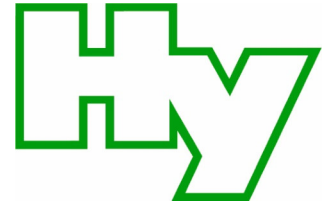


Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie

Director: Dr. Thomas-Benjamin Seiler

Legal Entity: Verein des Hygiene-Instituts des Ruhrgebiets e.V.



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Our reference: A-386993-24-Bi
Contact person: Mr Bien

Gelsenkirchen, den 08.03.2021

Page 1 of 3

Building material "Conduct Gel"

here: **Water-hygienic testing and evaluation taking into account
of the Technical Rules of LAGA No. 20**

Your letters dated 15.02.2021 and 26.03.2024
and our test report A-318607-19-Bi_en dated 04.10.2019

Dear Sir or Madam,

In accordance with the order, we have analysed the sample of the building material with the designation "Conduct Gel" sent with the above letter with regard to the composition (substance analysis) in accordance with Table II.1.2-2 of LAGA Notice M20 and with regard to the water-soluble constituents (trough eluate in accordance with LAGA EW 98 T) based on LAGA Table II.1.2-3 and compared the results with the specifications of the Technical Rules of LAGA No. 20 for orientation purposes.

Compared to the last examination of the building material in our company (cf. A-318607-19-Bi_en of 04.10.2019), it should be checked to what extent a comparison with the results from the previous water hygiene tests documents a consistent quality.

Our general terms and conditions apply (www.hyg.de). The validity of our test report assumes a coexisting quality of the test material, product composition and processing. The certificate shall not be reproduced, except in full, without written approval of the Institute.

Legal Entity: Verein des Hygiene-Instituts des Ruhrgebiets e.V., **Register:** VR 519 Local Court Gelsenkirchen (Germany); **VAT ID:** DE125018356 **Directorate:** Prof. Dr. Jürgen Kretschmann (Head), Dr. Emanuel Grün, Dr. Dirk Waider, Joachim Löchte, Dr. Thomas-Benjamin Seiler (Executive Member).

In addition to the substance analysis on the loose building material - due to the cement-free nature of the bedding material - a sample with a test specimen mass of approx. 2350 g was filled into a water-permeable "Bullflex®" sleeve on the applicator side to determine the eluate behaviour. The supporting function of the fabric prevented excessive disintegration of the building material during elution. In order to prevent the results from being influenced by the sleeve material, an elution was also carried out with an unfilled sleeve fabric with the same eluate ratio of 1 + 10 (here: 85 g in 0.85 l) and the results obtained in this way (HY BookCode A2021-4256) were offset as blank values against the test results of the building material sample or deducted.

Examination results

1. Substance analysis

On the basis of the available test results, the quality of the building material with the designation "Conduct Gel" is largely to be classified as inconspicuous with regard to the constituents tested here. Applying the LAGA criteria, the test material - irrespective of the only slightly alkaline pH value - is formally assigned the classification value Z 1.1.

2. Eluate analyses

With regard to the elutable constituents, it should be noted that these are only present in inconspicuous concentrations. No relevant heavy metal contents, including chromium VI compounds, can be detected in the construction material eluate obtained; the contents for the elements mentioned were below the respective limit of determination. The measured value for the electrical conductivity (EL: 61 μScm^{-1}) proves that this is not higher than in leaching of anthropogenically unaffected soils.

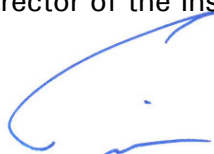
The water is also characterised by a slight alkalinity (pH value = 9.2). This fact can also be classified as inconspicuous.

Assessment

Taking into account the available test results, it can be stated that the building material "**Conduct Gel**" can still be **classified as harmless** from a water hygiene point of view. The pH value shift and salinisation of any groundwater or surface water that may be expected in the course of construction work when using cement-containing building materials cannot be detected in the present case.

With reference to the LAGA Guideline No. 20, Tables II.1.2-2 and II.1.2-3, the sample of the building material "Conduct Gel" examined by us can - on the basis of the solids analysis - be classified overall in RCL recycling class Z 1.1. From a purely water-hygienic point of view, the RCL recovery class Z 0 can be determined when considering the eluate findings. Compared to the last investigation, a constant material quality is recognisable.

Best regards
The Director of the Institute
p.p.



Dipl.-Umweltwiss. Sebastian Bien
Deputy Head of Department
Environment and Consumer Protection

Cebo Holland B.V.
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Sample from 16.02.2021
 HY-Code A2021-4255

Product "Conduct Gel"

here: Investigation according to Table II.1.2-2, Techn. rules d. LAGA "M 20

Parameters	Sample		Conduct Gel	Assignment value			
				Z 0	Z 1.1	Z 1.2	Z 2
Solids analysis							
Water content	W _w	%	1.3	-	-	-	-
Dry residue	W _T	%	98.7	-	-	-	-
pH-value			8.71	5.5 - 8 / -*	5.5 - 8 / -*	5 - 9 / -*	-
Copper	Cu	mg/kg	21	40	100	200	600
Zinc	Zn	mg/kg	27	120	300	500	1500
Nickel	Ni	mg/kg	21	40	100	200	600
Chromium	Cr	mg/kg	12	50	100	200	600
Cadmium	Cd	mg/kg	< 0.20	0.6	1	3	10
Mercury	Hg	mg/kg	0.04	0.3	1	3	10
Lead	Pb	mg/kg	5.0	100	200	300	1000
Arsenic	As	mg/kg	2.1	20	30	50	150
Thallium	Tl	mg/kg	< 0.10	0.5 / -*	1 / -*	3 / -*	10 / -*
Cyanide. total.	CN	mg/kg	< 0.50	1 / -*	10 / -*	30 / -*	100 / -*
Σ Polycyclene (US-EPA)**		mg/kg	0.03	1	5 (20)*	15 (50)*	20/75*(100)*
of which: Benzo(a)pyrene		mg/kg	< 0.01	-	< 0.5	< 1.0	-
of which:Naphthalene		mg/kg	0.03	-	< 0.5	< 1.0	-
Hydrocarbons		mg/kg	160	100	300	500	1000
Benzene		mg/kg	< 0.050				
Toluene		mg/kg	< 0.050				
Ethylbenzene		mg/kg	< 0.050				
m + p - Xylol		mg/kg	< 0.050				
o-Xylol		mg/kg	< 0.050				
Σ BTEX		mg/kg	n.n.	< 1 / -*	1 / -*	3 / -*	5 / -*
Dichloromethane		mg/kg	< 0.050				
trans-1.2-dichloroethene		mg/kg	< 0.050				
1.1-dichloroethane		mg/kg	< 0.050				
cis-1.2-dichloroethene		mg/kg	< 0.050				
Trichlormethane		mg/kg	< 0.050				
1.1.1-Trichlorethane		mg/kg	< 0.050				
1.2-Dichlorethane		mg/kg	< 0.050				
Tetrachlormethane		mg/kg	< 0.050				
Trichlorethene		mg/kg	< 0.050				
1.1.2-Trichlorethane		mg/kg	< 0.050				
1.3-Dichloropropane		mg/kg	< 0.050				
Tetrachlorethene		mg/kg	< 0.050				
Σ LHKW		mg/kg	n.n.	< 1 / -*	1 / -*	3 / -*	5 / -*
Extrah. Org. Halogen-compounds	EOX	mg/kg	< 1.0	1	3	10 / 5*	15 / 10*
Σ Polychlorinated Biphenyls***	PCB	mg/kg	n.n.	0.02	0.1	0.5	1
Total organic carbon	TOC	%	1.0	-	-	-	-

Unless otherwise stated, the analytical results refer to the sample in the undried state.

* deviating standard values for recycled building materials / non-processed building rubble; in individual cases, deviations may be made up to the value stated in brackets..

** Limit of determination per individual substance: 0.01 mg/kg

*** Sum of PCB 28, 52, 101, 138, 153 180, limit of determination per individual substance: 0.001 mg/kg

n.n. = not detectable.

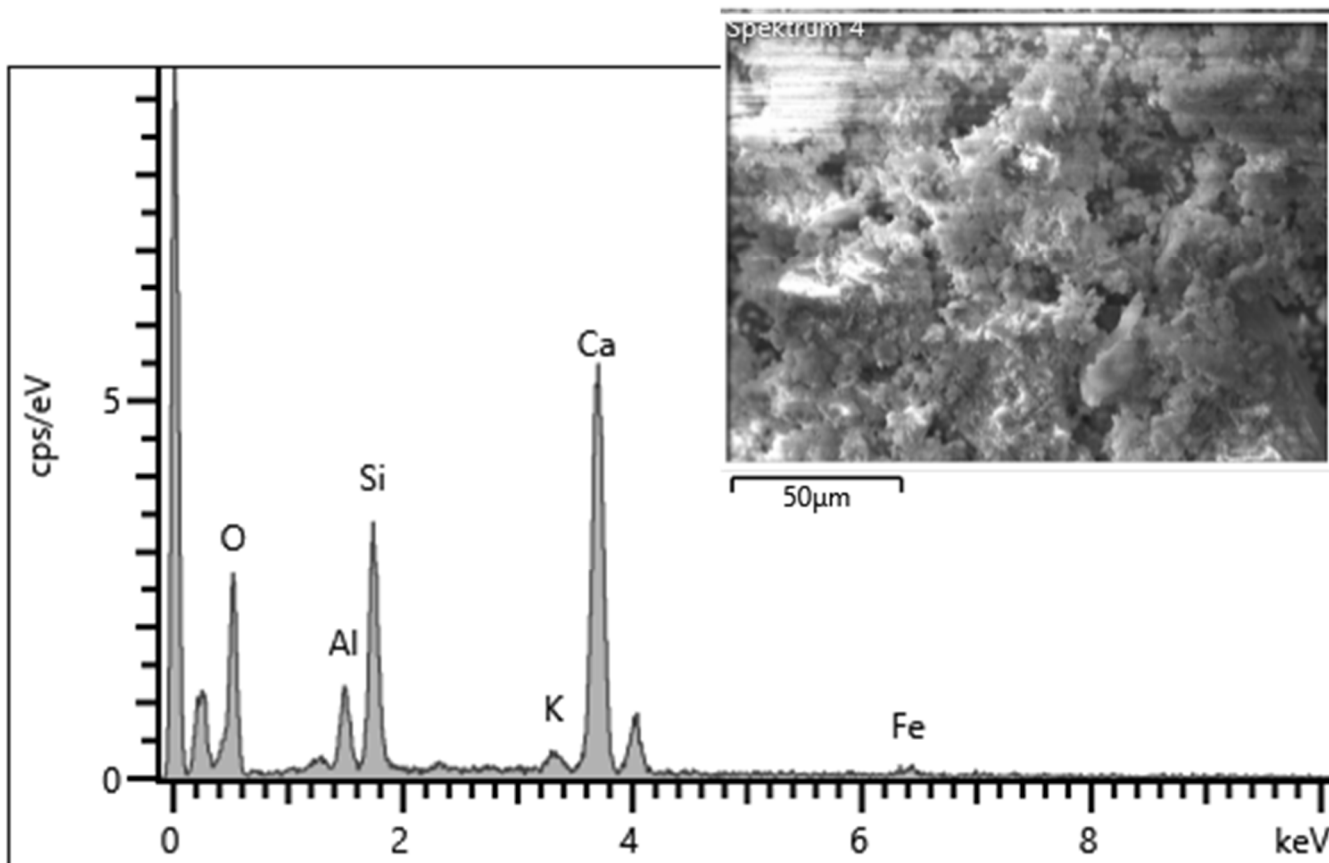
Cebo Holland B.V.
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 Niederlande

Sample from 16.02.2021
 HY-Code A2021-4255

Product "Conduct Gel"

here: Overview analysis according to DIN ISO 22309:2015-11

Elektronenbild 4



A2021-4255			
Element	Mass %	Oxide	Oxide %
O	37.3		
Al	4.93	Al ₂ O ₃	9.31
Si	13.98	SiO ₂	29.90
K	1.38	K ₂ O	1.66
Ca	40.74	CaO	57.00
Fe	1.65	FeO	2.12
Total:	100.00		100.00

Cebo Holland B.V.
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Sample from 19.02.2016
 HY-Code A2016-3452
 Data from A-318607-19-Bi_en

Building material "Conduct Gel"

here: Investigation in accordance with the Technical Rules of the LAGA

Parameters	Sample	Eluate Conduct Gel	Assignment value			
			Z 0	Z 1.1	Z 1.2	Z 2
<i>Eluate analysis (DIN 38 414 - S 4)</i>						
Colour		greyish				
Odour		faintly musty				
pH-value		8.2	6.5 – 9 7.0 – 12.5*	6.5 – 9 7.0 - 12.5*	6 – 12 7.0 - 12.5*	5.5 – 12 7.0 - 12.5*
Electr. conductivity	μScm^{-1}	78	500	500 / 1500*	1000 / 2500*	1500 / 3000*
Chloride	Cl ⁻ mg/l	< 5.0	10	10 / 20*	20 / 40*	30 / 150*
Sulphate	SO ₄ ²⁻ mg/l	15	50	50 / 150*	100 / 300*	150 / 600*
Cyanide, total	CN ⁻ mg/l	< 0.01	< 0.01 / -*	0.01 / -*	0.05 / -*	0.10** / -*
Cyanide, l.fr.	CN ⁻ mg/l	< 0.01	-	-	-	< 0.05** / -*
Copper	Cu mg/l	0.002	0.05	0.05	0.15	0.30 / 0.200*
Nickel	Ni mg/l	0.001	0.04	0.05	0.15 / 0.10*	0.20 / 0.10*
Chromium	Cr mg/l	< 0.001	0.015	0.03	0.075	0.15 / 0.10*
Cadmium	Cd mg/l	< 0.0001	0.002	0.002	0.005	0.010/0.005*
Mercury	Hg mg/l	< 0.0002	0.0002	0.0002	0.0010	0.0020
Lead	Pb mg/l	< 0.001	0.02	0.04	0.10	0.20 / 0.10*
Arsenic	As mg/l	0.001	0.010	0.010	0.040	0.060/0.050*
Chromium VI	Cr ⁶⁺ mg/l	< 0.010	-	-	-	-
Phenol index	mg/l	< 0.010	-	-	-	-
DOC	C mg/l	3.5	-	-	-	-

* deviating guide values for recycled building materials / unprocessed building rubble

** Recycling according to Z 2 is permissible if the concentration of CN- l.fr. is < 0.05 mg/l for CN- tot. > 0.10 mg/l..

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Sample from 16.02.2021
 HY-Code A2021-4255

**Product "Conduct Gel" in "Bullflex®"-sleeve (weighed-in quantity: 2451 g in 24.51 l)
 here: Investigation according to Table II.1.2-3, Techn. rules d. LAGA "M 20**

Parameters	Sample	Eluate Conduct Gel	Assignment value			
			Z 0	Z 1.1	Z 1.2	Z 2
<i>Eluate analysis (DIN 38 414 - S 4)</i>						
Colour		colourless				
Odour		without				
pH value		9.2	6.5 – 9 7.0 – 12.5*	6.5 – 9 7.0 - 12.5*	6 – 12 7.0 - 12,5*	5.5 – 12 7.0 - 12.5*
Electr. conductivity	μScm^{-1}	61	500	500 / 1500*	1000 / 2500*	1500 / 3000*
Chloride	Cl ⁻ mg/l	< 5.0	10	10 / 20*	20 / 40*	30 / 150*
Sulphate	SO ₄ ²⁻ mg/l	14	50	50 / 150*	100 / 300*	150 / 600*
Cyanide, total	CN ⁻ mg/l	< 0.01	< 0.01 / -*	0.01 / -*	0.05 / -*	0.10** / -*
Cyanide. l.fr.	CN ⁻ mg/l	< 0.01	-	-	-	< 0.05** / -*
Copper	Cu mg/l	< 0.001	0.05	0.05	0.15	0.30 / 0.200*
Zinc	Zn mg/l	< 0.005	0.10	0.10	0.30	0.60 / 0.40*
Nickel	Ni mg/l	< 0.001	0.04	0.05	0.15 / 0.10*	0.20 / 0.10*
Chromium	Cr mg/l	< 0.001	0.015	0.03	0.075	0.15 / 0.10*
Cadmium	Cd mg/l	< 0.0001	0.002	0.002	0.005	0.010/0.005*
Mercury	Hg mg/l	< 0.0002	0.0002	0.0002	0.0010	0.0020
Lead	Pb mg/l	< 0.001	0.02	0.04	0.10	0.20 / 0.10*
Arsenic	As mg/l	< 0.001	0.010	0.010	0.040	0.060/0.050*
Thallium	Tl mg/l	< 0.001	< 0.001	0.001	0.003	0.005
Barium	Ba mg/l	0.004	--	--	--	--
Molybdenum	Mo mg/l	< 0.001	--	--	--	--
Antimony	Sb mg/l	< 0.001	--	--	--	--
Selenium	Se mg/l	0.001	--	--	--	--
Phenol index	mg/l	< 0.010	< 0.010	0.010	0.050	0.100
Chromium VI	Cr ⁶⁺ mg/l	< 0.005	--	--	--	--
dissolved organic carbon	DOC mg/l	0.4	--	--	--	--

* deviating guideline values for recycled building materials / non-processed building rubble
 ** Recycling as per Z 2 is permissible if the concentration of CN- l.fr. is < 0.05 mg/l for CN- ges. > 0.10 mg/l.

Examination methods "LAGA 2003"

Parameters	Method
Water content	DIN ISO 11465 (12-1996)
Dry residue	DIN ISO 11465 (12-1996)
pH-value	DIN EN ISO 10523 (C5) (04-2012)
Aqua regia digestion	DIN EN 13346 (S 7a) (04-2001)
Copper	DIN EN ISO 17294-2 (E 29) (01-2017)
Zinc	DIN EN ISO 17294-2 (E 29) (01-2017)
Nickel	DIN EN ISO 17294-2 (E 29) (01-2017)
Chromium	DIN EN ISO 17294-2 (E 29) (01-2017)
Cadmium	DIN EN ISO 17294-2 (E 29) (01-2017)
Mercury	DIN EN ISO 12846 (E 12) (08-2012)
Lead	DIN EN ISO 17294-2 (E 29) (01-2017)
Arsenic	DIN EN ISO 17294-2 (E 29) (01-2017)
Thallium	DIN EN ISO 17294-2 (E 29) (01-2017)
Cyanide, total	DIN EN ISO 14403-2 (D3) (07-2002) / LAGA CN 2/79 (12-1983)
Σ Polycyclic (US EPA) Hydrocarbons	DIN ISO 18287 (05-2006)
Σ BTEX	DIN EN 14039 (01-2005) in conjunction with LAGA - Guideline KW/04 (12-2009)
Σ LHKW	DIN EN ISO 22155 (07-2006)/ Manual of Contaminated Sites HLUG 7, Part 4 (08-2000)
Extrah. Org. halogen compounds	Manual on Contaminated Sites HLUG 7, Part 4 (08-2000)
Σ Polychlorinated biphenyls	DIN 38414-S 17 (11-1989)
Eluate approach	DIN 38414 - S 20 (01-1996) / DIN EN 15308 (05-2008)
Colour	DIN 38 414 - S4 (10-1984)
Odour	organoleptic
Electr. conductivity	organoleptic
Chloride	DIN EN 27888 (11-1993)
Sulphate	DIN EN ISO 10304-1 (D 20) (07-2009)
Cyanide, total	DIN EN ISO 10304-1 (D 20) (07-2009)
Cyanide, l.fr.	DIN EN ISO 14403-2 (D3) (07-2002)
Phenol index	DIN EN ISO 14403-2 (D3) (07-2002)
	DIN EN ISO 14402 (12-1999) / DIN 38409 H 16 (06-1984)