



INDOOR AIR QUALITY EVALUATION FOLLOWING THE REQUIREMENTS OF CDPH/EHLB/STANDARD METHOD	
Product Description	3M Interam Endothermic Mat E-5A-4
Customer Information	PAUL FANNIN 3M COMPANY 3M CENTER ST. PAUL, MN 55144
Testing Laboratory	UL Environment • 2211 Newmarket Parkway • Marietta GA 30067-9399 USA
Product Category	Insulation
Product Sub-Category	Basic Mechanical
Date Received	July 3, 2018
Test Description	The product was received by UL Environment as packaged and shipped by the customer. The package was visually inspected and stored in a controlled environment immediately following sample check-in. Just prior to loading, the product was unpackaged, prepared for the required loading, and placed in a tray to expose the top surface side only. The sample was placed inside the environmental chamber, and tested according to the specified protocol.
Test Date	July 16, 2018 - July 30, 2018
Product Area Exposed	one-sided area = 0.0853 m ²
Chamber Volume	0.0861 m ³
Product Loading Ratio	0.99 m ² /m ³
Test Chamber Conditions	Air change rate: 1.00 ± 0.05 1/h Inlet air flow rate: 0.0861 ± 0.004 m ³ /h Temperature: 22.3°C - 23.3°C Relative Humidity: 50% RH ± 5%
Test Method	CDPH - CA Section 01350 <i>Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers</i> Version 1.2.
Released by	<i>Allyson McFry</i> Allyson M. McFry Chemistry Laboratory Director
<p>The temperature range specification is 23°C ± 1°. The actual temperature range listed above may vary slightly. If the range is outside this specification, data was reviewed to ensure a negative impact did not occur.</p> <p>This test is accredited under the laboratory's ISO/IEC 17025 accreditation issued by ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation AT-1297.</p>	

PHOTOGRAPH OF SAMPLE



RESULTS SUMMARY

Product Description		3M Interam Endothermic Mat E-5A-4			
Environment	Product Usage	Product Surface Area	Room Volume	Ventilation Rate (ACH)	Product Compliance?
Classroom	Duct	39.1 m ²	231 m ³	0.82	Yes
Office	Duct	5.5 m ²	30.6 m ³	0.68	Yes

PROJECT DESCRIPTION

The product was monitored for emissions of TVOC, individual VOCs, formaldehyde and other aldehydes over the 96-hour test period. Measurements were made and predicted exposures were calculated according to the CA Section 01350 protocol. As specified in this protocol, the results at 96 hours, after 10 days of conditioning, were compared to ½ (one-half) the current Chronic Reference Exposure Levels (CRELs), as adopted from the California OEHHA list. All identified VOCs were also compared to the California-EPA OEHHA Proposition 65 list and the California-EPA Air Resource Board list of Toxic Air Contaminants (TACs).

Report Outline:

Table 1	Comparison of Data To Method Requirements
Table 2	Chamber Concentrations and Emission Factors
Table 3	Most Abundant Compounds
Table 4	VOC Predicted Air Concentrations And Regulatory Information
Chain of Custody	Chain of Custody

For UL Environment's technical references and resources [click here](#) or <https://industries.ul.com/wp-content/uploads/sites/2/2018/02/Technical-references-and-resources.pdf>

For Product Evaluation Methodologies information [click here](#) or <https://industries.ul.com/wp-content/uploads/sites/2/2018/03/ProductEvaluationMethodologies-PE.pdf>

For Quality Control Program or Environmental Chamber Evaluations information [click here](#) or <https://industries.ul.com/wp-content/uploads/sites/2/2018/02/Quality-Control-Procedures.pdf>

For RSD, Quality Assurance Report or other quality documents, [Request](#) here or contact ULE.

TABLE 1

Product Description		3M Interam Endothermic Mat E-5A-4					
COMPARISON OF DATA TO METHOD REQUIREMENTS AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING							
Compound	CAS Number	½ CREL (µg/m³)	Chamber Concentration (µg/m³)	Emission Factor ^{††} (µg/m²·hr)	Classroom Predicted Concentration (µg/m³) ^{**}	Office Predicted Concentration (µg/m³) ^{**}	Meets ½ CREL? (Classroom/Office)
Acetaldehyde	75-07-0	70	BQL	BQL			Yes
Benzene	71-43-2	1.5	BQL	BQL			Yes
Carbon disulfide	75-15-0	400	BQL	BQL			Yes
Carbon tetrachloride	56-23-5	20	BQL	BQL			Yes
Chlorobenzene	108-90-7	500	BQL	BQL			Yes
Chloroform	67-66-3	150	BQL	BQL			Yes
Dichlorobenzene (1,4-)	106-46-7	400	BQL	BQL			Yes
Dichloroethylene (1,1)	75-35-4	35	BQL	BQL			Yes
Dimethylformamide (N,N-)	68-12-2	40	BQL	BQL			Yes
Dioxane (1,4-)	123-91-1	1,500	BQL	BQL			Yes
Epichlorohydrin*	106-89-8	1.5	BQL	BQL			Yes
Ethylbenzene	100-41-4	1,000	BQL	BQL			Yes
Ethylene glycol	107-21-1	200	BQL	BQL			Yes
Ethylene glycol monoethyl ether acetate	111-15-9	150	BQL	BQL			Yes
Ethylene glycol monoethyl ether	110-80-5	35	BQL	BQL			Yes
Ethylene glycol monomethyl ether acetate	110-49-6	45	BQL	BQL			Yes
Ethylene glycol monomethyl ether	109-86-4	30	BQL	BQL			Yes
Formaldehyde	50-00-0	9 ^{***}	BQL	BQL			Yes

Product Description		3M Interam Endothermic Mat E-5A-4					
COMPARISON OF DATA TO METHOD REQUIREMENTS AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING							
Compound	CAS Number	½ CREL (µg/m³)	Chamber Concentration (µg/m³)	Emission Factor ^{††} (µg/m²·hr)	Classroom Predicted Concentration (µg/m³) ^{**}	Office Predicted Concentration (µg/m³) ^{**}	Meets ½ CREL? (Classroom/Office)
Hexane (n-)	110-54-3	3,500	BQL	BQL			Yes
Isophorone	78-59-1	1,000	BQL	BQL			Yes
Isopropanol	67-63-0	3,500	BQL	BQL			Yes
Methyl chloroform	71-55-6	500	BQL	BQL			Yes
Methyl t-butyl ether	1634-04-4	4,000	BQL	BQL			Yes
Methylene chloride	75-09-2	200	BQL	BQL			Yes
Naphthalene	91-20-3	4.50	BQL	BQL			Yes
Phenol	108-95-2	100	BQL	BQL			Yes
Propylene glycol monomethyl ether	107-98-2	3,500	BQL	BQL			Yes
Styrene	100-42-5	450	BQL	BQL			Yes
Tetrachloroethylene (perchloroethylene)	127-18-4	17.5	BQL	BQL			Yes
Toluene	108-88-3	150	BQL	BQL			Yes
Trichloroethylene	79-01-6	300	BQL	BQL			Yes
Vinyl acetate	108-05-4	100	BQL	BQL			Yes
Xylenes (m-, o-, p-)	1330-20-7	350	BQL	BQL			Yes

BQL denotes below quantifiable level of 0.04 µg for individual VOCs, with the exceptions benzene and epichlorohydrin which have a QL of 0.02 µg, based on a standard 18 L air collection volume.

^{††}The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_c), the chamber volume (V_c), and the product area exposed in the chamber (A_c) as: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

*Denotes compound is within volatility range of method but no calibration standard was available.

^{**}The predicted building exposure concentration (BC) is calculated from the emission factor (EF), the building air change rate (N_b), the building room volume (V_b), and the product area exposed in the building room (A_b) as: $BC = (EF \cdot A_b) / (V_b \cdot N_b)$. For more information on Predicted Concentration modeling parameters, [click here](#).

^{***}Guidance value per CA Standard Method

TABLE 2

Product Description		3M Interam Endothermic Mat E-5A-4
CHAMBER CONCENTRATIONS AND EMISSION FACTORS FOR TVOC AND FORMALDEHYDE AT 24, 48, AND 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING		
Elapsed Exposure Hour After 10 Days Conditioning	Chamber Concentration (µg/m³)	Emission Factor^{††} (µg/m²•hr)
TVOC[†]		
24	130	130
48	120	120
96	52	53
Formaldehyde[‡]		
24	BQL	BQL
48	BQL	BQL
96	BQL	BQL

BQL denotes below quantifiable level of 2 µg/m³.

Exposure hours are nominal (± 1 hour).

[†]Defined as the sum of those VOCs that elute between the retention times of n-hexane (C₆) and n-hexadecane (C₁₆) on a non-polar capillary GC column quantified based on a toluene response factor.

[‡]Compound identified and quantified by DNPH derivitization and HPLC/UV analysis.

^{††}The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_c), the chamber volume (V_c), and the product area exposed in the chamber (A_c) as: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

TABLE 3

Product Description		3M Interam Endothermic Mat E-5A-4			
TEN MOST ABUNDANT IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS (VOCs) AND/OR ALDEHYDES AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING					
CAS Number	Compound	Chamber Concentration (µg/m ³)	Emission Factor ^{††} (µg/m ² •hr)	Calculated Predicted Exposure Concentration ^{**} (µg/m ³)	
				Classroom	Office
---	TVOC ^{‡‡}	52	53	11	14
104-76-7	1-Hexanol, 2-ethyl [†]	45	45	9.3	12
29590-42-9	Isooctyl acrylate (2-Propenoic acid, isooctyl ester) [†]	18	18	3.8	4.8
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (2-Ethylhexyl acrylate)	5.6	5.6	1.2	1.5
5345-58-4	Chloroacetic acid, 2-ethylhexyl ester*	3.4	3.4	0.7	0.9
103-09-3	Acetic acid, 2-ethylhexyl ester	3.2	3.2	0.7	0.8
1000368-21-4	Acetic acid, 3-methylpentyl ester*	2.8	2.8	0.6	0.7

Exposure hours are nominal (± 1 hour).

VOC data obtained by scanning GC/MS; identification of compound made by retention time and mass spectral characteristics.

[†]Quantified using multipoint authentic standard curve. Other VOCs quantified relative to toluene.

*Identification based on NIST mass spectral database only.

[‡]Compound identified and quantified by DNPH derivitization and HPLC/UV analysis.

^{††}The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_c), the chamber volume (V_c), and the product area exposed in the chamber (A_c) as: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

^{‡‡}Defined as the sum of those VOCs that elute between the retention times of n-hexane (C₆) and n-hexadecane (C₁₆) on a non-polar capillary GC column quantified based on a toluene response factor.

^{**}The predicted building exposure concentration (BC) is calculated from the emission factor (EF), the building air change rate (N_B), the building room volume (V_B), and the product area exposed in the building room (A_B) as: $BC = (EF \cdot A_B) / (V_B \cdot N_B)$. For more information on Predicted Concentration modeling parameters, [click here](#).

TABLE 4

Product Description		3M Interam Endothermic Mat E-5A-4						
VOC PREDICTED AIR CONCENTRATIONS AND REGULATORY INFORMATION AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING								
CAS Number	Compound	Chamber Concentration (µg/m³)	Emission Factor ^{††} (µg/m²·hr)	Predicted Exposure Concentration** (µg/m³)		✓ Indicates Presence On List		
				Classroom	Office	CA PROP 65	CA AIR TOXIC	CREL
---	none	---	---	---	---	---	---	---

[†]Quantified using multipoint authentic standard curve. Other VOCs quantified relative to toluene.

[‡]Compound identified and quantified by DNPH derivitization and HPLC/UV analysis.

^{††}The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_c), the chamber volume (V_c), and the product area exposed in the chamber (A_c) as: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

**The predicted building exposure concentration (BC) is calculated from the emission factor (EF), the building air change rate (N_B), the building room volume (V_B), and the product area exposed in the building room (A_B) as: $BC = (EF \cdot A_B) / (V_B \cdot N_B)$. For more information on Predicted Concentration modeling parameters, [click here](#).

CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals

1 = known to cause cancer

2 = known to cause reproductive toxicity

CAL Toxic Air Contaminant:

I) Substances identified as Toxic Air Contaminants, known to be emitted in California, with a full set of health values reviewed by the Scientific Review Panel.

IIA) Substances identified as Toxic Air Contaminants, known to be emitted in California, with one or more health values under development by the Office of Environmental Health Hazard Assessment for review by the Scientific Review Panel.

IIB) Substances NOT identified as Toxic Air Contaminants, known to be emitted in California, with one or more health values under development by the Office of Environmental Health Hazard Assessment for review by the Scientific Review Panel.

III) Substances known to be emitted in California, and are NOMINATED for development of health values or additional health values.

IVA) Substance identified as Toxic Air Contaminants, known to be emitted in California, and are TO BE EVALUATED for entry into Category III.

IVB) Substance NOT identified as Toxic Air Contaminants, known to be emitted in California, and are TO BE EVALUATED for entry into Category III.


V) Substance identified as Toxic Air Contaminants, and NOT KNOWN TO BE EMITTED from stationary source facilities in California based on information from the AB 2588 Air Toxic "Hot Spots" Program and the California Toxic Release Inventory.

VI) Substances identified as Toxic Air Contaminants, NOT KNOWN TO BE EMITTED from stationary source facilities in California, and are active ingredients in pesticides in California.


Chronic REL: California Office of Environmental Health Hazard Assessment (OEHHA), Chronic Reference Exposure Levels

✓ = Found in Listing

Product Description	3M Interam Endothermic Mat E-5A-4
CHAIN OF CUSTODY	



UL Environment Chain of Custody
 1000 26382

FOR INTERNAL USE ONLY	Test Information	
Proposal # 12241354  CUSDBF648 Project - Product # <u>18916-020AA</u> LSP 7/10/18 <u>18916-020AA</u> Category <u>Insulation</u> Subcategory <u>Basic Mechanical</u>	<input type="checkbox"/> Specialized Test for Odors <input type="checkbox"/> Formaldehyde Only <input type="checkbox"/> 4 Hr <input type="checkbox"/> 24 Hr <input type="checkbox"/> RUSH (Confirm with Account Manager prior to submitting product) <input checked="" type="checkbox"/> CA 01350 CDPH/EHLB/Standard Method V1.1 <input type="checkbox"/> Office <input type="checkbox"/> Classroom <input type="checkbox"/> Residential <input type="checkbox"/> 24 Hr TVOC <input type="checkbox"/> with Formaldehyde <input type="checkbox"/> ANSI/BIFMA M7.1 / X7.1 <input type="checkbox"/> Small Chamber <input type="checkbox"/> Intermediate Chamber <input type="checkbox"/> Large Chamber <input type="checkbox"/> 24 Hr TVOC & IVOCs <input type="checkbox"/> with Formaldehyde <input type="checkbox"/> Other (Specify test method, non-standard sample preparation, modeling parameters, application rate for wet products, etc.): <input type="checkbox"/> GREENGUARD Screening Test (24 Hr TVOC, IVOCs, and Aldehydes w/modeling)	
Manufacturer and Contact Details		
Company Name	3M Company Abrasive Systems Division	Contact Name <u>Nicole Pachan</u>
Street Address	2115 S. Broadway	Title <u>Manufacturing Engineer</u>
City, State/Province, Zip/Postal Code	Alexandria, MN 56308	Phone Number <u>320-759-0321</u>
Country	USA	E-Mail Address <u>npachan@mmm.com</u>
Product Details		
Sample ID (Used in Report)	3M™ Interam™ Endothermic Mat E-5A-4	Product Collection Location <u>D-Slitter - Alexandria, MN</u>
Product Commercial Name	3M™ Interam™ Endothermic Mat E-5A-4	Product Collection Date/Time (mm/dd/yyyy/hh:mm) <u>07/02/2018/09:06</u>
Manufacturer's Identification Number	98-0400-5620-6	Product Collected By <u>Nicole Pachan</u>
Manufactured Date (mm/dd/yyyy)	07/02/2018	Number of Product Pieces <u>1</u>
Post Testing Instructions		
<input type="checkbox"/> Return Product (Return Shipper and Manufacturer's Shipping Account # must be provided for product return)		<input type="checkbox"/> Discard product after testing
Return Shipper	Manufacturer's Shipping Acct #	
Packed By	Carrier <u>UPS</u>	
Ship Date (mm/dd/yyyy)	7/2/18	Air Bill # <u>1E56219/0163637004</u>
Signature Tracking Details		
Relinquished By (Manufacturer)	3M Company - Abrasive Systems Division	Date & Time (mm/dd/yyyy/hh:mm) <u>07/02/2018/09:50</u>
Signature	<u>Nicole Pachan</u>	
Laboratory Receiving Details - FOR INTERNAL USE ONLY		
Received by (Laboratory)	<u>[Signature]</u>	Date & Time (mm/dd/yyyy/hh:mm) <u>7/3/18 11:00 AM</u>
Signature	<u>[Signature]</u>	
Types of Containers	Shipping Package Notes	
Condition of Shipping Package	<input checked="" type="checkbox"/> Undamaged <input type="checkbox"/> Damaged	Product Condition Notes
Condition of Product	<input checked="" type="checkbox"/> Acceptable <input type="checkbox"/> Unacceptable	

White - Project File
 Canary - Sample
 Pink - Customer Retains

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00-ENV-F0652