



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 provide good levels of daylight for building users.	Up to three points are awarded where it is demonstrated that a nominated percentage of the NLA has a Daylight Factor not less than 2.5% as measured at the floor level under a uniform design sky, as follows: <ul style="list-style-type: none"> • 1 point = 30% of the NLA; • 2 points = 60% of the NLA; • 3 points = 90% of the NLA. 	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.
IEQ-7	Electric Lighting Levels	To encourage and recognise base building provided office lighting that is not over designed.	One point is awarded where it is demonstrated that office lighting design has a maintained illuminance level of no more than 400 Lux for 95% of the NLA as measured at the working plane (i.e. 900mm above the floor level).	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.
IEQ-12	Internal Noise Levels	To encourage and recognise buildings that are designed to maintain internal noise levels at an appropriate level.	Up to two points are awarded where it is demonstrated that for 95% of the building's NLA, the design achieves ambient internal noise levels in accordance with AS/NZS 2107:2000, as follows: Building Services Design <ul style="list-style-type: none"> • One point is awarded where the building services noise meets the recommended design sound levels provided in Table 1 of AS/NZS 2107:2000. Overall Building <ul style="list-style-type: none"> • One point is awarded where the sound levels are between 40-45 dB LAeqT in general offices and 35-40dB LAeqT in private offices. 	The materials used within a space greatly assist in maintaining internal noise levels – particularly walls, floors and ceilings. 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. For more information on the specific acoustical ratings of USG products refer to the table at the end of this document.

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
IEQ-13	Volatile Organic Compounds	To encourage and recognise projects that reduce the detrimental impact on occupant health from finishes emitting internal air pollutants.	<p>Up to three points are awarded where it is demonstrated that various finishes meet the benchmarks for low Volatile Organic Compound (VOC) content. One point is awarded for each criterion below that is achieved:</p> <ul style="list-style-type: none"> • 95% of all painted surfaces are low-VOC paints OR no paint is used; • All carpets are low-VOC OR no carpet is installed; and/or • All adhesives and sealants are low-VOC OR no adhesives/sealants are used. 	<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>
IEQ-14	Formaldehyde Minimisation	To encourage and recognise projects that reduce the use of formaldehyde composite wood products in order to promote a healthy indoor environment.	<p>One point is awarded where it is demonstrated that:</p> <ul style="list-style-type: none"> • All composite wood product is low emission formaldehyde OR no composite wood product used. 	<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 the widest selection 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>

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
IEQ-15	Mould Prevention	To encourage and recognise the design of systems which reduce the risk of mould growth and its associated detrimental impact on occupant health.	<p>One point is awarded where it is demonstrated that:</p> <ul style="list-style-type: none"> • The mechanical ventilation system is designed to actively control humidity to be no more than 60% relative humidity in the space and no more than 80% relative humidity in the supply ductwork; <p>OR</p> <ul style="list-style-type: none"> • The building is fully naturally ventilated. 	<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>
Ene-5	Office Lighting Power Density	To encourage and recognise lighting design practices which lessen lighting energy consumption while maintaining appropriate lighting levels.	<p>Up to four points are awarded where it is demonstrated that the lighting power densities for 95% of the NLA meet the following criteria:</p> <ul style="list-style-type: none"> • 1 point = 3.0 W/m² per 100 Lux; • 2 points = 2.5 W/m² per 100 Lux; • 3 points = 2.0 W/m² per 100 Lux; • 4 points = 1.5 W/m² per 100 Lux. 	<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>

Ref No.	Title	Aim of Credit	Credit Criteria Summary	USG Solution
Mat-4	Shell and Core or Integrated Fitout	To encourage and recognise the reduction of material wastage during tenancy fitouts.	<p>Up to three points are awarded where it is demonstrated that the percentage of the NLA of the base building construction or refurbishment is either 'shell and core' (i.e. no ceiling, floor finishes or partitions installed) OR the fitout is fully integrated with the tenancy fitout works. Points are awarded as follows:</p> <ul style="list-style-type: none"> • 1 point = 30% of the NLA meets the criteria; • 2 points = 60% of the NLA meets the criteria; • 3 points = 90% of the NLA meets the criteria. 	<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 points and USG Products

Table 1

Green Star Credits	Indoor Environmental Quality (IEQ)							Energy (EN)	Material						
	Daylight	Electric Lighting levels	Internal Noise levels	Volatile Organic Compounds	Formaldehyde	Mould Prevention	Office Lighting	Shell & Core	Recycled Content PC 25%; PI 50%	Recycled Content PC 50%	Recycled Content PC 20%	Reused Products & Materials	PVC Min	Ceilings Wall & Partitions	Design for Disassembly
Green Star Rating Tool	Office Design v2	IEQ-4	IEQ-7	IEQ-12				EN-5	MAT-4						
	Office as Built v2	IEQ-4	IEQ-7	IEQ-12				EN-5	MAT-4						
	Office Interiors v1.1	IEQ-3	IEQ-6	IEQ-10											
	Education - PILOT	IEQ-4	IEQ-7	IEQ-11							MAT-11				
	Healthcare - PILOT	IEQ-4	IEQ-7	IEQ-12	IEQ-13					MAT-4				MAT-10	
	Shopping Centre Design - PILOT	IEQ-4	-	IEQ-7							MAT-9				
	Office Existing Building EXTENDED PILOT	IEQ-4	IEQ-7	IEQ-12				EN-5							
Substrate	Product Family: Acoustical Ceiling Tiles*	LR	NRC	CAC	VOC (ug m3)	Formaldehyde level	Anti-Mold & Mildew	LR	Can contribute to points	Recycled Content		Can be re-used	PVC Content	Can contribute to points	Can be disassembled for re-use
										Post Ind.	Post Cons.				
Cast Mineral Fiber	FROST <i>ClimaPlus</i>	0.83	0.70	35 / 38	26	Free	●	0.83	✓	72%	0%	✓	0%	✓	✓
	SANDRIFT <i>ClimaPlus</i>	0.83	0.70	38	26	Free	●	0.83	✓	72%	0%	✓	0%	✓	✓
	BRIO <i>ClimaPlus</i>	0.81	0.70	35	26	Free	●	0.81	✓	72%	0%	✓	0%	✓	✓
	FRESCO <i>ClimaPlus</i>	0.83	0.70	35	26	Free	●	0.83	✓	72%	0%	✓	0%	✓	✓
X-Technology-Mineral Fibre	ECLIPSE <i>ClimaPlus</i>	0.86	0.70	35	<10	Low	●	0.86	✓	76%	0%	-	0%	✓	-
	MARS <i>ClimaPlus</i>	0.89	0.75/0.80	35	<10	Low	○	0.89	✓	74%	0%	✓	0%	✓	✓
	MILLENNIA <i>ClimaPlus</i>	0.87	0.70	30 / 35	<10	Low	○	0.87	✓	74%	0%	-	0%	✓	-
	ORION 210 <i>ClimaPlus</i>	0.76	0.65	25	<10	-	-	0.76	✓	81%	0%	✓	0%	✓	✓
Water-Felted Mineral Fibre	IMPRESSIONS <i>ClimaPlus</i>	0.84	0.55	33 / 35	21	Low	○	0.84	✓	31%	13%	-	0%	✓	-
	RADAR <i>ClimaPlus</i>	0.84	0.55	33 / 35	21	Low	○	0.84	✓	31%	13%	-	0%	✓	-
	RADAR <i>ClimaPlus</i> High NRC	0.84	0.70	35	21	Low	○	0.84	✓	51%	1%	-	0%	✓	-
	RADAR <i>ClimaPlus</i> High CAC	0.84	0.55	40	21	Low	○	0.84	✓	51%	1%	-	0%	✓	-
	RADAR Ceramic <i>ClimaPlus</i>	0.82	0.50	40	21	Low	-	0.82	✓	-	41%	✓	0%	✓	✓
	OLYMPIA Micro <i>ClimaPlus</i>	0.87	0.50/0.55	30 / 35	21	Low	○	0.87	✓	47%	7%	-	0%	✓	-
	ROCK FACE <i>ClimaPlus</i>	0.86	0.55	35	21	Low	○	0.86	✓	44%	3%	✓	0%	✓	✓
Suspension System	USG Donn Brand DX and Centricitee	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓	12%	0%	✓	N/A	N/A	✓

Notes

USG Ceiling Systems

Many USG acoustical ceiling panels contain mineral wool derived from slag, a byproduct 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:

USG Acoustical Ceiling Panels are low VOC emitters by the State of Washington requirements and professional standards. State Of WA Standard VOC maximum allowed = 500 ug m3
USG Ceiling Panels and Tiles of similar composition would be expected to contain similar VOC emissions.
USG Ceiling Panels that have been tested following ASTM 5116 protocol show TVOC and formaldehyde levels below the State of Washington product emission standard. Table 1 shows the emissions of USG Ceiling Panels tested to date.
Total Volatile Organic Compound (TVOC) emission from USG Ceiling tile following ASTM D 5116.



CLIMAPLUS Superior Performance: Features a lifetime-warranted, high-performance antimicrobial treatment and achieves "no growth" 10 rating per ASTM mold/mildew tests. Panel face and back surfaces are treated with USG's patented, broad-spectrum antimicrobial treatment. This standard formulation inhibits and retards the growth of mold/mildew, fungi, yeast, and odor/staincausing Gram-positive and Gram-negative bacteria. Treated panels achieved a 10 rating (signifying "no mold growth") when tested and evaluated per ASTM D3273-00 and D3274-95.



CLIMAPLUS AntiMicrobial Treatment: Provides dual inhibition of mold/mildew and odor/stain-causing bacteria. Panel face and back surfaces treated with a patented, broad-spectrum antimicrobial standard formulation that inhibits and retards the growth of mold/mildew, fungi, yeast, and odor/stain-causing Gram-positive and Gram-negative bacteria.

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

