

DOW SILICONES TEST REPORT

SCOPE OF WORK

CDPH 01350 Standard Method Version 1.2 on Dowsil™ 995 Silicone Structural Sealant

REPORT NUMBER

106147865GRR-001b

ISSUE DATE

15-May-2025

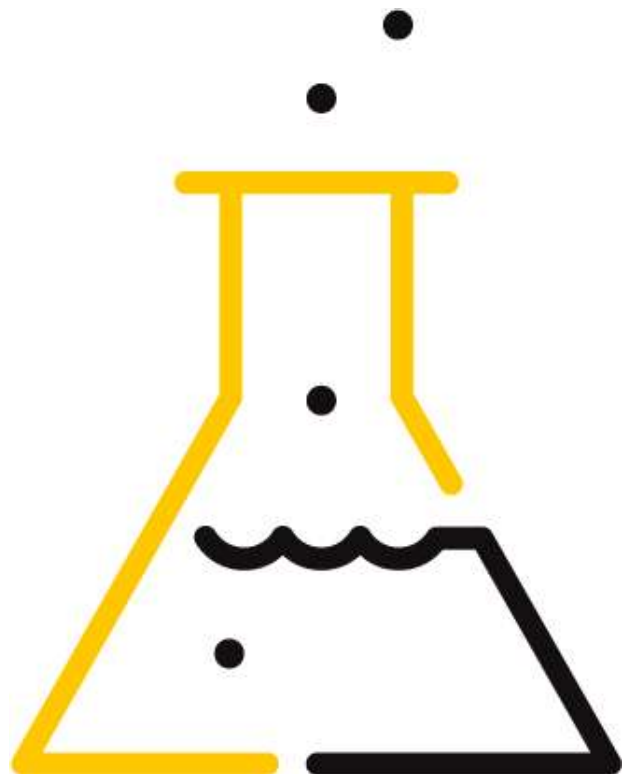
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TEST REPORT FOR DOW SILICONES CORPORATION

Report No.: 106147865GRR-001b

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P.O.: 4517233403

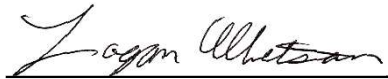
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SECTION 1

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)

CLIENT PROVIDED SAMPLE INFORMATION

Manufacturer / Location: Dow / Elizabethtown, KY
Product Name: Dowsil™ 995 Silicone Structural Sealant
Product Number: Not Specified
Product Description: Silicone Sealant
Date of Manufacture: 03-April-2025
Date of Collection: 03-April-2025
Date of Shipment: 15-April-2025

DESCRIPTION OF SAMPLES

Date Received by Lab: 17-April-2025
As Received Sample Condition: Good Condition
Lab Sample ID: GRR250417000A-1
Material Submitted: Two (2) cartridges of sealant

WORK REQUESTED/APPLICABLE DOCUMENTS

VOC Emissions Analysis: CDPH Standard Method v1.2
Intertek Quote: Qu-01510470

TEST RESULTS**CDPH Standard Method v1.2, Table 4.1**

MODELING SCENARIO	RESULT (PASS/FAIL)
Private Office (PO)	PASS
School Classroom (SC)	PASS
Single Family Residence (R)*	PASS

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

LEED v4 Total Volatile Organic Compounds (TVOC)

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

17-April-2025

Dates Tested:

25-April-2025 to 12-May-2025

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 to 5.0 mg m^{-3} $\geq 5.0 \text{ mg m}^{-3}$ **TEST NOTES OR DEVIATIONS:**

Testing performed without deviation.

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 applied in a 3/8" wide aluminum channel and placed into the test chamber with the top surface exposed. The sample was conditioned inside of the test chamber at $23 \pm 2^\circ\text{C}$ and $50 \pm 10\%$ RH. 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-dinitrophenylhydrazine (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	25-April-2025	10 Days
Chamber Testing	5-May-2025	4 Days

RESULTS:**Table 2: Sample and Chamber Conditions during Test Period**

PARAMETER		SYMBOL	VALUE	UNITS
Sample Dimensions	Length	-	0.154	m
	Width	-	0.009	m
	Thickness	-	0.011	m
Wet Sample Mass		-	22.5	g
Exposed Sample Surface Area		A	0.001	m^2
Chamber Volume		V	0.116	m^3
Chamber Loading Factor		L	0.01	$m^2 m^{-3}$
Inlet Air Flow Rate		Q	0.116	$m^3 h^{-1}$
Air Change Rate		N_{ACH}	1.00	h^{-1}
Length Specific Flow Rate		q_A	0.75	$m^2 h^{-1}$
Chamber Pressure (Range)		P	17.0 (15.7-18.4)	Pa
Average Temperature (Range)		T	23.0 (22.9-23.0)	$^{\circ}C$
Average Humidity (Range)		RH	49.9 (47.3-51.8)	% RH
Testing Duration		t	336	h

Table 3: Test chamber background VOC concentrations in $\mu g m^{-3}$.

COMPOUND	CAS No.	C_{i0}
Formaldehyde	50-00-0	0.7
TVOC	-	< 20.0

Table 4: Test chamber TVOC and formaldehyde concentrations in $\mu g m^{-3}$.

COMPOUND	CAS No.	264 H	288 H	336 H
Formaldehyde	50-00-0	1.1	0.9	0.9
TVOC	-	640	560	433

Table 5: Test chamber TVOC and formaldehyde emission factors in $\mu g m^{-1} h^{-1}$.

COMPOUND	CAS No.	264 H	288 H	336 H
Formaldehyde	50-00-0	0.3	< 0.2	< 0.2
TVOC	-	478	418	322

Individual emitted VOCs identified above the lower limits of quantitation are listed in Table 6; 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 7.

In Tables 5, 7 and 8, emission factors were calculated using equation 3.1 in CDPH Standard Method V1.2:

$$EF_{Ai} = \frac{Q \times (C_{it} - C_{i0})}{A_c}$$

The inlet flow rate, Q ($\text{m}^3 \text{h}^{-1}$), is the measured flow rate of air into the chamber. The chamber concentration, C_{it} ($\mu\text{g m}^{-3}$), is the concentration of a target VOC_i, formaldehyde and other carbonyl compounds measured at time t . The chamber background concentration, C_{i0} ($\mu\text{g m}^{-3}$), is the corresponding concentration measured with the chamber operating without a test specimen. The exposed surface length of the test specimen in the chamber, A_c (m), is determined from the measurements made at the time of specimen preparation.

Table 6: VOCs detected above lower limits of quantitation in air samples at 336 hours.

VOC	CAS No.	SURROGATE ¹	CREL ² ($\mu\text{g m}^{-3}$)	CARB TAC ³	PROP 65 LIST ⁴
Isopropyl Alcohol	67-63-0	No	7000	No	No
1-Butanol	71-36-3	Yes	-	No	No
Methyl acetoacetate	105-45-3	Yes	-	No	No
Ethyl acetoacetate	141-97-9	Yes	-	No	No
Silane, methyltriisopropoxy-	5581-67-9	Yes	-	No	No
Isopropyl acetoacetate	542-08-5	Yes	-	No	No
Cyclotetrasiloxane, octamethyl-	556-67-2	Yes	-	No	No
Isobutyl acetoacetate	7779-75-1	Yes	-	No	No
Cyclopentasiloxane, decamethyl-	541-02-6	Yes	-	No	No
Cyclohexasiloxane, dodecamethyl-	540-97-6	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).

Table 7: 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 ($\mu\text{g m}^{-1} \text{h}^{-1}$)
Formaldehyde	50-00-0	0.9	< 0.2
Acetaldehyde	75-07-0	< 3.7	< 2.7
Vinyl acetate	108-05-4	< 0.5	< 0.3
Epichlorohydrin	106-89-8	< 0.4	< 0.3
Ethanol, 2-methoxy-, acetate	110-49-6	< 0.8	< 0.6
Isopropyl Alcohol	67-63-0	64.4	48.4
Ethene, 1,1-dichloro-	75-35-4	< 0.2	< 0.2
Methylene chloride	75-09-2	< 5.0	< 3.8
Carbon disulfide	75-15-0	< 0.4	< 0.3
Methyl tert-butyl ether	1634-04-4	< 1.2	< 0.9
n-Hexane	110-54-3	< 0.5	< 0.4
Trichloromethane (Chloroform)	67-66-3	< 0.3	< 0.2
Ethanol, 2-methoxy-	109-86-4	< 5.0	< 3.8
Ethane, 1,1,1-trichloro-	71-55-6	< 0.3	< 0.2
Benzene	71-43-2	< 0.4	< 0.3
Carbon Tetrachloride	56-23-5	< 0.3	< 0.2
2-Propanol, 1-methoxy-	107-98-2	< 2.2	< 1.7
Ethylene glycol	107-21-1	< 30	< 22.5
Trichloroethylene	79-01-6	< 0.3	< 0.2
1,4-Dioxane	123-91-1	< 0.4	< 0.3
Ethanol, 2-ethoxy-	110-80-5	< 5.0	< 3.8
Toluene	108-88-3	< 0.3	< 0.2
Formamide, N,N-dimethyl-	68-12-2	< 5.0	< 3.8
Tetrachloroethylene	127-18-4	< 0.3	< 0.3
Benzene, chloro-	108-90-7	< 0.2	< 0.2
Ethylbenzene	100-41-4	< 0.4	< 0.3
Xylene (-m, -p, & -o)	108-38-3, 95-47-6, 106-42-3	< 0.8	< 0.6
Styrene	100-42-5	< 0.3	< 0.2
2-Ethoxyethyl acetate	111-15-9	< 2.4	< 1.8
Phenol	108-95-2	< 1.6	< 1.2
Benzene, 1,4-dichloro-	106-46-7	< 0.3	< 0.2
Isophorone	78-59-1	< 1.8	< 1.4
Naphthalene	91-20-3	< 0.5	< 0.4

Table 8: 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 ($\mu\text{g m}^{-1} \text{h}^{-1}$)
1-Butanol	71-36-3	62.2	46.8
Methyl acetoacetate	105-45-3	36.4	27.4
Ethyl acetoacetate	141-97-9	159	119
Silane, methyltriisopropoxy-	5581-67-9	19.1	14.4
Isopropyl acetoacetate	542-08-5	39.1	29.4
Cyclotetrasiloxane, octamethyl-	556-67-2	21.7	16.3
Isobutyl acetoacetate	7779-75-1	25.2	18.9
Cyclopentasiloxane, decamethyl-	541-02-6	42.4	31.8
Cyclohexasiloxane, dodecamethyl-	540-97-6	19.5	14.7
TVOC	-	433	322

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 length of the installed material in the building, A_B (m), 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 9. The modeled concentrations of identified individual VOCs are listed in Tables 10 & 11. 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 9: Standard modeling parameters for general purpose sealants.

PARAMETER	SYMBOL	VALUE	UNITS
Exposed Surface length Installed in <i>Private Office (PO)</i>	A_B	4.88	m
Air flow rate of <i>Private Office (PO)</i>	Q_B	20.7	$\text{m}^3 \text{h}^{-1}$
Exposed Surface length Installed in <i>Classroom (SC)</i>	A_B	12.2	m
Air flow rate of <i>Classroom (SC)</i>	Q_B	191	$\text{m}^3 \text{h}^{-1}$
Exposed Surface length Installed in <i>Residence (R)</i>	A_B	33.1	m
Air flow rate of <i>Residence (R)</i>	Q_B	127	$\text{m}^3 \text{h}^{-1}$

Table 10: 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	< 0.1	< 0.1	< 0.1	9	P	P	P
Acetaldehyde	75-07-0	< 0.6	< 0.2	< 0.7	70	P	P	P
Vinyl acetate	108-05-4	< 0.1	< 0.1	< 0.1	100	P	P	P
Epichlorohydrin	106-89-8	< 0.1	< 0.1	< 0.1	1.5	P	P	P
Ethanol, 2-methoxy-, acetate	110-49-6	< 0.1	< 0.1	< 0.2	45	P	P	P
Isopropyl Alcohol	67-63-0	11.4	3.1	13.0	3,500	P	P	P
Ethene, 1,1-dichloro-	75-35-4	< 0.1	< 0.1	< 0.1	35	P	P	P
Methylene chloride	75-09-2	< 0.9	< 0.2	< 1.0	200	P	P	P
Carbon disulfide	75-15-0	< 0.1	< 0.1	< 0.1	400	P	P	P
Methyl tert-butyl ether	1634-04-4	< 0.2	< 0.1	< 0.2	4,000	P	P	P
n-Hexane	110-54-3	< 0.1	< 0.1	< 0.1	3,500	P	P	P
Trichloromethane (Chloroform)	67-66-3	< 0.1	< 0.1	< 0.1	150	P	P	P
Ethanol, 2-methoxy-	109-86-4	< 0.9	< 0.2	< 1.0	30	P	P	P
Ethane, 1,1,1-trichloro-	71-55-6	< 0.1	< 0.1	< 0.1	500	P	P	P
Benzene	71-43-2	< 0.1	< 0.1	< 0.1	1.5	P	P	P
Carbon Tetrachloride	56-23-5	< 0.1	< 0.1	< 0.1	20	P	P	P
2-Propanol, 1-methoxy-	107-98-2	< 0.4	< 0.1	< 0.4	3,500	P	P	P
Ethylene glycol	107-21-1	< 5	< 1	< 6	200	P	P	P
Trichloroethylene	79-01-6	< 0.1	< 0.1	< 0.1	300	P	P	P
1,4-Dioxane	123-91-1	< 0.1	< 0.1	< 0.1	1,500	P	P	P
Ethanol, 2-ethoxy-	110-80-5	< 0.9	< 0.2	< 1.0	35	P	P	P
Toluene	108-88-3	< 0.1	< 0.1	< 0.1	150	P	P	P
Formamide, N,N-dimethyl-	68-12-2	< 0.9	< 0.2	< 1.0	40	P	P	P
Tetrachloroethylene	127-18-4	< 0.1	< 0.1	< 0.1	17.5	P	P	P
Benzene, chloro-	108-90-7	< 0.1	< 0.1	< 0.1	500	P	P	P
Ethylbenzene	100-41-4	< 0.1	< 0.1	< 0.1	1,000	P	P	P
Xylene (-m, -p, & -o)	108-38-3, 95-47-6, 106-42-3	< 0.1	< 0.1	< 0.2	350	P	P	P
Styrene	100-42-5	< 0.1	< 0.1	< 0.1	450	P	P	P
2-Ethoxyethyl acetate	111-15-9	< 0.4	< 0.1	< 0.5	150	P	P	P
Phenol	108-95-2	< 0.3	< 0.1	< 0.3	100	P	P	P
Benzene, 1,4-dichloro-	106-46-7	< 0.1	< 0.1	< 0.1	400	P	P	P
Isophorone	78-59-1	< 0.3	< 0.1	< 0.4	1,000	P	P	P
Naphthalene	91-20-3	< 0.1	< 0.1	< 0.1	4.5	P	P	P

Table 11: Modeled concentrations of identified non-listed individual VOCs.

VOC	CAS NO.	MODELED CONCENTRATION ($\mu\text{g m}^{-3}$)		
		PO	SC	R
1-Butanol	71-36-3	11.0	3.0	12.2
Methyl acetoacetate	105-45-3	6.5	1.7	7.1
Ethyl acetoacetate	141-97-9	28.2	7.6	31.1
Silane, methyltriisopropoxy-	5581-67-9	3.4	0.9	3.7
Isopropyl acetoacetate	542-08-5	6.9	1.9	7.7
Cyclotetrasiloxane, octamethyl-	556-67-2	3.8	1.0	4.2
Isobutyl acetoacetate	7779-75-1	4.5	1.2	4.9
Cyclopentasiloxane, decamethyl-	541-02-6	7.5	2.0	8.3
Cyclohexasiloxane, dodecamethyl-	540-97-6	3.5	0.9	3.8
TVOC _{Toluene}	-	76.0	20.6	84

PHOTOGRAPHS:



Figure 1: Photograph of sample in test chamber.

TEST REPORT FOR DOW SILICONES CORPORATION

Date: 15-May-2025

Report No.: 106147865GRR-001b

P.O.: 4517233403

SECTION 4

CLIENT PROVIDED CHAIN OF CUSTODY

	Ship To: Attn: VOC Laboratory 4700 Broadmoor Ave SE Suite 200 Kentwood, MI 49512 Phone: 616-656-7401	Chain of Custody for Chemical Testing Intertek Quotation Number: Purchase Order (enter Company and Number): Dow - 4517233403		
	Customer Information Company: Dow Silicones Corp. Street Address: 2200 W Salzburg Rd. City/State/Postal code: Auburn, MI 48611 Country: United States Contact Name & Title (for reporting): Austin Hlinka - Senior R&D/TS&D Technician Contact Phone/Fax Numbers: (989) 324-1716 Contact E-mail Address: Ahlinka@dow.com Financially Responsible Co.: Dow	Shipping Details Packed & Shipped By: Shipping Date: 4/15/2025 Carrier/Airbill Number:		
	Requested Testing Test to be performed: CDPH VOC Testing	Customer Request for Certification Clean Air™ Certification: ☐ YES		
Manufacturer Information (If Different) Company: City/State/Country: Contact Name/Title: Phone Number/E-mail Address:	Special Customer Instructions			
Sample Details Product Commercial Name*: Dowsil™ 995 Silicone Structural Sealant Product Commercial Part No.(if not part of the name)*: Not a part Manufacturer Sample Tracking ID: Date Manufactured*: 4/3/2025 Product Category & Use*: Sealant - Structural applications Sample Construction Materials*: Glass, Anodized, Kynar Plant Name & Location*: Dow - Elizabethtown KY Collection Location within Plant: Date & Time Collected*: 4/3/2025 Number of Sample Pieces*: 2 Cartridges Sample Collected by*: Austin Hlinka Phone/Fax Numbers*: (989) 324-1716 E-mail Address*: Ahlinka@dow.com	Customer Authorizes Laboratory to Submit Copies of Test Reports To: Contact: Austin Hlinka Email Address: Ahlinka@dow.com Organization: Dow Contact: Email Address: Organization:			
	Intertek Use Only Condition of Shipping Package: Good Condition Condition of Sample: Good Condition Sample ID: GRR250417000A-1 GIN: G106147865 *Indicates required field			
Sample Handling*				
	Printed Name* Relinquished By: Austin Hlinka Received by: Logan Albertson	Signature* Austin Hlinka 	Date* 4/22/2025 4/22/2025	Company* Dow Intertek