



Institute of Public Health in Ostrava
Centre of Hygienic Laboratories
CAI Accredited Testing Laboratory No. 1393 by ČSN EN ISO/IEC 17025
Partyzánské náměstí 7, 702 00 Ostrava

TEST REPORT No. 72312/2014

Customer : VÍTKOVICE POWER ENGINEERING a.s.
 Ruská 1142/30
 706 00 Ostrava-Vítkovice

Set No. : 29103
Sample Received : 25.8.2014 15:00
Sample Analyzed : 25.8.2014 - 19.9.2014
Ref. No. : ZU/26330/2014
File No. : S-ZU/26330/2014
File code : 4.0.3

Order No. : 89314V1040

Sample name:	White enamel
Sample amount:	8 pc of small plates
Sample Type:	Drinking water
Sampled by:	Customer
Purpose:	contact with drinking water

Test methods			
Parameter		Methods used	Kind
těžké kovy	2	SOP OV 055 (ČL, článek A)	A
Hg	2	SOP OV 200.03 (ČSN 75 7440)	A
Hardness (Ca + Mg), Ca, Mg, SiO ₂	2	SOP OV 201.01 (ČSN EN ISO 11885)	A
Al, As, Cd, Cr, Fe, Ni, Pb	2	SOP OV 201 (ČSN EN ISO 17294-1, ČSN EN ISO 17294-2)	A
TOC	2	SOP OV 307 (ČSN EN 1484)	A
Chloride	2	SOP OV 003 (ČSN EN ISO 15061, ČSN EN ISO 10304-1, ČSN EN ISO 10304-4)	A
Electrical conductivity	2	SOP OV 011 (ČSN EN 27888)	A
pH	2	SOP OV 033 (ČSN ISO 10523)	A
TFN treshold flavour number, TON treshold odour number	2	SOP OV 034 (ČSN EN 1622)	A
Turbidity	2	SOP OV 044.01 (ČSN EN ISO 7027)	A
Colour	2	SOP OV 064.02 (návodů firmy Thermo Scientific)	N
Colour	2	SOP OV 064.02 (návodů firmy Thermo Scientific)	A

Laboratory workplace :

(2) - Analyses performed at Ostrava (Partyzánské nám. 7, 702 00 Ostrava)

Methods in KIND column: "A" accredited test, "N" non-accredited test
 Results deal with tested samples only.

Head of Hygienic Laboratories Center : Doškářová Šárka, RNDr.

Checked by : Němcová Vladimíra, Ing.

Completed by : Němcová Vladimíra, Ing.

Number of pages : 4

Date : 24.2.2015



Zdeňka Dardová
 Ing. Zdeňka Dardová
 Head of Department of Sampling and Servicing

Z D R A V O T N Í Ú S T A V S E S Í D L E M V O S T R A V Ě
C E N T R U M H Y G E N I C K Ý C H L A B O R A T O Ř Í
Z A K Á Z K A č . : 1 5 8 1 1 / 2 0 1 4

R E S U L T S

Results lower than detection limit are marked with <.

P – requirements - according to the Regulation of the Ministry of Health CR No.252/2004

NAME OF PRODUCT

ORIGIN OF PRODUCT:

Produced by: Vítkovice Power Engineering a.s.

TYPE OF SAMPLE, ITS DESCRIPTION:

white colour enamel, which was applied on surface of metal plates,

- dimension of sample 12,08 x 8,10 x 0,4 cm
- s. image documentation

DECLARATION OF USING:

product intended for permanent contact with drinking water

PREPARATION:

Samples were delivered 25.8. 2014.

The edges of plates were covered by wax, to prevent contamination from basic metal material.
Samples pre-treatment: according to the Regulation of the Ministry of Health CR No.409/2005, Annex No. 1.: sample was immersed in tap water for 24 hours, and then washed off with tap water for 60 minutes, last with deionised water. Both parallel sample extracts were prepared by using 4 pieces of plates. The period of leaching was 3 x 72 hours, temperature 23± 2°C. Extracts were analyzed after each period and new batch of demineralised water was put to the sample. Material area (cm²) to volume of diluents water (cm³) corresponds to ratio 1:1. The pre-treatment was started 28.8. 2014., the beginning of leaching 2.9.2014. Conductivity of diluents (demineralised water): 0,53 µS/cm

Average value K²³₇₂ is diminished with the value of blank sample K²³₀.

1st extraction period – after 72+1 hours, temperature of leaching 23+2°C

INDICATOR	K ²³ _{72,1}	K ²³ _{72,1}	K ²³ _{72,1}	K ²³ _{72,1}	P	UNIT	Uncertainty
	blank no. 89275	sample no. 89268	sample no. 89274	AVERAGE VALUE			
		1. multipl. determ.	2. multipl. determ.				
Al	<0,002	<0,002	<0,002	<0,002	0,02	mg/l	
As	<0,1	<0,1	<0,1	<0,1	1,0	µg/l	
Cd	<0,05	<0,05	<0,05	<0,05	0,5	µg/l	
Cr	<0,5	<0,5	<0,5	<0,5	5,0	µg/l	
Ni	<0,5	<0,5	<0,5	<0,5	2,0	µg/l	
Pb	<0,10	<0,10	<0,10	<0,10	1,0	µg/l	
TOC	<0,5	<0,5	<0,5	<0,5	1,0	mg/l	
colour	<2	<2	<2	<2	20	mg/l Pt	
pH	5,9	6,1	6,1	6,1	6,5-9,5		0,3
turbidity	<0,2	<0,2	<0,2	<0,2	0,5	ZF (n)	

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ZAKÁZKA č. : 15811/2014

2nd extraction period – after 72±1 hours, temperature of leaching 23±2°C

INDICATOR	K ²³ _{72,2} blank no. 89278	K ²³ _{72,2} sample no. 89276 1. multipl. determ.	K ²³ _{72,2} sample no. 89277 2. multipl. determ.	K ²³ _{72,2} average value	P	UNIT	Uncertainty
Al	<0,002	<0,002	<0,002	<0,002	0,02	mg/l	
As	<0,1	<0,1	<0,1	<0,1	1,0	µg/l	
Cd	<0,05	<0,05	<0,05	<0,05	0,5	µg/l	
Cr	<0,5	<0,5	<0,5	<0,5	5,0	µg/l	
Ni	<0,5	<0,5	<0,5	<0,5	2,0	µg/l	
Pb	<0,10	<0,10	<0,10	<0,10	1,0	µg/l	
TOC	<0,5	<0,5	<0,5	<0,5	1,0	mg/l	
colour	<2	<2	<2	<2	20	mg/l Pt	
pH	5,7	5,9	5,9	5,9	6,5-9,5		0,3
turbidity	<0,2	<0,2	<0,2	<0,2	0,5	ZF (n)	

3rd extraction period – after 72±1 hours, temperature of leaching 23±2°C

INDICATOR	K ²³ _{72,3} blank no. 89281	K ²³ _{72,3} sample no. 89279 1. multipl. determ.	K ²³ _{72,3} sample no. 89280 2. multipl. determ.	K ²³ _{72,3} average value	P	UNIT	Uncertainty
Al	<0,002	<0,002	<0,002	<0,002	0,02	mg/l	
As	<0,1	<0,1	<0,1	<0,1	1,0	µg/l	
Cd	<0,05	<0,05	<0,05	<0,05	0,5	µg/l	
Cr	<0,5	<0,5	<0,5	<0,5	5,0	µg/l	
Ni	<0,5	<0,5	<0,5	<0,5	2,0	µg/l	
Pb	<0,10	<0,10	<0,10	<0,10	1,0	µg/l	
TOC	<0,5	<0,5	<0,5	<0,5	1	mg/l	
colour	<2	<2	<2	<2	20	mg/l Pt	
pH	5,7	5,9	6,7	6,1	6,5-9,5		0,3
threshold flavour number	1	1	1	1	2		
threshold odour number	1	1	1	1	2		
turbidity	<0,2	<0,2	<0,2	<0,2	0,5		

CALCULATION OF MIGRATION NUMBER:

Al	< 6,67.10 ⁻⁵	mg.dm ⁻² .den ⁻¹
As	< 3,33.10 ⁻⁶	mg.dm ⁻² .den ⁻¹
Cd	< 1,67.10 ⁻⁶	mg.dm ⁻² .den ⁻¹
Cr	< 1,67.10 ⁻⁵	mg.dm ⁻² .den ⁻¹
Ni	< 1,67.10 ⁻⁵	mg.dm ⁻² .den ⁻¹
Pb	< 3,33.10 ⁻⁶	mg.dm ⁻² .den ⁻¹
TOC	< 1,67.10 ⁻²	mg.dm ⁻² .den ⁻¹

EXPERT INTERPRETATION

The tested product meets the requirements under the Decree of the Ministry of Health no. 409/2005 Coll. for the specific indicators for the product coming into permanent contact with drinking water, in all extracts for analyzed indicators. Values of determined elements are under limit of detection.

Lower pH value is caused by using demineralised water. Concentration of all tested parameters does not increase from first to third leaching extract. Value of TOC (total organic carbon) is also under limit of detection in all extracts. The treshhold flavour and odour number values meet the requirements for organoleptic properties.

Conclusion:

The tested material - white enamel - produced by Vítkovice Power Engineering a.s. meets the requirements under the Decree of the Ministry of Health no. 409/2005 Coll. for the products coming into permanent contact with drinking water.

Image documentation:

