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Von der Industrie- und Handelskammer Karlsruhe öffentlich bestellter
und vereidigter Sachverständiger für Trink-, Grund- und Brauchwasser

FADER
Umweltanalytik

TESTREPORT NO. E194122

Regards:	**Investigation of OTTO perforated mats and OTTO geotextile for environmental compatibility**
Client:	OTTO Sport International GmbH, Am Umspannwerk 6, 90518 Altdorf b. Nürnberg
Delivered:	by parcel post
sampling date / sample receipt:	06/02/2022 / 06/03/2022
Testing period:	06/03/2022 bis 12/14/2022
Finding date:	12/29/2022 ot

sample designation	analysis number	parameter range
material sample from OTTO perforated mat	E 194-1/22	pH value, electrical conductivity, TOC, DOC in the eluate (1:10), heavy metals (As, Pb, Cd, Cr, Cu, Ni, Hg, Zinc), volatile halogenated hydrocarbons (LHKW), vinyl chloride (Vc), polychlorinated Biphenyls (PCB), aromatic hydrocarbons (BTEX) and polycyclic aromatic hydrocarbons (PAH according to EPA) in the eluate
material sample of OTTO-Geotextil T1	E 194-2/22	
material sample of OTTO Geotextile B2	E 194-3/22	
material sample of OTTO-Geotextil P3	E 194-4/22	

This test report includes: 18 page(s) of test report including assessment

DAkkS Deutsche Akkreditierungsstelle D-PL-19117-01-00

nach DIN EN ISO/IEC 17025:2005
akkreditiertes Prüflaboratorium

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ENVIRONMENTAL CHEMICAL INVESTIGATIONS

sample designation	**material sample from OTTO-perforated mat**
analysis number	**E 194-1/22**

parameter			test method	**eluate** *)
temperature (T_w)		°C *)	DIN 38404-C4-2: 1976-12	**20.1**
pH-value at T_w		- *)	DIN EN ISO 10523-C5: 2012-04	**5.98**
electrical conductivity at 20°C		µS/cm *)	DIN EN ISO 27888-C8: 1993-11	**4.8**
volatile halogenated hydrocarbons	Σ LHKW[1)]	mg/l	DIN 38414-S20: 1996-01	**nv**
polychlorinated Biphenyls	Σ PCB[#),1)]	mg/l	DIN 38414-S20: 1996-01	**nv**
aromatic hydrocarbons	Σ BTEX[1)]	mg/l	DIN 38407-F9: 1991-05	**nv**
polycyclic aromatic hydrocarbons (PAH)	Σ PAH acc. to EPA[1)]	mg/l	LUA- Merkblatt Nr. 1: 1994	**nv**
Organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**3.4**
arsenic	As	mg/l	DIN 38405-D35: 2004-09	**<0.001**
lead	Pb	mg/l	DIN 38406-E6: 1998-07	**0.0034**
cadmium	Cd	mg/l	DIN EN ISO 5961-E19-3: 1995-05	**<0.0002**
chrome	Cr	mg/l	DIN EN 1233-E10: 1996-08	**<0.001**
copper	Cu	mg/l	DIN 38406-E7-2: 1991-09	**0.0013**
nickel	Ni	mg/l	DIN 38406-E11-2: 1991-09	**<0.002**
mercury	Hg	mg/l	DIN EN ISO 12846-E12: 2012-08	**<0.0001**
zinc	Zn	mg/l	DIN 38406-E8-1: 2004-10	**<0.05**

*) eluate according to DIN EN 12457-4: 2003-01; the dissolved heavy metals are determined in the eluate; 1) see tabular compilation of individual parameters; #) congeners according to DIN 51527; nv = not verifiable

VOLATILE ORGANIC HYDROCARBONS (LHKW)

test method: DIN EN ISO 10301-3-F4 1997-08; Vc according to house method

sample designation	**material sample from OTTO-perforated mat**
analysis number	**E 194-1/22**

parameter			BG	**1. eluate*)**
trichloromethane	$CHCl_3$	mg/l	0.0001	**nv**
bromodichloromethane	$CHBrCl_2$	mg/l	0.0001	**nv**
dibromochloromethane	$CHBr_2Cl$	mg/l	0.0001	**nv**
tribromomethane	$CHBr_3$	mg/l	0.0001	**nv**
dichloromethane	CH_2Cl_2	mg/l	0.002	**nv**
carbon tetrachloride	CCl_4	mg/l	0.0001	**nv**
trichloroethene	C_2HCl_3	mg/l	0.0001	**nv**
tetrachloroethene	C_2Cl_4	mg/l	0.0001	**nv**
1,1,1- trichloroethane	1,1,1-$C_2H_3Cl_3$	mg/l	0.0001	**nv**
cis 1,2- dichloroethene	cis 1,2-$C_2H_2Cl_2$	mg/l	0.002	**nv**
trans 1,2- dichloroethene	trans 1,2-$C_2H_2Cl_2$	mg/l	0.002	**nv**
1,1- dichloroethene	1,1-$C_2H_2Cl_2$	mg/l	0.001	**nv**
1,2- dichloroethane	1,2-$C_2H_4Cl_2$	mg/l	0.002	**nv**
Σ LHKW		**mg/l**	**-**	
vinyl chloride	Vc	mg/l	0.0001	**<0.0001**

*) eluate according to DIN EN 12457-4 2003-01; BG = limit of quantification; nv = not verifiable

POLYCHLORINATED BIPHENYLS (PCB) x)

test method: DIN 38414-S20: 1996-01

sample designation	**material sample from OTTO-perforated mat**
analysis number	**E 194-1/22**

parameter		BG	**eluate*)**
PCB 28	mg/l	0.001	**nv**
PCB 52	mg/l	0.001	**nv**
PCB 101	mg/l	0.001	**nv**
PCB 138	mg/l	0.001	**nv**
PCB 153	mg/l	0.001	**nv**
PCB 180	mg/l	0.001	**nv**
Σ PCB (congenere acc. to DIN 51527)	**mg/l**	**-**	**nv**
Σ Sum of PCB (acc. to LAGA)	**mg/l**	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01; BG = limit of quantification; nv = not verifiable

VOLATILE AROMATIC HYDROCARBONS (BTEX)

test method: DIN 38407-F9: 1991-05

parameter		BG	**eluate*)**
benzene	mg/l	1	**nv**
toluene	mg/l	1	**nv**
ethylbenzene	mg/l	1	**nv**
m- + p- xylene	mg/l	1	**nv**
styrene	mg/l	1	**nv**
o- xylene	mg/l	1	**nv**
i- propylbenzene	mg/l	1	**nv**
Σ BTEX	**mg/l**	**-**	**nv**

BG = limit of quantification; *) eluate according to DIN EN 12457-4: 2003-01; nv = not verifiable

POLYCYCLIC AROMATIC HYDROGENCARBONS (PAHs)

test method: Solid: LUA leaflet no. 1: 1994

sample designation	**material sample from OTTO-perforated mat**
analysis number	**E 194-1/22**

parameter	BG [µg/l]	**eluate*) [µg/l]**
naphthaline	0.01	**nv**
acenaphthylene	0.01	**nv**
acenaphthene	0.01	**nv**
fluorene	0.01	**nv**
phenanthrene	0.01	**nv**
anthracene	0.01	**nv**
fluoranthene	0.01	**nv**
pyrene	0.01	**nv**
benz(a)anthracene	0.01	**nv**
chrysene	0.01	**nv**
benzo(b)fluoranthene	0.01	**nv**
benzo(k)fluoranthene	0.01	**nv**
benzo(a)pyrene	0.01	**nv**
indeno(1,2,3-cd)pyrene	0.01	**nv**
dibenz(ah)anthracene	0.01	**nv**
benzo(ghi)perylene	0.01	**nv**
∑ PAHs according to EPA-list	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01, BG = limit of quantification per individual substance; nv = not verifiable

ENVIRONMENTAL CHEMICAL INVESTIGATIONS

sample designation	**material sample of OTTO-Geotextil T1**
analysis number	**E 194-2/22**

parameter			test method	**eluate** *)
temperature (T_w)		°C *)	DIN 38404-C4-2: 1976-12	**20.1**
pH-value at T_w		- *)	DIN EN ISO 10523-C5: 2012-04	**6.14**
electrical conductivity at 20°C		µS/cm *)	DIN EN ISO 27888-C8: 1993-11	**76**
volatile halogenated hydrocarbons	Σ LHKW[1)]	mg/l	DIN 38414-S20: 1996-01	**nv**
polychlorinated Biphenyls	Σ PCB[#),1)]	mg/l	DIN 38414-S20: 1996-01	**nv**
aromatic hydrocarbons	Σ BTEX[1)]	mg/l	DIN 38407-F9: 1991-05	**nv**
polycyclic aromatic hydrocarbons (PAH)	Σ PAH acc. to EPA[1)]	mg/l	LUA- Merkblatt Nr. 1: 1994	**57**
organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**<0.001**
arsenic	As	mg/l	DIN 38405-D35: 2004-09	**0.0071**
lead	Pb	mg/l	DIN 38406-E6: 1998-07	**<0.0002**
cadmium	Cd	mg/l	DIN EN ISO 5961-E19-3: 1995-05	**0.0019**
chrome	Cr	mg/l	DIN EN 1233-E10: 1996-08	**0.014**
copper	Cu	mg/l	DIN 38406-E7-2: 1991-09	**0.0022**
nickel	Ni	mg/l	DIN 38406-E11-2: 1991-09	**<0.0001**
mercury	Hg	mg/l	DIN EN ISO 12846-E12: 2012-08	**<0.05**
zinc	Zn	mg/l	DIN 38406-E8-1: 2004-10	**57**

*) eluate according to DIN EN 12457-4: 2003-01; the dissolved heavy metals are determined in the eluate; 1) see tabular compilation of individual parameters; #) congeners according to DIN 51527; nv = not verifiable

parameter			test method	**repeat elution**	
				2. eluate*)	**3. eluate*)**
Dissolved organic carbon	DOC	mg/l C	DIN EN 1484-H3: 2019-04	**13.5**	**7.0**
organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**13.7**	**12.2**

*) eluate according to DIN EN 12457-4: 2003-01

annotation:

After the 1st elution (S4), the sample was poured off through a black band filter and the filter residue was prepared again as S4 eluate.

VOLATILE ORGANIC HYDROCARBONS (LHKW)

test method: DIN EN ISO 10301-3-F4 1997-08; Vc according to house method

sample designation	**material sample of OTTO-Geotextil T1**
analysis number	**E 194-2/22**

parameter			BG	**1. eluate*)**
trichloromethane	$CHCl_3$	mg/l	0.0001	**nv**
bromodichloromethane	$CHBrCl_2$	mg/l	0.0001	**nv**
dibromochloromethane	$CHBr_2Cl$	mg/l	0.0001	**nv**
tribromomethane	$CHBr_3$	mg/l	0.0001	**nv**
dichloromethane	CH_2Cl_2	mg/l	0.002	**nv**
carbon tetrachloride	CCl_4	mg/l	0.0001	**nv**
trichloroethene	C_2HCl_3	mg/l	0.0001	**nv**
tetrachloroethene	C_2Cl_4	mg/l	0.0001	**nv**
1,1,1- trichloroethane	$1,1,1\text{-}C_2H_3Cl_3$	mg/l	0.0001	**nv**
cis 1,2- dichloroethene	$cis\ 1,2\text{-}C_2H_2Cl_2$	mg/l	0.002	**nv**
trans 1,2- dichloroethene	$trans\ 1,2\text{-}C_2H_2Cl_2$	mg/l	0.002	**nv**
1,1- dichloroethene	$1,1\text{-}C_2H_2Cl_2$	mg/l	0.001	**nv**
1,2- dichloroethane	$1,2\text{-}C_2H_4Cl_2$	mg/l	0.002	**nv**
Σ LHKW		**mg/l**	**-**	
vinyl chloride	Vc	mg/l	0.0001	**<0.0001**

*) eluate according to DIN EN 12457-4 2003-01; BG = limit of quantification; nv = not verifiable

POLYCHLORINATED BIPHENYLS (PCB) x)

test method: DIN 38414-S20: 1996-01

sample designation	**material sample of OTTO-Geotextil T1**
analysis number	**E 194-2/22**

parameter		BG	**eluate*)**
PCB 28	mg/l	0.001	**nv**
PCB 52	mg/l	0.001	**nv**
PCB 101	mg/l	0.001	**nv**
PCB 138	mg/l	0.001	**nv**
PCB 153	mg/l	0.001	**nv**
PCB 180	mg/l	0.001	**nv**
Σ PCB (congenere acc. to DIN 51527)	**mg/l**	**-**	**nv**
Σ Sum of PCB (acc. to LAGA)	**mg/l**	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01; BG = limit of quantification; nv = not verifiable

VOLATILE AROMATIC HYDROCARBONS (BTEX)

test method: DIN 38407-F9: 1991-05

parameter		BG	**eluate*)**
benzene	mg/l	1	**nv**
toluene	mg/l	1	**nv**
ethylbenzene	mg/l	1	**nv**
m- + p- xylene	mg/l	1	**nv**
styrene	mg/l	1	**nv**
o- xylene	mg/l	1	**nv**
i- propylbenzene	mg/l	1	**nv**
Σ BTEX	**mg/l**	**-**	**nv**

BG = limit of quantification; *) eluate according to DIN EN 12457-4: 2003-01; nv = not verifiable

POLYCYCLIC AROMATIC HYDROGENCARBONS (PAHs)

test method: Solid: LUA leaflet no. 1: 1994

sample designation	**material sample of OTTO-Geotextil T1**
analysis number	**E 194-2/22**

parameter	BG [µg/l]	**eluate*) [µg/l]**
naphthaline	0.01	**nv**
acenaphthylene	0.01	**nv**
acenaphthene	0.01	**nv**
fluorene	0.01	**nv**
phenanthrene	0.01	**nv**
anthracene	0.01	**nv**
fluoranthene	0.01	**nv**
pyrene	0.01	**nv**
benz(a)anthracene	0.01	**nv**
chrysene	0.01	**nv**
benzo(b)fluoranthene	0.01	**nv**
benzo(k)fluoranthene	0.01	**nv**
benzo(a)pyrene	0.01	**nv**
indeno(1,2,3-cd)pyrene	0.01	**nv**
dibenz(ah)anthracene	0.01	**nv**
benzo(ghi)perylene	0.01	**nv**
∑ PAHs according to EPA-list	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01, BG = limit of quantification per individual substance; nv = not verifiable

ENVIRONMENTAL CHEMICAL INVESTIGATIONS

sample designation	**material sample of OTTO-Geotextil B2**
analysis number	**E 194-3/22**

parameter			test method	**eluate** *)
temperature (T_w)		°C *)	DIN 38404-C4-2: 1976-12	**20.2**
pH-value at T_w		- *)	DIN EN ISO 10523-C5: 2012-04	**6.16**
electrical conductivity at 20°C		µS/cm *)	DIN EN ISO 27888-C8: 1993-11	**34**
volatile halogenated hydrocarbons	Σ LHKW[1)]	mg/l	DIN 38414-S20: 1996-01	**nn**
polychlorinated Biphenyls	Σ PCB[#),1)]	mg/l	DIN 38414-S20: 1996-01	**nn**
aromatic hydrocarbons	Σ BTEX[1)]	mg/l	DIN 38407-F9: 1991-05	**nn**
polycyclic aromatic hydrocarbons (PAH)	Σ PAH acc. to EPA[1)]	mg/l	LUA- Merkblatt Nr. 1: 1994	**nn**
organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**38**
arsenic	As	mg/l	DIN 38405-D35: 2004-09	**<0.001**
lead	Pb	mg/l	DIN 38406-E6: 1998-07	**<0.001**
cadmium	Cd	mg/l	DIN EN ISO 5961-E19-3: 1995-05	**<0.0002**
chrome	Cr	mg/l	DIN EN 1233-E10: 1996-08	**0.0019**
copper	Cu	mg/l	DIN 38406-E7-2: 1991-09	**0.0087**
nickel	Ni	mg/l	DIN 38406-E11-2: 1991-09	**0.0038**
mercury	Hg	mg/l	DIN EN ISO 12846-E12: 2012-08	**<0.0001**
zinc	Zn	mg/l	DIN 38406-E8-1: 2004-10	**0.00013**

*) eluate according to DIN EN 12457-4: 2003-01; the dissolved heavy metals are determined in the eluate; 1) see tabular compilation of individual parameters; #) congeners according to DIN 51527; nv = not verifiable

parameter			test method	**repeat elution**	
				2. eluate*)	**3. eluate*)**
Dissolved organic carbon	DOC	mg/l C	DIN EN 1484-H3: 2019-04	**11.1**	**4.4**
organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**11.4**	**6.0**

*) eluate according to DIN EN 12457-4: 2003-01

annotation:

After the 1st elution (S4), the sample was poured off through a black band filter and the filter residue was prepared again as S4 eluate.

VOLATILE ORGANIC HYDROCARBONS (LHKW)

test method: DIN EN ISO 10301-3-F4 1997-08; Vc according to house method

sample designation	**material sample of OTTO-Geotextil B2**
analysis number	**E 194-3/22**

parameter			BG	**1. eluate*)**
trichloromethane	$CHCl_3$	mg/l	0.0001	**nv**
bromodichloromethane	$CHBrCl_2$	mg/l	0.0001	**nv**
dibromochloromethane	$CHBr_2Cl$	mg/l	0.0001	**nv**
tribromomethane	$CHBr_3$	mg/l	0.0001	**nv**
dichloromethane	CH_2Cl_2	mg/l	0.002	**nv**
carbon tetrachloride	CCl_4	mg/l	0.0001	**nv**
trichloroethene	C_2HCl_3	mg/l	0.0001	**nv**
tetrachloroethene	C_2Cl_4	mg/l	0.0001	**nv**
1,1,1- trichloroethane	$1,1,1\text{-}C_2H_3Cl_3$	mg/l	0.0001	**nv**
cis 1,2- dichloroethene	$cis\ 1,2\text{-}C_2H_2Cl_2$	mg/l	0.002	**nv**
trans 1,2- dichloroethene	$trans\ 1,2\text{-}C_2H_2Cl_2$	mg/l	0.002	**nv**
1,1- dichloroethene	$1,1\text{-}C_2H_2Cl_2$	mg/l	0.001	**nv**
1,2- dichloroethane	$1,2\text{-}C_2H_4Cl_2$	mg/l	0.002	**nv**
Σ LHKW		**mg/l**	**-**	
vinyl chloride	Vc	mg/l	0.0001	**<0.0001**

*) eluate according to DIN EN 12457-4 2003-01; BG = limit of quantification; nv = not verifiable

POLYCHLORINATED BIPHENYLS (PCB) x)

test method: DIN 38414-S20: 1996-01

sample designation	**material sample of OTTO-Geotextil B2**
analysis number	**E 194-3/22**

parameter		BG	**eluate*)**
PCB 28	mg/l	0.001	**nv**
PCB 52	mg/l	0.001	**nv**
PCB 101	mg/l	0.001	**nv**
PCB 138	mg/l	0.001	**nv**
PCB 153	mg/l	0.001	**nv**
PCB 180	mg/l	0.001	**nv**
Σ PCB (congenere acc. to DIN 51527)	**mg/l**	**-**	**nv**
Σ Sum of PCB (acc. to LAGA)	**mg/l**	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01; BG = limit of quantification; nv = not verifiable

VOLATILE AROMATIC HYDROCARBONS (BTEX)

test method: DIN 38407-F9: 1991-05

parameter		BG	**eluate*)**
benzene	mg/l	1	**nv**
toluene	mg/l	1	**nv**
ethylbenzene	mg/l	1	**nv**
m- + p- xylene	mg/l	1	**nv**
styrene	mg/l	1	**nv**
o- xylene	mg/l	1	**nv**
i- propylbenzene	mg/l	1	**nv**
Σ BTEX	**mg/l**	**-**	**nv**

BG = limit of quantification; *) eluate according to DIN EN 12457-4: 2003-01; nv = not verifiable

POLYCYCLIC AROMATIC HYDROGENCARBONS (PAHs)

test method: Solid: LUA leaflet no. 1: 1994

sample designation	**material sample of OTTO-Geotextil B2**
analysis number	**E 194-3/22**

parameter	BG [µg/l]	**eluate*) [µg/l]**
naphthaline	0.01	**nv**
acenaphthylene	0.01	**nv**
acenaphthene	0.01	**nv**
fluorene	0.01	**nv**
phenanthrene	0.01	**nv**
anthracene	0.01	**nv**
fluoranthene	0.01	**nv**
pyrene	0.01	**nv**
benz(a)anthracene	0.01	**nv**
chrysene	0.01	**nv**
benzo(b)fluoranthene	0.01	**nv**
benzo(k)fluoranthene	0.01	**nv**
benzo(a)pyrene	0.01	**nv**
indeno(1,2,3-cd)pyrene	0.01	**nv**
dibenz(ah)anthracene	0.01	**nv**
benzo(ghi)perylene	0.01	**nv**
∑ PAHs according to EPA-list	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01, BG = limit of quantification per individual substance; nv = not verifiable

ENVIRONMENTAL CHEMICAL INVESTIGATIONS

sample designation	**material sample of OTTO-Geotextil P3**
analysis number	**E 194-4/22**

parameter			test method	**eluate *)**
temperature (T_w)		°C *)	DIN 38404-C4-2: 1976-12	**-**
pH-value at T_w		- *)	DIN EN ISO 10523-C5: 2012-04	**6.35**
electrical conductivity at 20°C		µS/cm *)	DIN EN ISO 27888-C8: 1993-11	**70**
volatile halogenated hydrocarbons	Σ LHKW[1)]	mg/l	DIN 38414-S20: 1996-01	**nn**
polychlorinated Biphenyls	Σ PCB[#),1)]	mg/l	DIN 38414-S20: 1996-01	**nn**
aromatic hydrocarbons	Σ BTEX[1)]	mg/l	DIN 38407-F9: 1991-05	**nn**
polycyclic aromatic hydrocarbons (PAH)	Σ PAH acc. to EPA[1)]	mg/l	LUA- Merkblatt Nr. 1: 1994	**nn**
organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**78**
arsenic	As	mg/l	DIN 38405-D35: 2004-09	**0.001**
lead	Pb	mg/l	DIN 38406-E6: 1998-07	**<0.001**
cadmium	Cd	mg/l	DIN EN ISO 5961-E19-3: 1995-05	**<0.0002**
chrome	Cr	mg/l	DIN EN 1233-E10: 1996-08	**<0.001**
copper	Cu	mg/l	DIN 38406-E7-2: 1991-09	**0.0048**
nickel	Ni	mg/l	DIN 38406-E11-2: 1991-09	**<0.002**
mercury	Hg	mg/l	DIN EN ISO 12846-E12: 2012-08	**<0.0001**
zinc	Zn	mg/l	DIN 38406-E8-1: 2004-10	**0.00013**

*) eluate according to DIN EN 12457-4: 2003-01; the dissolved heavy metals are determined in the eluate; 1) see tabular compilation of individual parameters; #) congeners according to DIN 51527; nv = not verifiable

parameter			test method	**repeat elution**	
				2. eluate[*)]	**3. eluate[*)]**
Dissolved organic carbon	DOC	mg/l C	DIN EN 1484-H3: 2019-04	**24.7**	**8.3**
organically bound carbon	TOC	mg/l C	DIN EN 1484-H3: 2019-04	**26.5**	**8.4**

*) eluate according to DIN EN 12457-4: 2003-01

annotation:

After the 1st elution (S4), the sample was poured off through a black band filter and the filter residue was prepared again as S4 eluate.

VOLATILE ORGANIC HYDROCARBONS (LHKW)

test method: DIN EN ISO 10301-3-F4 1997-08; Vc according to house method

sample designation	**material sample of OTTO-Geotextil P3**
analysis number	**E 194-4/22**

parameter			BG	**1. eluate*)**
trichloromethane	$CHCl_3$	mg/l	0.0001	**nv**
bromodichloromethane	$CHBrCl_2$	mg/l	0.0001	**nv**
dibromochloromethane	$CHBr_2Cl$	mg/l	0.0001	**nv**
tribromomethane	$CHBr_3$	mg/l	0.0001	**nv**
dichloromethane	CH_2Cl_2	mg/l	0.002	**nv**
carbon tetrachloride	CCl_4	mg/l	0.0001	**nv**
trichloroethene	C_2HCl_3	mg/l	0.0001	**nv**
tetrachloroethene	C_2Cl_4	mg/l	0.0001	**nv**
1,1,1- trichloroethane	1,1,1-$C_2H_3Cl_3$	mg/l	0.0001	**nv**
cis 1,2- dichloroethene	cis 1,2-$C_2H_2Cl_2$	mg/l	0.002	**nv**
trans 1,2- dichloroethene	trans 1,2-$C_2H_2Cl_2$	mg/l	0.002	**nv**
1,1- dichloroethene	1,1-$C_2H_2Cl_2$	mg/l	0.001	**nv**
1,2- dichloroethane	1,2-$C_2H_4Cl_2$	mg/l	0.002	**nv**
Σ LHKW		**mg/l**	**-**	
vinyl chloride	Vc	mg/l	0.0001	**<0.0001**

*) eluate according to DIN EN 12457-4 2003-01; BG = limit of quantification; nv = not verifiable

POLYCHLORINATED BIPHENYLS (PCB) x)

test method: DIN 38414-S20: 1996-01

sample designation	**material sample of OTTO-Geotextil P3**
analysis number	**E 194-4/22**

parameter		BG	**eluate*)**
PCB 28	mg/l	0.001	**nv**
PCB 52	mg/l	0.001	**nv**
PCB 101	mg/l	0.001	**nv**
PCB 138	mg/l	0.001	**nv**
PCB 153	mg/l	0.001	**nv**
PCB 180	mg/l	0.001	**nv**
Σ PCB (congenere acc. to DIN 51527)	**mg/l**	**-**	**nv**
Σ Sum of PCB (acc. to LAGA)	**mg/l**	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01; BG = limit of quantification; nv = not verifiable

VOLATILE AROMATIC HYDROCARBONS (BTEX)

test method: DIN 38407-F9: 1991-05

parameter		BG	**eluate*)**
benzene	mg/l	1	**nv**
toluene	mg/l	1	**nv**
ethylbenzene	mg/l	1	**nv**
m- + p- xylene	mg/l	1	**nv**
styrene	mg/l	1	**nv**
o- xylene	mg/l	1	**nv**
i- propylbenzene	mg/l	1	**nv**
Σ BTEX	**mg/l**	**-**	**nv**

BG = limit of quantification; *) eluate according to DIN EN 12457-4: 2003-01; nv = not verifiable

POLYCYCLIC AROMATIC HYDROGENCARBONS (PAHs)

test method: Solid: LUA leaflet no. 1: 1994

sample designation	**material sample of OTTO-Geotextil P3**
analysis number	**E 194-4/22**

parameter	BG [µg/l]	**eluate*) [µg/l]**
naphthaline	0.01	**nv**
acenaphthylene	0.01	**nv**
acenaphthene	0.01	**nv**
fluorene	0.01	**nv**
phenanthrene	0.01	**nv**
anthracene	0.01	**nv**
fluoranthene	0.01	**nv**
pyrene	0.01	**nv**
benz(a)anthracene	0.01	**nv**
chrysene	0.01	**nv**
benzo(b)fluoranthene	0.01	**nv**
benzo(k)fluoranthene	0.01	**nv**
benzo(a)pyrene	0.01	**nv**
indeno(1,2,3-cd)pyrene	0.01	**nv**
dibenz(ah)anthracene	0.01	**nv**
benzo(ghi)perylene	0.01	**nv**
∑ PAHs according to EPA-list	**-**	**nv**

*) eluate according to DIN EN 12457-4: 2003-01, BG = limit of quantification per individual substance; nv = not verifiable

Evaluation:

The sample pieces sent from an OTTO perforated mat and three geotextile material samples with the designations T1, B2 and P3 were examined for various water-elutable environmentally relevant substances.

The test results above do not indicate any relevant levels of substances that can be washed out.

Dr. H. Fader