



August 26, 2019

Ms. Ceren Yazici
Sustainability Specialist
SURATAM on behalf of
FELTOUCH YAPI TASATIM SAN. TİC. A.Ş
09 B Block No. 7/15
Istanbul, Turkey 34676

**Subject: Dynamic Small-Scale Chamber Emissions Testing
Compliance Report per California Department of Public Health Standard Method
Version 1.2
Feltouch 7mm Wall Panel Plate with Mandarin Cover
MAS Project No.: 1901066**

Dear Ms. Yazici:

MAS, LLC is pleased to submit this report with results of VOC emissions testing from an application of Feltouch 7mm Wall Panel Plate with Mandarin cover

MAS conducted this test in general accordance with the emission testing guidelines specified under ASTM D 5116 and 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*. This testing protocol was implemented to bracket similarly formulated, lower emitting products under a single test.

Based on the test results, the 7mm Wall Panel Plate with Mandarin cover is compliant with the performance standards established for low-emitting materials under the CDPH, the Collaborative for High Performance Schools (CHPS) and the LEED v4 programs. Qualified project uses of this product may be eligible for credit points under the CHPS and LEED programs.

MAS is pleased to have been of service to you. If you have any questions or comments, or if we can be of further assistance, please contact us.

Sincerely,

MAS, LLC

Manager, Emissions Group

Senior Analytical Chemist

Appendices: Appendix A – General Testing Parameters and Data
Appendix B – Chain-of-Custody
Appendix C – Compliant and Bracketed Products

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Testing Cert. #2925.01

EMISSIONS COMPLIANCE TEST

California Dept. of Public Health Standard Method Version 1.2

Wall Panel Evaluation

SAMPLE DESCRIPTION & TESTING PARAMETERS

Sample specifics as described in the chain-of-custody (see Appendix B) and a timeline of milestones dates relative to sampling and analysis are summarized below.

Product Name: 7mm Wall Panel Plate with Mandarin Covering	MAS Assigned ID: 1901066
Manufacturer: FELTOUCH YAPI TASARIM SAN. TİC, A.Ş	Product Description: PET fabric with polyethylene plastic Approx. 15cm x 15cm
Manufacture Date: July 2019	Testing Period: August 1 – 15, 2019
Collection Date: July 2019	In-Chamber Sampling Dates: Aug. 12 @ 24 hrs.; Aug. 13 @ 48 hrs.; Aug. 15 @ 96 hrs.
Shipping Date: July 24, 2019	Date of Sample Analysis: Aug. 15 – 26, 2019
Laboratory Arrival Date: July 29, 2019	Age of Sample at Testing: Approx. one month



Feltouch 7mm Wall Panel Plate as submitted and tested; photo on right shows Mandarin covering layer

The sample was placed flat on the floor, Mandarin side up, inside one of MAS's small-scale emissions chambers beneath a ceiling-mounted fan to facilitate even air circulation around the sample.

Sample conditioning, collection of samples, and analysis of compounds of interest were conducted in accordance with 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*, for comparison to the Leadership in Energy and Environmental Design (LEED) standard, and the Collaborative for High Performance Schools (CHPS) criteria for low emitting materials. Appendix A presents general testing parameters and data.



TEST RESULTS

To compare the chamber-derived data to the standards established under CDPH Standard Method and the CHPS criteria an emission factor for the tested sample is calculated based on the 96 hour test point data following ten days of in-chamber conditioning. This emission factor is used to predict airborne concentrations of target compounds in a CDPH-defined classroom with a total wall area of 94.6 square meters, and a typical private office with a total wall area of 33.4 square meters. Table I presents the results of the modeled data.

Table I
Comparison of Emission Factors and Predicted 96-Hour Airborne Concentrations
from the Feltouch 7mm Wallcovering Plate in Typical Building Environments

VOC Name	Calculated Emission Factor ($\mu\text{g}/\text{m}^2\text{hr}$)	Predicted Airborne Concentration ($\mu\text{g}/\text{m}^3$)*		Maximum Concentration Limits ($\mu\text{g}/\text{m}^3$)	Testing Comment
		Classroom	Private Office		
Total VOCs (TVOC)	10	5.1	16	NA	NA
Formaldehyde ^{1,2}	3.8	1.9	6.2	9	Compliant
Acetaldehyde ^{1,2}	<4.3	<2.2	<7.0	70	Compliant
Isopropanol	<2.9	<1.5	<4.7	3500	Compliant
1,1-dichloroethylene	<2.9	<1.5	<4.7	35	Compliant
Methylene chloride ²	<2.9	<1.5	<4.7	200	Compliant
Carbon disulfide ^{1,2}	<2.9	<1.5	<4.7	400	Compliant
MTBE ²	<2.9	<1.5	<4.7	4000	Compliant
Vinyl acetate ²	<2.9	<1.5	<4.7	100	Compliant
Hexane ²	<2.9	<1.5	<4.7	3500	Compliant
Chloroform ^{1,2}	<2.9	<1.5	<4.7	150	Compliant
2-methoxyethanol ¹	<2.9	<1.5	<4.7	30	Compliant
1,1,1-trichloroethane ²	<2.9	<1.5	<4.7	500	Compliant
Benzene ^{1,2}	<2.9	<1.5	<4.7#	1.5	Compliant
1-methoxy-2-propanol	<2.9	<1.5	<4.7	3500	Compliant
Carbon tetrachloride ^{1,2}	<2.9	<1.5	<4.7	20	Compliant
Ethylene glycol ²	<2.9	<1.5	<4.7	200	Compliant
1,4-dioxane ^{1,2}	<2.9	<1.5	<4.7	1500	Compliant
Trichloroethylene ^{1,2}	<2.9	<1.5	<4.7	300	Compliant
Epichlorohydrin ^{1,2}	<1.5	<0.76	<2.4#	1.5	Compliant
2-ethoxyethanol ¹	<2.9	<1.5	<4.7	35	Compliant
n,n-dimethylformamide ²	<2.9	<1.5	<4.7	40	Compliant
Toluene ^{1,2}	<2.9	<1.5	<4.7	150	Compliant
2-methoxyethanol acetate ¹	<2.9	<1.5	<4.7	45	Compliant
Tetrachloroethylene ^{1,2}	<2.9	<1.5	<4.7	17.5	Compliant
Chlorobenzene ²	<2.9	<1.5	<4.7	500	Compliant
Ethylbenzene ^{1,2}	<2.9	<1.5	<4.7	1000	Compliant
m & p-xylene ²	<2.9	<1.5	<4.7	350	Compliant
Styrene ^{1,2}	<2.9	<1.5	<4.7	450	Compliant
2-ethoxyethyl acetate ¹	<2.9	<1.5	<4.7	150	Compliant
o-xylene ²	<2.9	<1.5	<4.7	350	Compliant
Phenol ²	<2.9	<1.5	<4.7	100	Compliant
1,4-dichlorobenzene ^{1,2}	<2.9	<1.5	<4.7	400	Compliant



Isophorone ²	<2.9	<1.5	<4.7	1000	Compliant
Naphthalene ^{1,2}	<1.5	<0.76	<2.4	4.5	Compliant

* Assumes a 24' x 40' x 8.5' classroom with a ventilation rate of 0.82 h⁻¹ and a 10' x 12' x 9' private office with a ventilation rate of 0.68 h⁻¹ as defined by CDPH/EHLB/Standard Method V.1.2

1 Compound included on Cal/EPA OEHHA Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) list

2 Compound included on Cal/EPA ARB list of Toxic Air Contaminants (TAC)

No benzene or epichlorohydrin were detected in the sample; however, modeling criteria elevates the predicted concentration above the maximum limit set by CDPH. MAS believes the compound is compliant with CDPH criteria.

CONCLUSIONS

Based on the emissions test data, MAS offers the following findings and conclusions:

- Predicted airborne concentrations of the CDPH target compounds at the 14-day test point in both a classroom and private office setting are compliant with the CDPH Standard Method v1.2 maximum concentration limits.
- By virtue of compliance with the CDPH Standard Method, the wall panel plate is compliant with the performance standards established for low-emitting materials under the Collaborative for High Performance Schools (CHPS) 2019 Core Criteria EQ C6.1.6 Ceiling and Wall Systems. This test did not evaluate the VOC content of the material.
- By virtue of compliance with CDPH Standard Method v1.2 the wall panel plate is compliant with LEED v4 EQ: Low-Emitting Materials general emissions evaluation criteria. In accordance with LEED v4 reporting requirements, the estimated TVOC concentrations are 0.5 mg/m³ or less. This test did not evaluate the VOC content of the material.

Qualified project uses of the Feltouch 7mm Wall Panel Plate with Mandarin Cover may be eligible for credit points under the CHPS and LEED programs.

Note: all data, including but not limited to raw instrument files, calibration fits, and quality control checks used to generate the test results are available to the client upon request.

LIMITATIONS

This report is intended for the use of SURATAM and Feltouch only. If other parties wish to rely on this report, please contact MAS so an agreement on the terms and conditions for our services can be established prior to the use of this information. This report shall not be reproduced, except in full, without the written approval of MAS, LLC.

Emissions generally decay over time, and the representativeness of the analytical data reported is directly dependent upon the age and conditions under which the tested sample was received.



APPENDIX A

GENERAL TESTING PARAMETERS AND DATA

Under the provisions of the testing method referenced in this report, testing consisted of the following procedural steps:

- Storage of test specimens in original shipping containers prior to emissions testing for up to 10 days in a ventilated and conditioned room maintained at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50\% \pm 15\%$.
- For quality assurance the emission chamber was cleaned and air purged prior to testing. Air samples were collected and analyzed from the chamber exhaust prior to loading to establish background levels.
- Collection of air samples at method-specified intervals from the chamber exhaust port utilizing mass flow controllers calibrated at 180 cc/min for VOCs and 150 cc/min for aldehydes.
- Tenax TA[®] tubes are used for VOC analysis performed by thermal desorption gas chromatography/mass spectrometry (TD-GC/MS) using a modified EPA TO-17 method. Samples are also collected on DNPH tubes for aldehyde analysis performed using high performance liquid chromatography (HPLC) using a modified NIOSH 2016 method. All samples are drawn and analyzed in duplicate.
- Instrument calibration, analysis of quality control samples and quantitation of the CDPH target list of 35 chemicals of concern, and reporting and speciation of top 10 tentatively identified compounds.

The operating parameters for the small-scale emissions chamber used for this project included:

Parameter	Value	Parameter	Value
Chamber Volume	0.053 m ³	Area Specific Flow Rate	2.4 m/h
Loading Factor	0.425 m ² /m ³	Temperature	$23 \pm 1^{\circ}\text{C}$
Air Exchange Rate	$1.0 \pm 0.05 \text{ h}^{-1}$	Relative Humidity	$50 \pm 5\%$

Total volatile organic compounds (TVOC) are defined as the compounds eluting between hexane (*n*-C₅) and hexadecane (*n*-C₁₇) and in this protocol quantified as toluene. Table A-I presents the measured concentration and emission factor of TVOC at each of the three sampling intervals.

Table A-I
Total Volatile Organic Compounds (TVOC) between n-C₅ and n-C₁₇ Measured by GC/MS*

Sample Interval (hours)	TVOC Concentration (μg/m ³)	TVOC Emission Factor (μg/m ² h)
24	8.7	21
48	7.6	18
96	4.3	10

*TVOC values are background corrected



Table A-II presents measured concentrations and emission factors of formaldehyde and acetaldehyde at each of the three sampling intervals.

Table A-II
Formaldehyde and Acetaldehyde Concentrations and Emission Factors as Measured by HPLC

Sample Interval hours	Target Compound	Concentration ($\mu\text{g}/\text{m}^3$)	Emission Factor ($\mu\text{g}/\text{m}^2 \text{ h}$)
24	Formaldehyde	<1.4	<3.2
48	Formaldehyde	<1.4	<3.2
96	Formaldehyde	1.6	3.8
24	Acetaldehyde	<1.8	<4.3
48	Acetaldehyde	<1.8	<4.3
96	Acetaldehyde	<1.8	<4.3

Table A-III present the individual volatile organic compounds (IVOC) identified by GC/MS after 96 hours.

Table A-III
Speciation of Tentatively Identified IVOCs* by GC/MS after 96 hours

CAS Number	Tentatively Identified Compounds	Concentration ($\mu\text{g}/\text{m}^3$)	Emission Factor ($\mu\text{g}/\text{m}^2 \text{ h}$)
112-34-5	ethanol, 2-(2-butoxyethoxy)-	1.5	3.6
No other IVOCs were identified above laboratory instrument detection limits			

*All IVOCs detected were identified using the average response factor of toluene calibration standards. The sum concentration of IVOC's does not necessarily correlate with the TVOC concentration under the analytical conditions.



APPENDIX B

Chain-of-Custody



Materials Analytical Services LLC

3645 Lakeland Court
Suwanee, Georgia 30024
Phone: 770-866-3200
Fax: 770-866-3259



Standard Method (section 01350)

Emission Testing

Chain-of-Custody

Client Information		Testing Specifications (per MAS) check appropriate test below		
Company: FELTOUCH YAPI TASARIM SANAYI TICARET A.Ş.		<input type="checkbox"/> R&D (custom): Specify Details		
Street Address: BURNHAMME MAHI BANCILERI SKI. NO: 6/AT1 02		<input type="checkbox"/> 24-hour Comparative R&D Test		
City/State: ISTANBUL		<input type="checkbox"/> 72-hour Comparative R&D Test		
Zip/Postal Code: 34731		<input checked="" type="checkbox"/> 14-day CDPH Compliance Test		
Country: TURKEY		<input type="checkbox"/> CARB Formaldehyde Test		
Contact Name: SERIF OZER				
Title: MANAGING PARTNER				
Phone Number: +90 532 947 2020				
Fax Number:				
Email Address: serif@feltouch.com				
Manufacturer Information (if different than client)		Construction Details (as applicable)		
Company:		Covering Type: Fabric <input type="checkbox"/> (Primary Fiber type: PET <input type="checkbox"/> , Vinyl <input type="checkbox"/> , Leather <input type="checkbox"/>)		
City/State/Country:		Plastic Type(s): Nylon <input type="checkbox"/> , PVC <input type="checkbox"/> , PE <input type="checkbox"/> , PP <input type="checkbox"/> , PU <input type="checkbox"/> , PS <input type="checkbox"/> , PC <input type="checkbox"/> , ABS <input type="checkbox"/> , Acrylic <input type="checkbox"/> , Laminar <input type="checkbox"/>		
Contact Name/Title:		Substrate Type(s): MDF <input type="checkbox"/> , Particle Board <input type="checkbox"/> , Plywood <input type="checkbox"/> , Solid Wood <input type="checkbox"/> , Other <input type="checkbox"/>		
Phone Number:		Outer Finish Type(s): Oil Base <input type="checkbox"/> , Water Base <input type="checkbox"/> , Catalyzed/Conversion Var <input type="checkbox"/> , Polyurethane <input type="checkbox"/>		
		Plastic Laminar: Melamine <input type="checkbox"/> , UV <input type="checkbox"/> , Other <input type="checkbox"/>		
		Form Type: Polyurethane <input type="checkbox"/> , Memory <input type="checkbox"/> , Latex <input type="checkbox"/> , Exlon <input type="checkbox"/> , High Resilience <input type="checkbox"/> , High Density <input type="checkbox"/>		
		Paint Type: Latex <input type="checkbox"/> , Oil <input type="checkbox"/> , Low VOC <input type="checkbox"/> , No VOCs <input type="checkbox"/> , Powder Coat <input type="checkbox"/> , Chrome <input type="checkbox"/>		
Sample Details		Special Notes or Comments from Manufacturer:		
Unique Sample ID (if applicable):				
Product Name & Catalog #: FELTOUCH FELT				
Product Type: Ceiling/Wall Panels <input checked="" type="checkbox"/> , Flooring <input type="checkbox"/> , Trim <input type="checkbox"/> , Wall Paint <input type="checkbox"/> , Wall Coverings <input type="checkbox"/> , Thermal Insulation <input type="checkbox"/> , Adhesives <input type="checkbox"/> , Ceiling Tiles <input type="checkbox"/> , Other <input type="checkbox"/>				
Date of Product Manufacturing Completion:				
Sample Location: Factory <input checked="" type="checkbox"/> , Warehouse <input type="checkbox"/> , Production Stack/Roll <input type="checkbox"/> , Container <input type="checkbox"/>				
Sample Submitted by: FELTOUCH YAPI TASARIM A.Ş. - SERIF OZER				
Date of Sample Shipment: 24 JULY 2019		Laboratory Receipt (to be completed by Laboratory Representative)		
Number of Boxes or Pallets: 1		Received By: S. Ryck		
		Received Date: 7-29-19		
		Condition of Shipping Package: Good		
		Condition of Sample: Good		
		Remarks:		
Shipping Details				
Packed By: FELTOUCH YAPI TASARIM A.Ş. - KEREM CEMEN				
Shipping Date: 24 JULY 2019				
Carrier/Airbill Number:				
Sample Handling				
Relinquished By	Company	Received By	Company	Date/Time
		S. Ryck	MAL	7-29-19 12:50





APPENDIX C

Californian Department of Public Health, LEED v4, and Collaborative for High Performance Schools List of Compliant Products

FELTOUCH YAPI TASARIM SAN. TİC. A.Ş

Wall Panel Plates

6mm Plate

7mm Plate*

DecoSound

Flatline

* Product tested as representative exemplar of products listed above. Claims of compliant products are made under the criteria in Section 8.3 of the CDPH Standard Method and/or Section 9.1 of ANSI/BIFMA M7.1-2011 (R2016).

Per ANSI/BIFMA and CDPH standards, products must be re-evaluated if significant changes to materials, processes, or the facility occur that affect the eligibility of the products for any credits available under these or other applicable standards. Regardless, the frequency of compliance assessment for ANSI/BIFMA shall not exceed three years. Third-party certification programs may require more frequent compliance testing.