

Test Report

No. 68-70/4000406/2017/TR_rev1

Date: 22 March 2017

Name of the client: Ekokem Oy Ab
 Address of the client: P.O. Box 181
 11101 Riihimäki, Finland
 Contact person(s): Anna Järvinen / Heli Hellén

This report supersedes report numbered 68-70/4000406/2017/TR, due to additional note of the VOC test.

The following sample(s) was / were submitted and identified on behalf of the client as :

SAMPLE DESCRIPTION:

SGS Sample No.	Product description
68	Plastic pellets - LD 14.2.2017, 1/3 SUM, 1/3 NOR, 1/3 KIK
69	Plastic pellets - HD 14.2.2017, 1/3 SUM, 1/3 NOR, 1/3 EKO
70	Plastic pellets - PP 14.2.2017, 1/3 SUM, 1/3 NOR, 1/3 EKO

Sample receiving date to SGS Kotka laboratory: 17 February 2017
 Testing period: 6 to 14 March 2017

TEST RESULTS:


The following analyses were performed in SGS Kotka

Analysis	Result	Method
Polycyclic aromatic hydrocarbons (PAH)	Please refer to next page (s)	SGS In-House with reference to AfPS GS 2014:01 PAK
Volatile organic compounds (VOC)	Please refer to next page (s)	SGS In-house

The following analyses were performed in SGS Hong Kong

Analysis	Result	Method
Total cadmium content	Please refer to next page (s)	SGS In-House with reference to EN 1122:2001
PBBs and PBDEs content	Please refer to next page (s)	With reference to IEC 62321-6:2015

Signed for and on behalf of
 SGS INSPECTION SERVICES OY


 Hanna Larvio
 Testing Engineer



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Polycyclic Aromatic Hydrocarbons
Test method: SGS In-house with reference to AfPS GS 2014:01 PAK. Analysis was performed by GC-MS.

Compound	CAS number	Result (mg/kg)			Detection limit (mg/kg)
		68	69	70	
Naphthalene	91-20-3	0.3	0.4	< 0.2	0.2
Acenaphthylene	208-96-8	< 0.2	< 0.2	< 0.2	0.2
Acenaphthene	83-32-9	< 0.2	< 0.2	< 0.2	0.2
Fluorene	86-73-7	< 0.2	< 0.2	< 0.2	0.2
Phenanthrene	85-01-8	0.4	0.4	< 0.2	0.2
Anthracene	120-12-7	< 0.2	< 0.2	< 0.2	0.2
Fluoranthene	206-44-0	0.3	< 0.2	< 0.2	0.2
Pyrene	129-00-0	< 0.2	< 0.2	< 0.2	0.2
Benz[a]anthracene	56-55-3	< 0.2	< 0.2	< 0.2	0.2
Chrysene	218-01-9	< 0.2	< 0.2	< 0.2	0.2
Benzo[b]fluoranthene	205-99-2	< 0.2	< 0.2	< 0.2	0.2
Benzo[k]fluoranthene	207-08-9	< 0.2	< 0.2	< 0.2	0.2
Benzo[j]fluoranthene	205-82-3	< 0.2	< 0.2	< 0.2	0.2
Benzo[a]pyrene	50-32-8	< 0.2	< 0.2	< 0.2	0.2
Benzo[e]pyrene	192-97-2	< 0.2	< 0.2	< 0.2	0.2
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.2	< 0.2	< 0.2	0.2
Dibenz[a,h]anthracene	53-70-3	< 0.2	< 0.2	0.2	0.2
Benzo[g,h,i]perylene	191-24-2	< 0.2	< 0.2	< 0.2	0.2
Sum of 18 PAH		1.0	0.8	0.2	
Conclusion		Pass	Pass	Pass	

For the summation only results above the detection limit are taken into account.

 Permitted limit for the eight (8) substances in bold is specified in Regulation No 1272/2013 applicable from 27 December 2015 and amending Annex XVII of the EU Regulation 1907/2006: - **1 mg/kg** (0,5 mg/kg for toys and childcare articles)

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Date: 22 March 2017

AfPS (German commission for Product Safety): GS PAHs requirements

Parameter	Category 1 Material intended to be put in the mouth or toys with intended skin contact (longer than 30 s).	Category 2		Category 3	
		Toy under 2009/48/EC	Other products under ProdSG	Toy under 2009/48/EC	Other products under ProdSG
Naphthalene (mg/kg)	< 1	< 2		< 10	
Acenaphthylene (mg/kg)	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Acenaphthene (mg/kg)					
Fluorene (mg/kg)					
Phenanthrene (mg/kg)					
Anthracene (mg/kg)					
Fluoranthene (mg/kg)					
Pyrene (mg/kg)					
Benzo[a]anthracene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[b]fluoranthene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[j]fluoranthene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[k]fluoranthene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[a]pyrene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[e]pyrene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno[1,2,3-cd]pyrene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenz[a,h]anthracene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[g,h,i]perylene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Sum 18 PAH (mg/kg)	<1	< 5	< 10	< 20	< 50

Remark: The German committee on Product Safety (AfPS) adopted a new PAHs document on August 4, 2014, which is taken into account by the GS certification bodies for the certification process of the GS mark now. The transitional arrangements and deadlines contained therein shall determine the procedure for existing certificates and new certificates; also there are exceptions. The previously valid document "PAK" (ZEK 01.4-08, English version) was repealed on 30th of June 2015.

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Test Report

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Date: 22 March 2017

Volatile organic compounds (VOC)

Test method: SGS In-house semi quantitative method. Extraction by methanol.
 Analysis performed by HS-GC/MS.

Compound	Result (mg/kg)			Detection limit (mg/kg)
	68	69	70	
Benzene	<0.02	<0.02	<0.02	0.02
Toluene	1.4	0.83	0.46	0.02
Ethylbenzene	<0.02	<0.02	<0.02	0.02
m+p-Xylene	0.05	<0.04	<0.04	0.04
Styrene	0.02	<0.02	<0.02	0.02
o-Xylene	0.06	0.03	<0.02	0.02
Isopropylbenzene	<0.02	<0.02	<0.02	0.02
4-Isopropyltoluene	<0.02	<0.02	<0.02	0.02
n-Propylbenzene	<0.02	<0.02	<0.02	0.02
1,2,4-Trimethylbenzene	<0.02	0.03	<0.02	0.02
1,3,5-Trimethylbenzene	<0.02	<0.02	<0.02	0.02
1,1-Dichloroethylene	<0.04	<0.04	<0.04	0.04
trans-1,2- Dichloroethylene	<0.03	<0.03	<0.03	0.03
cis-1,2- Dichloroethylene	<0.03	<0.03	<0.03	0.03
Trichloroethylene	<0.02	<0.02	<0.02	0.02
Tetrachloroethylene	<0.02	<0.02	<0.02	0.02
Methylene chloride	<0.07	<0.07	<0.07	0.07
Chlorobenzene	<0.02	<0.02	<0.02	0.02
1,2-Dichlorobenzene	<0.02	<0.02	<0.02	0.02
1,2,3-Trichlorobenzene	<0.02	<0.02	<0.02	0.02
1,2,4-Trichlorobenzene	<0.02	<0.02	<0.02	0.02
MTBE	<0.05	<0.05	<0.05	0.05
TAME	<0.05	<0.05	<0.05	0.05
ETBE	<0.05	<0.05	<0.05	0.05
TAAE	<0.05	<0.05	<0.05	0.05
DIPE	<0.05	<0.05	<0.05	0.05
TVOC C5-C10	<5	<5	<5	5

Note:

1. mg/kg = milligram per kilogram
2. No reference limit given for the above substances in plastics.
3. Possible recommendations can be found from the Decree on Concentrations Known to be Hazardous (268/2014). The Ministry of Social Affairs and Health has confirmed a list of concentrations of impurities in workplace air known to be hazardous (HTP values) and a list of corresponding indicative limit values for biological exposure indicators. The lists are enclosed as Annexes 1 and 2 in publication. The values are intended to be taken into account when assessing the quality of workplace air, the employees' exposure and the significance of the results of measurements.
<https://julkaisut.valtioneuvosto.fi/handle/10024/79109>

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Date: 22 March 2017

Total Cadmium Content - Annex XVII of the REACH Regulation (EC) No 1907/2006 and its amendments

Test method with reference to SGS In-House method with reference to EN 1122:2001, Method B. Acid digestion followed by analysis by ICP-AES.

SGS Sample no.	Result (mg/kg)			Permissible limit (mg/kg)
	68	69	70	
Cadmium	n.d.	n.d.	n.d.	100
Comment	Pass	Pass	Pass	

Notes:

1. n.d. = not detected
2. mg/kg = milligram per kilogram
3. Detection limit: 5 mg/kg
4. Permissible limit specified by Commission Regulations (EU) No 494/2011 and No 835/2012 amending Annex XVII of REACH Regulation (EC) No 1907/2006

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Determination of PBBs/PBDEs

Test method with reference to IEC 62321-6:2015

Determination of polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs).

Analyzed by GC/MS.

Test Item(s)	Result (mg/kg)			Reporting Limit (mg/kg)	RoHS Limit (mg/kg)
	68	69	70		
Sum of PBBs	n.d.	n.d.	n.d.	-	1000
Monobromobiphenyl	n.d.	n.d.	n.d.	50	-
Dibromobiphenyl	n.d.	n.d.	n.d.	50	-
Tribromobiphenyl	n.d.	n.d.	n.d.	50	-
Tetrabromobiphenyl	n.d.	n.d.	n.d.	50	-
Hexabromobiphenyl	n.d.	n.d.	n.d.	50	-
Pentabromobiphenyl	n.d.	n.d.	n.d.	50	-
Heptabromobiphenyl	n.d.	n.d.	n.d.	50	-
Octabromobiphenyl	n.d.	n.d.	n.d.	50	-
Nonabromobiphenyl	n.d.	n.d.	n.d.	50	-
Decabromobiphenyl	n.d.	n.d.	n.d.	50	-
Sum of PBDEs	n.d.	n.d.	n.d.	-	1000
Monobromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Dibromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Tribromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Tetrabromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Pentabromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Hexabromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Heptabromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Octabromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Nonabromodiphenyl ether	n.d.	n.d.	n.d.	50	-
Decabromodiphenyl ether	n.d.	n.d.	n.d.	50	-

Notes:

1. mg/kg = ppm
2. n.d. = not detected
3. RoHS Limits with reference to Annex II of RoHS Directive 2011/65/EC and subsequent amendments

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Photo(s) of the tested sample(s):



68: Plastic pellets -
LD 14.2.2017, 1/3 SUM, 1/3 NOR, 1/3 KIK



69: Plastic pellets -
HD 14.2.2017, 1/3 SUM, 1/3 NOR, 1/3 EKO



70: Plastic pellets -
PP 14.2.2017, 1/3 SUM, 1/3 NOR, 1/3 EKO

SGS authenticates the photo (s) on original report only.

End of report

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