SUSTAINABILITY FRAMEWORK ADDITIONAL GUIDANCE

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3.6 THERMAL COMFORT

For Naturally Ventilated and Mechanically Assisted Naturally Ventilated Spaces the Usable Floor Area falls within the Acceptability Limits of ASHRAE Standard 55-2004 are achieved during Standard Operating Hours of Occupancy for 98% of the year for internal temperatures within 80% of Acceptability Limit 1.

For Mechanically Air-Conditioned Spaces the Useable Floor Area falls within the Predicted Mean Vote (PMV) levels, calculated in accordance with ISO7730, for Standard Operating Hours of Occupancy for 98% of the year using standard clothing and metabolic rate values for PMV levels between -0.5 and +0.5, inclusive for 95% of the UFA

For mixed mode buildings, the above mechanical and natural ventilation thermal comfort criteria must be met for the relevant Useable Floor Areas where the systems are provided.

The thermal comfort indices shown below must be used in the thermal comfort assessment:

- Air temperature: Must be calculated and fall within 20°C -25°C.
- Mean radiant temperature: Must be calculated and fall within 19°C -26°C.
- Air velocity: Must be calculated and fall within 0.1 – 0.3 m/s in occupied zones
- Humidity: Must be calculated and fall within 40% – 70%
- Metabolic Rate/Activity Level: (1.2 – 1.25)
- Clothing (clo): Light Business clothes

The PMV value must be calculated in a dynamic building simulation software such as IESVE or equivalent for a whole year. The calculation must be based on local weather data from a reliable source, such as an IWEC (International Weather for Energy Simulation) file.

A frequency analysis of the PMV levels must be assessed for a period of 30 days within the peak months of January to February.

The building model, ventilation/heating/cooling strategy, input data and results/conclusions must be documented and presented to the University.

(Usable floor area for the PMV calculation excludes external covered areas, libraries, cafe / canteens or gymnasiums).

3.10 VOLATILE ORGANIC COMPOUNDS - ADHESIVES & SEALANTS

Ensure that adhesives and sealant products (used in the interior of the building, and applied on site, including both exposed and concealed applications) have low Total Volatile Organic Compound levels (TVOCs).

Maximum limits are defined below:

Product Type	**Maximum TVOC content* (g/litre of product)**
Indoor carpet adhesive	50
Carpet pad adhesive	50
Wood flooring and Laminate adhesive	100
Rubber flooring adhesive	60
Sub-floor adhesive	50
Ceramic tile adhesive	65
Cove base adhesive	50
Dry Wall & Panel adhesive	50
Multipurpose construction adhesive*	70
Structural glazing adhesive	100
Architectural sealants*	250

*Sealants used to enhance the fire and water proofing properties are included.

Alternately, product compliance with the following independent third-party schemes is deemed acceptable:

- Ecospecifier's GreenTag GreenRate - GGTv3.2 - Adhesive and Sealant Supplementary Product standards at Level A or Level B
- Good Environmental Choice Australia (GECA)

3.11 VOLATILE ORGANIC COMPOUNDS – PAINTS, CARPETS & FLOORING

PAINT

Low volatile organic compound products must be used for paints and carpets that are internal to the building. This can be achieved by installing products that are certified to the following industry standards:

- Ecospecifier's GreenTag GreenRate - GGTv3.2 - Paint Supplementary Product standards at Level A or Level B; OR
- Good Environmental Choice Australia GECA PCv2.2i-2012 - 'Paints and Coatings' standard

Alternate products may be used provided that they meet the total VOC levels specified below:

Product Type/Sub Category	**Max TVOC content (g/l of ready-to-use product)**
Walls and ceilings - interior gloss	75
Walls and ceilings - interior semi gloss	16
Walls and ceilings - interior low sheen	16
Walls and ceilings - interior flat washable	16
Ceilings - interior flat	14
Trim - gloss, semi gloss, satin, varnishes and wood stains	75
Timber and binding primers	30
Latex primer for galvanized iron and zinc alume	60
Interior latex undercoat	65
Interior sealer	65
One and two pack performance coatings for floors	140
Any solvent-based coatings whose purpose is not covered in table	200

CARPET

Ensure that any carpet & underlay products have a low Total Volatile Organic Compound levels (TVOCs) as per the limits listed below:

Test Component	**Maximum Allowable Limit**
TVOC emissions limit	0.5 mg/m2 per hour
4-PC (4-Phenylcyclohexane)	0.05 mg/m2 per hour

Or all carpet products are certified to one of the following product schemes:

- Carpet Institute of Australia, Environmental Certification Scheme (ECS) certification ECS v1.2 Level 2 - Level A, B or C GBCA recognition

- Ecospecifier's GreenTag GreenRate certification v3.2 Level A or B
- Institute for Market Transformation to Sustainability (MTS) SMaRT 4.0 Sustainable Platinum - Level A recognition or SMaRT 4.0 Sustainable Gold - Level A recognition

FLOORING

Ensure that any flooring products have low Total Volatile Organic Compound levels (TVOCs) as per the limits listed below:

Resilient flooring products are to comply with the following criteria:
Test Component Maximum Allowable Limit:

Test Component	**Maximum Allowable Limit**
TVOC at three days	5 mg/m2 per hour
TVOC at 28 days	0.5 mg/m2 per hour

Other flooring products are to comply with the following criteria:

Test Component	**Maximum Allowable Limit**
TVOC at three days	5 mg/m2 per hour
TVOC at 28 days	0.5 mg/m2 per hour

Or any flooring product is certified to one of the following product schemes:

- Good Environmental Choice Australia GECA 40-2008 v1.1 - 'Hard Surfacing' - Level A GBCA recognition; OR
- Ecospecifier's GreenTag GreenRate certification v3.2 Level A or B

3.12 FORMALDEHYDE MINIMISATION

Ensure that all engineered wood products used in exposed or concealed applications either have low formaldehyde emissions or contain no formaldehyde. Engineered wood products are defined as particleboard, plywood, veneer, Medium Density Fiberboard (IVI DF) and decorative overlaid wood panels. Product compliance may be demonstrated either through certification with the following independent third-party schemes:

- Ecospecifier's GreenTag GreenRate certification v3.2 Level A, B or C
- Good Environmental Choice Australia GECA 28-2010 v2 - 'Furniture and Fittings' and v2.1 'Furniture Fittings and Foam', and GECA 04-2011 v2 - 'Panel Boards'
- Institute for Market Transformation to Sustainability (MTS) SMaRT 4.0 Sustainable Platinum - Level A recognition or SMaRT 4.0 Sustainable Gold - Level A recognition
- Australasian Furnishing Research and Development Institute (AFRDI) Standard 150 Green Tick Level C/Silver, Level B/Gold & Level A/Platinum

Alternate products may be used provided that they meet the maximum formaldehyde levels stipulated below:

Test Protocol Emission limit	**Unit of measurements**
- AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	< 1.0 mg/L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	< 1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	< 1.0 mg/L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	< 1.0 mg/L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	< 1.0 mg/L
JIS A1901 (not applicable to Plywood)	< 1.0 mg/L
ASTM D5116	<0.1 (+/- 0.0005) mg/m²hr (may also be represented as mg/m²/hr)
ISO 16000 part 9, 10 and 11 (also known as EN 13419)	<0.1 (+/- 0.0005) mg/m²hr
ASTM D6007	0.12mg/m³*
ASTM E1333	0.12mg/m³**
EN 717-1 (also known as DIN EN 717-1)	0.12 mg/m³
EN 717-2 (also known as DIN EN 717-2)	3.5 mg/m²hr (may also be represented as mg/m²/hr)

*The test report must confirm that the conditions of Table 1 comply for the particular wood product type, the final results must be presented in EN 717-1 equivalent (as presented in the table) using the correlation ratio of 0.98.

** The final results must be presented in EN 717-1 equivalent (as presented in the table), using the correlation ratio of 0.98.

4.1 LOOSE FURNISHINGS

Specify furnishings with high recycled content, end-of-life local recyclability, product stewardship agreements, warranties greater or equal to ten years. Compliance with the following independent third-party schemes is deemed acceptable:

- The current version of Ecospecifier's Green Tag Green Rate Level A, B or C; OR
- Australasian Furnishing Research and Development Institute (AFRDI) Green Tick Level C/Silver- Level B or Green Tick Level B/Gold - Level or Green Tick Level A/Platinum - Level A
- The current version of Good Environmental Choice Australia GECA 28 - 'Furniture Fittings and Foam' - Level or GECA 28 - 'Furniture and Fittings' - Level B; OR
- The current version of the Institute for Market Transformation to Sustainability (MTS) Institute for Market Transformation to Sustainability (MTS or SMaRT Sustainable Gold - Level A)

At least 50% of all furniture items are to be certified to one of the above schemes and the remaining 50% of the items must have at least one (1) environmental credential of:

- A high recycled content OR End-of-life local recyclability OR product stewardship agreements OR product warranty greater or equal to ten years.