

ELITE PLASTIC TEST REPORT

SCOPE OF WORK

CDPH 01350 Standard Method Version 1.2 on Tekkor PVC Wall and Ceiling Board

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TEST REPORT FOR ELITE PLASTIC PRODUCTS INC.

Report No.: 105244976GRR-001

Date: 12-January-2022

P.O.: 1012


SECTION 1

CLIENT INFORMATION

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SECTION 2

SUMMARY AND CONCLUSION

Test Method: Standard Method Version 1.2 for CDPH 01350
 Modeling Scenario: Private office (PO), school classroom (SC) and single family residence (R)

DESCRIPTION OF SAMPLES

Manufacturer / Location: Elite Plastic Products Inc / Iowa, USA
 Product Name: Tekkor PVC Wall and Ceiling Board
 Product Number: Tekkor 18" Panel
 Date of Manufacture: 03-November-2022
 Date of Collection: 03-November-2022
 Date of Shipment: 03-November-2022
 Date Received by Lab: 04-December-2022
 Date of Test Start: 18-November-2022
 As Received Sample Condition: Good Condition
 Lab Sample ID: GRR221104000A

WORK REQUESTED/APPLICABLE DOCUMENTS

VOC Emissions Analysis: CDPH Standard Method v1.2
 Intertek Quote: Qu-01308631

TEST RESULTS

MODELING SCENARIO	RESULT (PASS/FAIL)	TVOC (mg m ⁻³)
Private Office (PO)	PASS	< 0.1
School Classroom (SC)	PASS	< 0.1
Single Family Residence (R)*	PASS	< 0.1

*Note: The single family residence scenario is not yet a CDPH requirement. It is provided for informational purposes only.

SAMPLE DISPOSITION

At the completion of testing, samples were disposed of in a routine manner.

SECTION 3**CDPH STANDARD METHOD V1.2**

Date Received: 04-December-2022
 Dates Tested: 18-November-2022 to 02-December-2022

DESCRIPTION OF SAMPLES:

Product Description: PVC
 Material Submitted: One (1) PVC panel

ACCEPTANCE CRITERIA:

Referencing: CDPH Standard Method v1.2, Table 4.1
 LEED v4 - Low Emitting Materials
 LEED v4 - TVOC Ranges: $\leq 0.5 \text{ mg m}^{-3}$
 $0.5 \text{ to } 5.0 \text{ mg m}^{-3}$
 $\geq 5.0 \text{ mg m}^{-3}$

TEST NOTES OR DEVIATIONS:

Testing performed without deviation unless noted below.

TEST SUMMARY:

The emissions testing was performed according to "Standard Method for the Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers Version 1.2". A photograph of the tested sample is included herein. The sample was placed into the test chamber with the top surface exposed. The sample was conditioned outside of the test chamber. Air samples were collected prior to the sample being placed in the test chamber (0 hours) and at 264, 288, and 336 hours after preparation. Samples analyzed for individual VOCs and TVOC were collected on multi-sorbent tubes containing glass wool, Tenax TA 35/60 and Carbograph 5 TD 40/60. These VOC samples were analyzed by thermal desorption-gas chromatography/mass-spectrometry, TD-GC/MS. TVOC was calculated through integration of the chromatogram from n-pentane through n-heptadecane using toluene as a surrogate. Individual VOCs were calculated using calibration curves based on pure standards unless otherwise noted. Samples analyzed for low molecular weight aldehydes were collected on cartridges treated with 2,4-di-nitrophenylhydrazine (DNPH). Low molecular weight aldehydes were analyzed using high performance liquid chromatography, HPLC.

Table 1: Conditioning and test timing

EXPERIMENT PHASE	START DATE	DURATION
Conditioning	18-November-2022	10 Days
Chamber Testing	28-November-2022	4 Days

RESULTS:

Table 2: Sample and Chamber Conditions during Test Period

PARAMETER		SYMBOL	VALUE	UNITS
Sample Dimensions	Length	-	0.235	m
	Width	-	0.241	m
	Thickness	-	-	m
Exposed Sample Surface Area		<i>A</i>	0.057	m ²
Chamber Volume		<i>V</i>	0.116	m ³
Chamber Loading Factor		<i>L</i>	0.49	m ² m ⁻³
Inlet Air Flow Rate		<i>Q</i>	0.116	m ³ h ⁻¹
Air Change Rate		<i>N_{ACH}</i>	1.00	h ⁻¹
Area Specific Flow Rate		<i>q_A</i>	2.04	m h ⁻¹
Chamber Pressure (Range)		<i>P</i>	17.4 (15.2-18.9)	Pa
Average Temperature (Range)		<i>T</i>	23.1 (22.8-23.4)	°C
Average Humidity (Range)		RH	49.8 (46.6-51.7)	% RH
Testing Duration		<i>t</i>	336	h

Table 3: Parameters of Conditioning

PARAMETER	VALUE	UNITS
Average Temperature (Range)	23.4 (22.8-24.1)	°C
Average Humidity (Range)	46.1 (23.2-51.1)	% RH

Note: Conditioning air is passed through both particulate and activated charcoal filtration to remove background VOCs.

Table 4: Test chamber background VOC concentrations in µg m⁻³.

COMPOUND	CAS No.	<i>C_{io}</i>
Formaldehyde	50-00-0	< 2.0
TVOC	-	20.4

Table 5: Test chamber TVOC and formaldehyde concentrations in µg m⁻³.

COMPOUND	CAS No.	264 H	288 H	336 H
Formaldehyde	50-00-0	< 1.0	< 1.0	< 1.0
TVOC	-	28.5	14.2	21.4

Table 6: Test chamber TVOC and formaldehyde emission factors in µg m⁻² h⁻¹.

COMPOUND	CAS No.	264 H	288 H	336 H
Formaldehyde	50-00-0	< 2	< 2	< 2
TVOC	-	< 20	< 20	< 20

Individual emitted VOCs identified above the lower limits of quantitation are listed in Table 5; VOCs which are listed on chemical of concern lists or have CRELs are indicated.

The measured chamber concentrations and corresponding emission factors of identified individual VOCs and TVOCs are listed in Table 6.

In Tables 4, 6 and 7, emission factors were calculated using equation 3.1 in CDPH Standard Method V1.2:

$$EF_{Ai} = \frac{Q \times (C_{it} - C_{io})}{A_c}$$

The inlet flow rate, Q ($m^3 h^{-1}$), is the measured flow rate of air into the chamber. The chamber concentration, C_{it} ($\mu g m^{-3}$), is the concentration of a target VOC_i, formaldehyde and other carbonyl compounds measured at time t . The chamber background concentration, C_{io} ($\mu g m^{-3}$), is the corresponding concentration measured with the chamber operating without a test specimen. The exposed surface area of the test specimen in the chamber, A_c (m^2), is determined from the measurements made at the time of specimen preparation.

Table 7: VOCs detected above lower limits of quantitation in air samples at 336 hours.

VOC	CAS No.	SURROGATE ¹	CREL ² ($\mu g m^{-3}$)	CARB TAC ³	PROP 65 LIST ⁴
Butylated Hydroxytoluene ⁵	128-37-0	Yes	-	No	No

¹Indicates which non-listed VOCs were quantified using surrogate compounds, all other compounds were quantified using pure compounds.

²Chronic Reference Exposure Level (CREL) as defined by California Office of Environmental Health Hazard Assessment.

³Substance is listed on California Air Resource Board’s (CARB) Toxic Air Contaminant (TAC) identification list.

⁴Substance known to the state of California to cause cancer or reproductive toxicity according to California’s Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).

⁵Compound was detected but may be due to the aluminized tape.

Table 8: Measured chamber concentrations and corresponding emission factors of individual VOCs listed in Table 4-1 of CDPH 01350 V1.2. at 336 hours.

VOC	CAS No.	CHAMBER CONCENTRATION ($\mu\text{g m}^{-3}$)	EMISSION FACTOR ($\mu\text{g m}^{-2} \text{h}^{-1}$)
Formaldehyde	50-00-0	< 2.0	< 4.1
Acetaldehyde	75-07-0	< 3.9	< 8.0
Vinyl acetate	108-05-4	< 0.9	< 1.8
Epichlorohydrin	106-89-8	< 0.5	< 1.0
Ethanol, 2-methoxy-, acetate	110-49-6	< 0.8	< 1.6
Isopropyl Alcohol	67-63-0	< 0.6	< 0.1
Ethene, 1,1-dichloro-	75-35-4	< 0.5	< 1.1
Methylene chloride	75-09-2	< 0.4	< 0.1
Carbon disulfide	75-15-0	< 1.0	< 2.1
Methyl tert-butyl ether	1634-04-4	< 0.3	< 0.5
n-Hexane	110-54-3	< 1.1	< 2.1
Trichloromethane (Chloroform)	67-66-3	< 1.2	< 2.5
Ethanol, 2-methoxy-	109-86-4	< 0.6	< 1.2
Ethane, 1,1,1-trichloro-	71-55-6	< 0.7	< 1.5
Benzene	71-43-2	< 0.3	< 0.5
Carbon Tetrachloride	56-23-5	< 0.3	< 0.5
2-Propanol, 1-methoxy-	107-98-2	< 0.8	< 1.6
Ethylene glycol	107-21-1	< 20.0	< 40.9
Trichloroethylene	79-01-6	< 0.7	< 1.5
1,4-Dioxane	123-91-1	< 0.3	< 0.5
Ethanol, 2-ethoxy-	110-80-5	< 0.4	< 0.8
Toluene	108-88-3	< 0.6	< 1.3
Formamide, N,N-dimethyl-	68-12-2	< 0.3	< 0.5
Tetrachloroethylene	127-18-4	< 0.3	< 0.5
Benzene, chloro-	108-90-7	< 0.3	< 0.5
Ethylbenzene	100-41-4	< 0.3	< 0.6
Xylene (-m, -p, & -o)	108-38-3, 95-47-6, 106-42-3	< 1.5	< 3.1
Styrene	100-42-5	< 1.3	< 2.7
2-Ethoxyethyl acetate	111-15-9	< 0.3	< 0.5
Phenol	108-95-2	< 0.8	< 1.7
Benzene, 1,4-dichloro-	106-46-7	< 1.1	< 2.3
Isophorone	78-59-1	< 0.6	< 1.3
Naphthalene	91-20-3	< 0.5	< 1.0

Table 9: Measured chamber concentrations and corresponding emission factors of identified non-listed individual VOCs and TVOC at 336 hours.

VOC	CAS No.	CHAMBER CONCENTRATION ($\mu\text{g m}^{-3}$)	EMISSION FACTOR ($\mu\text{g m}^{-2} \text{h}^{-1}$)
Butylated Hydroxytoluene	128-37-0	3.2	6.5
TVOC	-	21.4	< 4.1

Exposure Scenario Modeling and Evaluation:

Estimated building concentrations for the listed scenarios were calculated using equation 3.2a of CDPH Standard Method V1.2:

$$C_{Bi} = \frac{EF_{Ai} \times A_B}{Q_B}$$

The area specific emission rate EF_A at 336 hours (14 days) total exposure time is multiplied by the ratio of the exposed surface area of the installed material in the building, A_B (m^2), to the flow rate of outside ventilation air, Q_B ($\text{m}^3 \text{h}^{-1}$).

The modeling parameters used for the given scenarios are listed in Table 8. The modeled concentrations of identified individual VOCs are listed in Tables 9 & 10. Whether the modeled concentrations meet the maximum allowable concentration requirements specified in Table 4.1 of CDPH Standard Method V1.2 are also indicated.

Table 10: Standard modeling parameters for Ceiling and Wallcovering.

PARAMETER	SYMBOL	VALUE	UNITS
Exposed Surface Area Installed in <i>Private Office (PO)</i>	A_B	44.5	m^2
Air flow rate of <i>Private Office (PO)</i>	Q_B	20.7	$\text{m}^3 \text{h}^{-1}$
Exposed Surface Area Installed in <i>Classroom (SC)</i>	A_B	184	m^2
Air flow rate of <i>Classroom (SC)</i>	Q_B	191	$\text{m}^3 \text{h}^{-1}$
Exposed Surface Area Installed in <i>Residence (R)</i>	A_B	779	m^2
Air flow rate of <i>Residence (R)</i>	Q_B	127	$\text{m}^3 \text{h}^{-1}$

Table 11: Modeled concentrations of individual VOCs specified in Table 4-1 of CDPH 01350 V1.2.

VOC	CAS NO.	MODELED CONCENTRATION ($\mu\text{g m}^{-3}$)			CONC. LIMIT ($\mu\text{g m}^{-3}$)	RESULT Pass (P) /Fail (F)		
		PO	SC	R		PO	SC	R
Formaldehyde	50-00-0	< 4	< 2	< 11*	9	P	P	P
Acetaldehyde	75-07-0	< 17.2	< 7.7	< 49.1	70	P	P	P
Vinyl acetate	108-05-4	< 3.8	< 1.7	< 10.8	100	P	P	P
Epichlorohydrin	106-89-8	< 2.1	< 0.9	< 5.9	1.5	P	P	P
Ethanol, 2-methoxy-, acetate	110-49-6	< 3.5	< 1.5	< 9.9	45	P	P	P
Isopropyl Alcohol	67-63-0	< 2.8	< 1.3	< 8.1	3,500	P	P	P
Ethene, 1,1-dichloro-	75-35-4	< 2.4	< 1.1	< 6.9	35	P	P	P
Methylene chloride	75-09-2	< 1.5	< 0.7	< 4.4	200	P	P	P
Carbon disulfide	75-15-0	< 4.6	< 2.1	< 13.1	400	P	P	P
Methyl tert-butyl ether	1634-04-4	< 1.1	< 0.5	< 3.1	4,000	P	P	P
n-Hexane	110-54-3	< 4.6	< 2.1	< 13.2	3,500	P	P	P
Trichloromethane (Chloroform)	67-66-3	< 5.3	< 2.4	< 15.1	150	P	P	P
Ethanol, 2-methoxy-	109-86-4	< 2.6	< 1.2	< 7.5	30	P	P	P
Ethane, 1,1,1-trichloro-	71-55-6	< 3.2	< 1.4	< 9.2	500	P	P	P
Benzene	71-43-2	< 1.1	< 0.5	< 3.1	1.5	P	P	P
Carbon Tetrachloride	56-23-5	< 1.1	< 0.5	< 3.1	20	P	P	P
2-Propanol, 1-methoxy-	107-98-2	< 3.5	< 1.6	< 10	3,500	P	P	P
Ethylene glycol	107-21-1	< 87.9	< 39.4	< 250.8	200	P	P	P
Trichloroethylene	79-01-6	< 3.2	< 1.4	< 9.0	300	P	P	P
1,4-Dioxane	123-91-1	< 1.2	< 0.5	< 3.3	1,500	P	P	P
Ethanol, 2-ethoxy-	110-80-5	< 1.6	< 0.7	< 4.6	35	P	P	P
Toluene	108-88-3	< 2.7	< 1.2	< 7.7	150	P	P	P
Formamide, N,N-dimethyl-	68-12-2	< 1.1	< 0.5	< 3.1	40	P	P	P
Tetrachloroethylene	127-18-4	< 1.1	< 0.5	< 3.1	17.5	P	P	P
Benzene, chloro-	108-90-7	< 1.1	< 0.5	< 3.1	500	P	P	P
Ethylbenzene	100-41-4	< 1.3	< 0.6	< 3.8	1,000	P	P	P
Xylene (-m, -p, & -o)	108-38-3, 95-47-6, 106-42-3	< 6.7	< 3.0	< 19.0	350	P	P	P
Styrene	100-42-5	< 5.8	< 2.6	< 16.6	450	P	P	P
2-Ethoxyethyl acetate	111-15-9	< 1.1	< 0.5	< 3.1	150	P	P	P
Phenol	108-95-2	< 3.6	< 1.6	< 10.1	100	P	P	P
Benzene, 1,4-dichloro-	106-46-7	< 4.9	< 2.2	< 13.9	400	P	P	P
Isophorone	78-59-1	< 2.8	< 1.3	< 8.1	1,000	P	P	P
Naphthalene	91-20-3	< 2.1	< 0.9	< 5.9	4.5	P	P	P

*Individual VOC of concern is below lower LOQ for modeled scenario.

Table 12: Modeled concentrations of identified non-listed individual VOCs.

VOC	CAS NO.	MODELED CONCENTRATION ($\mu\text{g m}^{-3}$)		
		PO	SC	R
Butylated Hydroxytoluene	128-37-0	14.0	6.2	39.8
TVOC _{Toluene}	-	< 8.8	< 3.9	< 25.1

PHOTOGRAPHS:

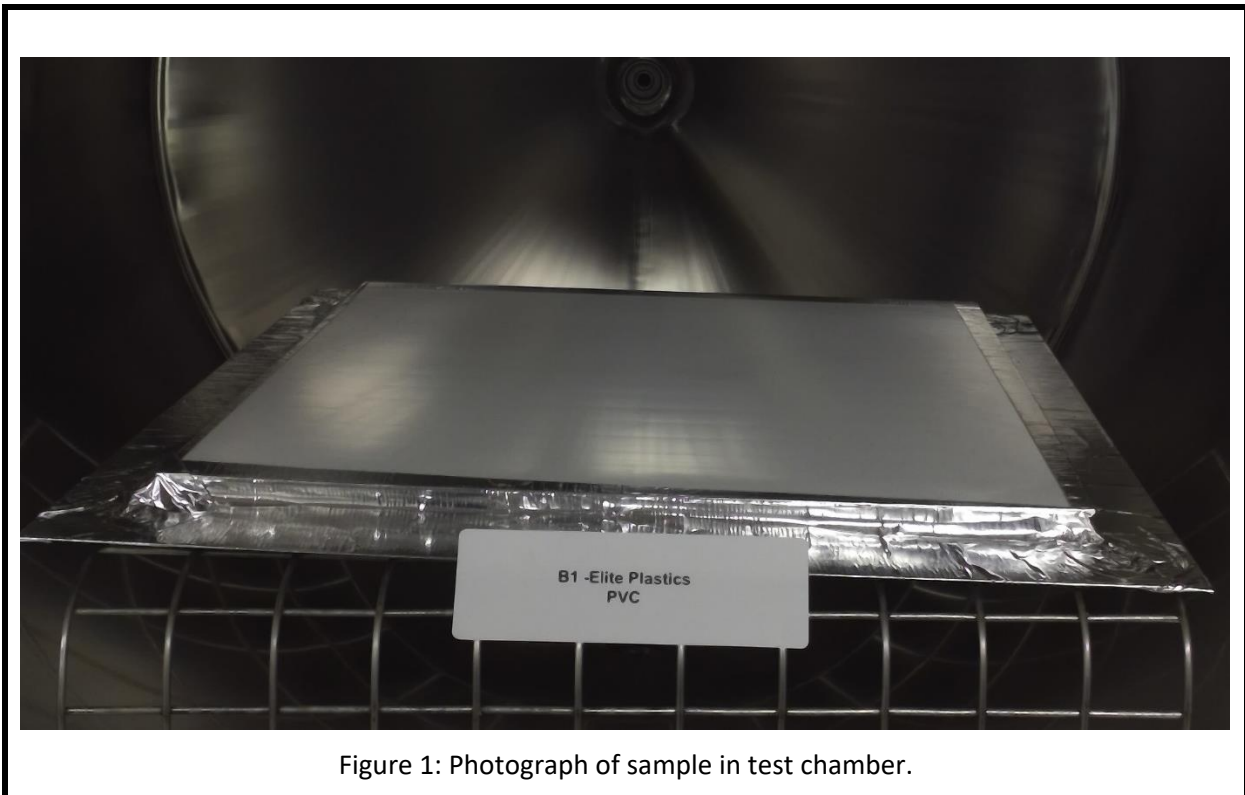



Figure 1: Photograph of sample in test chamber.

SECTION 4

FACILITIES AND EQUIPMENT:

GCMS	
INSTRUMENTATION USED:	Markes TD-100 Thermal Desorption Agilent 7890A GC Agilent 5975C MS
COLUMN USED:	AGILENT HP-5MS (GC)
HPLC	
INSTRUMENTATION USED:	Agilent 1260 Infinity Series
COLUMN USED:	Poroshell 120 EC-C18

SECTION 5
CHAIN OF CUSTODY

	Ship To:		Chain of Custody for Chemical Testing	
	Attn: VOC Laboratory 4700 Broadmoor Ave SE Suite 200 Kentwood, MI 49512 Phone: 616-656-7401		Intertek Quotation Number: Qu-01309631 Purchase Order (enter Company and Number): PO 1012	
Customer Information			Shipping Details	
Company: Elite Plastic Products Inc Street Address: 2692 Rock Ridge Rd City/State/Postal code: Rock Valley, IA 51247 Country: US Contact Name & Title (for reporting): Alex Koedam, Owner Contact Phone/Fax Numbers: 712-470-4163 Contact E-mail Address: alexk@offroadbelts.com Financially Responsible Co.: Elite Plastic Products Inc			Packed & Shipped By: Tony Jackson Shipping Date: 11/3/2022 Carrier/Airbill Number:	
Manufacturer Information (If Different)			Requested Testing	
Company: City/State/Country: Contact Name/Title: Phone Number/E-mail Address:			Test to be performed: CDPH 01350	
Sample Details			Customer Request for Certification	
Product Commercial Name*: Tekkor PVC Wall and Ceiling Board Product Commercial Part No. (if not part of the name)*: Tekkor 18" Panel Manufacturer Sample Tracking ID: 11-3-22 Twin Date Manufactured*: 11/3/2022 Product Category & Use*: Construction Sample Construction Materials*: PVC Plant Name & Location*: IA Manufacturing Plant, Rock Valley, IA Collection Location within Plant: Extruder Stacker Date & Time Collected*: 11/3/22 3:46 pm. Number of Sample Pieces*: 1 Sample Collected by*: Jason DeWeerd Phone/Fax Numbers*: 712-578-9368 E-mail Address*: production@eliteplasticsusa.com			Clean Air™ Certification: <input type="checkbox"/> YES	
Special Customer Instructions			Customer Authorizes Laboratory to Submit Copies of Test Reports To:	
			Contact: Scott DeWeerd Email Address: scott@d@offroadbelts.com Organization: Elite Plastic Products Inc Contact: Nick Dowdey Email Address: nddowdey@hotmail.com Organization: Elite Plastic Products Inc	
Intertek Use Only				
			Condition of Shipping Package: Good Condition Condition of Sample: Good Condition Sample ID: GRR221104000A GIN: G105244976	
*Indicates required field				
Sample Handling*				
	Printed Name*	Signature*	Date*	Company*
Relinquished By:	Tony Jackson	<i>Tony Jackson</i>	11/3/22	Elite Plastic
Received by:	Mark Lockwood	<i>Mark Lockwood</i>	11/4/22	Intertek