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Nederland

Through our consultant

Your notice of: 03-04-2018
Your reference: TONGA
Date of receipt: 03-04-2018

Analysis Report 18.01991.01

Required tests:
- EN 16516 (2017) Emission of volatile organic compounds (chamber method)
- ISO 16000-3 (2011) determination of aldehydes after emission

Identification number: T1807975
Information given by the client: TONGA
Date of receipt: 03-04-2018

Jo Wynendaele

Order responsible

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In assessing compliance with the specifications, we did not take into account the uncertainty on the test results.

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VAT BE 0459.218.289 • IBAN BE44 2100 4729 6545 • BIC GEBABEBB
Reference: T1807975 - TONGA

Emission of volatile organic compounds (chamber method)

Date of ending the test 23-07-2018
Standard used EN 16516 (2017)
Product standard décret Français sur les COV

Preparation Procedure of sampling, storage of samples and preparation of test specimens as described in the standard EN 16516
Sampling and conditioning Emission test chamber method at 23°C and 50% RH under ½ air exchange per hour. Sampling (under continuous ventilation) on Tenax TA
Sampling after X days 28 days
Analytical method Volatile compounds are thermally desorbed, cryo-trapped and injected into a GC-MS.
Detection Gas chromatography with Agilent MSD detector.
Quantification Target compounds are calibrated, non-target and unidentified compounds are quantified using toluene equivalents (TEQ)

Results
 Determination limit µg/m³
 (emissions) 5
 Determination limit µg/m³
 (carcinogenic, mutagenic and toxic substances) 1
### Limits and Measured Values

<table>
<thead>
<tr>
<th></th>
<th>Limits</th>
<th>Measured μg/m³</th>
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</thead>
<tbody>
<tr>
<td>Rating</td>
<td>a+</td>
<td></td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>&lt;10</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>&lt;200</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Toluene</td>
<td>&lt;300</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Tetrachloroethylene</td>
<td>&lt;250</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>&lt;750</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Xylene</td>
<td>&lt;200</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Styrene</td>
<td>&lt;250</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>2 butoxyethanol</td>
<td>&lt;1000</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>1,2,4-trimethylbenzene</td>
<td>&lt;1000</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>1,4-dichlorobenzene</td>
<td>&lt;60</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>TVOC</td>
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<td>482</td>
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<tr>
<td>Benzene</td>
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<tr>
<td>DBP</td>
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<td>DEHP</td>
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<tr>
<td>Trichloroethylene</td>
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</tbody>
</table>

### Sample Identification

#### Type of test method

- **Flec**
- **Test-chamber**

#### Material of test chamber

- **Steel**
- **Glass**
- **Other**

- **Test chamber volume**: 0,25 [m³]
- **Area of sample**: 0,25 [m²]
- **Air exchange rate**: 0,5 [h⁻¹]
- **Area specific air exchange rate q**: 0,5 [mh⁻¹]
- **Temperature**: 23 [°C]
- **Rel. humidity**: 50 [%]

#### Date

| Insert of sample into the test chamber | 06-04-18 |
| Sampling after 28 days                | 04-05-18 |

### Table 1: Summary of conditions and results of 28 day emission test

Performed under accreditation in the chemical lab under the responsibility of Pablo Moerman
Reference: T1807975_01d - TONGA

**Determination of aldehydes after emission**

Date of ending the test 18-05-2018  
Standard used ISO 16000-3 (2011)  
Product standard décret Français sur les COV

Deviation from the standard
Sample preparation The sample is conditioned in a simulation room at 23°C and 50% R.H.
Air exchange rate 0.5 air exchange per hour
Sampling formaldehyde and acetaldehyde are adsorbed on dinitrophenylhydrazine (DNPH) impregnated silica
Analytical method RP-HPLC (UV 360 nm)

Results  
Determination limit 0.002 mg/m³ for formaldehyde and acetaldehyde, 0.005 mg/m³ for the other components

<table>
<thead>
<tr>
<th>28 days</th>
<th>mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>&lt; 0.002</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>&lt; 0.002</td>
</tr>
<tr>
<td>Acrolein</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Propionaldehyde</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Crotonaldehyde</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Butyraldehyde</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Isovaleraldehyde</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Valeraldehyde</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Hexaldehyde</td>
<td>&lt; 0.005</td>
</tr>
</tbody>
</table>

Performed under accreditation in the chemical lab under the responsibility of David Van de Vyver
Sample history

**T1807975_01d  TONGA**
From sample T1807975 and the following procedure (TONGA)

**Quantitative determination of aldehydes (chamber method)**

Date of ending the test 16-07-2018
Standard used ISO 16000-3 (2011)

Deviation from the standard
Sample preparation The sample is conditioned in a simulation room at 23°C and 50% R.H.
Residence time (in days) 28 days
Air exchange rate 0.5 air exchange per hour
Sampling Aldehydes on dinitrophenylhydrazine (DNPH) impregnated silica

Results