



ANALYTICAL REPORT

Customer: Terence Akroyd – Cavalier Bremworth Ltd

Address: 7 Grayson Avenue
Papatoetoe, Auckland, 2104
New Zealand

SGS Report Number: ENV28499 SE180560

Date of Receipt of Samples: 26/06/2018

Sample Description: Samurai 736 60 oz. Wool Loop Pile

Analysis Requested: VOC Emissions Testing

The work has been carried out in accordance with your instructions. The results and associated information are contained in the following pages of the report. Should you have any queries regarding this report please contact the undersigned.

Reported by: Dr Christopher McRae
Date: 16 July, 2018

Report authorised by: Dr Peter Novella
Date: 16 July, 2018

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1. Background

SGS Environment, Health & Safety, Sydney was requested by Terence Akroyd of Cavalier Bremworth Ltd to measure the VOC emission rate from a sample of carpet tile.

The sample received by SGS Environment, Health & Safety, Sydney and assigned a laboratory reference number as follows:

Your Reference	Our Reference
Samurai 736 60 oz. Wool Loop Pile	SE180560-1

The sample was provided as a carpet tile (210 mm × 300 mm, 0.063 m²) individually wrapped in 2-3 layers of aluminium foil. The sample was kept sealed in the aluminium foil and at room temperature until analysed.

2. Methods Used

The determination of the emission rate of volatile organic compounds was undertaken as per the international standard: *ISO 10580:2012 – Resilient, Textile and laminate floor coverings – Test method for volatile organic compound (VOC) emissions*. As this international standard is functionally equivalent to ASTM method D 5116-97, it can be considered that this determination was also undertaken as per ASTM method D5116-97.

The sample was prepared for analysis, by removing the sample from the aluminium foil and placing it immediately into the test chamber. The sample was then allowed to equilibrate for 24 hours in the test chamber under an air change rate of 1.3 hr⁻¹ of instrument grade air at 50-55% humidity. After the 24-hour equilibration period, vapour sampling of the test chamber and analysis of VOC's was undertaken in accordance with ISO 16000-3 for formaldehyde and acetaldehyde and ISO 16000-6 for all other VOC's.

3. Analytical Results

The maximum emission rates for chemicals listed in Carpet Institute of Australia's Environmental Certification Scheme technical document, together the Area-Specific Emission Factors for sample SE180560-1 VOC's are given in the table below:

Chemical	Maximum Emission Factor ($\mu\text{g}/\text{m}^2/\text{h}$)	Emission Factor ($\mu\text{g}/\text{m}^2/\text{h}$)
Formaldehyde	10	< 2
Acetaldehyde	20	< 2
Vinyl Acetate	400	< 3
Benzene	55	< 3
Toluene	280	< 4
Xylenes	50	< 4
Styrene	410	< 4
4-Vinylcyclohexene	85	< 4
4-Phenylcyclohexene	50	< 6
Naphthalene	20	< 5
Hydrocarbons (C10-C14)	300	94
2-Ethylhexanol	50	< 5
2-Ethylhexanoic Acid	46	< 6
1-Methyl-2-pyrrolidinone	300	< 5
Caprolactam	120	< 5
Octanal	24	< 6
Nonanal	24	< 6
Total VOC Emissions	500	94

4. Opinions and Interpretations:

To meet the specifications of the Green-Star rating a carpet must have a total VOC emission rate of less than $500 \mu\text{g}/\text{m}^2/\text{h}$. Sample SE180560-1 **satisfies the specification** with a total VOC emission rate of $94 \mu\text{g}/\text{m}^2/\text{h}$ over a 24-hour period with no individual VOC exceeding its specific maximum emission rate.