Inwards		Inwards and Outwards		Outwards				
5	Offices	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
6	Retail	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
7a	Carpark	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
7b	Warehouse and wholesale	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
8	Factory, Laboratory	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
9a	Health Care	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
9b	School	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R3.2	R4.3
	Direction of Heatflow	Downwards						Upwards		

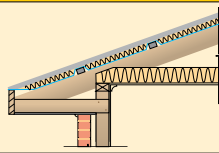
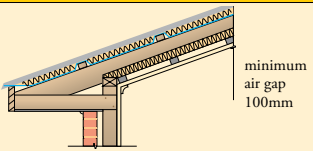
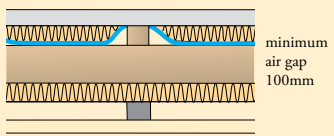
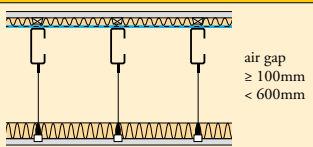
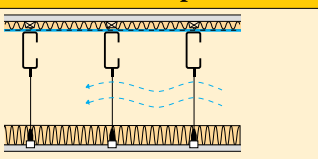
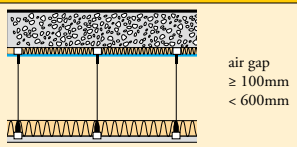
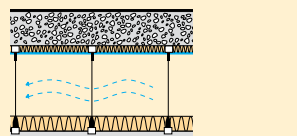
STEP C. Read off the minimum insulation required for your roofing system

Note: The BCA includes a range of conditions that permit reductions of roof R-value. Please refer to the BCA or the Bradford website for more information.

The following tables allow you to select Bradford insulation product that meets the minimum BCA insulation requirement. Simply select the roof system and read off the insulation product for the appropriate climate zone.

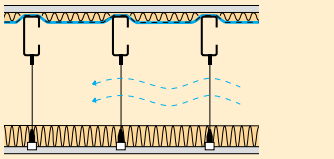
Note: This table relates to Anticon foil faced products only for Anticon with alternate facing, Acousticon or Agricon products contact Bradford for your specific design.

3.2. Anticon Roof System Class 2 to 4 - Minimum insulation required

ROOF										
Climate Zone	1	2		3	4	5	6	7	8	
		<300m	>300m							
Direction of Heat Flow	Inwards		Inwards and Outwards		Outwards					
Required Total R-Value	2.2	2.2	2.5	2.2	3.0	2.7	3.2	3.8	4.3	
Pitched Metal Roof with Flat Ceiling (Non Ventilated) R0200										
	Anticon Foil Faced Blanket	55	55	75	75	95	75	95	130	75
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Pitched Metal Roof with Cathedral Ceiling Below Rafters (Non Ventilated) R0400										
	Anticon Foil Faced Blanket	55	55	75	75	95	75	95	75	75
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	R1.5	R1.5
Flat Metal Roof with Plasterboard Ceiling (Non Ventilated) R0700										
	Anticon Foil Faced Blanket	55	55	75	75	95	75	95	130	95
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Flat Metal Roof with Suspended Ceiling (Non Ventilated) R1000										
	Anticon Foil Faced Blanket	55	55	75	55	95	75	95	75	95
	Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	R1.5	R1.5
Flat Metal Roof Suspended Ceiling Plenum Return (Ventilated) R1100										
	Anticon Foil Faced Blanket	95	95	95	95	130	110	130	*	*
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	*	*
Flat 150mm Concrete Roof with Unventilated Ceiling R1200										
	Anticon Foil Faced Blanket	55	55	75	55	95	75	95	130	95
	Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Flat Concrete Roof with Suspended Ceiling Plenum Return (ventilated) R1300										
	Anticon Foil Faced Blanket	95	95	95	75	130	95	130	*	*
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	-	-

For detailed system descriptions refer to ICANZ Insulation Handbook, Part 1 Thermal Performance. * Contact Bradford

3.3. Anticon Roof System Class 5 to 9 - Minimum insulation required

ROOFS											
Climate Zone	1	2		3	4	5	6	7	8		
		<300m	>300m								
Direction of Heat Flow	Inwards							Outwards			
Required Total R-Value	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.3	
Pitched Metal Roof with Flat Ceiling (Non Ventilated) R0200											
 <p>minimum air gap 100mm</p>	Anticon Foil Faced Blanket	95	95	95	95	95	95	95	95	75	
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Flat Metal Roof with Plasterboard Ceiling R0700											
 <p>minimum air gap 100mm</p>	Anticon Foil Faced Blanket	55	55	55	55	55	55	55	95	95	
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Flat Metal Roof with no Ceiling R0900											
	Anticon Foil Faced Blanket	100HP	100HP	100HP	100HP	100HP	100HP	100HP	130	*	
	Additional Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	nil	*
Flat Metal Roof with Suspended Ceiling (Non Ventilated) R1000											
 <p>air gap ≥ 100mm < 600mm</p>	Anticon Foil Faced Blanket	55	55	55	55	55	55	55	95	95	
	Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Flat Metal Roof Suspended Ceiling Plenum Return (Ventilated) R1100											
	Anticon Foil Faced Blanket	*	*	*	*	*	*	*	130	*	
	Additional Bradford Gold Insulation	*	*	*	*	*	*	*	nil	*	
Flat 150mm Concrete Roof with Unventilated Ceiling R1200											
 <p>air gap ≥ 100mm < 600mm</p>	Anticon Foil Faced Blanket	55	55	55	55	55	55	55	95	95	
	Bradford Gold Insulation	nil	nil	nil	nil	nil	nil	nil	nil	nil	R1.5
Flat Concrete Roof with Suspended Ceiling Plenum Return (Ventilated) R1300											
	Anticon Foil Faced Blanket	*	*	*	*	*	*	*	130	*	
	Additional Bradford Gold Insulation	*	*	*	*	*	*	*	nil	*	

* Contact Bradford. For detailed system descriptions refer to ICANZ Insulation Handbook, Part 1 Thermal Performance or consult your nearest Bradford representative. In some climates consideration must be given to the positioning of the vapour barrier and the level of insulation as the minimum BCA targets may not be adequate to provide the required condensation control.

4. APPLICATIONS AND PRODUCTS

4.1. Introduction

As most Bradford roofing products combine a base blanket with a facing, a very wide range of products is available. In order to select the right products for your application we recommend that you determine the blanket thickness required to meet the thermal and condensation requirements of the project and then select the facing that provides the best level of performance for your particular application.

4.2. Material Base Blanket (R_{MAT}) and Total System R-Values (R_T)



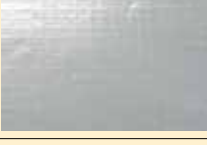





AS/NZS 4859.1: 2002 (amendment 2006) allows insulation manufacturers to present the performance in a number of ways. Two common methods of presenting product performance are R_{MAT}

(the base material thermal performance) or R_T (the total performance of the product installed in a system). Eg. Anticon 100HP has a base blanket performance of $R_{2.5}$ (R_{MAT}), however, when installed in a warehouse roof, the total R-value of the roof can be calculated as $R_{3.2}$ (R_T). Bradford presents its product performance as base blanket performance R_{MAT} to allow designers the flexibility to design and specify the most cost effective projects.

To ensure value for money it is important that products are compared based on the same criteria, eg base material performance or total performance.

4.3. Available Facings for roofing blanket



Anticon products are available in a range of facings as follows;

FACING	DESCRIPTION
Thermofoil™ Light Duty 	An economical grade reflective foil, Bradford Thermofoil™ Light Duty is a lightweight radiant barrier consisting of two layers of aluminium foil laminated to a central core of kraft paper with flame retardant adhesives with a fibreglass reinforcing yarn in a tri-directional pattern.
Thermofoil™ Medium Duty 	A tough medium duty facing for bulk insulation consisting of two layers of aluminium foil laminated to a central core of heavy kraft paper with flame retardant adhesives with a tri-directional fibre glass reinforcing yarn. This foil is stronger and has more resistance to crushing and crinkling.
Thermofoil™ Heavy Duty 	Bradford Thermofoil™ Heavy Duty Foil is premium strength, heavy-duty scrim reinforced foil laminate designed to provide a premium finish in areas where foil is exposed.
Thermoplast 980 Decorative Facing 	A facing with a white surface on one side making it ideal where a decorative finish and high level of reflectivity is required. Bradford Thermoplast™ 980 is a medium duty reflective laminate consisting of aluminium foil and kraft paper bonded to a white polymeric film with flame retardant adhesive and is reinforced with fibreglass yarn in tri-directional pattern. The white facing provides a surface with good light diffusion and reflective properties whilst the bright foil surface when combined with an associated air space provides thermal insulating properties.
Thermofoil black 	Black faced blanket is suitable for under slab in chilled beam applications, or for other acoustic requirements where low light reflectivity is required. Also available in perforated finish.
Perforated foil 	Available in heavy duty (750P) and medium duty white Thermoplast (980P) for its acoustic performance. Not suitable for applications where condensation control is required.
Acoustituff 	Bradford Acoustituff is a tough, lightweight flexible vapour barrier consisting of polypropylene film bonded to aluminium foil with fire retardant hot melt adhesive. The flexible nature of Acoustituff provides high levels of sound absorption.
Ultrapphon 	Ultrapphon is a black woven fibreglass facing designed to provide a premium black finish with a large open area for maximum sound absorption.

* Base Blanket Material R-Value

4.4. Ventilators

Edmonds manufactures an extensive range of naturally and hybrid powered roof vents for commercial applications.

PRODUCT	DESCRIPTION
Hurricane 	The Australian leader in industrial ventilation. The Hurricane vent has a vertical vane design, which considerably increases its exhaust capacity over traditional spherical vane vent designs of the same throat diameter. Available in throat sizes from 100mm to 900mm, and can also be supplied to work in corrosive environments. Also available in a wide range of colours to match Colorbond® roofs.
EcoPower 	Edmonds ecopower® ventilators are the worlds first true hybrid ventilators that will work in all conditions, even when there is no wind. They provide peak performance, using less energy than an average incandescent light globe. Available in 400mm, 600mm and 900mm throats. Also available in a wide range of colours to match Colorbond® roofs.

4.5. Roofing Applications

The Bradford roofing range can be used of a variety of applications. The following table provides guidance as to the most appropriate product for your application:

APPLICATION	PRODUCT
Roof where antiglare facing required	Thermofoil Roof Sarking in conjunction with Bradford roofing blanket
Cost effective roof insulation	Anticon™ with light duty foil
Exposed roof insulation where aesthetics is a premium or a higher level of tear resistance is required. Pinned applications beneath concrete slabs – Soffits	Anticon™ with medium duty foil
Exposed roof insulation where aesthetics is critical or the highest level of tear resistance is required. Pinned applications beneath concrete slabs – Soffits	Anticon™ with heavy duty foil
Roofs with need to keep external noise out or internal noise in	Acousticon™
Roofs that require a white finish and improved light reflectance such as assembly halls and sports facilities.	Anticon with Thermoplast 983 facing
Under-slab applications – such as in use with chilled beams	Anticon™ with black facing
Farm sheds used for housing poultry and livestock	Agricon™
Roofs where heat loads need to be ventilated	Hurricane or Ecopower roof ventilators
Roofs where noxious gases need to be ventilated	Hurricane or Ecopower roof ventilators

For specific applications contact Bradford for further information on product suitability.

5. INSTALLATION - INSULATION

5.1. General

Bradford Anticon™ should be installed by qualified professionals. Care should be taken in the installation of the insulation that sufficient room is provided to allow the insulation to recover to its design thickness between purlins. If the insulation is compressed the total R value will be reduced and may not meet required design R values.

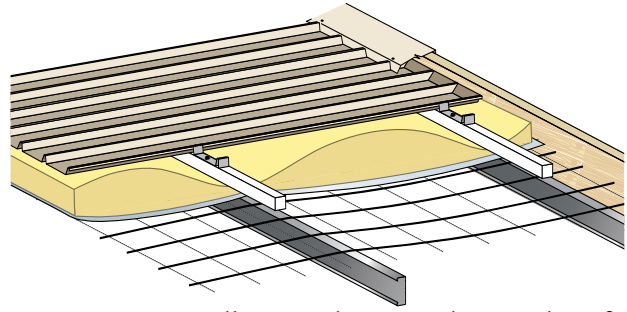


Figure 3 - Installing insulation under metal roofs

5.2. Installation of Bulk Insulation Beneath Metal Roofs

5.2.1. Installation Details

When insulation is to be installed under metal roofs provision must be made for insulation to recover to its nominal thickness. There are two options available. Spacers can be used to lift the roof sheeting above the purlin line allowing the insulation to recover to its design thickness as shown in Figure 1. Alternatively roof safety mesh can be dished (as per figure 2) but this is dependent on project and local Health and Safety requirements.

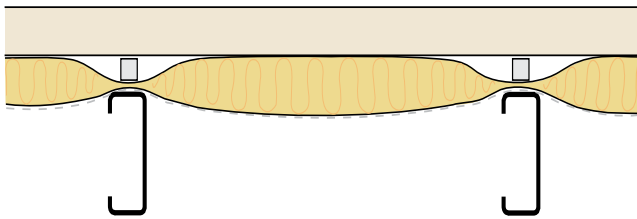


Figure 1 - use of spacers

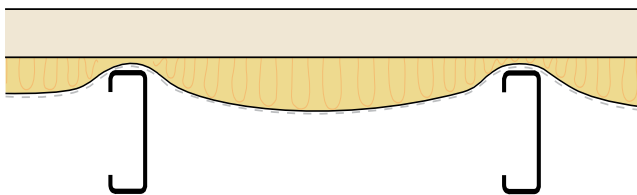


Figure 2 - dishing of safety mesh

5.2.2. Installation of Insulation

The insulation is simply rolled out over the safety mesh. The subsequent rolls of Anticon must butt up against the installed Anticon over the foil lap.

Spacers and roof sheeting are fixed through the insulation. For details refer to figure 3.

5.2.3. Spacers

To ensure compliance with section J of the BCA the insulation must be allowed sufficient space to recover to nominal thickness and a thermal break of R0.2 at purlin must be achieved. A range of spacers is available on the market that will achieve this. Bradford offers the Thermodeck spacer, a high performance thermal spacer that allows the insulation space to recover and provides a thermal break well in excess of the required BCA R0.2.

A range of spacers can be used to achieve the appropriate thickness after installing Bradford insulation. It is critical for all insulation that it is able to recover to its design thickness. Spacer details are as follows;

ANTICON PRODUCT	BLANKET THICKNESS (mm)	SPACER HEIGHT (mm)
Anticon 55	60	35
Anticon 75	80	55
Anticon 95	100	75
Anticon 100HP	100	75
Anticon 110	110	85
Anticon 130	130	105

Note: Spacers with smaller footprints may compress insulation more than continuous support spacers. To ensure sufficient recovery space is provided increase minimum recommended spacer height by 5mm.

5.3. Installation Beneath Concrete Slab Roofs - Soffits

When fixing insulation to underside of slab, insulation is pinned to slab using plastic anchors or similar. Anticon lap is taped. Refer to figure 4. Medium Duty or Heavy Duty foil facing is recommended.

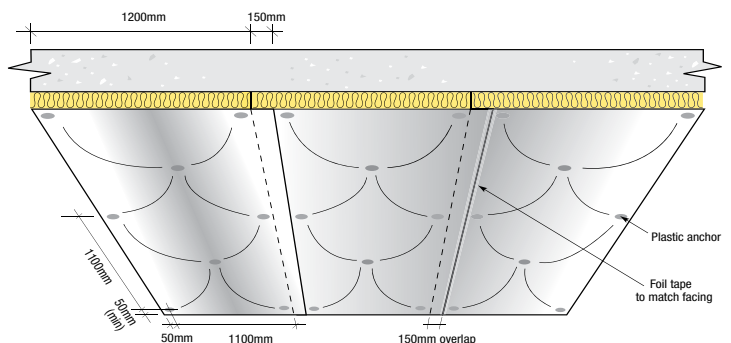


Figure 4 - fixing to underside of slabs

* Please check with local Government Health and Safety body for suitability of this method.

6. TECHNICAL INFORMATION

The following tables outline the key technical information on Anticon products. Further information can be found on the product data sheets available from the Bradford website www.bradfordinsulation.com.au

6.1. Dimensions and Weights

Product	Base Blanket Material R-Value R _{MAT}	Thickness (mm)	Nominal Length (m)	Nominal Width (mm)	Nominal Coverage per roll (m ²)	Nominal Density (kg/m ³)	Nominal Pack Weight (kg)
ANTICON							
Anticon 55	R1.3	60	15	1200	18	10	11.88
Anticon 55	R1.3	60	15	1400	21	10	13.86
Anticon 75	R1.8	80	15	1200	18	11	15.84
Anticon 95	R2.3	100	10	1200	12	11	13.2
Anticon 110	R2.5	110	10	1200	12	11	14.52
Anticon 100HP	R2.5	100	10	1200	12	14	16.8
Anticon 130	R3.0	130	10	1200	12	12	17.16
ACOUSTICON							
Acousticon	R1.5	75	15	1200	18	9	14.85
AGRICON							
Agricon	R1.5	75	15	1200	18	9	14.85

6.2. Physical Properties

Property	Product	Test	Result
Maximum Service Temperature	Glasswool Base blanket		350°C
	Facings: Foil		70°C
	Ultrapon		300°C
Moisture Absorption	All products	4 days @50C and 95% RH	Less than 0.2% by volume
Compliance with Standards	All products	AS/NZS4859.1 "Materials for the Thermal Insulation of Buildings"	Complies

6.3. Acoustics

SOUND ABSORPTION in accordance with AS1045:1988

Product	Thickness (mm)	Frequency (Hz)						5000	NRC
		125	250	500	1000	2000	4000		
ANTICON									
Anticon 55 Thermofoil LD	60	0.34	0.86	1.04	0.41	0.20	0.07	0.04	0.65
Anticon 75 Thermofoil LD	80	0.60	1.21	1.21	0.41	0.28	0.10	0.12	0.70
Anticon 95 Thermofoil LD	100	0.72	1.43	1.43	0.43	0.26	0.14	0.08	0.75
ACOUSTICON									
Acousticon	75	0.14	1.02	0.82	0.42	0.38	0.29	0.38	0.65

INSERTION LOSS (dB)

Product	Thickness (mm)	Frequency (Hz)						5000	NRC
		125	250	500	1000	2000	4000		
ACOUSTICON									
Acousticon	75	5	12	15	17	19	18	16	18

6.4. Compliance Certification

For compliance certificate for your project files refer to DesignSmart at www.bradfordinsulation.com.au





7. PRODUCTS SOLD BY BRADFORD

For a comprehensive list of products and pricing refer to Bradford price list or contact your local Bradford distributor.

PRODUCT		PRODUCT	
	Anticon Blanket		Ashgrid Spacer
	Hurricane roof ventilators and accessories		Thermodeck spacers
	Thermofoil facings		Reinforced foil tape
	Safety mesh		Moisture seal tape

8. PRODUCTS SOLD BY OTHERS

For a comprehensive list of products and pricing refer to Bradford price list or contact your local Bradford distributor.

PRODUCT		SUPPLIER
	Roofing screws - For fixing to purlins	ITW Buildex or others
	Nylon Anchors X-IE6 - For fixing to underside of concrete slabs Pin length to match nearest roofing insulation nominal thickness.	Hilti or others
	Alternate Spacer	by others

9. HEALTH AND SAFETY

Glasswool and rockwool insulation products are excellent insulation materials and are fully safe to use under all conditions. Both insulation materials have been in worldwide use for over 70 years, and during that time their manufacture and use have been extensively monitored and researched.

Bradford glasswool and rockwool products are manufactured using the latest FBS.1 technology and are not classified as hazardous according to the criteria of the ASCC (Formerly NOHSC) guidelines.

Detailed information on health & safety is contained in the MSDS & ICANZ (Insulation Council of Australian & New Zealand) literature Available from our website www.bradfordinsulation.com.au.

10. PRODUCT WARRANTY

CSR Building Products Limited warrants CSR Bradford™ Insulation products to be free of defects in materials and manufacture.

Please note that foil faced Anticon™ products must not come in contact with water, if Anticon™ product is used in an unusual application or alkaline environment contact Bradford for further details.

For full product warranty details please refer to Bradford website.

11. BRADFORD DESIGNSMART

For further specification assistance the DesignSmart section of our website includes full details or regulations, specification calculators, product brochures, data sheets, MSDSs and much more information to make your job even easier.

Visit www.bradfordinsulation.com.au or contact your Bradford representative on **1300 850 305**.

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