

Bellaterra : **7th March, 2007**
File number : **07/32001576**
Petitioner's reference : **ARTLUX EUROPA, S.L.**
C/Menen Pérez, 2 – 4º Dcha.
33201 Gijón (ASTURIAS)

For the attention of Ms. Yolanda Suárez Castaño

Date at which the material to be tested was received: 01.02.07
Date at which the test was conducted: Start: 05.02.07
End: 06.03.07

MATERIAL RECEIVED

A sample was submitted, in accordance with the petitioner's statement, as a polyurea membrane intended for being in contact with drinking water.
The product's reference is as follows:

- POLYUREA SYSTEM, ART-7052

ISSUE REQUESTED

To determine the parameters stated in the results table as presented in Annex I of Royal Decree 140/2003, dated 7th February, which establishes the health criteria applying to the quality of water intended for human consumption, based upon Guideline 98/83/CE of the COUNCIL, dated 3rd November, 1998, and pertaining to the quality of waters intended for human consumption.

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TESTING METHOD

- **Migration**

Testing conditions

- Extraction means: Chlorinated water containing 1 ppm chlorine.
- Migration Temperature: 40° C.
- Contact time:
 - The sample is washed several times, as instructed in Guideline EN-12873.
 - Next, three 72-hour cycles are conducted, thereby obtaining three testing samples.
 - Parameters are analysed during the initial 72-hour cycle; only the parameters that are beyond the limits of RD 140/2003 are repeated in the second and third cycle.
- Volume of the sample: 1 litre for each of the 72-hour cycles.
- Contact surface: Ten 10 x 5 cm² test tubes.
- Surface/volume ratio: 500 cm²/l.

Parameters:

Acrylamide: Determination of acrylamide, according to the PE-BV/0035 HR GC-ECD method.

Epichloridrine: Determination of epichloridrine, according to the PE-BS/0025 SPME-GC/MS method.

Mercury: Determination of mercury, according to the PE-D/0005 Atomic Fluorescence method.

Metals: Determination of metals, according to the PE-D/0026 ICP-MS method.

Fluorides: Determination of fluorides, according to the PE-BV/0001HPLC-Conductivity method.

Nitrates: Determination of nitrates, according to the PE-BV/0001HPLC-Conductivity method.

Total cyanides: Determination of total cyanides, according to the Flow Test method. PE-F/0057

Ammonia: Determination of ammonia, according to the PE-C/0012 Absorption Spectrophotometry method.

Free residual chlorine: According to the PE-C/0018 Absorption Spectrophotometry method.

Combined residual chlorine: According to the PE-C/0018 Absorption Spectrophotometry method.

Chlorides: Determination of chlorides, according to the PE-BV/0001HPLC-Conductivity method.

Colour: Determination of colour, according to the PE-C/0016 Photometry method.

Conductivity at 20 °C: According to the PE-A/0004 Electrometry method.

pH: Determination of pH, according to the PE-A/0010 Electrometry method.

Oxidability: According to the PE-A/0008 Permanganate Oxidability method.

Nitrites: Determination of nitrites, according to the PE-C/0010 Absorption Spectrophotometry method.

Sodium: Determination of sodium, according to the PE-D/0025 ICP-OES method.

Sulphates: Determination of sulphates, according to the PE-BV/0001HPLC-Conductivity method.

Turbidity: Determination of turbidity, according to the PE-A/0021 Nephelometry method.

Alkalinity: According to the PE-A/0010 Electrometry method.

Benzene: Determination of benzene, according to PE-BV/0048 HRGC-MS method.

Benzopyrene: Determination of benzopyrene, according to the PE-BS/0024 SBSE-GC-MS method.

Sum of 4 PAHs: Determination of PAHs, according to the PE-BS/0024 SBSE-GC-MS method.

Pesticides: Determination of pesticides, according to the PE-BS/0024 SBSE-GC-MS method.

Trichloroethene + Tetrachloroethene: According to the PE-BV/0048 HRGC-MS method.

1,2-Dichloroethane: Determination of 1,2-dichloroethane, according to PE-BV/0048 HRGC-MS method.

Trihalomethanes: Determination of trihalomethanes, according to PE-BV/0048 HRGC-MS method.

- **20 ppm chlorine chemical reaction**

Testing conditions

Eight hours at 40° C and subsequent visual evaluation.

- **Flavour and Odour test:**

Testing conditions: PT-109-708 Procedure

Extraction means: Mineral water with medium mineralisation.

Surface (test tube) / volume (extraction means) ratio: 100cm²/l.

Migration Temperature: 30 °C.

Contact time: Three 72-hour cycles; the first two for washing and the last cycle provides the testing sample.

Dilution index method at 25 °C, in compliance with Royal Decree 140/2003, which establishes the health criteria applying to water quality of water intended for human consumption.

RESULTS

PARAMETERS	MIGRATION	RD 140/2003 LIMITS
Acrylamide	<0,1µg/l	0,10µg/l
Epichloridrine	N.D.	0,10µg/l
Trihalomethanes	17,9µg/l	<150µg/l
Total cyanides	<5µg/l	50µg/l
Fluorides	<0,1mg F/l	1,5mg/l
Nitrates	<1,0mgNO ₃ /l	50mg/l
Ammonia	<0,10mg NH ₄ /l	0,5mg/l
Free residual chlorine	<0,05 mgCL ₂ /l	1,0mg/l
Combined residual chlorine	<0,05 mg/l	2mg/l
Chlorides	4,2mg Cl/l	250mg/l
Colour	<1mg Pt/l	15 mg Pt/l
Nitrites	<0,05 mg/l	0,5 mg/l
Oxidability	1,6 mg O ₂ /l	5,0 mg O ₂ /l
Conductivity at 20 °C	26µS/cm	2500µS/cm
pH	7,4 pH units	6,5-9,5 pH units
Sulphates	<5,0mg SO ₄ /l	250mg/l
Turbidity	0,56 UNF	1UNF
Odour	1 Dilution index	3 Dilution index
Flavour	1 Dilution index	3 Dilution index
20pmm chlorine chemical reaction	No reaction is observed visually	
Metals		
Aluminium	<5µg/l	200µg/l
Antimony	<2µg/l	5µg/l
Arsenic	<2µg/l	10µg/l
Boron	<0,02µg/l	1mg/l
Cadmium	<1µg/l	5µg/l

Note: N. D. = Not Detected. The detection limit for the technique used is 1µg/l.

PARAMETERS	MIGRATION	RD 140/2003 LIMITS
Copper	<0,002µg/l	2mg/l
Chromium	<2µg/l	50µg/l
Iron	<10µg/l	200µg/l
Manganese	<2µg/l	50µg/l
Mercury	0,10µg/l	1µg/l
Nickel	<2µg/l	20µg/l
Lead	<2µg/l	10µg/l
Selenium	<2µg/l	10µg/l
Sodium	2,8mg/l	200mg/l
Volatile organic compounds		
1,2-Dichloroethane	<0,2µg/l	3,0µg/l
Trichloroethene +	<0,4µg/l	10µg/l
Tetrachloroethene		
Polycyclic Aromatic Hydrocarbons		
Benzopyrene	<0,01µg/l	0,01µg/l
Sum of Polycyclic Aromatic Hydrocarbons	<0,1µg/l	0,1µg/l
BTEX		
Benzene	<0,2µg/l	1µg/l
Pesticides		
Individual pesticides	<0,5µg/l	< 0,1µg/l
Aldrin	<0,02µg/l	0,03µg/l
Dieldrin	<0,02µg/l	0,03µg/l
Heptachlorine	<0,02µg/l	0,03µg/l
Heptachlorine epoxid	<0,02µg/l	0,03µg/l

CONCLUSION

The values obtained in the analysed parameters **are compliant** with the limits set in Royal Decree 140/2003, which establishes the health criteria applying to water intended for human consumption, and in Guideline 98/83/EC OF THE COUNCIL, dated 3rd November, 1998, regarding the quality of waters intended for human consumption. **Therefore, the tested material complies, as far as the mentioned parameters are concerned, with the requirements set in Royal Decree 140/2003 and in Guideline 98/83/EC.**

No chemical reaction has been observed in the product at 20 ppm of chlorine; as far as this parameter is concerned, **the product complies** with the requirements contained in Royal Decree 140/2003.



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The results contained herein refer exclusively to the sample, product, or material delivered to the Laboratory, as indicated in the paragraph pertaining to materials received and tested, under the conditions established in the standards of procedures mentioned herein.

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