Material Emissions Report

Prepared For

Inspired Floorcoverings Pty Ltd

Report No. J 2502031

18 February 2025

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PROJECT	**Building Material Emissions**
REPORT No.	J 2502031
REPORT DATE	18 February 2025
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BACKGROUND

Inspired Floorcoverings is an Australian-owned and operated company specializing in commercial flooring solutions. Established in 2011, the company has built a reputation for its range of floor coverings, including carpet tiles and vinyl, suitable for various sectors such as offices, retail, education, healthcare, aged care, and hospitality.

Inspired Floorcoverings requested BELL Laboratories to determine emissions of volatile organic compounds and carbonyl compounds from carpet tile products for certification purposes.

The products were tested according to the California Department of Public Health (CDPH) “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2” and ISO 10580:2010 “Test method for volatile organic compound (VOC) emissions - resilient, textile and laminate floor coverings”.

SAMPLE DETAILS & TEST OUTCOME

Product details, custody dates, room model details as well as the test outcome are summarised in the table below.

Report No.	J 2502031
Sample No.	2502031-1
Manufacturer	Inspired Floor Coverings
Product	Stonewall Onyx carpet tile
Product description	Nylon carpet tile, PVC backing
Product code, Lot No.	CT900803, BATCH 07
Date manufactured	13/11/2024
Date received	3/02/2025
Date tested	4/02/2025 (1 day)
Test methods	CDPH-IAQ V1.2 2017 "Standard Method for the Testing and Evaluation of VOC Emissions from Indoor Sources" ISO 10580:2010 “Test Method for VOC Emissions - resilient, textile and laminate floor coverings”
Sample size	20cm x 25cm
Chamber volume	125L
Room model	Private office
Emission surface	Floor
VOC's & Aldehydes	Pass
TVOC's	<450 µg/m²/h, <0.450 mg/m³

TEST METHODS

The following tests were performed by BELL Laboratories in accordance with requirements of the methods indicated.

Test items were prepared from the supplied product and conditioned for 24 hours under prescribed environmental conditions.

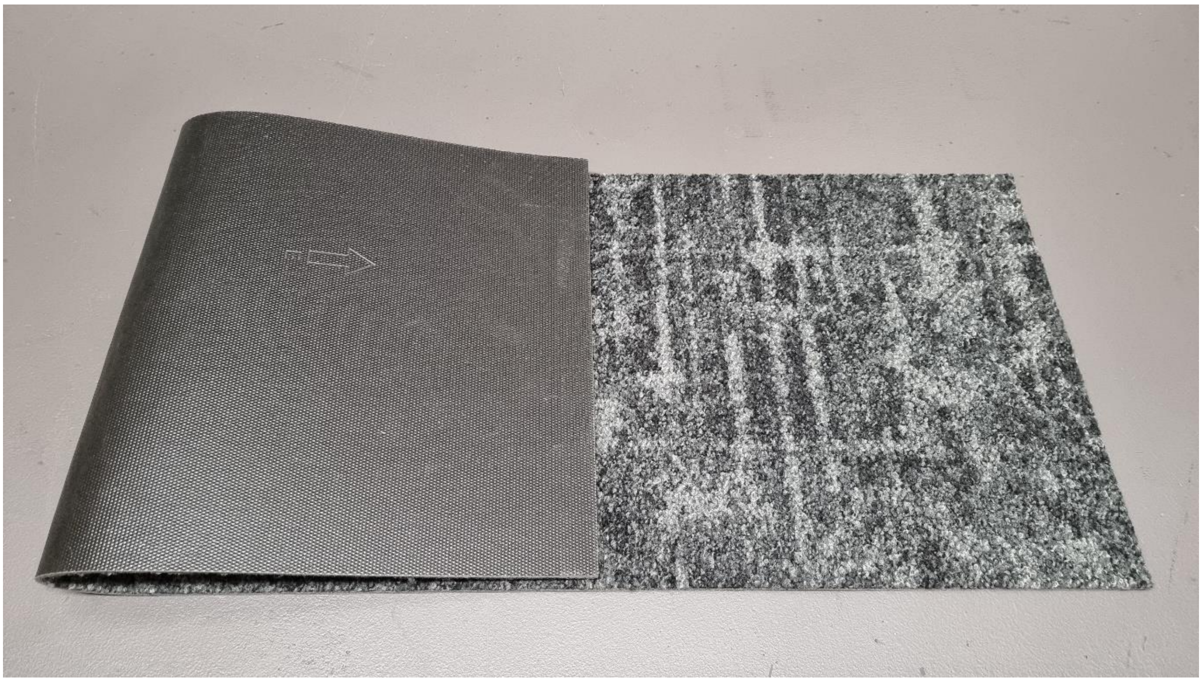
Test samples were collected after 24 hours conditioning for analysis of volatile organic compounds (VOC's), total VOC's and aldehydes using the prescribed methods.

Volatile organic compounds were sampled onto Tenax tubes, thermally desorbed and analysed by GCMS. Aldehydes were sampled onto DNPH treated silica gel tubes, extracted and analysed by HPLC.

Parameter	Test Methods	Detection Limit
Environmental chamber determination of VOC emissions from building products	ASTM D5116 ISO 16000-9	Method specific
Volatile organic compounds	USEPA TO-17	1.5 µg/m³
Aldehydes	ASTM D5197	5 µg/m³

AS – Australian Standard
ASTM – American Society of Testing & Materials
ISO – International Standards Organisation
USEPA – United States Environmental Protection Agency

PHOTOGRAPHS – TEST ITEMS



EMISSION FACTOR & CONCENTRATION CRITERIA

CDPH 01350 V1.2 Target CREL VOCs & Maximum Allowable Concentrations; 14 Day

No.	Compound	14 day MAC (µg/m³)
1	Acetaldehyde	70
2	Benzene	1.5
3	Carbon disulfide	400
4	Carbon tetrachloride	20
5	Chlorobenzene	500
6	Chloroform	150
7	Dichlorobenzene (1,4-)	400
8	Dichloroethylene (1,1-)	35
9	Dimethylformamide (N,N-)	40
10	Dioxane (1,4-)	1500
11	Epichlorohydrin	1.5
12	Ethylbenzene	1000
13	Ethylene glycol	200
14	Ethylene glycol monoethyl ether	35
15	Ethylene glycol monoethyl ether acetate	150
16	Ethylene glycol monomethyl ether	30
17	Ethylene glycol monomethyl ether acetate	45
18	Formaldehyde	9
19	Hexane	3500
20	Isophorone	1000
21	Isopropanol	3500
22	Methyl chloroform	500
23	Methylene chloride	200
24	Methyl t-butyl ether	4000
25	Naphthalene	4.5
26	Phenol	100
27	Propylene glycol monomethyl ether	3500
28	Styrene	450
29	Tetrachloroethylene	17.5
30	Toluene	150
31	Trichloroethylene	300
32	Vinyl acetate	100
33	Xylenes (m, o, p)	350

Emission Factor Criteria for VOCs; 28 Day

No.	Compound	28 day EF (µg/m^2/hour)
1	Acetaldehyde	20
2	Acetophenone	300
3	Benzene	10
4	Butylated hydroxy toluene	300
5	Caprolactam	120
6	Chlorobenzene	937
7	Chloroform	281
8	Dichloroethylene (1,1-)	66
9	2-Ethylhexanoic acid	46
10	Formaldehyde	10
11	1-Methyl-2-pyrrolidone	300
12	Naphthalene	20
13	Octanal	24
14	Nonanal	24
15	4-Phenylcyclohexene	50
16	Styrene	410
17	Trichloroethylene	562
18	Toluene	280
19	Vinyl acetate	100
20	2-Ethyl-1-hexanol	50
21	Hydrocarbons (C10-C14)	300
22	Vinyl cyclohexene	85
23	Xylenes (m, o, p)	50
24	Total VOC	500

MODEL SCENARIO SPECIFICATIONS

Specification / Scenario	Private Office	Classroom	Single Residence
Volume, m^3	30.6	231	547
Outdoor Air, m^3/min	20.7	191	127
Air Change Rate, per hour	0.68	0.82	0.23
Occupancy	1	27	4
Floor Area, m^2	11.2	89.3	211
Ceiling Area, m^2	11.2	89.3	217
Wall Area, m^2	36.8	94.8	562

TABULATED RESULTS

VOC's & Aldehydes CDPH, Area Specific (1) Private Office, Floor	Stonewall Onyx carpet tile Chamber Conc µg/m³	 Mass Rate µg/hour	 Emission Factor µg/m²/hour	 Indoor Conc µg/m³	 Indoor Conc ppb
Methanol	<0.4	<0.05	<1	<0.54	<0.41
Ethanol	<0.4	<0.05	<1	<0.54	<0.28
Isopropanol	<0.4	<0.05	<1	<0.54	<0.22
1,1-Dichloroethene	<0.4	<0.05	<1	<0.54	<0.14
Pentane	<0.4	<0.05	<1	<0.54	<0.18
Dichloromethane	<0.4	<0.05	<1	<0.54	<0.15
trans-1,2-Dichloroethene	<0.4	<0.05	<1	<0.54	<0.14
Methyl tert-butyl ether	<0.4	<0.05	<1	<0.54	<0.15
Acetone	<0.4	<0.05	<1	<0.54	<0.23
Carbon disulfide	<0.4	<0.05	<1	<0.54	<0.17
cis-1,2-Dichloroethene	<0.4	<0.05	<1	<0.54	<0.14
Chloroform	<0.4	<0.05	<1	<0.54	<0.11
Hexane	<0.4	<0.05	<1	<0.54	<0.15
Vinyl acetate	<0.4	<0.05	<1	<0.54	<0.15
1,1,1-Trichloroethane	<0.4	<0.05	<1	<0.54	<0.098
Carbon tetrachloride	<0.4	<0.05	<1	<0.54	<0.085
Ethyl acetate	<0.4	<0.05	<1	<0.54	<0.15
Methyl ethyl ketone	<0.4	<0.05	<1	<0.54	<0.18
Benzene	<0.4	<0.05	<1	<0.54	<0.17
Cyclohexane	<0.4	<0.05	<1	<0.54	<0.16
1,2-Dichloroethane	<0.4	<0.05	<1	<0.54	<0.13
Trichloroethene	<0.4	<0.05	<1	<0.54	<0.1
Isopropyl acetate	<0.4	<0.05	<1	<0.54	<0.13
2-Methylhexane	<0.4	<0.05	<1	<0.54	<0.13
2,3-Dimethylpentane	<0.4	<0.05	<1	<0.54	<0.13
Butylated hydroxytoluene	<0.4	<0.05	<1	<0.54	<0.06
Heptane	<0.4	<0.05	<1	<0.54	<0.13
Isooctane	<0.4	<0.05	<1	<0.54	<0.11
1,4-Dioxane	<0.4	<0.05	<1	<0.54	<0.15
Propyl acetate	<0.4	<0.05	<1	<0.54	<0.13
Isobutanol	<0.4	<0.05	<1	<0.54	<0.18
Toluene	<0.4	<0.05	<1	<0.54	<0.14
1,1,2-trichloroethane	<0.4	<0.05	<1	<0.54	<0.098
Butanol	<0.4	<0.05	<1	<0.54	<0.18
Epichlorohydrin	<0.4	<0.05	<1	<0.54	<0.14
Methyl isobutyl ketone	<0.4	<0.05	<1	<0.54	<0.13
1-Methoxy-2-propanol	<0.4	<0.05	<1	<0.54	<0.15
Tetrachloroethene	<0.4	<0.05	<1	<0.54	<0.079
2-Methoxyethanol	<0.4	<0.05	<1	<0.54	<0.17
Octane	<0.4	<0.05	<1	<0.54	<0.11
Butyl acetate	<0.4	<0.05	<1	<0.54	<0.11
Vinyl cyclohexene	<0.4	<0.05	<1	<0.54	<0.12
Chlorobenzene	<0.4	<0.05	<1	<0.54	<0.12
2-Ethoxyethanol	<0.4	<0.05	<1	<0.54	<0.15
Ethylbenzene	<0.4	<0.05	<1	<0.54	<0.12
Xylenes (m, o, p)	<0.4	<0.05	<1	<0.54	<0.12
Styrene	1.29	0.161	3.22	1.74	0.406
2-Methoxyethyl acetate	<0.4	<0.05	<1	<0.54	<0.11
1-Methoxy-2-propyl acetate	<0.4	<0.05	<1	<0.54	<0.099
1,1,2,2-Tetrachloroethane	<0.4	<0.05	<1	<0.54	<0.078
Nonane	<0.4	<0.05	<1	<0.54	<0.1

VOC's & Aldehydes CDPH, Area Specific (1) Private Office, Floor	Stonewall Onyx carpet tile Chamber Conc µg/m³	Mass Rate µg/hour	Emission Factor µg/m²/hour	Indoor Conc µg/m³	Indoor Conc ppb
Isopropylbenzene	<0.4	<0.05	<1	<0.54	<0.11
Dimethylformamide	<0.4	<0.05	<1	<0.54	<0.18
Cyclohexanone	<0.4	<0.05	<1	<0.54	<0.13
2-Ethylhexanol	15.9	1.98	39.7	21.4	4
2-Ethoxyethyl acetate	<0.4	<0.05	<1	<0.54	<0.1
Propylbenzene	<0.4	<0.05	<1	<0.54	<0.11
Cyclohexanol	<0.4	<0.05	<1	<0.54	<0.13
tert-Butylbenzene	<0.4	<0.05	<1	<0.54	<0.098
1,2,4-trimethylbenzene	<0.4	<0.05	<1	<0.54	<0.11
2-Butoxyethanol	<0.4	<0.05	<1	<0.54	<0.11
1,4-Dichlorobenzene	<0.4	<0.05	<1	<0.54	<0.09
Decane	<0.4	<0.05	<1	<0.54	<0.093
1,2,3-trimethylbenzene	<0.4	<0.05	<1	<0.54	<0.11
Phenol	<0.4	<0.05	<1	<0.54	<0.14
p-Diethylbenzene	<0.4	<0.05	<1	<0.54	<0.098
o-Diethylbenzene	<0.4	<0.05	<1	<0.54	<0.098
Propylene glycol	<0.4	<0.05	<1	<0.54	<0.17
2-Butoxyethyl acetate	<0.4	<0.05	<1	<0.54	<0.082
Ethyldiglycol acetate	<0.4	<0.05	<1	<0.54	<0.075
Ethylene glycol	<0.4	<0.05	<1	<0.54	<0.21
4-Methylbiphenyl	<0.4	<0.05	<1	<0.54	<0.078
Acetophenone	<0.4	<0.05	<1	<0.54	<0.11
1-Methyl-2-pyrrolidone	<0.4	<0.05	<1	<0.54	<0.13
Isophorone	<0.4	<0.05	<1	<0.54	<0.095
Naphthalene	<0.4	<0.05	<1	<0.54	<0.1
2-Ethylhexanoic acid	<0.4	<0.05	<1	<0.54	<0.092
Benzothiazole	<0.4	<0.05	<1	<0.54	<0.098
4-Phenylcyclohexene	1.07	0.134	2.67	1.44	0.222
Texanol	<0.4	<0.05	<1	<0.54	<0.061
Tetradecane	<0.4	<0.05	<1	<0.54	<0.067
Caprolactam	6.7	0.837	16.7	9.05	1.94
Tripropylene glycol	<0.4	<0.05	<1	<0.54	<0.069
Hydrocarbons (C10 - C14)	<0.4	<0.05	<1	<0.54	<0.082
Formaldehyde	1.48	0.185	3.71	2	1.62
Acetaldehyde	2.35	0.293	5.86	3.17	1.75
Acrolein	<4.8	<0.6	<12	<6.5	<2.8
Propionaldehyde	<0.96	<0.12	<2.4	<1.3	<0.54
Butyraldehyde	<1.9	<0.24	<4.8	<2.6	<0.87
Benzaldehyde	<1.9	<0.24	<4.8	<2.6	<0.59
Pentanal	<0.96	<0.12	<2.4	<1.3	<0.36
Hexanal	<0.96	<0.12	<2.4	<1.3	<0.31
Heptanal	<0.96	<0.12	<2.4	<1.3	<0.28
Octanal	<0.96	<0.12	<2.4	<1.3	<0.25
Nonanal	1.93	0.241	4.83	2.61	0.445
Decanal	<0.96	<0.12	<2.4	<1.3	<0.2

Total VOC's CDPH, Area Specific (1) Private Office, Floor	Stonewall Onyx carpet tile Chamber Conc µg/m³	Mass Rate µg/hour	Emission Factor µg/m²/hour	Indoor Conc mg/m³	Indoor Conc ppm
TVOC's	24.8	3.1	62	0.0335	0.00884

ENVIRONMENTAL CHAMBER DETAILS

Report	J 2502031	**Client**	Inspired Floor Coverings	**Location**	Terrigal
Chamber ID	ECH 3	**Project type**	Building Material Emissions	**State**	NSW
Date rec'd	3/02/25	**Sample ID**	2502031-1	**Sample type**	Nylon carpet tile
Date tested	4/02/25	**Test method**	CDPH		
Analyst	WA	**Test details**	Test 1; Stonewall Onyx carpet tile		

Test Details	Chamber	Sample Size
Length, cm	50	25
Width, cm	50	20
Height, cm	50	1
Area, m²	0.3	0.050
Volume, L	125	0.5
Loading factor and area-specific flow rate	0.400	2.500

Test Parameters	Results
Temperature, °C	23.3
Relative humidity, %	48.8
Barometric pressure, kPa	100.8
Static pressure, Pa	13.0
Chamber pressure, kPa	100.8
Flow rate, L/min	2.08
Air exchange rate, per hour	1
Gas Parameters	
Moisture content, %	1.4
Gas molecular weight, g/g mole	28.8 (wet)
Gas density at 23°C, kg/m³	1.19 (wet)

QUALITY ASSURANCE

BELL Laboratories operates to ISO 17025 – General Requirements for the Competence of Testing and Calibration Laboratories. ISO 17025 requires that laboratories have an ISO 9002 compliant quality system, suitable equipment and instrumentation, as well as laboratory staff with the training and technical competence to perform the analytical/test procedures.

BELL Laboratories quality control program includes field sampling activities as well as laboratory analyses. The program is designed to check sampling reproducibility as well as analytical precision & accuracy.

STATEMENT OF LIMITATIONS

This report has been prepared in accordance with the agreement between BELL Laboratories Pty Ltd and the client. Within the limitations of the agreed scope of services, this work has been performed in a professional manner, in accordance with generally accepted practices, using a degree of skill and care ordinarily exercised by members of its profession and consulting practice. No other warranty, expressed or implied, is made.

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This report shall only be presented in full and may not be used to support any other objective than those set out in the report, except where written approval is provided by BELL Laboratories.

DEFINITIONS

The following symbols and abbreviations may be used in this test report:

<	Less than
NA	Not applicable
NS	Not specified
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASTM	American Society of Testing & Materials
CDPH	California Department of Public Health
USEPA	United States Environmental Protection Agency
TSP	Total suspended particulate matter
PM_{10}	Particulate matter less than 10 micron
RH	Relative humidity
CO	Carbon monoxide
CO_2	Carbon dioxide
BP	Barometric pressure
MAC	Maximum Allowable Concentration
$\mu g/m^3$	Micrograms per cubic metre
mg/m^3	Milligrams per cubic metre
ppb	Parts per billion
ppm	Parts per million
µm	Micrometre
hPa	Hectopascals
VOC's	Volatile organic compounds
TVOC's	Total VOC's