

Further notification see: www.huk-umweltlabor.de

Umweltlabor GmbH

Customer 25071

Cebo Holland BV

Westerduinweg 1
NL-1976 BV IJmuiden

Sample Arrival Date 17.01.2014

Contract No. A140022

Sample No. P201400868

Sampler / sent by Auftraggeber / per Post

Analysis done by HuK Umweltlabor GmbH

Analysis Date 17.01.2014 - 29.01.2014

Contact	FAX	Telephone
Herr Dompelaar	0031-255-546202	0031-255-546262

Sample Identification Tunnelgel Plus - Umweltunbedenklichkeit

Origin Auftraggeber

Place of Sampling Auftraggeber

Remarks

Results of Analysis

Parameter	Result	Units	SOP	Place	2. SOP	
Appearance	Pulver			4*	Wen	
Color	beige		DIN EN ISO 7887	1*	Wen	
Smell	ohne		DEV B 1/2	1*	Wen	
Consistency	fest				Wen	
Moisture content (105 °C)	10,4	%	DIN EN 14346	1*	Wen	
Dry residue (105 °C)	89,7	%	DIN EN 14346	1*	Wen	
pure density	2,64	g/cm ³	DIN 66137-2	1*	Wen	
Sintering temperature	885	°C	DIN 51730	1*	Wen	
Softening temperature	1196	°C	DIN 51730	1*	Wen	
Sphere temperature	n.b.	°C	DIN 51730	1*	Wen	
Hemisphere temperature	1351	°C	DIN 51730	1*	Wen	
Flow temperature	1482	°C	DIN 51730	1*	Wen	
GC-MS-Screening (Hexane)	ohne Befund		i.A. AA-HuK-009		Wen	
GC-MS-Screening (Methanol)	ohne Befund		i.A. AA-HuK-009		Wen	
HS-GC-MS/FID 80 °C	ohne Befund		DIN EN ISO 10301	2*	Wen	
Hydrocarbon oil index C10-C20 (dry substance)	<10	mg/kg	DIN EN 14039	1*	Wen	
Hydrocarbon oil index C20-C40 (dry substance)	<10	mg/kg	DIN EN 14039	1*	Wen	
Hydrocarbon oil index (dry substance)	<20	mg/kg	DIN EN 14039	1*	Wen	
Oil index by solvent extraction	<0,01	%	LAGA KW/04	1*	Wen	
Sum benzene and derivates (dry substance)	<1	mg/kg	E DIN ISO 22155	1*	Wen	DIN 38407-9
Highly volatile halogenated hydrocarbons (dry substance)	<1	mg/kg	E DIN ISO 22155	1*	Wen	DIN EN ISO 10301
Naphthalene	<0,01	mg/kg	DIN ISO 18287	1*	Wen	DIN EN 15527
Benzo(a)pyrene	<0,01	mg/kg	DIN ISO 18287	1*	Wen	DIN EN 15527
Sum of 16 EPA PAH's (dry substance)	<1	mg/kg	DIN ISO 18287	1*	Wen	DIN EN 15527
Sum of PCB's accor. DIN (dry substance)	<0,01	mg/kg	DIN 38414-20	1*	Wen	DIN EN 15308
EOX (dry substance)	<1	mg/kg	DIN 38414-17	1*	Wen	
Total Cyanide (dry substance)	<1	mg/kg	DIN ISO 17380	1*	Wen	
Carbon, total (dry substance)	1,42	%	ISO 15350	2*	Wen	
Sulphur, total (dry substance)	0,053	%	DIN 51724-3	1*	Wen	ISO 15350
Hydrogen (dry substance)	0,72	%	DIN 51732	1*	Wen	

Further notification see: www.huk-umweltlabor.de

Umweltlabor GmbH

Customer 25071

Cebo Holland BV

Westerduinweg 1
NL-1976 BV IJmuiden**Sample Arrival Date** 17.01.2014**Contract No.** A140022**Sample No.** P201400868**Sampler / sent by** Auftraggeber / per Post**Analysis done by** HuK Umweltlabor GmbH**Analysis Date** 17.01.2014 - 29.01.2014

Contact	FAX	Telephone
Herr Dompelaar	0031-255-546202	0031-255-546262

Sample Identification Tunnelgel Plus - Umweltunbedenklichkeit**Origin** Auftraggeber**Place of Sampling** Auftraggeber

Parameter	Result	Units	SOP		Place	2. SOP
Nitrogen (dry substance)	0,052	%	DIN ISO 13878	1*	Wen	
Oxygen	46,4	%	DIN EN 10276-2	2*	Wen	
Total organic carbon (dry substance)	0,61	%	DIN EN 13137	1*	Wen	DIN ISO 10694
Ignition residue (900°C)	92,4	%	DIN 51081	1*	Wen	
Loss on ignition (900°C)	7,61	%	DIN 51081	1*	Wen	
HCl/HNO ₃ -acid digestion (dry substance)	ja		DIN EN 13346	1*	Wen	DIN EN 13657
ICP-OES-Screening (dry substance)	ja		i.A. AA-HuK-012		Wen	
Aluminium (dry substance)	7900	mg/kg	DIN EN ISO 11885	1*	Wen	
Antimony (dry substance)	<10	mg/kg	DIN EN ISO 11885	1*	Wen	
Arsenic (dry substance)	5,01	mg/kg	DIN EN ISO 11885	1*	Wen	
Barium (dry substance)	408	mg/kg	DIN EN ISO 11885	1*	Wen	
Beryllium (dry substance)	<0,5	mg/kg	DIN EN ISO 11885	1*	Wen	
Lead (dry substance)	24,0	mg/kg	DIN EN ISO 11885	1*	Wen	
Boron (dry substance)	12,7	mg/kg	DIN EN ISO 11885	1*	Wen	
Cadmium (dry substance)	<0,1	mg/kg	DIN EN ISO 11885	1*	Wen	
Chromium (dry substance)	<10	mg/kg	DIN EN ISO 11885	1*	Wen	
Chromium (VI) (dry substance)	<0,5	mg/kg	DIN 38405-24	2*	Wen	
Iron (dry substance)	8670	mg/kg	DIN EN ISO 11885	1*	Wen	
Cobalt (dry substance)	4,39	mg/kg	DIN EN ISO 11885	1*	Wen	
Copper (dry substance)	22,5	mg/kg	DIN EN ISO 11885	1*	Wen	
Manganese (dry substance)	620	mg/kg	DIN EN ISO 11885	1*	Wen	
Molybdenum (dry substance)	<1,5	mg/kg	DIN EN ISO 11885	1*	Wen	
Nickel (dry substance)	<10	mg/kg	DIN EN ISO 11885	1*	Wen	
Phosphor (dry substance)	1130	mg/kg	DIN EN ISO 11885	1*	Wen	
Mercury (dry substance)	<0,1	mg/kg	DIN EN ISO 12846	2*	Wen	DIN EN 1483
Selenium (dry substance)	<1	mg/kg	DIN EN ISO 11885	1*	Wen	
Thallium (dry substance)	<0,1	mg/kg	DIN EN ISO 11885	1*	Wen	
Zinc (dry substance)	19,5	mg/kg	DIN EN ISO 11885	1*	Wen	
Tin (dry substance)	<3	mg/kg	DIN EN ISO 11885	1*	Wen	
Extraction with ammonium nitrate	ja		DIN 19730	1*	Wen	
Arsenic (NH ₄ NO ₃ extraction)	<0,03	mg/kg	DIN EN ISO 11885	1*	Wen	
Lead (NH ₄ NO ₃ extraction)	<0,03	mg/kg	DIN EN ISO 11885	1*	Wen	
Cadmium (NH ₄ NO ₃ extraction)	<0,003	mg/kg	DIN EN ISO 11885	1*	Wen	

Further notification see: www.huk-umweltlabor.de

Umweltlabor GmbH

Customer 25071

Cebo Holland BV

Westerduinweg 1
NL-1976 BV IJmuiden**Sample Arrival Date** 17.01.2014**Contract No.** A140022**Sample No.** P201400868**Sampler / sent by** Auftraggeber / per Post**Analysis done by** HuK Umweltlabor GmbH**Analysis Date** 17.01.2014 - 29.01.2014**Contact**

Herr Dompelaar

FAX

0031-255-546202

Telephone

0031-255-546262

Sample Identification Tunnelgel Plus - Umweltunbedenklichkeit**Origin** Auftraggeber**Place of Sampling** Auftraggeber

Parameter	Result	Units	SOP		Place	2. SOP
Copper (NH ₄ NO ₃ extraction)	0,058	mg/kg	DIN EN ISO 11885	1*	Wen	
Nickel (NH ₄ NO ₃ extraction)	<0,03	mg/kg	DIN EN ISO 11885	1*	Wen	
Thallium (NH ₄ NO ₃ extraction)	<0,003	mg/kg	DIN EN ISO 11885	1*	Wen	
Zinc (NH ₄ NO ₃ extraction)	0,065	mg/kg	DIN EN ISO 11885	1*	Wen	
Leaching by water	ja		DIN 38414-4	1*	Wen	DIN EN 12457-4
pH-value (Leaching)	9,96		DIN EN ISO 10523	1*	Wen	DIN 38404-5
Electrical conductivity (25°C) (Leaching)	193	µS/cm	DIN EN 27888	1*	Wen	
Water soluble amount	0,97	%	DIN 38409-1	1*	Wen	
Water soluble amount	96,5	mg/L	DIN EN 15216	1*	Wen	
Cyanide, free (Leaching)	<0,005	mg/L	DIN EN ISO 14403	1*	Wen	
IC-screening (Leaching)	ja		i.A. AA-HuK-014		Wen	
Bromide-IC (Leaching)	<0,10	mg/L	DIN EN ISO 10304-1	1*	Wen	
Chloride-IC (Leaching)	8,59	mg/L	DIN EN ISO 10304-1	1*	Wen	
Fluoride-IC (Leaching)	<0,10	mg/L	DIN EN ISO 10304-1	1*	Wen	
Nitrate-IC (Leaching)	0,45	mg/L	DIN EN ISO 10304-1	1*	Wen	
Nitrite-IC (Leaching)	<0,10	mg/L	DIN EN ISO 10304-1	1*	Wen	
Phosphate-IC (Leaching)	<0,10	mg/L	DIN EN ISO 10304-1	1*	Wen	
Sulphate-IC (Leaching)	5,75	mg/L	DIN EN ISO 10304-1	1*	Wen	
AOX (Leaching)	<0,3	mg/L	DIN EN ISO 9562	1*	Wen	
Phenole index (Leaching)	<0,1	mg/L	DIN EN ISO 14402	1*	Wen	
TOC (Leaching)	52,9	mg/L	DIN EN 1484	1*	Wen	
Ammonium (Leaching)	<0,05	mg/L	DIN EN ISO 11732	1*	Wen	
ICP-OES-screening (Leaching)	10g/L		i.A. AA-HuK-012		Wen	
Aluminium (Leaching)	0,030	mg/L	DIN EN ISO 11885	1*	Wen	
Antimony (Leaching)	<0,005	mg/L	DIN EN ISO 11885	1*	Wen	
Arsenic (Leaching)	0,011	mg/L	DIN EN ISO 11885	1*	Wen	
Barium (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Lead (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Boron (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Cadmium (Leaching)	<0,001	mg/L	DIN EN ISO 11885	1*	Wen	
Calcium (Leaching)	0,72	mg/L	DIN EN ISO 11885	1*	Wen	
Chromium, total (Leaching)	<0,005	mg/L	DIN EN ISO 11885	1*	Wen	
Chromium(VI) (leaching)	<0,005	mg/L	DIN 38405-24	1*	Wen	

Further notification see: www.huk-umweltlabor.de

Umweltlabor GmbH

Customer 25071

Cebo Holland BV

Westerduinweg 1
NL-1976 BV IJmuiden**Sample Arrival Date** 17.01.2014**Contract No.** A140022**Sample No.** P201400868**Sampler / sent by** Auftraggeber / per Post**Analysis done by** HuK Umweltlabor GmbH**Analysis Date** 17.01.2014 - 29.01.2014

Contact	FAX	Telephone
Herr Dompelaar	0031-255-546202	0031-255-546262

Sample Identification Tunnelgel Plus - Umweltunbedenklichkeit**Origin** Auftraggeber**Place of Sampling** Auftraggeber

Parameter	Result	Units	SOP		Place	2. SOP
Cobalt (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Iron (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Potassium (Leaching)	0,77	mg/L	DIN EN ISO 11885	1*	Wen	
Copper (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Magnesium (Leaching)	0,075	mg/L	DIN EN ISO 11885	1*	Wen	
Manganese (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Molybdenum (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Sodium (Leaching)	40,9	mg/L	DIN EN ISO 11885	1*	Wen	
Nickel (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Phosphor, total (Leaching)	0,029	mg/L	DIN EN ISO 11885	1*	Wen	
Mercury AAS (Leaching)	<0,0001	mg/L	DIN EN ISO 12846	1*	Wen	DIN EN 1483
Selenium (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Thallium (Leaching)	<0,001	mg/L	DIN EN ISO 11885	1*	Wen	
Zinc (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
Tin (Leaching)	<0,01	mg/L	DIN EN ISO 11885	1*	Wen	
XRAY-Screening (ignition residue)	Ja		DIN 51001	1*	Wen	
Aluminium oxide (LOI)	19,0	%	DIN EN ISO 12677	1*	Wen	
Barium oxide (LOI)	0,098	%	DIN EN ISO 12677	1*	Wen	
Lead oxide (LOI)	<0,01	%	DIN EN ISO 12677	1*	Wen	
Calcium oxide (LOI)	3,91	%	DIN EN ISO 12677	1*	Wen	
Chromium(III) oxide (LOI)	<0,01	%	DIN EN ISO 12677	1*	Wen	
Iron(III) oxide (LOI)	5,58	%	DIN EN ISO 12677	1*	Wen	
Potassium oxide (LOI)	1,42	%	DIN EN ISO 12677	1*	Wen	
Copper oxide (LOI)	<0,01	%	DIN EN ISO 12677	1*	Wen	
Magnesium oxide (LOI)	2,45	%	DIN EN ISO 12677	1*	Wen	
Manganese(III) oxide (LOI)	0,14	%	DIN EN ISO 12677	1*	Wen	
Sodium oxide (LOI)	3,12	%	DIN EN ISO 12677	1*	Wen	
Nickel oxide (LOI)	0,012	%	DIN EN ISO 12677	1*	Wen	
Phosphor(V) oxide (LOI)	0,32	%	DIN EN ISO 12677	1*	Wen	
Sulphur(VI) oxide (LOI)	0,11	%	DIN EN ISO 12677	1*	Wen	
Silicon(IV) oxide (LOI)	63,0	%	DIN EN ISO 12677	1*	Wen	
Strontium oxide (LOI)	0,084	%	DIN EN ISO 12677	1*	Wen	
Titanium(IV) oxide (LOI)	0,73	%	DIN EN ISO 12677	1*	Wen	



Analysis Report No.: B140802

Further notification see: www.huk-umweltlabor.de

Umweltlabor GmbH

Customer 25071	Sample Arrival Date 17.01.2014
Cebo Holland BV	Contract No. A140022
	Sample No. P201400868
Westerduinweg 1	Sampler / sent by Auftraggeber / per Post
NL-1976 BV IJmuiden	Analysis done by HuK Umweltlabor GmbH
	Analysis Date 17.01.2014 - 29.01.2014

Contact	FAX	Telephone
Herr Dompelaar	0031-255-546202	0031-255-546262

Sample Identification Tunnelgel Plus - Umweltunbedenklichkeit**Origin** Auftraggeber**Place of Sampling** Auftraggeber

Parameter	Result	Units	SOP		Place	2. SOP
Vanadium(V)-oxide (LOI)	<0,01	%	DIN EN ISO 12677	1*	Wen	
Zinc oxide (LOI)	0,012	%	DIN EN ISO 12677	1*	Wen	
Zirconium(IV) oxide (LOI)	0,042	%	DIN EN ISO 12677	1*	Wen	
Sum of oxides	99,8	%	Berechnung	1*	Wen	

1* Accredited test method: 1*: Yes; 2*: Yes, with modifications; 3*: Yes, Subcontracted // 4*: No 5*: External laboratory with accreditation

Place of determination: Wen: Laboratory Wenden, Wtz: Laboratory Wetzlar

Incorrectly provided samples can affect the test results. The results include measurement uncertainties, which may be requested if required. The analysis results refer only to the examined samples and may only be reproduced with the permission of the HuK Umweltlabor GmbH.

HuK Umweltlabor GmbH, Hünsborn 30.01.2014

Dr. Lars Füchtjohann
HuK Umweltlabor GmbH