MASONITE BEAMS

Svanemerket bolig

Masonite bjelke og stender:

- Tilfredsstiller kravet om å unngå bruk av visse treslag. Bekreftet i sertifikat (Intyg).
- Tilfredsstiller kravverdien til Svanens grenseverdi for formaldehydemissioner på 0,07 mg/m^3 ihht RISE testrapporter.
- Kan leveres med PEFC og FSC sertifiserte råvarer når dette er spesifisert av kunde ved bestilling.

Vedlegg:

- Sertifikat (Intyg).
- RISE Testrapport formaldehyd for Masonite bjelke/stender med sponplate steg.
- RISE Testrapport formaldehyd for Masonite bjelke/stender med OSB steg.

Bilaga 12 Intyg för träslag som inte får användas i Svanenmärkta produkter

Licensinnehavare/ansokare	Projekt
Masonite Beams AB	
Produktgrupp/produkttyp	
Lättbalk Lättregel Syll	
Ange versionsnummer och datum för den lista over forbjudna träslag som använts	
V 1.0 2016-01-27	

Det intygas härmed att träslag upptagna på listan över förbjudna träslag (Nordic Ecolabelleling-Prohibited Wood) inte används i den Svanenmärkta byggnaden eller i komplementbyggnader (exempelvis avfallshus, cykelförråd, uthus, skjul och bodar) samt till utedäck, staket, utemöbler, utelekredskap och liknande som ingår i det Svanemärkta projektet/uppdraget och som uppförs och marknadsförs med den Svanenmärkta byggnaden.

Träslag på den förbjudna listan får inte heller användas vid produktionen, även om de inte byggs in i den Svanenmärkta byggnaden.

Listan över förbjudna träslag finns på webbsidan: www.nordic-ecolabel.org/wood/

Nordisk Miljömärkning kan efterfråga mer information om tvivel uppstår kring specifika träslag.

Ansökarens underskrift

Ort och datum	Företagsnamn/stämpel
2018-08-20	Masonite Beams AB
Ansvarig person	Ansvarig persons underskrift
Tommy Persson	
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REPORT

issued by an Accredited Testing Laboratory

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Date	Reference	Page
2018-05-14	8F009063-02	1 (5)

Testing

Masonite Beams AB
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Emission measurements after 28 days

(2 appendices)

Object

One sample of a wood-based beam was delivered to RISE by the customer.

Product name:	**H300 spånskiva**
Production date:	2018-03-05
Size of sample:	1.0 x 0.3 m, wrapped in plastic foil
Date of sampling:	2018-03-05
Date of arrival to RISE:	2018-03-16
Date of analysis:	week 12 - 18, 2018

Assignment

Emission measurement according to ISO 16000-9:2006 (Indoor air – Part 9: Determination of the emission of volatile organic compounds from 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), formaldehyde and acetaldehyde (ISO 16000-3:2011). Evaluation according to EN 16516:2017 (EU-LCI values).

For evaluation of test results the principle of shared risk is applied, i.e. for a max limit (≤) a result ≤ the limit complies and a result > the limit does not comply (ILAC G8 section 2.7).

Method

The test was started 2018-03-21 by unwrapping the test sample. Short edges were sealed with aluminium tape. The specimen was placed in a separate conditioning container (with air velocity of ca 0.2 m/s) in a room with controlled climate conditions of 23 ± 2 °C and 50 ± 5 % RH. The test specimen was placed into the chamber five days prior to air samplings. Air samplings after 28 days of conditioning were carried out on 2018-04-18.

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Accred. No. 1002
Testing
ISO/IEC 17025

Test conditions in the chamber:

Chamber volume:	1.0 m^3
Temperature:	23 ± 0.5 °C
Relative humidity:	50 ± 5 % RH
Surface area of test specimen:	0.69 m^2
Air exchange rate:	0.5 h^{-1}
Area specific air flow rate:	0.72 m^3/m^2 h.
Air velocity at specimen surface:	0.1 – 0.3 m/s

Tenax TA was used as adsorption medium for VOC. The tubes were thermally desorbed and analysed in accordance to RISE method 0601, similar to ISO 16000-6:2011 (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). This means an analysis in a gas chromatograph and detection with a flame ionisation detector (FID) and mass selective detector (MS). The capillary column used is coated with 5% phenyl/ 95 % methylpolysiloxane. The FID signals are used for compound quantification. The total volatile organic compounds (TVOC) means compounds eluting between and including n-hexane to hexadecane, having boiling points in the range of about 70-260 °C. Minimum duplicate air samples were taken and the results are mean values. Sampled volumes are 3 to 7 L.

Tenax TA was also used as adsorption medium for testing of volatile carcinogenic compounds according to EU Regulation No 1272/2008 Annex VI, cat 1A and 1B), (exclusive formaldehyde), 1 µg/m^3 and above.

The samplings of aldehydes were carried out with DNPH samplers. The samplers were analysed according to RISE method 2302, similar to ISO 16000-3:2011(Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds – 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 60 to 120 L.

Results

The results in Table 1 are expressed as area specific emission rates and as concentrations in a reference room (according to EN 16516:2017). 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 m^2, floor area is 12 m^2, small area, like a door, is 1.6 m^2 and very small area, like sealant, is 0.2 m^2. **Small 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/m^3
E_a = area specific emission rate, in µg/m^2h
A = surface area of product in reference room, in m^2
n = air exchange rate, in changes per hour, here 0.5 h^{-1}
V = volume of the reference room, in m^3, here 30 m^3

Table 1.
Emission results of **H300 spånskiva** after 28 days

Volatile organic compounds	CAS number	Retention time (min)	ID[1]	Emission rate ($\mu g/m^2h$)	Concentration in reference room ($\mu g/m^3$)	LCI_i ($\mu g/m^3$)	R_i (c_i/LCI_i)
TVOC ($C_6 - C_{16}$)	--	6.5 – 38	B	48	< 10	--	--
Volatile Carcinogens [2]		6.5 – 38					
No substances detected	--	--	B	< 1	< 1	--	--
VOC with LCI [3]		6.5 – 38					
Acetic acid (VVOC)	64-19-7	5.7	A	52	6	1200	0.005
Propanoic acid	79-09-4	7.8	A	6	< 5	1500	--
Pentanal	110-62-3	8.8	A	7	< 5	800	--
1-Pentanol	71-41-0	10.8	A	3	< 5	730	--
Hexanal	66-25-1	12.2	A	32	< 5	900	--
α-Pinene	80-56-8	17.7	A	6	< 5	2500	--
Nonanal	124-19-6	23.4	A	5	< 5	900	--
∑ VOC with LCI	--	--	A	110	6	--	0.005
VOC without LCI [4]							
Hexanoic acid	142-62-1	18.0	B	4	< 5	--	--
Benzaldehyde	100-52-7	18.7	B	2	< 5	--	--
∑ VOC without LCI	--	--	B	6	< 5	--	--
SVOC ($C_{16} - C_{22}$) [5]		38 - 51					
No substances detected	--	--	B	< 2	< 5	--	--
∑ SVOC	--	--	B	< 2	< 5	--	--
VVOC ($< C_6$) [6]		4.9 – 6.5					
Formaldehyde [7]	50-00-0	--	A	54	6	100	0.06
Acetaldehyde [7]	75-07-0	--	A	8	< 5	1 200	--
∑ VVOC	--	--	A	62	6	--	--
$R = \sum C_i / LCI_i$ [8]	--	--	--	--	--	--	0.065

[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 2016
[4] VOC without LCI = VOC-compound without LCI-value or not identified.
[5] SVOC = semi-volatile organic compounds, as defined in ISO 16000-6 (not part of accreditation)
[6] VVOC = very volatile organic compounds, as defined in ISO 16000-6 (not part of accreditation)
[7] VVOC-aldehydes measured with DNPH samplers (ISO 16000-3)
[8] All VVOC, VOC, SVOC and carcinogens with LCI

Only VOC-compounds with an emission rate higher than 5 $\mu g/m^2h$ are listed in Table 1, carcinogenic compounds ≥ 1 $\mu g/m^2h$. Only the compounds with a concentration in the

reference room > 5 µg/m^3 are evaluated based on LCI (= lowest concentration of interest). TVOC expressed in µg/m^3 is the sum of all individual substances with concentrations ≥ 5 µg/m^3 (in toluene equivalents). The emission rate of TVOC (µg/m^{2}h) includes all compounds ca ≥ 1 µg/m^{2}h in the chamber.

Quantification limit for TVOC is 10 µg/m^{2}h. Measurement uncertainty for VOC is 15 % (rel) and for formaldehyde 30 % (rel). Background of TVOC in the empty chamber was below 20 µg/m^3 and is subtracted.

See Appendix 1 for a gas chromatogram (FID spectra) and Appendix 2 for a photo of the test specimen.

Summary of the test results

The test results are summarized in Table 2.

Table 2.
Summary of the emission results after 28 days of **H300 spånskiva**

Compounds	**Emission rate** (µg/m^{2}h)	**Concentration in reference room** (small area scenario) (µg/m^3)
TVOC	48	< 10
∑ Carcinogenic VOCs	< 1	< 1
∑ VOC with LCI	110	6
∑ VOC without LCI	6	< 5
∑ VVOC	62	6
Formaldehyde	54	6
∑ SVOC	< 2	< 5
$R = \sum C_i / LCI_i$	0.06	

The emission result of **formaldehyde** (54 µg/m^{2}h) can be converted into a concentration according to EN 717-1:2004 (Wood-based panels – Determination of formaldehyde release – Part 1: Formaldehyde emission by the chamber method).

In EN 717-1 the area specific air flow rate is 1 m^3/m^{2}h, this means that the concentration equals the emission rate. After adjustment of measuring at different relative humidity (division by 1.09 (ASTM E 1333-96)) the emission of formaldehyde of the tested product expressed as **concentration according to EN 717-1 is 0.050 mg/m^3** (670 h*). *) The duration of the test in hours.

Evaluation of the test results

The test results are compared to the emission requirements in section O32 and O33 of Nordic Ecolabelling for Construction and facade panels, version 6.3, 21 June 2016.

Table 3.
The test results are compared to the requirements of wood based with surface treatment

Compounds	Limit value after 28 days (mg/m^3)	Test Results (mg/m^3)	Pass / Fail
TVOC (C_6-C_{16})	0.30	**< 0.010**	**PASS**
SVOC (C_{16}-C_{23})	0.10	**< 0.005**	**PASS**
Formaldehyde (EN 717-1)	0.07	**0.050**	**PASS**

The test results are in compliance with the requirements of Nordic Ecolabelling for Construction and facade panels.

RISE Research Institutes of Sweden AB
Chemistry and Materials - Chemistry

Performed by

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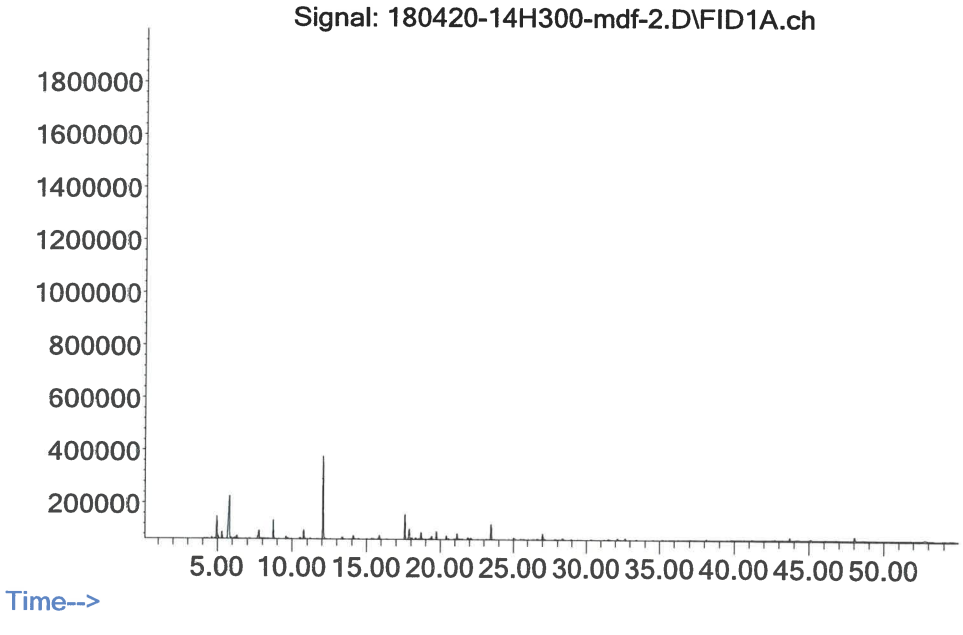
Appendices

1. Gas Chromatogram
2. Photo of the test specimen

Appendix 1

Gas chromatogram

H300 spånskiva, after 28 days:



TVOC between C_6 and C_{16}, means compounds eluting between 6.5 and 38 minutes.

Appendix 3

Photo of the test specimen

REPORT

issued by an Accredited Testing Laboratory

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Date	Reference	Page
2018-05-14	8F009063-01	1 (5)

Testing

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Emission measurements after 28 days

(2 appendices)

Object

One sample of a wood-based beam was delivered to RISE by the customer.

Product name:	**H300 OSB**
Production date:	2018-03-05
Size of sample:	1.0 x 0.3 m, wrapped in plastic foil
Date of sampling:	2018-03-05
Date of arrival to RISE:	2018-03-16
Date of analysis:	week 12 - 18, 2018

Assignment

Emission measurement according to ISO 16000-9:2006 (Indoor air – Part 9: Determination of the emission of volatile organic compounds from 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), formaldehyde and acetaldehyde (ISO 16000-3:2011). Evaluation according to EN 16516:2017 (EU-LCI values).

For evaluation of test results the principle of shared risk is applied, i.e. for a max limit (≤) a result ≤ the limit complies and a result > the limit does not comply (ILAC G8 section 2.7).

Method

The test was started 2018-03-21 by unwrapping the test sample. Short edges were sealed with aluminium tape. The specimen was placed in a separate conditioning container (with air velocity of ca 0.2 m/s) in a room with controlled climate conditions of 23 ± 2 °C and 50 ± 5 % RH. The test specimen was placed into the chamber five days prior to air samplings. Air samplings after 28 days of conditioning were carried out on 2018-04-18.

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Accred. No. 1002
Testing
ISO/IEC 17025

Test conditions in the chamber:

Chamber volume:	1.0 m^3
Temperature:	23 ± 0.5 °C
Relative humidity:	50 ± 5 % RH
Surface area of test specimen:	0.69 m^2
Air exchange rate:	0.5 h^{-1}
Area specific air flow rate:	0.72 $m^3/m^2 h$.
Air velocity at specimen surface:	0.1 – 0.3 m/s

Tenax TA was used as adsorption medium for VOC. The tubes were thermally desorbed and analysed in accordance to RISE method 0601, similar to ISO 16000-6:2011 (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). This means an analysis in a gas chromatograph and detection with a flame ionisation detector (FID) and mass selective detector (MS). The capillary column used is coated with 5% phenyl/ 95 % methylpolysiloxane. The FID signals are used for compound quantification. The total volatile organic compounds (TVOC) means compounds eluting between and including n-hexane to hexadecane, having boiling points in the range of about 70-260 °C. Minimum duplicate air samples were taken and the results are mean values. Sampled volumes are 3 to 7 L.

Tenax TA was also used as adsorption medium for testing of volatile carcinogenic compounds according to EU Regulation No 1272/2008 Annex VI, cat 1A and 1B), (exclusive formaldehyde), 1 µg/m^3 and above.

The samplings of aldehydes were carried out with DNPH samplers. The samplers were analysed according to RISE method 2302, similar to ISO 16000-3:2011(Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds – 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 60 to 120 L.

Results

The results in Table 1 are expressed as area specific emission rates and as concentrations in a reference room (according to EN 16516:2017). 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 m^2, floor area is 12 m^2, small area, like a door, is 1.6 m^2 and very small area, like sealant, is 0.2 m^2. **Small 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/m^3
E_a = area specific emission rate, in µg/m^2h
A = surface area of product in reference room, in m^2
n = air exchange rate, in changes per hour, here 0.5 h^{-1}
V = volume of the reference room, in m^3, here 30 m^3

Table 1.
Emission results of **H300 OSB** after 28 days

Volatile organic compounds	CAS number	Retention time (min)	ID[1]	Emission rate ($\mu g/m^2h$)	Concentration in reference room ($\mu g/m^3$)	LCI_i ($\mu g/m^3$)	R_i (c_i/LCI_i)
TVOC ($C_6 - C_{16}$)	--	6.5 – 38	B	110	< 10	--	--
Volatile Carcinogens [2]		6.5 – 38					
No substances detected	--	--	B	< 1	< 1	--	--
VOC with LCI [3]		6.5 – 38					
Acetic acid (VVOC)	64-19-7	5.7	A	31	< 5	1200	--
Pentanal	110-62-3	8.8	A	12	< 5	800	--
1-Pentanol	71-41-0	10.8	A	5	< 5	730	--
Hexanal	66-25-1	12.2	A	41	< 5	900	--
α-Pinene	80-56-8	17.7	A	26	< 5	2500	--
β-Pinene	127-91-3	19.4	A	3	< 5	1400	--
3-Carene	13466-78-9	20.4	A	16	< 5	1500	--
Limonene	138-86-3	21.1	A	2	< 5	5000	--
Nonanal	124-19-6	23.4	A	7	< 5	900	--
∑ VOC with LCI	--	--	A	140	< 5	--	--
VOC without LCI [4]							
Hexanoic acid	142-62-1	18.0	B	10	< 5	--	--
∑ VOC without LCI	--	--	B	10	< 5	--	--
SVOC ($C_{16} - C_{22}$) [5]		38 - 51					
No substances detected	--	--	B	< 2	< 5	--	--
∑ SVOC	--	--	B	< 2	< 5	--	--
VVOC ($< C_6$) [6]		4.9 – 6.5					
Formaldehyde [7]	50-00-0	--	A	17	< 5	100	--
Acetaldehyde [7]	75-07-0	--	A	8	< 5	1 200	--
∑ VVOC	--	--	A	25	< 5	--	--
$R = \sum C_i / LCI_i$ [8]	--	--	--	--	--	--	< 0.01

[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 2016
[4] VOC without LCI = VOC-compound without LCI-value or not identified.
[5] SVOC = semi-volatile organic compounds, as defined in ISO 16000-6 (not part of accreditation)
[6] VVOC = very volatile organic compounds, as defined in ISO 16000-6 (not part of accreditation)
[7] VVOC-aldehydes measured with DNPH samplers (ISO 16000-3)
[8] All VVOC, VOC, SVOC and carcinogens with LCI

Only VOC-compounds with an emission rate higher than 5 µg/m²h are listed in Table 1, carcinogenic compounds ≥ 1 µg/m²h. Only the 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 is the sum of all individual substances with concentrations ≥ 5 µg/m³ (in toluene equivalents). The emission rate of TVOC (µg/m²h) includes all compounds ca ≥ 1 µg/m²h in the chamber.

Quantification limit for TVOC is 10 µg/m²h. Measurement uncertainty for VOC is 15 % (rel) and for formaldehyde 30 % (rel). Background of TVOC in the empty chamber was below 20 µg/m³ and is subtracted.

See Appendix 1 for a gas chromatogram (FID spectra) and Appendix 2 for a photo of the test specimen.

Summary of the test results

The test results are summarized in Table 2.

Table 2.
Summary of the emission results after 28 days of **H300 OSB**

Compounds	**Emission rate** (µg/m²h)	**Concentration in reference room** (small area scenario) (µg/m³)
TVOC	110	< 10
∑ Carcinogenic VOCs	< 1	< 1
∑ VOC with LCI	140	< 5
∑ VOC without LCI	10	< 5
∑ VVOC	25	< 5
Formaldehyde	17	< 5
∑ SVOC	< 2	< 5
$R = \sum C_i / LCI_i$	< 0.01	

The emission result of **formaldehyde** (17 µg/m²h) can be converted into a concentration according to EN 717-1:2004 (Wood-based panels – Determination of formaldehyde release – Part 1: Formaldehyde emission by the chamber method).

In EN 717-1 the area specific air flow rate is 1 m³/m²h, this means that the concentration equals the emission rate. After adjustment of measuring at different relative humidity (division by 1.09 (ASTM E 1333-96)) the emission of formaldehyde of the tested product expressed as **concentration according to EN 717-1 is 0.016 mg/m³** (670 h*). *) The duration of the test in hours.

Evaluation of the test results

The test results are compared to the emission requirements in section O32 and O33 of Nordic Ecolabelling for Construction and facade panels, version 6.3, 21 June 2016.

Table 3.
The test results are compared to the requirements of wood based with surface treatment

Compounds	Limit value after 28 days (mg/m^3)	Test Results (mg/m^3)	Pass / Fail
TVOC (C_6-C_{16})	0.30	**< 0.010**	**PASS**
SVOC (C_{16}-C_{23})	0.10	**< 0.005**	**PASS**
Formaldehyde (EN 717-1)	0.07	**0.016**	**PASS**

The test results are in compliance with the requirements of Nordic Ecolabelling for Construction and facade panels.

RISE Research Institutes of Sweden AB
Chemistry and Materials - Chemistry

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Tove Mali´n

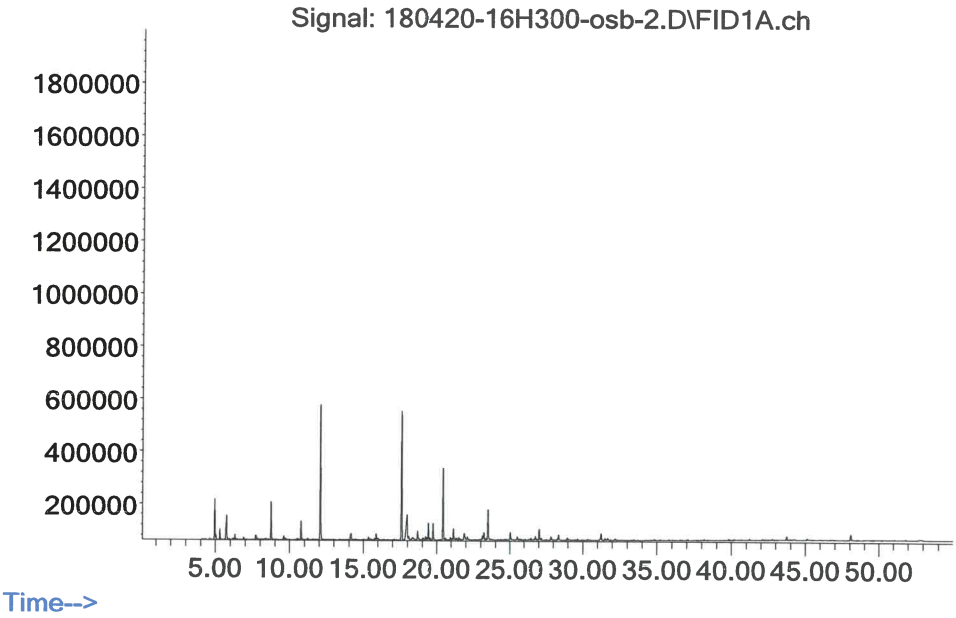
Appendices

1. Gas Chromatogram
2. Photo of the test specimen

Appendix 1

Gas chromatogram

H300 OSB, after 28 days:



TVOC between C_6 and C_{16}, means compounds eluting between 6.5 and 38 minutes.

Appendix 3

Photo of the test specimen