

ZEOCEM a.s.
Attn: Marta Mihocova
Bystré 282
09434 Bystré
Slovakia

ANALYTICAL REPORT : IAC17-02647_001

Your reference: URK/2017 18/05/2017

Number of samples: 1

Date of receipt: 18/05/2017

Identification of the samples:

IAC17-02647.001 - Clinoptilolite of sedimentary origin (1g568), batch number ORFFA 24/17 (Additive)

Analytical results:

- B Determination of 2,3,7,8 substituted PCDF's and PCDD's
(HRGC/HRMS; ECO/AV/IAC/011)

- B Determination of Dioxin-like Polychlorinated Biphenyls (PCB)
(HRGC/HRMS; ECO/AV/IAC/017)

The analyses marked with B are Belac ISO17025 accredited (N.005-TEST)

I.A.C., a division of SGS Belgium NV

ANTWERP, 06/06/2017



ISO17025 (N.005-TEST)

Geert De Smet
Lab Operations Manager

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Determination of 2,3,7,8-substituted PCDFs and PCDDs and Dioxin-Like PCBs.						
Sample identification : IAC17-02647.001			Date of analysis: 02-06-2017			
Your reference: Clinoptilolite of sedimentary origin (1g568), batch number ORFFA 24/17						
Component	Concentration (ng/kg)	WHO-TEF	WHO-TEQ (ng/kg) Lowerbound	WHO-TEQ (ng/kg) Middlebound	WHO-TEQ (ng/kg) Upperbound	WHO-TEQ (ng/kg) Reporting Limit
2,3,7,8-TCDF	<0.026	0.1	0.0	0.0013	0.0026	0.0026
2,3,7,8-TCDD	<0.035	1	0.0	0.017	0.035	0.035
1,2,3,7,8-PeCDF	<0.035	0.03	0.0	0.00052	0.0010	0.0010
2,3,4,7,8-PeCDF	<0.035	0.3	0.0	0.0052	0.010	0.010
1,2,3,7,8-PeCDD	<0.035	1	0.0	0.017	0.035	0.035
1,2,3,4,7,8-HxCDF	<0.026	0.1	0.0	0.0013	0.0026	0.0026
1,2,3,6,7,8-HxCDF	<0.026	0.1	0.0	0.0013	0.0026	0.0026
2,3,4,6,7,8-HxCDF	<0.026	0.1	0.0	0.0013	0.0026	0.0026
1,2,3,7,8,9-HxCDF	<0.026	0.1	0.0	0.0013	0.0026	0.0026
1,2,3,4,7,8-HxCDD	<0.026	0.1	0.0	0.0013	0.0026	0.0026
1,2,3,6,7,8-HxCDD	<0.026	0.1	0.0	0.0013	0.0026	0.0026
1,2,3,7,8,9-HxCDD	<0.026	0.1	0.0	0.0013	0.0026	0.0026
1,2,3,4,6,7,8-HpCDF	<0.13	0.01	0.0	0.00065	0.0013	0.0013
1,2,3,4,7,8,9-HpCDF	<0.13	0.01	0.0	0.00065	0.0013	0.0013
1,2,3,4,6,7,8-HpCDD	<0.13	0.01	0.0	0.00065	0.0013	0.0013
OCDF	<0.26	0.0003	0.0	0.000039	0.000078	0.000078
OCDD	0.67	0.0003	0.00020	0.00020	0.00020	0.000078
Sum of dioxins (WHO-PCDD/F-TEQ) (100% d.w.)			0.00020	0.053	0.11	0.11
Sum of dioxins (WHO-PCDD/F-TEQ) (88% d.w.)			0.00018	0.047	0.093	
Measurement Uncertainty (88% d.w.)					0.017	
Non-ortho PCBs						
3,4,4',5'-TeCB (PCB #81)	<0.52	0.0003	0.0	0.000078	0.00016	0.00016
3,3',4,4'-TeCB (PCB #77)	<1.0	0.0001	0.0	0.000052	0.00010	0.00010
3,3',4,4',5'-PeCB (PCB #126)	<0.26	0.1	0.0	0.013	0.026	0.026
3,3',4,4',5,5'-HxCB (PCB #169)	<0.26	0.03	0.0	0.0039	0.0078	0.0078
Mono-ortho PCBs						
2',3,4,4',5'-PeCB (PCB #123)	<1.0	0.00003	0.0	0.000016	0.000031	0.000031
2,3',4,4',5'-PeCB (PCB #118)	37	0.00003	0.0011	0.0011	0.0011	0.00031
2,3,4,4',5'-PeCB (PCB #114)	<1.0	0.00003	0.0	0.000016	0.000031	0.000031
2,3,3',4,4'-PeCB (PCB #105)	<5.2	0.00003	0.0	0.000078	0.00016	0.00016
2,3',4,4',5,5'-HxCB (PCB #167)	<5.2	0.00003	0.0	0.000078	0.00016	0.00016
2,3,3',4,4',5-HxCB (PCB #156)	8.7	0.00003	0.00026	0.00026	0.00026	0.00016
2,3,3',4,4',5'-HxCB (PCB #157)	<1.0	0.00003	0.0	0.000016	0.000031	0.000031
2,3,3',4,4',5,5'-HpCB (PCB #189)	<1.0	0.00003	0.0	0.000016	0.000031	0.000031
Sum of dioxin-like PCBs (WHO-PCB-TEQ) (100% d.w.)			0.0014	0.019	0.036	0.035
Sum of dioxin-like PCBs (WHO-PCB-TEQ) (88% d.w.)			0.0012	0.016	0.031	0.031
Measurement Uncertainty (88% d.w.)					0.0060	
Sum of dioxins and dioxin-like PCBs (WHO-PCDD/F-PCB-TEQ) (100% d.w.)			0.0016	0.072	0.15	
Sum of dioxins and dioxin-like PCBs (WHO-PCDD/F-PCB-TEQ) (88% d.w.)			0.0014	0.063	0.12	
Measurement Uncertainty (88% d.w.)					0.023	
The TEQ values have been calculated using the WHO-2005 toxicity equivalence factors (TEF) according to Martin Van den Berg et al. (Toxicological Sciences, 7 July 2006). Lowerbound concentration : For the calculation of the total concentration, the values, which were lower than the limit of reporting, were regarded as zero. Mediumbound concentration : For the calculation of the total mediumbound concentration, the values, which were lower than the limit of reporting, were regarded as the half of the limit of reporting. Upperbound concentration: For the calculation of the total upperbound concentration, the values, which were lower than the limit of reporting, were regarded as the value of the limit of reporting.						
The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.						
The RSD of the control sample is less than 10%.						

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Recovery standards - 2,3,7,8-substituted PCDFs and PCDDS and Dioxin-Like PCBs.	
Sample identification : IAC17-02647.001 Your reference: Clinoptilolite of sedimentary origin (1g568), batch number ORFFA 24/17	
Component	Recovery 13C extraction standards (%)
13C-2,3,7,8-TCDF	102
13C-2,3,7,8-TCDD	85.8
13C-1,2,3,7,8-PeCDF	93.2
13C-2,3,4,7,8-PeCDF	97.3
13C-1,2,3,7,8-PeCDD	92.5
13C-1,2,3,4,7,8-HxCDF	100
13C-1,2,3,6,7,8-HxCDF	100
13C-2,3,4,6,7,8-HxCDF	103
13C-1,2,3,7,8,9-HxCDF	108
13C-1,2,3,4,7,8-HxCDD	96.6
13C-1,2,3,6,7,8-HxCDD	93.3
13C-1,2,3,4,6,7,8-HpCDF	103
13C-1,2,3,4,7,8,9-HpCDF	92.2
13C-1,2,3,4,6,7,8-HpCDD	102
13C-OCDF	91.1
13C-OCDD	93.3
Non-Ortho PCBs	
13C-3,4,4',5'-TeCB (PCB #81)	91.1
13C-3,3',4,4'-TeCB (PCB #77)	91.4
13C-3,3',4,4',5'-PeCB (PCB #126)	94.2
13C-3,3',4,4',5,5'-HxCB (PCB #169)	113
Mono-Ortho PCBs	
13C-2',3,4,4',5'-PeCB (PCB #123)	88.6
13C-2,3',4,4',5'-PeCB (PCB #118)	88.1
13C-2,3,4,4',5'-PeCB (PCB #114)	93.9
13C-2,3,3',4,4'-PeCB (PCB #105)	92.9
13C-2,3',4,4',5,5'-HxCB (PCB #167)	88.9
13C-2,3,3',4,4',5-HxCB (PCB #156)	90.5
13C-2,3,3',4,4',5-HxCB (PCB #157)	89.4
13C-2,3,3',4,4',5,5'-HpCB (PCB #189)	98.7