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Dresden, 2020-05-05
50- sw

Test Report Order no. 2520125-8

Client: Hemel
Emprenye Sanayi ve Ticaret A.S.
Istanbul Deri Organize Sanayi Bölgesi
Vakum Cad. No:25
B-1 Özel Parsel, Aydinli-Orhanli Mevkii, Tuzla
34957 Istanbul
Turkey

Date of order: 2020-03-19

Order: Determination of the migration behavior of heavy metals according to DIN EN 71-3: 2019-08 (category III, table 1) in Hickson Decor Aqua Decorative Colorant

Contractor: EPH – Laboratory Chemical Testing

Engineer in charge: Dr. Christiane Swaboda



Dipl.-Ing. M. Broege
Head of Laboratory Chemical Testing

The test report contains 4 pages. Any duplication, even in part, requires written permission of EPH.

1 Assignment

Determination of the migration behaviour of heavy metals according to DIN EN 71-3: 2019-08 (Category III according to Table 1) in 1 liquid sample

2 Sample material

The client handed over the following sample:

Table 1: sampling information

2520125 – P9 Hickson Decor Aqua Decorative Colorant

Sample receipt in the EPH: 24 March 2020

3 Performed tests

Tabelle 2 performed tests

| Pos. | Performed tests | Testing period |
|------|---|----------------|
| 1 | Determination of heavy metals according to DIN EN 71-3: 2019-08 | 2020-04-01/03 |
| 2 | Determination of Chrome VI according to DIN EN 71-3: 2019-08 | 2020-04-14/17 |

Pos 2: The investigation was carried out by the accredited test institute Hansecontrol GmbH

3.1 Determination of heavy metals according to DIN EN 71-3: 2019-08

sample quantities: ca. 0.5 g
solvent: 25 mL 0.07 n hydrochloric acid
method: Elution over 2 h in a water bath at 37 °C
Quantification: with ICP-OES
Determination: double determination

The following elements were to be determined according to DIN EN 71-3:2019-08:

Aluminum (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)

Table 3: Limit of quantification of different elements

| Element | Al | As | B | Ba | Cd | Co | Cr total. | Cr VI | Cu | Hg | Mn | Ni | Pb | Sb | Se | Sn | Sr | Zn |
|-------------|----|-----|---|-----|------|------|-----------|-------|-----|------|------|------|-----|-----|-----|------|------|-----|
| LOQ [mg/kg] | 3 | 1.5 | 3 | 0.1 | 0.05 | 0.05 | 0.02 | 0.005 | 0.1 | 0.05 | 0.05 | 0.25 | 1.5 | 1.5 | 1.5 | 0.05 | 0.05 | 1.5 |

LOQ Limit of quantification [mg/kg]

4 Results

Table 4 Result overview of the tested material

| [mg/kg] | Al | As | B | Ba | Cd | Co | Cr total | Cr (III) ¹ | Cr (VI) ² | Cu | Hg | Mn | Ni | Pb | Sb | Se | Sn | Organo- tin ³ | Sr | Zn |
|-----------------------------|-------|-------|-------|-------|-------|-------|----------|-----------------------|----------------------|------|-----|-------|-------|-------|-------|-------|--------|-----------------------------|-------|-------|
| Limit Value Category III | 70000 | 47 | 15000 | 18750 | 17 | 130 | 460 | 460 | 0.2/0.053 | 7700 | 94 | 15000 | 930 | 23 | 560 | 460 | 180000 | 12 | 56000 | 46000 |
| Measured Values | < LOQ | < LOQ | < LOQ | < LOQ | < LOQ | < LOQ | < LOQ | < LOQ | n.d. | 0.1 | 0.1 | 1.9 | < LOQ | < LOQ | < LOQ | < LOQ | < LOQ | n.d. | 0.3 | < LOQ |
| comply with limit value | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

n.d. not determined

¹ The chromium (III) content corresponds to the total chromium content minus the chromium (VI) content² The migration limit for chromium (VI) for category III toy material (scraped toy material) has been changed by Commission Directive (EU) 2018/725. The new limit value (0.053 mg / kg) applies from 2019-11-18. Before this date, the limit is 0.2 mg / kg. Chromium (VI) was only determined for samples in which the total chromium content exceeded the limit value for chromium (VI).³ The organotin content was only determined for samples in which the tin content exceeded the limit value for organotin.

5 Evaluation of results*

The limit values for the migration of heavy metals were met by the sample.

* Statements on conformity assessment/classification were made based on the measurement results obtained. Measurement uncertainties were not included in the assessment (ILAC G8 03/2009 "Guidelines on the Reporting of Compliance with Specification" Section 2.



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