



Australian Green Star  
Office Design and Built v3  
and USG Ceilings

# GREENER

acoustical  
ceilings

As an industry leader with a proud heritage spanning more than 100 years, USG understands the need to safeguard the world around us and protect the vital natural resources we all share. Long before conservation became a mainstream concern, USG was finding innovative ways to reduce waste, operate efficiently and transform manufacturing byproducts into valuable new resources.

With a firm belief that health, safety and environmental well-being are compatible with economic prosperity, USG maintains a longstanding commitment with our employees, customers and communities to reduce environmental impact, use recycled materials whenever feasible and eliminate manufacturing waste. We have a solid history of environmental leadership and responsibility, and we are constantly seeking environmentally friendly product and manufacturing solutions.

Consumers have become increasingly aware of the need to conserve energy, manage the use of raw materials, reduce waste and safeguard against pollutants. In response, many developers and owners now demand buildings with materials and technologies that will help save energy, preserve the integrity of the surrounding land and assure a clean, healthy indoor environment.

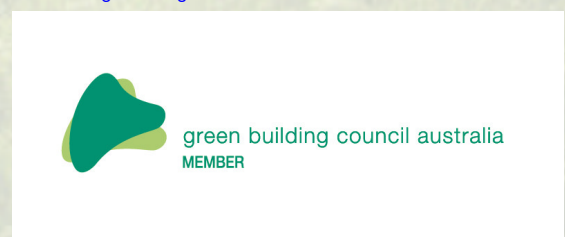
USG emphasises innovation in our products, from the ingredients we choose to the processes we employ. Take a closer look at the advantages that let you choose USG products with confidence.



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## Acoustical Ceiling Panels

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
IEQ - 4	Daylight	To encourage and recognise designs that provides good levels of daylight for building users.	<p>Up to three points are available in this credit; there are two alternative credit criteria:</p> <p>The percentage of the NLA that has a measured Daylight Factor (DF) of not less than 2.0%, at desk-height level (720mm AFFL) under a uniform design sky; OR The percentage of the NLA that has a Daylight Illuminance (DI) of at least 250 Lux.</p> <p>In both cases are the points awarded based on percentage of NLA as per below. One point is awarded for 30% of NLA; Two points are awarded for 60% of NLA; and Three points are awarded for 90% of NLA.</p>	<p>Using high Light Reflectance (LR) ceiling materials such as USG's acoustical ceiling panels (LR of .70 to .89) can reduce required luminaries of design space, therefore energy consumption, and improve the quality and quantity of natural light.</p> <p>For more information on the specific light reflectance levels of USG products refer to the table at the end of this document.</p>
IEQ - 7	Electric Lighting Levels	To encourage and recognise base building provided office lighting that is not over designed.	<p>One point is awarded where: The office lighting design has a maintained illuminance level of no more than 400 Lux for 95% of the Class 5 Commercial Office NLA as measured at the working plane (720mm AFFL).</p>	<p>Using high Light Reflectance (LR) ceiling materials such as USG's acoustical ceiling panels (LR of .70 to .89) can reduce required luminaries of design space, therefore energy consumption, and improve the quality and quantity of natural light.</p>
IEQ - 12	Internal Noise Levels	To encourage and recognise buildings that are designed to maintain internal noise levels at an appropriate level.	<p>Up to two points are awarded where 95% of the project's NLA does not exceed the 'Satisfactory' ambient internal noise levels in accordance with AS/NZS 2107:2000, as follows:</p> <p><b>Building Services Design</b> - One point is awarded where, within the entire base building general office space, noise from the building services does not exceed 40dBAeq.</p> <p><b>Overall Building</b> - One point is awarded where within the base building office space, the sound level does not exceed 40dBAeq (assuming open plan offices).</p>	<p>The materials used within a space greatly assist in maintaining internal noise levels – particularly walls, floors and ceilings.</p> <p>USG manufacture high performance acoustical ceilings tiles that deliver high NRC – Noise Reduction Coefficient (related to the reverberation time of a material) levels, while maintaining excellent CAC – Ceiling Attenuation Class (measurement of the sound transmission of a material) values. These tiles can assist acoustics engineers to maintain the correct acoustic level.</p> <p>For more information on the specific acoustical ratings of USG products refer to the table at the end of this document.</p>

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
IEQ - 13	Volatile Organic Compounds	To encourage and recognise specification of interior finishes that minimise the contribution and levels of Volatile Organic Compounds in buildings.	<p>Up to three points are awarded where the various finishes used in the project meet the benchmarks outlined below as follows:</p> <p><b>Paints</b> One point where at least 95% of all painted surfaces meet the TVOC Content Limits outlined in Table IEQ-13.1 (low-VOC) or where no paint is used in the project</p> <p><b>Carpets and Flooring</b> One point where all carpets meet the TVOC emissions limits outlined in Table IEQ-13.2 (low-VOC); OR Where no carpet has been installed in the project and projects wish to use low-VOC flooring, one point is awarded where all the flooring installed in the project meet the emissions limits outlined in Table IEQ-13.2.</p> <p>Where no carpet has been installed in the project, the carpet point is 'Not Applicable' and is removed from the total number of points available for the category; type "na" in the appropriate 'No. of Points Achieved' column of the rating</p> <p><b>Adhesives and Sealants</b> One point where 95% of all adhesives and sealants meet the TVOC Content Limits outlined in Table IEQ-13.3 (low-VOC) or where no adhesives or sealants are used.</p>	<p>Ceilings being one of the largest surface areas of any interior play a vital role in reducing or adding to the level of VOCs within an internal environment.</p> <p>Although Green Star Rating does not address emissions of VOCs for ceilings and their effects on indoor air quality, all USG products are low emitters of VOCs and meet the most stringent requirements for emission.</p> <p>Specifying USG Ceilings will help deliver a holistic approach to the reduction of VOCs in the indoor environment.</p> <p>For more information on the specific VOC levels of USG products refer to the table at the end of this document.</p>

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
IEQ - 14	Formaldehyde Minimisation	To encourage and recognise the specification of products with low formaldehyde emission levels.	<p>One point is awarded where all composite wood products (including exposed and concealed applications) either: Contain low-emission formaldehyde. OR Contain no formaldehyde.</p> <p>If no engineered wood products are used within the project, this credit is 'Not Applicable' and is removed from the total number of points available for the category; type "na" in the appropriate 'No. of Points Achieved' column of the rating tool.</p>	<p>Although Green Star Rating does not address Formaldehyde emissions for ceilings, they should be considered when ceilings are part of the base building, or are included in an integrated fitout.</p> <p>USG offers one of the widest selections of standard ceilings that satisfy stringent IEQ requirements and guidelines related to VOC and formaldehyde emissions. More than 20 ceiling families deliver zero- or low-emissions performance. The level of formaldehyde in USG's low-emissions ceilings is still far below the level considered an exposure risk.</p> <p>Specifying USG Ceilings will help contribute to the goal of a healthy indoor environment.</p> <p>For more information on the specific Formaldehyde levels of USG products refer to the table at the end of this document.</p>
IEQ - 15	Mould Prevention	To encourage and recognise the design of services that eliminate the risk of mould growth and its associated detrimental impact on occupant health.	<p>One point is awarded where the building includes a dedicated tenant's exhaust riser with the following characteristics:</p> <ul style="list-style-type: none"> <li>- Complies with section 5.7 of AS1668.2-2002;</li> <li>- Provides no less than 0.2 L/s/m<sup>2</sup> for 100% of the NLA;</li> <li>- Has a capacity of 0.35 L/s/ m<sup>2</sup> for 100% of NLA on any individual floor; and</li> <li>- The exhaust system is not recycled to other enclosures of different use.</li> </ul>	<p>Because mould spores are everywhere and they can grow on virtually any surface where moisture is present, preventing mould also requires the reduction of possible food sources. USG address the issue of mould and microbial growth by providing acoustical ceiling tiles treated with a USG-patented antimicrobial treatment that provides broad spectrum control for mould/mildew.</p> <p>Although Green Star Rating do not address materials that may provide a food source for mould spores, the use of anti-mold and mildew products will contribute to the goal of a healthy indoor environment.</p> <p>For more information on the specific mould prevention levels of USG products refer to the table at the end of this document.</p>

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
Ene - 3	Lighting Power Density	To encourage and recognise designs that provide artificial lighting with minimal energy consumption.	Up to three points are awarded where it is demonstrated that the lighting power densities for 95% of the NLA meets the following criteria at 720mm AFFL with the default maintenance factor of 0.8: One point for energy use of 2.5 W/m <sup>2</sup> per 100 Lux; Two points for energy use of 2.0 W/m <sup>2</sup> per 100 Lux; and Three points for energy use of 1.5 W/m <sup>2</sup> per 100 Lux.	Using high Light Reflectance (LR) ceiling materials such as USG's acoustical ceiling panels (LR of .70 to .89) can reduce required luminaries of design space, therefore energy consumption, and improve the quality and quantity of natural light.  For more information on the specific light reflectance levels of USG products refer to the table at the end of this document.
Mat - 3	Reused Materials	To encourage and recognise designs that prolong the useful life of existing products and materials.	One point is awarded where: At least 2% of the project's total contract value is represented by reused products/materials.  This credit excludes materials specifically addressed by other credits (i.e. steel, concrete, PVC and timber); neither does it address the reuse of the original building(s) on the site (addressed in Mat-2 'Building Reuse').	USG Donn Brand suspension system with its patented Quick Release Clip (QRC) makes it easy to disassemble and reuse.  When used with a durable acoustical ceiling tile you have a system that can be reused in the future.  If the building has an existing USG Donn Brand ceiling installed, then the re-use of the ceiling grid and tiles is possible.

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
Mat - 4	Shell and Core or Integrated Fit-out	To encourage and recognise base building delivery mechanisms that eliminate the need for immediate tenant refits.	<p>Two points are available as follows:            Up to two points are awarded where a percentage of the (NLA) of the project is delivered as any combination of shell and core or integrated fitout.</p> <ul style="list-style-type: none"> <li>- One point for 60% of NLA; or</li> <li>- Two points for 90% of NLA.</li> </ul>	<p>USG Donn Brand suspension system with its patented Quick Release Clip (QRC) makes it easy to disassemble and reuse.</p> <p>When used with a durable cast acoustical ceiling tile you have a system that can be reused in the future.</p> <p>This is applicable for an integrated fitout as set out in Mat-4.</p> <p>This is also an advantage for shell and core developments that include a suspended ceiling. If the disassembly and reuse of the system are included in the Building Users Guide and are part of the contracted lease, then it could be argued that the aim of this credit (to encourage and recognise the reduction of material wastage during tenancy fitouts) is achieved.</p> <p>For more specific information on which USG products suite disassembly, please refer to the table at the end of this document.</p>

**Note:** Use of the particular products/solutions listed in this table contribute toward the efforts to achieve Green Star points in these specific categories, however, use of these products/solutions alone does not guarantee achievement of point criteria or Green Star certification of a building.



# Australian Sustainability Table

Relationship between Green Star Credits and USG Products

Can Contribute Green Star AU Credits		Indoor Environmental Quality (IEQ)			Energy (EN)	Material (MAT)				Meets the aim of the Credit	Indoor Environmental Quality (IEQ)			Material (MAT)		
		Daylight	Electric Lighting levels	Internal Noise levels	Greenhouse Gas Emissions (Office Lighting)	Shell & Core or Integrated Fit-out	Ceilings Wall & Partitions Material calculators	Recycled Content			Volatile Organic Compounds (including Formaldehyde)			Mould Prevention	Reused Products & Materials	PVC Min
		IEQ-4	IEQ-7	IEQ-12	Ene-1 Ene-3	Mat-4	N/A	N/A			IEQ-13, IEQ-14			IEQ-15	N/A	Mat-7
		IEQ-3	IEQ-6	IEQ-10	N / A	N/A	N/A				IEQ-11, IEQ-12			N/A	N/A	Mat-10
		IEQ-4	IEQ-13	IEQ-7	Ene-1	N/A	Mat-14				IEQ-8, IEQ-9			IEQ-10	N/A	Mat-6
		IEQ-4	N / A	IEQ-7	Ene-1	N/A	Mat-14				IEQ-8, IEQ-9			IEQ-10	N/A	Mat-6
		IEQ-4	N / A	IEQ-7	Ene-1	N/A	N/A <sup>1</sup>				IEQ-8, IEQ-9			N/A	Mat-3	Mat-6
		IEQ-4	N / A	IEQ-7	Ene-1	Mat-3	N/A	Mat-3			IEQ-8, IEQ-9			IEQ-10	Mat-3	Mat-6
Substrate	Product Family: Acoustical Ceiling Tiles*	LR	NRC	CAC	LR	Can contribute to points	Can contribute to points	Post Ind.	Post Cons.		VOC			Anti-Mould & Mildew	Can be re-used	PVC Content
											Emission Levels	ppb	mg/m <sup>3</sup>			
Cast Mineral Fibre	FROST <i>ClimaPlus</i>	0.85	0.70	35 / 40	0.85	✓	✓	71%	0%	✓	Free	1.6ppb	0.002	●	✓	0%
	SANDRIFT <i>ClimaPlus</i>	0.83	0.70	38	0.83	✓	✓	71%	0%	✓	Free	1.6ppb	0.002	●	✓	0%
	BRIO <i>ClimaPlus</i>	0.81	0.70	35	0.81	✓	✓	71%	0%	✓	Free	1.6ppb	0.002	●	✓	0%
	FRESCO <i>ClimaPlus</i>	0.83	0.70	35	0.83	✓	✓	71%	0%	✓	Free	1.6ppb	0.002	●	✓	0%
X-Technology-Mineral Fibre	ECLIPSE <i>ClimaPlus</i>	0.84	0.70	35	0.84	✓	✓	77%	0%	✓	Low	13.5ppb	0.017	●	-	0%
	MARS <i>ClimaPlus</i>	0.89	0.75/0.85	35	0.89	✓	✓	76%	0%	✓	Low	13.5ppb	0.017	●	✓	0%
	MILLENNIA <i>ClimaPlus</i>	0.87	0.70	35	0.87	✓	✓	75%	0%	✓	Low	13.5ppb	0.017	●	-	0%
Water-Felted Mineral Fibre	IMPRESSIONS <i>ClimaPlus</i>	0.84	0.55	33 / 35	0.84	✓	✓	31%	13%		Low	13.5ppb	0.017	●	-	0%
	RADAR <i>ClimaPlus</i>	0.84	0.55	33 / 35	0.84	✓	✓	31%	13%		Low	13.5ppb	0.017	●	-	0%
	RADAR <i>ClimaPlus</i> High NRC	0.84	0.70	35	0.84	✓	✓	57%	1%	✓	Low	13.5ppb	0.017	●	-	0%
	RADAR <i>ClimaPlus</i> High CAC	0.84	0.55	40	0.84	✓	✓	57%	1%	✓	Low	13.5ppb	0.017	●	-	0%
	RADAR Ceramic <i>ClimaPlus</i>	0.82	0.50	40	0.82	✓	✓	45%	0%		Low	13.5ppb	0.017	●	✓	0%
	OLYMPIA Micro <i>ClimaPlus</i>	0.87	0.50	30 / 35	0.87	✓	✓	39%	13%	✓	Low	13.5ppb	0.017	●	-	0%
	CLEANROOM <i>ClimaPlus</i> 10m-100m	0.79	0.55	35	0.79	✓	✓	51%	0%		Low	13.5ppb	0.017	●	✓	0%
	ROCK FACE <i>ClimaPlus</i>	0.86	0.55	35	0.86	✓	✓	43%	6%		Low	13.5ppb	0.017	●	✓	0%
Suspension System	USG Donn Brand DX and DXT Centricitee	N/A	N/A	N/A	N/A	✓	✓	12%	0%		N/A	N/A	N/A	N/A	✓	N/A

1: No credits for this criteria as ceilings is specially addressed in the materials calculator

### USG Ceiling Systems

Many USG acoustical ceiling panels contain mineral wool derived from slag, a by-product of steel-making, which reduces the need to mine and process raw materials and minimizes landfill waste. Many panels also contain recycled paper. Binders are derived from corn and wheat starch, renewable agricultural resources. USG acoustical ceiling panels contain low VOCs. Non-directional ceiling panels such as RADAR™ allow more efficient use of material, reducing waste during installation. The steel in several of our metal ceiling and drywall suspension systems includes recycled content. Steel offers additional benefits in that it can be fully re-purposed by re-melting and salvaging the metal.

### VOC Emissions and USG Ceiling Panels:

Zero-emitting is defined as having less than 1.6ppb  
 Classified as zero or low-emitting per standards established by the Collaborative for High-Performance Schools (CHPS), following California Specification 01350 testing methods.  
 Low-emitting is defined as having less than 13.5ppb  
 Total Volatile Organic Compound (TVOC) emission from USG Ceiling tile follow ASTM D 5116 protocol

\* Please check with your local USG representative on availability and lead times for products

● **CLIMAPLUS Superior Performance:** Features a lifetime-warranted, high-performance antimicrobial treatment and achieves "no growth" 10 rating per ASTM mould/mildew tests.

Contains a broad-spectrum antimicrobial treatment on the face and back of the panel that provides guaranteed resistance against the growth of



### Good Environmental Choice Australia

Tiles indicated have independent ESD Certification by Good Environmental Choice Australia as Eco peered products

USG-2-2008  
GECA 28-2006  
Furniture and Fixings



# Working with the Environment

USG has consistently led the industry in offering customers innovative products and services used in the construction of high-performing sustainable spaces. From the product formulations we choose, to the processes we employ, we are committed to products that are designed, manufactured, distributed and used in a sustainable way and minimize overall environmental impact. Read our 2009 Sustainability Report at [www.usg.com.au](http://www.usg.com.au)

In addition to being members of both the Australian and New Zealand Green Building Councils, USG Corporation was a founding member of the United States Green Building Council in 1993.



green building council australia  
MEMBER



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