

Ruhr District Institute of Hygiene

Institute for environmental hygiene and toxicology

Director: Prof. Dr.rer.nat. Lothar Dunemann

Support organisation: The Society for the Control of Common Diseases in Ruhr District (NPO)

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Gelsenkirchen, 11.09.2013

Oil binder 'Oilex'

Here: Industrial medicinal assessment as well as environment-technical test in accordance with the amendment of Oil Binder Regulation dated 16.06.1998

Your letter dated 23.08.2013, Mr. Stefan Brodner

Respected Sir/Madam,

With aforementioned letter, you assigned us the industrial medicinal assessment and environment-technical test and evaluation of the oil binders named "Oilex" marketed by your enterprise.

The evaluation conducted here took place based on the notification by the Federal Minister for Environment, Nature Conservation and Nuclear Safety dated 12.03.1990 (GMBI no. 18, Pg 355 and following) as well as the amendment of the aforementioned notification dated 16.06.1998 (GMBI15, Pg 312 and 3213).

The results of our tests and evaluations are applicable for the examined test objects and are subject to the statutory regulations applicable at the time of test. Without our explicit permission, this document may be published or reproduced only in complete and unaltered form.

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[German Accreditation Body]

Support Organisation: The Society for the Control of Common Diseases in Ruhr District (NPO) Register of associations: VR 519 District Court Gelsenkirchen, VAT ID: OE 125018356

Board of Directors: Prof. Dr. Werner Schlake (Chairperson), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann, board of di

The last-mentioned statutory regulation states that besides testing the industrial medicinal requirements of the special ist departments specified in the Common Ministerial Gazette, it should also be tested to see whether the sold oil binders qualify for use fram eco-technological aspect.

The "eco-technological" sultability test is conducted in accordance with the parameter specifications for the dump categories land II specified in the appendix of Landfill Ordinance (DepV) dated 27.04.2009 (BGBl [German Civil Code I]S 900). Here, the classification criteria of dump category I of the specified ordinance must be fulfilled for oil binder types I, II and IV whereas the classification criteria of dump category II of the specified ordinance must be fulfilled for oil binder type III. In case of any deviations in both the cases, a pH value range between 4.0 and 11.0 must be provided for.

1. Industrial medicinal assessment of oil binders

A natural material consisting of peat should be used for soaking oil for oil binding agent under test. It is slightly acidic (pH value = 3.80) in concentrated hydrous suspension (ratio 1 + 2) and thus lies within a range which does not cause any irritation in case of a possible contact with skin.

As regards the results of the sieve analysis conducted (compare attachment), it must be determined that the oil binding agent does not have any increased fine fraction (0.2) of < 63 μ m which can cause lung damage due to its alveolar mobility in case of the given exposure.

With respect to the issuance of industrial medicinal clearance certificate, it must be specified that there is no objection against the use of oil binder "Oilex" based on the tests conducted as well as the available information.

2. *Eco-technological evaluation*

As the analysis results, recorded in the enclosed attachment and presented in a tabular form, indicate in comparison to the threshold values of DepV that the product at hand, which was supplied to us on 28.08.2013 by the material testing office, fulfils the "eco-technological" requirements related to the oil binder types I, II, III and IV. Although the identified concentration value for the organic carbon content in the eluate is clearly above the specified threshold values, an overshooting of TOG maximum value for the binding agent, which are of natural origin and sold in chemically unaltered form, is considered as acceptable according to the Order of "Oil and Chemical Binders" Working Group dated 25.06.1999. Nevertheless, it should be taken into account that the high amount of soluble organic carbon contained in approximately 1.93 g/kg oil binding agent could have adverse effects on the water quality if used in water bodies.

Best regards,
The Director of the Institute
by order

[Signature]

Dipl, Engineer Michael Sauerwald
Head of the department
Sewage, soil and air hygiene

[Signature]

Ulrich Tolksdorf
Head
Product testing and mining hygiene

Attachment

O Material Testing Office Dortmund

OilexGmbH
Dujardingstraße 7
47829 Krefeld

Oil binder "Oilex"

Processing period: 28.08 to 10.09.2013

a) **Substance analysis**
pH value (1 + 4) = 3.80

Sieve analysis
> 63 μ m = 99.8
< 63 μ m = 0.2

b) Eluate analysis as per DIN 38 414 Part 4

Parameter	Oil binder "Oilex"		Threshold values as per the ordinance		
			Type I, II and IV	Type III	
pH value		4.06	4 - 11	4 - 11	
Organic carbon	C	mg/l	193	~50	~80
Phenol		mg/l	<0.010	~ 0.2	~50
Arsenic	As	mg/l	<0.001	~ 0.2	~ 0.2
Lead	Pb	mg/l	<0.001	~0.2	~1
Cadmium	Cd	mg/l	<0.0001	S 0.05	S 0.1
Copper	Cu	mg/l	0.008	~1	~5
Nickel	Ni	mg/l	<0.001	~ 0.2	~1
Mercury	Hg	mg/l	<0.0002	S 0.005	~0.02
Zinc	Zn	mg/l	0.007	~2	~5
Fluoride	F	mg/l	<0.05	~5	~15
Cyanide, lfr.	CN	mg/l	<0.01	S 0.1	~0.5
Evaporation residue		0/0	0.0501	~3	~6
Barium	Ba	mg/l	<0.005	~5	~10
Chromium	Cr ges.	mg/l	< 0.001	~0.3	~1
Molybdenum	Mo	mg/l	< 0.001	~0.3	~1
Antimony	Sb	mg/l	< 0.001	~0.03	~0.07
Selenium	Se	mg/l	< 0.001	~0.03	~0.05
Chloride	Cl	mg/l	5	S 1500	S 1500
Sulphate	SO4	mg/l	<5	~2000	~2000
Electric conductivity		IJScm ⁻¹	116	-	-

Support organisation of the hygiene institute: The Society for the Control of Common Diseases in Ruhr District (NPO), Gelsenkirchen