

Condry Construction Improvement AB
Kent Carrin
Östra Grinnekärrsvägen 8
436 56 Hovås

Emission measurements after 28 days

(3 appendices)

Object

One sample of a concrete impregnation, alkali barrier (applied on a concrete stone) was delivered to RISE by the customer.

Product name:

Condry NT50

Manufacturer:

Condry Construction Improvement AB, Östra
Grinnekärrsvägen 8, 436 56 Hovås

Manufacturing date:

December 2024

Batch:

2412

Sampling date:

2025-03-03

Size of sample, packaging:

120 x 100 x 50 mm, concrete stone wrapped in
plastic foil

Date of arrival to RISE:

2025-03-04

Date of analysis:

week 10 – 15, 2025

Place of test:

Chemistry and Applied Mechanics,
Brinellgatan 4, Borås

Assignment

Emission measurement according to ISO 16000-9:2024 (Indoor air - Part 9: Determination of the emission of volatile organic compounds from samples of building products and furnishing - Emission test chamber method), after 28 days regarding volatile organic compounds (VOC and VVOC/SVOC), carcinogenic substances (VOC-substances, EU Regulation No 1272/2008 Annex VI, cat 1A and 1B) and aldehydes. Reference room calculations according to EN 16516:2017/A1:2020 (EU-LCI values). Test specimen preparation according to ISO 16000-11:2024 (Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens).

Method

The test was started on March 7, 2025 by unpacking the sample. The edges and back side of the sample were sealed with aluminium tape. The specimen was placed in a separate conditioning container (with air velocity of 0.2 m/s) in a room with controlled climate conditions of 23 ± 2 °C and 50 ± 5 % RH and placed into a chamber three days prior to air samplings. Air samplings after 28 days of conditioning were carried out on April 4, 2025.

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Confidentiality level

C2 - Internal

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Accred. No. 1002
Testing
ISO/IEC 17025

Test conditions in the chamber:

Chamber volume:	0.031 m ³
Temperature, Relative humidity:	23 ± 0.5 °C, 50 ± 3 % RH
Surface area of test specimen:	0.01 m ²
Air exchange rate:	0.68 h ⁻¹
Area specific air flow rate:	1.8 m ³ /m ² h
Air velocity at specimen surface:	0.1 – 0.3 m/s

Tenax TA and multisorbents were used as adsorption mediums for VOC. The tubes were thermally desorbed and analysed in accordance with ISO 16000-6:2021 (Indoor air - Part 6: Determination of organic compounds (VVOC, VOC, SVOC) in indoor and test chamber air by active sampling on sorbent tubes, thermal desorption and gas chromatography using MS or MS FID). This means an analysis in a gas chromatograph and detection with a flame ionisation detector (FID) and mass selective detector (MS). The FID signals are used for compound quantification. The TVOC is quantified as toluene equivalents. The mass selective detector is used for identification of compounds. The capillary column used is coated with 5% phenyl/ 95 % methylpolysiloxane. Tenax TA and multisorbents were also used as adsorption mediums for testing of volatile carcinogenic compounds, according to EU Regulation No 1272/2008 Annex VI, cat 1A and 1B, (exclusive formaldehyde), 0.001 mg/m³ and above. Minimum duplicate air samples were taken and the results are mean values. Sampled volumes are 2 to 7 L.

The samplings of aldehydes were carried out with DNPH samplers. The samplers were analysed according to ISO 16000-3:2022 (Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air– Active sampling method). This means analysis on a liquid chromatograph with absorbance detector. Duplicate air samples were taken and the results are mean values. Sampled volumes were 20 – 21 L.

Results

The results relate only to the items tested.

The results in Table 1 are expressed as area specific emission rates and as concentrations in a reference room (according to EN 16516:2017/A1). The reference room has a base area of 3 m x 4 m and a height of 2.5 m, with an air exchange rate of 0.5 h⁻¹. The wall area is 31.4 m², floor area is 12 m², small area, like a door, is 1.6 m² and very small area, like sealant, is 0.2 m². Floor area is used for the calculation of the concentrations.

Calculation of the concentration from the emission rate:

$$C = \frac{E_a \times A}{n \times V}$$

C = concentration of VOC in the reference room, in µg/m³
E_a = area specific emission rate, in µg/m²h
A = surface area of product in reference room, in m²
n = air exchange rate, in changes per hour, here 0.5 h⁻¹
V = volume of the reference room, in m³, here 30 m³

Table 1.Emission results of **Condry NT50**, after 28 days

Volatile organic compounds	CAS number	Retention time (min)	ID ¹	Emission rate (µg/m ² h)	Concentration in reference room (µg/m ³)	LCI _i (µg/m ³)	R _i (c _i /LCI _i)
TVOC (C ₆ – C ₁₆)	--	6.1 - 38	B	< 10	< 10	--	--
Volatile Carcinogens ²		6.1 - 38					
No substances detected	--	--	B	< 1	< 1	--	--
VOC with LCI ³		6.1 - 38					
Ethanol, 2-(2-butoxyethoxy)-	112-34-5	25.4	A	9	7	350	0.05
Σ VOC with LCI	--	--	A	9	7	--	--
VOC without LCI ⁴		6.1 - 38					
No substances detected	--	--	B	< 2	< 5	--	--
Σ VOC without LCI	--	--	B	< 2	< 5	--	--
SVOC (C ₁₆ – C ₂₂) ⁵		38 - 51					
No substances detected	--	--	B	< 2	< 5	--	--
Σ SVOC	--	--	B	< 2	< 5	--	--
VVOC (< C ₆) ⁶		5.0 – 6.1					
No substances detected	--	--	B	< 2	< 5	--	--
Σ VVOC	--	--	B	< 2	< 5	--	--
Formaldehyde ⁷	50-00-0	--	A	< 2	< 5	100	--
Acetaldehyde ⁷	75-07-0	--	A	< 2	< 5	300	--
R = Σ C _i / LCI _i ⁸	--	--	--	--	--	--	0.05

¹) ID: A = quantified compound specific, B = quantified as toluene equivalent.

²) Volatile carcinogens = VOCs according to EU Regulation No 1272/2008 Annex VI, cat 1A and 1B.

³) VOC with LCI = identified VOC-compound with LCI-value according to EU-LCI, Dec 2022.

⁴) VOC without LCI = VOC-compound without LCI-value or not identified.

⁵) SVOC = semi-volatile organic compounds.

⁶) VVOC = very volatile organic compounds.

⁷) Aldehydes measured with DNPH samplers (ISO 16000-3).

⁸) R_i is the ratio of c_i/LCI_i, where c_i is the concentration in the reference room for compound *i*.

All VVOC, VOC, SVOC and carcinogens with LCI are included in the calculation of R value.

Only VOC-compounds with an emission rate higher than 2 µg/m²h are listed in Table 1, carcinogenic compounds ≥ 1 µg/m²h. Only compounds with a concentration in the reference room ≥ 5 µg/m³ are evaluated based on LCI (= lowest concentration of interest).

TVOC expressed in µg/m³ and µg/m²h is the sum of all individual substances with concentrations ≥ 5 µg/m³ (in toluene equivalents) in the reference room. Quantification limit for TVOC is 10 µg/m²h. Background of TVOC in the empty chamber was below 10 µg/m³ and is subtracted.

Measurement uncertainty for VOC is 25 % (rel) and for formaldehyde 36 % (rel). The measurement uncertainties are calculated with a coverage factor of 2, which gives a level of confidence of approximately 95 %.

See Appendix 1 for gas chromatograms (FID spectra) and Appendix 2 for a photo of the test specimen. Appendix 3 is the Sampling Report received from the customer.

Evaluation of the test results

Decision rule: When stating conformity to requirement documents, the average value of the measured result is compared to the requirement level. The uncertainty is not taken into consideration unless it is a demand to the applicable requirement document. Procedure "Simple acceptance" for handling the measurement uncertainty is applied according to document ILAC-G8:09/2019, "Guard band 0", shared risk < 50 % probability for false acceptance.

The emission results can be compared to different Emission Labelling Systems.

Byggsvarubedömningen (version 7.3, 2023-11-01) has criteria regarding Emissions of VOC to the indoor environment. The emissions are to be measured according to a standard method such as ISO 16000-9 after 28 days regarding VOC and aldehydes. The results of the tested sample are compared to these criteria of Recommended class, see Table 2.

Table 2.

The test results of **Condry NT50** compared to the criteria of the Recommended class

Compounds	Requirement Recommended Class ($\mu\text{g}/\text{m}^3$)	Test Results ($\mu\text{g}/\text{m}^3$)	Pass / Fail
TVOC	≤ 300	< 10	PASS
CMR 1A+1B	≤ 1	< 1	PASS
Single VOC	$\leq \text{EU-LCI}$	< EU-LCI	PASS
Formaldehyde	< 60	< 5	PASS
R value	≤ 1	< 1	PASS

Conclusion

The test results of TVOC, VOC and formaldehyde are in compliance with the requirements for the **Recommended class** of Byggsvarubedömningen, criteria version 7.3, regarding Emissions of VOC to the indoor environment.

RISE Research Institutes of Sweden AB
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Appendices

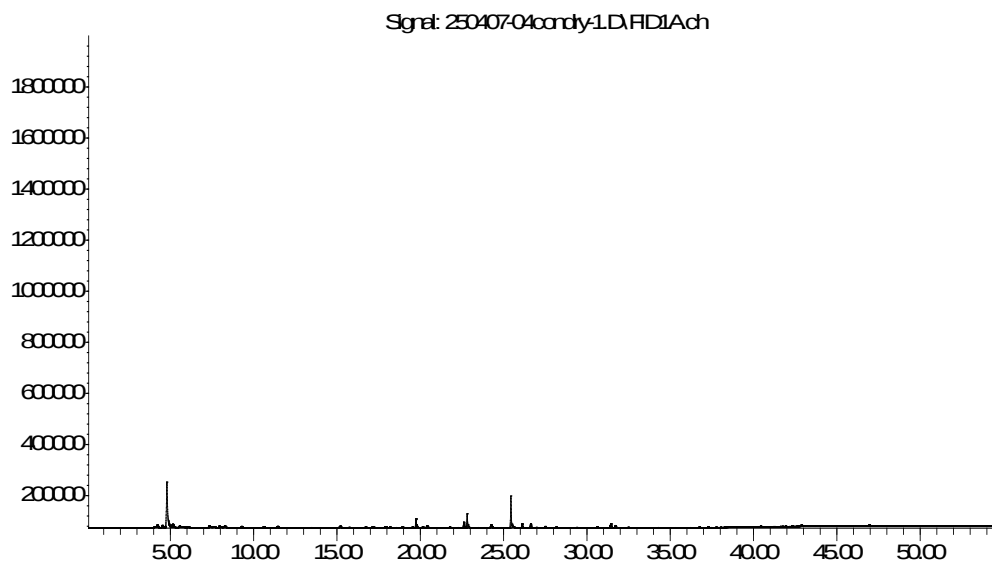
1. Gas Chromatogram
2. Photo of the test specimen
3. Sampling report

Appendix 1

Gas chromatogram

Condry NT50, after 28 days

Abundance



TVOC between C₆ and C₁₆, means compounds eluting between 6.1 and 38 minutes.

Appendix 2

Photo of the test specimen



Appendix 3

Sampling Report

Sampler (Name, Company, contact info): Condry Construction Improvement AB Kent Carrin Kent.carrin@condry.eu Tel. 0708-587573	Manufacturer of the product (Company, address): Condry Construction Improvement AB Östra Grinnekärsvägen 8 436 56 Hovås
Name of product: Condry NT50	Type of product: Betongimpregnering, alkalispärr
Manufacturing Date: December-2024	Batch No: 2412
Sample Details: 1. Betongsten, rengjord och slipad på appliceringsytan. 2. Ytan fuktad och sedan sprayad med Condry NT50 2 ggr. med 2 timmars mellanrum. 3. Inslagen i plast 2 tim efter sista applicering. (Baksidan märkt med ett rött X)	Date of sampling: 2025-03-03 Amount/size of material sampled: 120 x 100 x 50 mm Packing material: Betongsten inslagen i plast
Sample is taken from: Production line ☐ Stock / Storage ☒ Miscellaneous ☐ -where, specify:	How was the product stored before sampling? Inomhus ca 20 grader celsius
If a sub-sample was collected from a larger material amount, describe how the sub-sample was taken: Från en 5-liters dunk.	
Observations and remarks:	
Confirmation I hereby confirm that the sample was selected, taken and packed in accordance with the instructions.	
Date: 2025-03-03	Signature: 

Verification

Transaction 09222115557543963207

Document

1309284 Condry Construction Improvement AB
Main document
8 pages
Initiated on 2025-04-10 14:54:32 CEST (+0200) by Simon Hultman (SH)
Finalised on 2025-04-10 14:58:58 CEST (+0200)

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