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Dresden, Feb 24th, 2015

Test Report Order no. 2515036

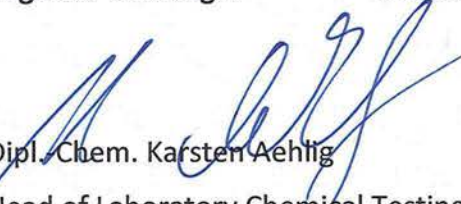
Client: LOBA GmbH & Co.KG
Leonberger Straße 52- 62
71241 Ditzingen

Date of order: January 14th, 2015

Order: Determination of the migration behavior of heavy metals according to
DIN EN ISO 71-3 in 2 samples

Contractor: EPH – Laboratory chemical testing

Engineer in charge: Dr. Christiane Swaboda


Dipl.-Chem. Karsten Aehlig
Head of Laboratory Chemical Testing

The test report contains 4 pages. Any duplication, even in part, requires written permission of EPH. These test results are exclusively related to the tested material.

1 Task

Determination of the migration behavior of heavy metals according to DIN EN ISO 71-3: 2014-12.

2 Sample material

The client handed over the following samples:

2515036 - 1 LOBASOL Deck & Teak Oil transparent

2515036 – 2 LOBASOL Deck & Teak Oil bankirai, dark

Sample receipt in the EPH: January 19th, 2015

3 Investigations carried out

3.1 Migration behavior of heavy metals acc. to DIN EN ISO 71-3: 2014-12

According to the new version of DIN EN ISO 71-3 from December 2014 the following elements were to be determined:

Aluminium (Al), Antimony (Sb), Arsenic (As), Barium (Ba), Boron (B), Cadmium (Cd), Cobalt (Co), Chrome (Cr), Copper (Cu), Mercury (Hg), Manganese (Mn), Nickel (Ni), Lead (Pb), Selenium (Se), Tin (Sn), Strontium (Sr), Zinc (Zn)

The oil was given on a filter paper and airdried overnight. About 1 g of the cut paper was added with 50 ml of 0.07 mol HCl, stirred for 15 minutes at 37°C and then left for 2 hours. Afterwards the liquid was separated by centrifugation. The resulting pH - value of the solutions was 1.5.

The quantitative determination of the heavy metals was carried out with the methods and detection limits indicated in table 1. The results are average values from a double determination.

The evaluation of the results followed the limit values for category III according to pt. 7.4.3.1 for uncolored or imbued materials like wood, wood based materials, bones ore leather.

Table 1 Methods, detection limits and limit values for estimation of the heavy metal content

Element	Al	As	Ba	B	Cd	Co	Cr	Cu
Method	MP-AES	GTA	MP-AES	MP-AES	MP-AES	MP-AES	MP-AES	MP-AES
DL [mg/kg]	0.5	0.1	0.01	0.2	0.07	0.2	0.05	0.2
LV category III [mg/kg]	70000	47	18750	15000	17	130	460 0.2*	7700

GTA = = graphite tube atom absorption spectrometry, MP-AES = microwave plasma induced atom emission spectrometry
DL= Detection Limit, LV = Limit value acc.to DIN EN 71-3. pt. 4.2 table 2 in connection with table 1 pt. 4.1

* value for Cr VI

Continuation of table 1

Element	Hg	Mn	Ni	Pb	Sb	Se	Sn	Sr	Zn
Method	MP-AES with hydrid-bilder	MP-AES	MP-AES	MP-AES	GTA	GTA	MP-AES	MP-AES	MP-AES
DL [mg/kg]	0.04	0.05	0.15	0.1	0.1	0.2	0.1	0.2	0.1
LV category III [mg/kg]	94	15000	930	160	560	460	180000 12**	56000	46000

GTA = = graphite tube atom absorption spectrometry, MP-AES = microwave plasma induced atom emission spectrometry
DL= Detection Limit, LV = Limit value acc.to DIN EN 71-3. pt. 4.2 table 2 in connection with table 1 pt. 4.1

** = Value for Organtins

4 Results

Table 2 Content of heavy metals after extraction acc. to DIN EN ISO 71-3 in mg/kg

Sample	Al	As	Ba	B	Cd	Co	Cr	Cu
P1	< DL	< DL	108.4	< DL	0.5	18.7	< DL	< DL
P2	< DL	< DL	85.5	< DL	< DL	2.8	< DL	< DL

Continuation of table 2

Sample	Hg	Mn	Ni	Pb	Sb	Se	Sn	Sr	Zn
P1	< DL	3.4	< DL	< DL	< DL	< DL	< DL	< DL	63
P2	< DL	2.8	< DL	< DL	< DL	< DL	< DL	< DL	90

DL = Detection limit

5 Evaluation

The products LOBASOL Deck & Teak Oil transparent and LOBASOL Deck & Teak Oil bankirai, dark completely meet the requirements of DIN EN ISO 71-3 (2013:07).

6 Miscellaneous

The product sample will be stored in the EPH for 3 months as a retained sample.

A handwritten signature in blue ink, appearing to read "Ch. Swaboda". The signature is written in a cursive style with a large initial "C".

Dr. rer. nat. Ch. Swaboda
Chemist in Charge