TNO triskelion bv

Analytical report

Date
4 November 2015

Our reference
ARPC/15-993/VeH

Project data

Analysis requested	:	Food approval according EU and Dutch legislation
Client	:	Saint-Gobain Zorya, Rivne Oblast, Ukraine
Project number	:	093.25523/01.48
Analyses date	:	October 2015
Date of issue	:	November 2015
Validity	:	November 2015 – November 2021
Evaluation	:	This investigation must be re-evaluated if the relevant regulation is changed, or the composition or the production process of the product is changed, or at November 2018 the latest.

Sample data

The following sample was analysed (hereafter called 'Sample'):

Sampled by	:	Client
Code client	:	Extra Flint glass
Description client	:	Jar with standard twist-off cap 82 mm.
Sample code TNO	:	0939-04-3604
Sample description TNO	:	Glass bottle, transparent, content 150 ml
Sample received at	:	9 October 2015

Legislative context

The report, the experiments described and the conditions used to obtain the results presented are based on the following legislation:

- Commodity Act Packaging and Food Utensils Regulation of The Netherlands of 20 November 1979 and its amendments up to and including 328583-117560-VGP of 14 March 2014
- Regulation on plastic materials and articles intended to come into contact with food (EU) No 10/2011 of 14 January 2011 and its amendments up to and including (EU) No 2015/174 of 5 February 2015
- Regulation (EC) No 1935/2004 of 27 October 2004

An interpretation of the above legislation was made for the product to be investigated, as is outlined below. The interpretation was used for the administrative check, the selection of the tests and the evaluation of the results. In the report the legislation used for this interpretation will be referred to as 'Relevant Legislation'.

Glass articles are only regulated on European level by article 3 of the framework Regulation (EC) No 1935/2004 (food contact materials may not endanger human health and bring about an unacceptable change in the composition of foodstuffs).

In the Netherlands glass articles are regulated in chapter (V) (glass and glass ceramics) of the Commodity Act Packaging and Food Utensils Regulation of The Netherlands.
To be able to state that the material can be considered as not-detrimental to human health, the overall migration and the specific migration of all elements with a specific migration limit are determined.

Because a food approval was requested by the client, TNO Triskelion has selected which experiments had to be performed (overall and specific migrations, residual contents, extraction tests etc as described in detail in the method section) based on the application of the 'Sample' and the legislation with which the 'Sample' has to comply with.

Methods applied

Migration conditions

To determine the overall and specific migration from the 'Sample', specimens were filled with 150 ml of 3% acetic acid, closed with a lid and stored for 4 hours at 100°C. The contact area of the sample was 1.3 dm^2.

The simulants, contact time, and contact temperature were selected according Regulations (EU) No 10/2011 on plastic materials and articles intended to come into contact with food and following CEN method EN 1186-1:2002 (17 April 2002) and CEN method EN 13130-1:2004 (26 May 2004). After the storage period the samples were analysed as is described in the overall and specific migration section.

Overall migration
After the storage period, the overall migration from the 'Sample' was determined following the CEN method EN 1186-9:2002 (17 April 2002) (article filling, aqueous simulant) as close as possible.

Specific migration
After the storage period, the specific migrations were determined. If the 'Sample' was brought into contact with several simulants, the worst case simulant for each compound was selected. The specific migrations were determined following the CEN method EN 13130-1:2004 (26 May 2004) as close as possible. A summary of the specific migrations is shown in the following table:

Compound	Simulant	Time/temperature conditions	Analytical technique
antimony, arsenic, barium, boron, cadmium, cerium, chromium, cobalt, lithium, lead, manganese, nickel, rubidium and zirconium	3% acetic acid	4 hours 100°C	ICP-MS
fluoride	3% acetic acid	4 hours 100°C	GC

GC = gas chromatography, ICP-MS = inductively coupled plasma mass spectrometry

Results

Overall migration into 3% acetic acid after 4 hours contact at 100°C

	Overall migration (mg/dm^2)			
Simulant	Measurement 1	Measurement 2	Average	Limit
3% acetic acid	1.4	1.6	1.5	10

n.d. = not detectable

Specific migration into 3% acetic acid after 4 hours contact at 100°C

	Specific migration (mg/kg simulant)			
Component	Determination 1	Determination 2	Average	Limit
antimony	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.04
arsenic	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.01
barium	0.0003	0.0003	0.0003	1
boron	n.d.(<0.004)	n.d.(<0.004)	n.d.(<0.004)	1
cadmium	n.d.(<0.0001)	n.d.(<0.0001)	n.d.(<0.0001)	0.01
cerium	n.d.(<0.0001)	n.d.(<0.0001)	n.d.(<0.0001)	1
chromium	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.1
fluoride	n.d.(<0.1)	n.d.(<0.1)	n.d.(<0.1)	1
cobalt	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.05
lithium	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.6
lead	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.1
manganese	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.6
nickel	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	1
rubidium	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	1
zirconium	n.d. (<0.001)	n.d. (<0.001)	n.d. (<0.001)	0.05

n.d. = not detectable

Conclusions

Based on the information that was supplied about the composition, the application of the ‘Sample’ and ‘Relevant Legislation’, all relevant tests were selected and performed (overall and specific migrations, residual contents, extraction tests etc as described in detail in the method section).

The values obtained for the overall migrations and relevant specific migrations from the ‘Sample’, into 3% acetic acid after a contact period of 4 hours at 100°C meet the limits as specified in the ‘Relevant Legislation’.

In conclusion, the ‘Sample’ is suitable for contact with all types of foodstuff for any storage time at any temperature regarding the relevant overall migrations and the relevant specific migrations as described above, according to the Commodity Act Packaging and Food Utensils Regulation of The Netherlands and its amendments up to and including 328583-117560-VGP and the sample is not detrimental for human health as is required in Article 3 of the Regulation (EC) No 1935/2004 for both single and repeated use.

The product must be tested in the final application for deterioration in the organoleptic characteristics of the food (according to the requirements of Article 3 of the Regulation (EC) No 1935/2004).

Supporting documents with all details of the analytical experiments will be filed for a period of six years and can be accessed by enforcement authorities upon agreement of the client.

Approved by

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