REGIONAL AUTHORITY OF PUBLIC HEALTH WITH REGISTERED OFFICE IN POPRAD

Logo of Regional Authority of Public Health in Poprad

Zdravotnicka 3, 058 97 Poprad

National reference centre for common use items and packing material

Logo of NRL EU Network of Reference Laboratories Food Contact Materials

Results of laboratory analyses and product safety assessment No. 4746-4751

Client: IZONIL

Protocol sample no.: 4746-4751
Date of sample reception: 7 May 2010
Testing period: 10 May 2010 – 18 June 2010
Date of issue: 29 May 2012

Sample name: IZONIL – waterproof and breathable plaster

Material composition: cement, water-repellent admixture, sand, methyl cellulose
Purpose of use: *direct contact with cold drinking water*
(for the plastering of surfaces coming in contact with drinking water)
Manufacturer: IZONIL
Sample description:

- plaster mixture of grey colour applied to stainless surfaces of 100x100 mm, sample surface put to lixiviation tests 2.77 dm^2

Chemical examination

Samples tested in accordance with requirements of the Decree of the Ministry of Health of the Slovak Republic No. 550/2007 Coll. on details and requirements for products intended for contact with drinking water

Sample pre-treatment:

Pre-treatment by stagnation

The tested sample is immersed into municipal water and left 24 h ± 0.5 h to rest at the temperature of 23±2°C). Afterwards water is removed and replaced with fresh municipal water of the test temperature and left 16 h ± 0.5 h to rest.

Rinsing:

All samples are rinsed with municipal water for 60 min. ± 10 min. under a constant current of 5$cm^3.s^{-1}$±2 $cm^3.s^{-1}$ and in the end they are rinsed with the test water for not less than 2 minutes.

Migration test procedure:

The migration test is carried out simultaneously with two identical test samples. Migration tests take place immediately after the pre-treatment of samples by immersing sample surfaces intended for contact with water (or the whole samples) into the test water. The samples are lixiviated three times during 72 hours. After the first and the second exposition time (72 h), the entire amount of the lixivium is always strained off and replaced with an identical amount of fresh test water. A laboratory examination is carried out on the basis of lixiviums acquired separately after each migration period.

Testing conditions:

The samples were lixiviated three times at 72-hour successive intervals at the temperature of 23±2°C.

Surface of the tested sample/amount of tested water ratio was 1:4 ($1cm^2$ / $1\ cm^3$).

Test water – deionized water.

Lixiviums were produced in duplicate.

Description of lixiviums:

Lixivium Type	Sample
1st lixivium (day 1-3)	72 h, 23°C, test water volume 1110 ml
2nd lixivium (day 3-6)	72 h, 23°C, test water volume 1110 ml
3rd lixivium (day 6-9)	72 h, 23°C, test water volume 1110 ml

Test results

comparative sample (blank test)

Indicator	Unit	Parallel specification	1st lixivium	2nd lixivium	3rd lixivium
pH	-	I.	8.84	8.30	7.46
		II.	8.86	8.20	7.65
ChSk-Mn (chemical consumption of oxygen by permanganate)	$mg.l^{-1}$	I.	<0.52 (LOQ)	<0.52 (LOQ)	<0.52 (LOQ)
		II.	<0.52 (LOQ)	<0.52 (LOQ)	<0.52 (LOQ)
A^{254}	-	I.	<0.010 (LOQ)	<0.010 (LOQ)	<0.010 (LOQ)
		II.	<0.010 (LOQ)	<0.010 (LOQ)	<0.010 (LOQ)
conductivity	$mS.m^{-1}$	I.	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
		II.	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
NH_4^+	$mg.l^{-1}$	I.	ND LOD: 0.03	ND LOD: 0.03	ND LOD: 0.03
		II.	ND LOD: 0.03	ND LOD: 0.03	ND LOD: 0.03
NO_2^-	$mg.l^{-1}$	I.	ND LOD: 0.01	ND LOD: 0.01	ND LOD: 0.01
		II.	ND LOD: 0.01	ND LOD: 0.01	ND LOD: 0.01
Cd	$mg.l^{-1}$	I.	ND LOD: 0.0003	ND LOD: 0.0003	ND LOD: 0.0003
		II.	ND LOD: 0.0003	ND LOD: 0.0003	ND LOD: 0.0003
Pb	$mg.l^{-1}$	I.	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001
		II.	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.005
Cr	$mg.l^{-1}$	I.	ND LOD: 0.005	ND LOD: 0.005	ND LOD: 0.005
		II.	ND LOD: 0.005	ND LOD: 0.005	ND LOD: 0.001
Al	$mg.l^{-1}$	I.	ND LOD: 0.024	ND LOD: 0.024	ND LOD: 0.024
		II.	ND LOD: 0.024	ND LOD: 0.024	ND LOD: 0.024
As	$mg.l^{-1}$	I.	<0.004 (LOQ)	ND LOD: 0.001	ND LOD: 0.001
		II.	<0.004 (LOQ)	ND LOD: 0.001	ND LOD: 0.001
colour	mg Pt. l^{-1}	I.	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
		II.	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
turbidity	FTU	I.	ND LOD: 0.5	ND LOD: 0.5	ND LOD: 0.5
		II.	ND LOD: 0.5	ND LOD: 0.5	ND LOD: 0.5

Sample – IZONIL – waterproof and breathable plaster

Indicator	Unit	Parallel specification	1st lixivium	2nd lixivium	3rd lixivium
pH	-	I.	11.16	10.98	10.59
		II.	11.26	10.99	10.66
ChSk-Mn	$mg.l^{-1}$	I.	2.1	2.1	1.5
		II.	1.7	1.8	1.3
A^{254}	-	I.	<0.010 (LOQ)	<0.010 (LOQ)	<0.010 (LOQ)
		II.	<0.010 (LOQ)	<0.010 (LOQ)	<0.010 (LOQ)
conductivity	$mS.m^{-1}$	I.	46.3	34.6	19.9
		II.	50.0	34.7	21.8
NH_4^+	$mg.l^{-1}$	I.	ND LOD: 0.03	ND LOD: 0.03	ND LOD: 0.03
		II.	ND LOD: 0.03	ND LOD: 0.03	ND LOD: 0.03
NO_2^-	$mg.l^{-1}$	I.	0.03	ND LOD: 0.01	ND LOD: 0.01
		II.	ND LOD: 0.01	ND LOD: 0.01	ND LOD: 0.01
Cd	$mg.l^{-1}$	I.	ND LOD: 0.0003	ND LOD: 0.0003	ND LOD: 0.0003
		II.	ND LOD: 0.0003	ND LOD: 0.0003	ND LOD: 0.0003
Pb	$mg.l^{-1}$	I.	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001
		II.	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.005
Cr	$mg.l^{-1}$	I.	ND LOD: 0.005	ND LOD: 0.005	ND LOD: 0.005
		II.	ND LOD: 0.005	ND LOD: 0.005	ND LOD: 0.001
Al	$mg.l^{-1}$	I.	0.268	0.241	0.289
		II.	0.254	0.202	0.284
As	$mg.l^{-1}$	I.	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001
		II.	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001
colour	mg Pt. l^{-1}	I.	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
		II.	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
turbidity	FTU	I.	1.6	ND LOD: 0.5	ND LOD: 0.5
		II.	<1.5 (LOQ)	ND LOD: 0.5	ND LOD: 0.5

Sensory assessment – 3rd lixivium				
Assessor no.	Model substance	Model substance affected by material		
		change of taste	change of smell	change of appearance
1.	deionized water	1	1	1
2.		1	1	1
3.		2	1	1
4.		1	1	1
5.		1	1	1
Total change average		1.2	1.0	1.0

Evaluation of the average:

≤ 1.8	a little probability that material or an item will unfavourably affect sensory properties of food and drinking water
1.9-2.4	material or an item may unfavourably affect sensory properties of food and drinking water
>2.4	a strong probability that material or an item will unfavourably affect sensory properties of food and drinking water

Calculation of K_0 average concentrations of parallel detections of monitored substances in a blank test

comparative sample (blank test)

Indicator	Unit	K_0^{23}; 1	K_0^{23}; 2	K_0^{23}; 3
pH	-	8.85	8.25	7.56
ChSk-Mn	$mg.l^{-1}$	<0.52 (LOQ)	<0.52 (LOQ)	<0.52 (LOQ)
A^{254}	-	<0.010 (LOQ)	<0.010 (LOQ)	<0.010 (LOQ)
conductivity	$mS.m^{-1}$	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
NH_4^+	$mg.l^{-1}$	ND LOD: 0.03	ND LOD: 0.03	ND LOD: 0.03
NO_2^-	$mg.l^{-1}$	0.02	ND LOD: 0.01	ND LOD: 0.01
Cd	$mg.l^{-1}$	ND LOD: 0.0003	ND LOD: 0.0003	ND LOD: 0.0003
Pb	$mg.l^{-1}$	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001
Cr	$mg.l^{-1}$	ND LOD: 0.005	ND LOD: 0.005	ND LOD: 0.005
Al	$mg.l^{-1}$	ND LOD: 0.024	ND LOD: 0.024	ND LOD: 0.024
As	$mg.l^{-1}$	<0.004 (LOQ)	ND LOD: 0.001	ND LOD: 0.001
colour	mg Pt. l^{-1}	<5 (LOQ)	<5 (LOQ)	<5 (LOQ)
turbidity	FTU	ND LOD: 0.5	ND LOD: 0.5	ND LOD: 0.5

Calculation of K_{72} average concentrations of parallel detections of monitored substances over the migration time of 72 h and calculation of migration values $M_{24/3}$ of substances after the third migration test

Sample – IZONIL – waterproof and breathable plaster

Indicator	K_{72}^{23}; 1	K_{72}^{23}; 2	K_{72}^{23}; 3	M_{24}^{23}; 3
Units	- $mg.l^{-1}$	- $mg.l^{-1}$	- $mg.l^{-1}$	mg/dm^2 x 24 h
pH	11.21	10.99	10.63	-
ChSk-Mn	1.90	1.95	1.4	0.19
A^{254}	<0.010 (LOQ)	<0.010 (LOQ)	<0.010 (LOQ)	0.07
NH_4^+	ND LOD: 0.03	ND LOD: 0.03	ND LOD: 0.03	0.004
NO_2^-	0.02	ND LOD: 0.01	ND LOD: 0.01	0.001
Cd	ND LOD: 0.0003	ND LOD: 0.0003	ND LOD: 0.0003	0.4×10^{-4}
Pb	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001	0.1×10^{-3}
Cr	ND LOD: 0.005	ND LOD: 0.005	ND LOD: 0.005	0.7×10^{-3}
Al	0.261	0.222	0.287	0.038
As	ND LOD: 0.001	ND LOD: 0.001	ND LOD: 0.001	0.1×10^{-3}

Analytical methods used:

Indicator	Identification of method	LOD	LOQ	Limit*
ChSk-Mn	ŠPP -V6 (SWP - standard working process)	-	0.52 mg/l	3.0 mg/l
pH	SWP –V21	-	-	6.5 – 8.5
A^{254}	STN 757360	-	0.01	0.08
conductivity	STN EN 27 888	-	5 mS/m	125 mS/m
NH_4^+	SWP-V8	0.03	0.04	0.5 mg/l
NO_2^-	SWP-ŠA1	0.01	0.02	0.5 mg/l
Cd	SWP-ŠA2	0.345 ng/ml	1.149 ng/ml	0.003 mg/l
Pb	SWP-ŠA2	1.334 ng/ml	4.445 ng/ml	0.01 mg/l
Cr	SWP-ŠA2	5.499 ng/ml	18.499 ng/ml	0.05 mg/l
Al	SWP-ŠA8	24.180 ng/ml	80.599 ng/ml	0.2 mg/l
As	SWP-ŠA2	1.273 ng/ml	4.243 ng/ml	0.01 mg/l
colour	STN EN ISO 7887	-	5	20 mg/l
turbidity	SWP –V20	0.5 FTU	1.5 FTU	5 FTU

*Regulation of the Government of the Slovak Republic No. 354/2006 Coll. laying down the requirements for water intended for human consumption and control of water quality intended for human consumption.

ND – not detectable
LOD – limit of detection
LOQ – limit of quantification

Laboratory analyses have been made in an accredited testing laboratory of the Chemical Analyses Department of the Regional Authority of Public Health with its registered office in Poprad, with the accreditation certificate SNAS Reg. No. 126/S-096 dated 26 November 2009 and concern exclusively the item subject to the tests.

Test results refer only to the tested samples.

The protocol must not be reproduced abbreviated and without consent of the testing laboratory.

Product safety assessment

IZONIL - waterproof and breathable plaster designated for direct contact with drinking water has been examined in the accredited laboratory of the Regional Authority of Public Health with its registered office in Poprad from the point of view of its impact on drinking water quality in accordance with requirements of the Act No. 355/2007 Coll. on Protection, Support and Development of Public Health and on amendments to certain acts and in accordance with requirements of the Decree of the Ministry of Health of the Slovak Republic No. 550/2007 Coll. on details and requirements for products intended for contact with drinking water.

In the examined indicators: water reaction (pH), chemical consumption of oxygen by permanganate (ChSk-M), A^{254} (absorbance), conductivity, NH_4^+, NO_2^-, the content of Cd, Pb, Cr, Al, As, colour, turbidity and sensory assessments the third 72-hour lixivium of the sample left in water at the temperature of 23°C meets the requirements for water intended for human consumption and control of water quality intended for human consumption.

It results from the laboratory examinations that from the point of view of protection of health the product IZONIL - waterproof and breathable plaster manufactured by your company can be recommended for contact with cold drinking water.

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signature

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Department Head