

Condry Construction Improvement  
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426 52 VÄSTRA FRÖLUNDA

## Emission measurement after 28 days

(1 bilaga)

### Object

One sample of an alkali barrier was supplied to SP by the client.

Sample name: **Condry NT 50**  
plastic container of 1 L

Date of arrival: 2012-09-12

### Work requested

Emission measurements regarding volatile organic compounds (VOC) after 28 days.

### Method

The emission was measured according to SS-EN ISO 16000-10:2006, "Indoor air – Part 10: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test cell method" (accredited SP method 1598), but only 28 days after application.

The alkali barrier was applied with a brush to a circular glass plate with a diameter of 15 cm. Applied amount was 2.01 g, that is 110 g/m<sup>2</sup>.

The specimen was stored in a room with controlled climate conditions of 23 ± 2 °C and 50 ± 5 % RH. The specimen was put into the test cell 24 hours prior to air sampling.

The date of application was 2012-09-25. Air samplings after 28 days of conditioning was carried out on 2012-10-23. Duplicate air samples were taken.

Conditions of the test in the FLEC cell:

Test chamber volume	0.000035 m <sup>3</sup>
Area of sample	0.0177 m <sup>2</sup>
Air change rate	171 h <sup>-1</sup>
Area specific air change rate	0.34 m <sup>3</sup> /m <sup>2</sup> h
Temperature	23 ± 1 °C
Relative Humidity	50 ± 5 % RH

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Laboratorier ackrediteras av Styrelsen för ackreditering och teknisk kontroll (SWEDAC) enligt svensk lag. Denna rapport får endast återges i sin helhet, om inte utfärdande laboratorium i förväg skriftligen godkänt annat.

Tenax TA was used as adsorption medium for VOC. The Tenax tubes were thermally desorbed and analysed in accordance to ISO 16000-6:2004 (Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS/FID), accredited SP method 0601. 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 total volatile organic compounds (TVOC) means compounds eluting between and including n-hexane to octadecane, having boiling points in the range of about 70-320 °C. The TVOC is quantified in toluene equivalents and includes all compounds  $c_a \geq 1 \mu\text{g}/\text{m}^3$ . The mass selective detector is used for identification of single compounds, quantified in compound specific amounts when possible, otherwise in toluene equivalents.

## Results

The results are expressed as area specific emission rates:

$$SER_A = \frac{Conc \times n}{L}$$

$SER_a$  = area specific emission rate, in  $\mu\text{g}/\text{m}^2\text{h}$

Conc = concentration of a VOC in the test cell, in  $\mu\text{g}/\text{m}^3$

n = air exchange rate, in changes per hour

L = loading factor, in  $\text{m}^2/\text{m}^3$  (area of sample/volume of test cell)

Emission results of **Condry NT 50**, after 28 days:

Volatile organic compounds	Retention time (min)	CAS number	ID <sup>1</sup>	Emission rate ( $\mu\text{g}/\text{m}^2\text{h}$ )
<b>TVOC</b> ( $C_6 - C_{16}$ )	5.1 - 36.0	--	B	< 10
<b>Identified substances:</b>				
Ethanol, 2-(2-butoxyethoxy)-	24.6	112-34-5	A	11
<b>Substances outside TVOC</b> ( $C_6 - C_{16}$ ):				
$\sum \text{VVOC} (< C_6)^2$	3.5 - 5.1	--	B	--
No substance identified	--	--	B	--
$\sum \text{SVOC} (C_{16} - C_{22})^3$	36.0 - 42.0	--	B	--
No substance identified	--	--	B	--

<sup>1)</sup> ID: A = quantified as compound specific, B = quantified as toluene equivalent

<sup>2)</sup>  $\sum \text{VVOC}$  = the sum of very volatile organic compounds, as defined in ISO 16000-6 (not accredited)

<sup>3)</sup>  $\sum \text{SVOC}$  = the sum of semi-volatile organic compounds, as defined in ISO 16000-6 (not accredited)

Only compounds with an emission rate higher than 2  $\mu\text{g}/\text{m}^2\text{h}$  are listed in the table.

Quantification limit for TVOC is 10  $\mu\text{g}/\text{m}^2\text{h}$ . Measurement uncertainty for VOC is 15 % (rel).

See Appendix 1 for gas chromatograms (FID spectra).

### Summary of test results

The emission rate of the total volatile organic compounds (TVOC) after 28 days from the tested product **Condry NT 50** was very low, below  $10 \mu\text{g}/\text{m}^2\text{h}$ .

The emission of 2-(2-butoxyethoxy)-Ethanol was  $11 \mu\text{g}/\text{m}^2\text{h}$ . This emission expressed in toluene equivalents, like TVOC, is  $2 \mu\text{g}/\text{m}^2\text{h}$ .

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### Bilaga

#### 1. Gas Chromatogram