TÜV Rheinland LGA Products GmbH
Business Stream Products
LFGB / Consumer Products
Emission Testing

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Certified according to DIN EN ISO 9001/14001

Examination of a door with regard to the emissions of formaldehyde and volatile organic compounds (VOC) respecting an evaluation in accordance with the French regulations for VOC emissions of construction products (2009/0701/F and 2009/0702/F).

Client:	Türelemente Borne Handelsgesellschaft mbH, 54311 Trierweiler
Test report:	3031007B_Grenelle
Commission dated:	2011-08-22
Sample:	Door "Beech", veneered, lacquered representative for all doors, veneered, lacquered
Date of production:	2011-08-22
Sample received on:	2011-08-24
Testing period:	2011-09-27 to 2011-10-04
Final Classification:	A+

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1. Commission

TÜV Rheinland LGA Products GmbH was commissioned to examine a door according to the French regulations for VOC emissions of construction products (2009/0701/F and 2009/0702/F) from the "Ministry of Ecology, Energy, Sustainable Development and Sea".

2. Testing methods

2.1 Testing conditions:

Chamber volume:	1 m^3
Temperature:	(23 ± 2) °C
Relative air humidity:	50 % rel. h. ± 5 % rel. h.
Air velocity:	0.1 to 0.3 m/s
Loading factor for a door:	0,05 m^2/m^3 ± 0.005 m^2/m^3
Air exchange:	0.5 h^{-1} ± 0.01 h^{-1}

The sample was placed in the test chamber on September 27, 2011 for seven days. Sampling was performed after seven days.

2.2 Testing methods

ISO 16000-3: Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds – Active sampling method

ISO 16000-6: Indoor air – Part 6: 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

EN ISO 16000-9: Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method

EN ISO 16000-11: 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

3. Examination results

3.1 Emissions of volatile organic compounds (VOC) [1]

Table 1: Comparison of the requirements of the French regulations with the test results (emissions of VOC [1] in µg/m³)

Parameters	CAS No.	Requirements of the Emission Classes				Test results after seven days	Emission Class
		A+	A	B	C		
Formaldehyde	50-00-0	< 10	< 60	< 120	> 120	5.4	A+
Acetaldehyde	75-07-0	< 200	< 300	< 400	> 400	2.2	A+
Toluene	108-88-3	< 300	< 450	< 600	> 600	n.d. [3]	A+
Tetrachloroethylene	127-18-4	< 250	< 350	< 500	> 500	n.d. [3]	A+
Xylene	1330-20-7	< 200	< 300	< 400	> 400	n.d. [3]	A+
1,2,4-Trimethylbenzene	95-63-6	< 1,000	< 1,500	< 2,000	> 2,000	n.d. [3]	A+
1,4-Dichlorobenzene	106-46-7	< 60	< 90	< 120	> 120	n.d. [3]	A+
Ethylbenzene	100-41-4	< 750	< 1,000	< 1,500	> 1,500	n.d. [3]	A+
2-Butoxyethanol	111-76-2	< 1,000	< 1,500	< 2,000	> 2,000	n.d. [3]	A+
Styrene	100-42-5	< 250	< 350	< 500	> 500	n.d. [3]	A+
TVOC [2]	- / -	< 1,000	< 1,500	< 2,000	> 2,000	18	A+

[1] VOC = volatile organic compounds
[2] TVOC = total volatile organic compounds within retention range of C_6 – C_{16}
[3] n.d. = not detected, no substances of the corresponding category have been detected, limit of quantification 1 µg/m³
* The substances benzene and dibutylphthalate were not detected in the test chamber (French regulation 2009/0104/F)

4. Evaluation

Final classification representative for all doors, veneered, lacquered:

Émissions dans l'air intérieur: **A+**

Nuremberg, 2011-11-03

TÜV Rheinland LGA Products GmbH
LFGB / Consumer Products – Emission Testing

Dr. Christian Schelle
Chemist

Person in charge:

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