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CHANGZHOU HUAWEI ELECTRONIC CO., LTD ZOUQU TOWN, CHANGZHOU CITY, JIANGSU PROVINCE, CHINA

THIS REPORT IS TO SUPERSEDE TEST REPORT NO.SHAHG1928588203 A01

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

ELECTROLYTIC CAPACITOR (RADIAL)

SGS Job No.: CZHL1912005412OT - SH

Date of Sample Received: 24 Dec 2019

Testing Period: 24 Dec 2019 - 06 Jan 2020

Test Requested : Selected test(s) as requested by client.

Test Method : Please refer to next page(s).

Test Results : Please refer to next page(s).

Result Summary:

Test Requested	Conclusion
RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU	PASS
RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU	PASS
Halogen	See Results
Antimony(Sb)	See Results
Formaldehyde content	See Results
Organic-tin compounds	See Results
Organic-tin compounds	See Results
Asbestos	See Results
Formaldehyde	See Results
PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)	See Results
Polycyclic aromatic hydrocarbons (PAHs)	FAIL
Azo Dyes	See Results
Phthalates Content	See Results



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Signed for and on behalf of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Lucia Liu

Approved Signatory





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Test Results:

Test Part Description:

Specimen No.	SGS Sample ID	Description
SN1	SHA19-285882.001	Black plastic band
SN2	SHA19-285882.002	Black plastic band
SN3	SHA19-285882.003	White paint
SN4	SHA19-285882.004	Transparent soft plastic adhesive tape
SN5	SHA19-285882.005	Beige paper
SN6	SHA19-285882.006	Transparent liquid
SN7	SHA19-285882.007	Silvery metal sheet
SN8	SHA19-285882.008	Silvery metal sheet
SN9	SHA19-285882.009	Silvery metal shell
SN10	SHA19-285882.010	Silvery metal lead wire
SN11	SHA19-285882.011	Black soft plastic part

Remarks:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>	<u>002</u>	<u>003</u>
Cadmium (Cd)	100	mg/kg	2	ND	ND	ND
Lead (Pb)	1000	mg/kg	2	ND	ND	ND
Mercury (Hg)	1000	mg/kg	2	ND	ND	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8		ND	
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND		ND
Sum of PBBs	1000	mg/kg	-	ND	ND	ND
Monobromobiphenyl	-	mg/kg	5	ND	ND	ND
Dibromobiphenyl	-	mg/kg	5	ND	ND	ND
Tribromobiphenyl	-	mg/kg	5	ND	ND	ND
Tetrabromobiphenyl	-	mg/kg	5	ND	ND	ND
Pentabromobiphenyl	-	mg/kg	5	ND	ND	ND
Hexabromobiphenyl	-	mg/kg	5	ND	ND	ND



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Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>001</u>	<u>002</u>	<u>003</u>
Heptabromobiphenyl	-	mg/kg	5	ND	ND	ND
Octabromobiphenyl	-	mg/kg	5	ND	ND	ND
Nonabromobiphenyl	-	mg/kg	5	ND	ND	ND
Decabromobiphenyl	-	mg/kg	5	ND	ND	ND
Sum of PBDEs	1000	mg/kg	-	ND	ND	ND
Monobromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Dibromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Tribromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Octabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Decabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND	ND	ND
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND	ND	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND	ND	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND	ND	ND
Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>004</u>	<u>005</u>	<u>006</u>
Cadmium (Cd)	100	mg/kg	2	ND	ND	ND
Lead (Pb)	1000	mg/kg	2	ND	ND	ND
Mercury (Hg)	1000	mg/kg	2	ND	ND	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND	ND	ND
Sum of PBBs	1000	mg/kg	-	ND	ND	ND
Monobromobiphenyl	-	mg/kg	5	ND	ND	ND
Dibromobiphenyl	-	mg/kg	5	ND	ND	ND
Tribromobiphenyl	-	mg/kg	5	ND	ND	ND
Tetrabromobiphenyl	-	mg/kg	5	ND	ND	ND
Pentabromobiphenyl	-	mg/kg	5	ND	ND	ND
Hexabromobiphenyl	-	mg/kg	5	ND	ND	ND
Heptabromobiphenyl	-	mg/kg	5	ND	ND	ND
Octabromobiphenyl	-	mg/kg	5	ND	ND	ND
Nonabromobiphenyl	-	mg/kg	5	ND	ND	ND
Decabromobiphenyl	-	mg/kg	5	ND	ND	ND
Sum of PBDEs	1000	mg/kg	-	ND	ND	ND
Monobromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Dibromodiphenyl ether	-	mg/kg	5	ND	ND	ND



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Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>004</u>	<u>005</u>	<u>006</u>
Tribromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Octabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Decabromodiphenyl ether	-	mg/kg	5	ND	ND	ND
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND	ND	ND
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND	ND	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND	ND	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND	ND	ND
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>011</u>		
Cadmium (Cd)	100	mg/kg	2	ND		
Lead (Pb)	1000	mg/kg	2	8		
Mercury (Hg)	1000	mg/kg	2	ND		
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND		
Sum of PBBs	1000	mg/kg	-	ND		
Monobromobiphenyl	-	mg/kg	5	ND		
Dibromobiphenyl	-	mg/kg	5	ND		
Tribromobiphenyl	-	mg/kg	5	ND		
Tetrabromobiphenyl	-	mg/kg	5	ND		
Pentabromobiphenyl	-	mg/kg	5	ND		
Hexabromobiphenyl	-	mg/kg	5	ND		
Heptabromobiphenyl	-	mg/kg	5	ND		
Octabromobiphenyl	-	mg/kg	5	ND		
Nonabromobiphenyl	-	mg/kg	5	ND		
Decabromobiphenyl	-	mg/kg	5	ND		
Sum of PBDEs	1000	mg/kg	-	ND		
Monobromodiphenyl ether	-	mg/kg	5	ND		
Dibromodiphenyl ether	-	mg/kg	5	ND		
Tribromodiphenyl ether	-	mg/kg	5	ND		
Tetrabromodiphenyl ether	-	mg/kg	5	ND		
Pentabromodiphenyl ether	-	mg/kg	5	ND		
Hexabromodiphenyl ether	-	mg/kg	5	ND		
Heptabromodiphenyl ether	-	mg/kg	5	ND		
Octabromodiphenyl ether	-	mg/kg	5	ND		
Nonabromodiphenyl ether	-	mg/kg	5	ND		



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Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>011</u>	
Decabromodiphenyl ether	-	mg/kg	5	ND	
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND	
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND	
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND	
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND	

Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP ORG ID.FSP LANG ID: 1258637.25
- (2) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall not apply to toys which are already subject to the restriction of DEHP, BBP, DBP and DIBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013 and IEC62321-7-1:2015, Test Method: analyzed by ICP-OES, AAS and UV-Vis .

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>007</u>	<u>008</u>	<u>009</u>
Cadmium (Cd)	100	mg/kg	2	ND	ND	ND
Lead (Pb)	1000	mg/kg	2	ND	24	9
Mercury (Hg)	1000	mg/kg	2	ND	ND	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm²	0.10	ND	ND	ND
Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>010</u>		
Cadmium (Cd)	100	mg/kg	2	ND		
Lead (Pb)	1000	mg/kg	2	ND		
Mercury (Hg)	1000	mg/kg	2	ND		
Hexavalent Chromium (Cr(VI))▼	-	µg/cm²	0.10	ND		

Notes:

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG ID:1258637,25

(2) ▼ = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm².



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The sample coating is considered to contain CrVI

- b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating
- c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive unavoidable coating variations may influence the determination Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

<u>Halogen</u>

With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>001</u>	<u>002</u>	<u>003</u>
Fluorine (F)	mg/kg	50	ND	ND	ND
Chlorine (CI)	mg/kg	50	ND	>100000	ND
Bromine (Br)	mg/kg	50	ND	ND	ND
lodine (I)	mg/kg	50	ND	ND	ND
Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>004</u>	<u>005</u>	<u>006</u>
Fluorine (F)	mg/kg	50	ND	ND	ND
Chlorine (CI)	mg/kg	50	ND	ND	ND
Bromine (Br)	mg/kg	50	ND	ND	ND
lodine (I)	mg/kg	50	ND	ND	ND
Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>011</u>		
Fluorine (F)	mg/kg	50	102		
Chlorine (CI)	mg/kg	50	ND		
Bromine (Br)	mg/kg	50	ND		
lodine (I)	mg/kg	50	ND		

Antimony(Sb)

Test Method: With reference to US EPA 3052:1996, analysis was performed by ICP-OES.

Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>001</u>	<u>002</u>	<u>003</u>
Antimony (Sb)	mg/kg	10	55	ND	ND



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Test Item(s) Antimony (Sb)	<u>Unit</u> mg/kg	<u>MDL</u> 10	<u>004</u> ND	<u>005</u> ND	<u>006</u> ND		
Test Item(s) Antimony (Sb)	<u>Unit</u> mg/kg	MDL 10	<u>011</u> ND				

Formaldehyde content

Test Method: With reference to ISO 17226-2:2018, analysis was performed by UV-VIS.

Test Item(s) Formaldehyde	<u>Unit</u>	MDL	<u>001</u>	<u>002</u>	<i>004</i>
	mg/kg	20	ND	ND	ND
<u>Test Item(s)</u> Formaldehyde	<u>Unit</u> mg/kg	MDL 20	<i>005</i> ND	<u>011</u> ND	

Organic-tin compounds

Test Method: With reference to ISO 17353: 2004 with carbamate, analysis was performed by GC-MS.

Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>003</u>	<u>006</u>
Monobutyl tin (MBT)	mg/kg	0.05	ND	ND
Dibutyl tin (DBT)	mg/kg	0.05	ND	ND
Tributyl tin (TBT)	mg/kg	0.05	ND	ND
Monooctyl tin (MOT)	mg/kg	0.05	ND	ND
Tetrabutyl tin (TTBT)	mg/kg	0.05	ND	ND
Dioctyl tin (DOT)	mg/kg	0.05	ND	ND
Triphenyl tin (TPhT)	mg/kg	0.05	ND	ND
Tricyclohexyl tin (TCyT)	mg/kg	0.05	ND	ND
Tributyl Tin Oxide (TBTO) ◆	mg/kg	0.05	ND	ND



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Notes:

(1) Calculated concentration of TBTO is based on the identified TBT

Organic-tin compounds

Test Method: With reference to ISO 17353: 2004 with carbamate, analysis was performed by GC-MS.

Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>001</u>	<u>002</u>	<u>004</u>
Dibutyl tin (DBT)	mg/kg	0.02	ND	ND	ND
Tributyl tin (TBT)	mg/kg	0.02	ND	ND	ND
Dioctyl tin (DOT)	mg/kg	0.02	ND	ND	ND
Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>005</u>	<u>011</u>	
Dibutyl tin (DBT)	mg/kg	0.02	ND	ND	
Tributyl tin (TBT)	mg/kg	0.02	ND	ND	
Dioctyl tin (DOT)	mg/kg	0.02	ND	ND	

Asbestos

Test Method: With reference to NIOSH 9000:2015 and ISO 22262-1:2012. analysis was performed by X-ray diffractometer (XRD) and Polarized light microscope (PLM).

Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>001</u>	<u>002</u>	<u>003</u>
Actinolite	77536-66-4	%	0.1	Negative	Negative	Negative
Amosite	12172-73-5	%	0.1	Negative	Negative	Negative
Anthophyllite	77536-67-5	%	0.1	Negative	Negative	Negative
Chrysotile	12001-29-5 132207-32-0	%	0.1	Negative	Negative	Negative
Crocidolite	12001-28-4	%	0.1	Negative	Negative	Negative
Tremolite	77536-68-6	%	0.1	Negative	Negative	Negative
Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>004</u>	<u>005</u>	<u>006</u>
Actinolite	77536-66-4	%	0.1	Negative	Negative	Negative
Amosite	12172-73-5	%	0.1	Negative	Negative	Negative



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Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>004</u>	<u>005</u>	<u>006</u>
Anthophyllite	77536-67-5	%	0.1	Negative	Negative	Negative
Chrysotile	12001-29-5	%	0.1	Negative	Negative	Negative
	132207-32-0					
Crocidolite	12001-28-4	%	0.1	Negative	Negative	Negative
Tremolite	77536-68-6	%	0.1	Negative	Negative	Negative
Toot Itam(a)	CASNO	Lloit	MDI	<u>011</u>		
Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>			
Actinolite	77536-66-4	%	0.1	Negative		
Amosite	12172-73-5	%	0.1	Negative		
Anthophyllite	77536-67-5	%	0.1	Negative		
Chrysotile	12001-29-5	%	0.1	Negative		
0	132207-32-0	0/				
Crocidolite	12001-28-4	%	0.1	Negative		
Tremolite	77536-68-6	%	0.1	Negative		

Notes:

(1) Negative = the absence of asbestos, Positive = the presence of asbestos.

Formaldehyde

Test Method: With reference to ISO 17226-1:2018, analysis was performed by HPLC-DAD.

Test Item(s) *003* 006 Unit MDL Formaldehyde ND ND mg/kg 16

PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method: With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Perfluorooctanesulfonate (PFOS)^	mg/kg	10	ND
Perfluorooctanoic Acid (PFOA)	mg/kg	10	ND



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Test Item(s) Perfluorooctanesulfonate (PFOS)^ Perfluorooctanoic Acid (PFOA)		<u>Unit</u> mg/kg mg/kg	MDL 10 10	002 ND ND
Test Item(s) Perfluorooctanesulfonate (PFOS)^ Perfluorooctanoic Acid (PFOA)		<u>Unit</u> mg/kg mg/kg	MDL 10 10	003 ND ND
Test Item(s) Perfluorooctanesulfonate (PFOS)^ Perfluorooctanoic Acid (PFOA)		<u>Unit</u> mg/kg mg/kg	MDL 10 10	004 ND ND
Test Item(s) Perfluorooctanesulfonate (PFOS)^ Perfluorooctanoic Acid (PFOA)		<u>Unit</u> mg/kg mg/kg	MDL 10 10	005 ND ND
Test Item(s) Perfluorooctanesulfonate (PFOS)^ Perfluorooctanoic Acid (PFOA)		<u>Unit</u> mg/kg mg/kg	MDL 10 10	006 ND ND
Test Item(s) Perfluorooctanesulfonate (PFOS)^ Perfluorooctanoic Acid (PFOA)		<u>Unit</u> mg/kg mg/kg	MDL 10 10	<u>011</u> ND ND

Notes:

(1) ^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid, Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

Polycyclic aromatic hydrocarbons (PAHs)

Test Method: With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Benzo(a)pyrene(BaP)	1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	1	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)	1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)	1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	1	mg/kg	0.1	ND
Chrysene(CHR)	1	mg/kg	0.1	ND



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Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	<u>001</u>
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	ND
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	ND
Pyrene(PYR)		-	mg/kg	0.1	ND
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	ND
Sum of Acenaphthylene, Acenaphthe	ene, Fluorene, Phenanthrene,	50	mg/kg	-	ND
Pyrene, Anthracene, Fluoranthene					
Naphthalene(NAP)		10	mg/kg	0.1	ND
Sum of 18 PAHs		50	mg/kg	-	ND
Material Category		-	-	-	3
Conclusion					PASS
Test Item(s)		<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Benzo(a)pyrene(BaP)		1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)		1	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)		1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)		1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)		1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)		1	mg/kg	0.1	ND
Chrysene(CHR)		1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	ND
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	ND
Pyrene(PYR)		-	mg/kg	0.1	ND
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	ND
Sum of Acenaphthylene, Acenaphthe	ene, Fluorene, Phenanthrene,	50	mg/kg	-	ND
Pyrene, Anthracene, Fluoranthene					
Naphthalene(NAP)		10	mg/kg	0.1	ND
Sum of 18 PAHs		50	mg/kg	-	ND
Material Category		-	-	-	3



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Test Item(s) Conclusion		<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u> PASS
Test Item(s)		<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Benzo(a)pyrene(BaP)		1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)		1	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)		1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)		1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)		1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)		1	mg/kg	0.1	ND
Chrysene(CHR)		1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	ND
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	ND
Pyrene(PYR)		-	mg/kg	0.1	ND
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	ND
Sum of Acenaphthylene, Acenaphthe	ene, Fluorene, Phenanthrene,	50	mg/kg	-	ND
Pyrene, Anthracene, Fluoranthene					
Naphthalene(NAP)		10	mg/kg	0.1	ND
Sum of 18 PAHs		50	mg/kg	-	ND
Material Category		-	-	-	3
Conclusion					PASS
Test Item(s)		<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>004</u>
Benzo(a)pyrene(BaP)		1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)		1	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)		1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)		1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)		1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)		1	mg/kg	0.1	ND
Chrysene(CHR)		1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	ND
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND



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Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	004
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	ND
Pyrene(PYR)		-	mg/kg	0.1	ND
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	ND
Sum of Acenaphthylene, Acenaphthe	ene, Fluorene, Phenanthrene,	50	mg/kg	-	ND
Pyrene, Anthracene, Fluoranthene					
Naphthalene(NAP)		10	mg/kg	0.1	ND
Sum of 18 PAHs		50	mg/kg	-	ND
Material Category		-	-	-	3
Conclusion					PASS
Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	<u>005</u>
Benzo(a)pyrene(BaP)		1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)		1	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)		1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)		1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)		1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)		1	mg/kg	0.1	ND
Chrysene(CHR)		1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	ND
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	ND
Pyrene(PYR)		-	mg/kg	0.1	ND
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	ND
Sum of Acenaphthylene, Acenaphthe	ene, Fluorene, Phenanthrene,	50	mg/kg	-	ND
Pyrene, Anthracene, Fluoranthene					
Naphthalene(NAP)		10	mg/kg	0.1	ND
Sum of 18 PAHs		50	mg/kg	-	ND
Material Category		-	-	-	3
Conclusion					PASS
Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	<u>006</u>
Benzo(a)pyrene(BaP)		1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)		1	mg/kg	0.1	ND



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Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	006
Benzo(a)anthracene(BaA)		1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)		1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)		1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)		1	mg/kg	0.1	ND
Chrysene(CHR)		1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	ND
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	ND
Pyrene(PYR)		-	mg/kg	0.1	ND
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	ND
Sum of Acenaphthylene, Acenaphthe	ne, Fluorene, Phenanthrene,	50	mg/kg	-	ND
Pyrene, Anthracene, Fluoranthene					
Naphthalene(NAP)		10	mg/kg	0.1	ND
Sum of 18 PAHs		50	mg/kg	-	ND
Material Category		-	-	-	3
Conclusion					PASS
Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	<u>011</u>
Benzo(a)pyrene(BaP)		1	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)		1	mg/kg	0.1	0.5
Benzo(a)anthracene(BaA)		1	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)		1	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)		1	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)		1	mg/kg	0.1	ND
Chrysene(CHR)		1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)		1	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)		1	mg/kg	0.1	3.3#
Indeno(1,2,3-c,d)pyrene(IPY)		1	mg/kg	0.1	0.2
Acenaphthylene(ANY)		-	mg/kg	0.1	ND
Acenaphthene(ANA)		-	mg/kg	0.1	ND
Fluorene(FLU)		-	mg/kg	0.1	ND
Phenanthrene(PHE)		-	mg/kg	0.1	0.3
Pyrene(PYR)		-	mg/kg	0.1	12.0
Anthracene(ANT)		-	mg/kg	0.1	ND
Fluoranthene(FLT)		-	mg/kg	0.1	1.2



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Test Item(s)		<u>Limit</u>	<u>Unit</u>	MDL	<u>011</u>
Sum of Acenaphthylene, Acenaph	thene, Fluorene, Phenanthrene,	50	mg/kg	-	13.5
Pyrene, Anthracene, Fluoranthene)				
Naphthalene(NAP)		10	mg/kg	0.1	0.2
Sum of 18 PAHs		50	mg/kg	-	17.7
Material Category		-	-	-	3
Conclusion					FAIL

Notes:

As per client information, the tested sample is not toy's product which is under the directive of ProdSG. AfPS (German commission for Product Safety): GS PAHs requirements

Parameter	Category 1	Catego	ory 2	Category	3
	Material intended to be put in the mouth or toys with intended skin contact (longer than 30 s).	Materials not falling under category 1 with foreseeable contact to skin for longer than 30 s (long-term skin) or frequent contact.		Materials not falling category 1 or 2 with contact to skin for le (short-term skin con	foreseeable ss than 30 s
		Toy under 2009/48/EC	Other products under ProdSG	Toy under 2009/48/EC	Other products under ProdSG
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
Benzo(a)anthracene 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
Chrysene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(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
Indeno(I,2,3-cd)pyrene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Acenaphthylene, Acenaphthene, fluorene,phenanthrene, pyrene, anthracene, fluoranthene, mg/kg	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene, mg/kg	<1	< 2	2	< 10	
Sum of 18 PAHs	<1	< 5	< 10	< 20	< 50

Azo Dyes

Test Method: According to Ref. EN 14362-1:2012- Analysis was conducted with GC-MS/HPLC-DAD.



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Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitroto	luene	99-55-8	30	mg/kg	5	ND
4-chloroaniline		106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole						
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND
3.3'-dimethoxybenzidine		119-90-4	30	mg/kg	5	ND
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenylm	ethane /	838-88-0	30	mg/kg	5	ND
4,4'-methylenedi-o-toluidine						
p-cresidine		120-71-8	30	mg/kg	5	ND
4,4'-methylene-bis-(2-chloroaniline)		101-14-4	30	mg/kg	5	ND
4,4'-oxydianiline		101-80-4	30	mg/kg	5	ND
4,4'-thiodianiline		139-65-1	30	mg/kg	5	ND
o-toluidine		95-53-4	30	mg/kg	5	ND
4-methyl-m-phenylenediamine /		95-80-7	30	mg/kg	5	ND
2,4-Toluylendiamine						
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND
Conclusion						**
Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	MDL	<u>002</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitroto	luene	99-55-8	30	mg/kg	5	ND
4-chloroaniline		106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole					-	- ·-
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND



3.3'-dimethoxybenzidine

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30

mg/kg

ND

5



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Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	MDL	002
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenylm	ethane /	838-88-0	30	mg/kg	5	ND
4,4'-methylenedi-o-toluidine				0 0		
p-cresidine		120-71-8	30	mg/kg	5	ND
4,4'-methylene-bis-(2-chloroaniline)		101-14-4	30	mg/kg	5	ND
4,4'-oxydianiline		101-80-4	30	mg/kg	5	ND
4,4'-thiodianiline		139-65-1	30	mg/kg	5	ND
o-toluidine		95-53-4	30	mg/kg	5	ND
4-methyl-m-phenylenediamine /		95-80-7	30	mg/kg	5	ND
2,4-Toluylendiamine						
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND
Conclusion						**
Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitroto	oluene	99-55-8	30	mg/kg	5	ND
4-chloroaniline		106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole						
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND
3.3'-dimethoxybenzidine		119-90-4	30	mg/kg	5	ND
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenylm	ethane /	838-88-0	30	mg/kg	5	ND
4,4'-methylenedi-o-toluidine		120 71 0	20	malka	5	ND
p-cresidine		120-71-8 101-14-4	30	mg/kg		
4,4'-methylene-bis-(2-chloroaniline)			30	mg/kg	5	ND
4,4'-oxydianiline		101-80-4	30	mg/kg	5	ND
4,4'-thiodianiline		139-65-1	30	mg/kg	5	ND
o-toluidine		95-53-4	30	mg/kg	5	ND
4-methyl-m-phenylenediamine /		95-80-7	30	mg/kg	5	ND
2,4-Toluylendiamine		127 47 7	20	ma/lea	E	NID.
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND



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Test Report	No. SHAHG1928	588205 A02	Date: 13	3 Jan 2020	P	age 19 of 42
Test Item(s) Conclusion		CAS NO.	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u> **
Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	MDL	<u>004</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitroto	luene	99-55-8	30	mg/kg	5	ND
4-chloroaniline		106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole						
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND
3.3'-dimethoxybenzidine		119-90-4	30	mg/kg	5	ND
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenylme	ethane /	838-88-0	30	mg/kg	5	ND
4,4'-methylenedi-o-toluidine						
p-cresidine		120-71-8	30	mg/kg	5	ND
4,4'-methylene-bis-(2-chloroaniline)		101-14-4	30	mg/kg	5	ND
4,4'-oxydianiline		101-80-4	30	mg/kg	5	ND
4,4'-thiodianiline		139-65-1	30	mg/kg	5	ND
o-toluidine		95-53-4	30	mg/kg	5	ND
4-methyl-m-phenylenediamine /		95-80-7	30	mg/kg	5	ND
2,4-Toluylendiamine		407 47 7	20	ma m/l cm	E	ND
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND **
Conclusion						
Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	MDL	<u>005</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitroto	luene	99-55-8	30	mg/kg	5	ND
4-chloroaniline		106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole						
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND



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Test Report	No. SHAHG1928	8588205 A02	Date: 13	3 Jan 2020	Pa	age 20 of 42
Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	MDL	<u>005</u>
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND
3.3'-dimethoxybenzidine		119-90-4	30	mg/kg	5	ND
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenylm	ethane /	838-88-0	30	mg/kg	5	ND
4,4'-methylenedi-o-toluidine					_	
p-cresidine		120-71-8	30	mg/kg 	5	ND
4,4'-methylene-bis-(2-chloroaniline)		101-14-4	30	mg/kg	5	ND
4,4'-oxydianiline		101-80-4	30	mg/kg	5	ND
4,4'-thiodianiline		139-65-1	30	mg/kg	5	ND
o-toluidine		95-53-4	30	mg/kg	5	ND
4-methyl-m-phenylenediamine /		95-80-7	30	mg/kg	5	ND
2,4-Toluylendiamine		407.47.7	00		_	ND
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND **
Conclusion						**
Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>006</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitroto	luene	99-55-8	30	mg/kg	5	ND
4-chloroaniline		106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole						
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND
3.3'-dimethoxybenzidine		119-90-4	30	mg/kg	5	ND
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenylm 4,4'-methylenedi-o-toluidine	ethane /	838-88-0	30	mg/kg	5	ND
p-cresidine		120-71-8	30	mg/kg	5	ND
4,4'-methylene-bis-(2-chloroaniline)		101-14-4	30	mg/kg	5	ND
4,4'-oxydianiline		101-14-4	30	mg/kg	5	ND
, ,		139-65-1				
4,4'-thiodianiline o-toluidine		95-53-4	30 30	mg/kg mg/kg	5 5	ND ND
				mg/kg mg/kg	5 5	
4-methyl-m-phenylenediamine / 2,4-Toluylendiamine		95-80-7	30	mg/kg	5	ND
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND



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Test Item(s)		CAS NO.	<u>Limit</u>	<u>Unit</u>	MDL	<u>006</u>
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND
Conclusion						**
Test Item(s)		CAS NO.	Limit	Unit	<u>MDL</u>	<u>011</u>
4-Aminobiphenyl		92-67-1	30	mg/kg	5	ND
Benzidine		92-87-5	30	mg/kg	5	ND
4-chloro-o-toluidine		95-69-2	30	mg/kg	5	ND
2-naphthylamine		91-59-8	30	mg/kg	5	ND
o-aminoazotoluene		97-56-3	30	mg/kg	5	ND
5-nitro-o-toluidine / 2-Amino-4-nitrot	oluene	99-55-8	30	mg/kg	5	ND
4-chloroaniline	olderic	106-47-8	30	mg/kg	5	ND
4-methoxy-m-phenylenediamine /		615-05-4	30	mg/kg	5	ND
2,4-Diaminoanisole		010-00-4	30	mg/kg	3	ND
4,4'-diaminodiphenylmethane		101-77-9	30	mg/kg	5	ND
3,3'-dichlorobenzidine		91-94-1	30	mg/kg	5	ND
3.3'-dimethoxybenzidine		119-90-4	30	mg/kg	5	ND
3,3'-dimethylbenzidine		119-93-7	30	mg/kg	5	ND
3,3'-Dimethyl-4,4'-diaminodiphenyln	nethane /	838-88-0	30	mg/kg	5	ND
4,4'-methylenedi-o-toluidine				0 0		
p-cresidine		120-71-8	30	mg/kg	5	ND
4,4'-methylene-bis-(2-chloroaniline)		101-14-4	30	mg/kg	5	ND
4,4'-oxydianiline		101-80-4	30	mg/kg	5	ND
4,4'-thiodianiline		139-65-1	30	mg/kg	5	ND
o-toluidine		95-53-4	30	mg/kg	5	ND
4-methyl-m-phenylenediamine /		95-80-7	30	mg/kg	5	ND
2,4-Toluylendiamine						
2,4,5-trimethylaniline		137-17-7	30	mg/kg	5	ND
4-aminoazobenzene		60-09-3	30	mg/kg	5	ND
O-Anisidine		90-04-0	30	mg/kg	5	ND
Conclusion						**

Notes:

- (1) Test result for 4-aminoazobenzene (CAS no.: 60-09-3) is considered as "not detected" (i.e. <5mg/kg) since both aniline and/or 1,4-phenylenediamine is not found (i.e. <5mg/kg) by mentioned test method (2) **= For textiles no relevant amine exceeding 30 ppm (mg/kg) is required, the test method is only
- applicable for textile and the result is only for client's information.
- (3) Whenever 4-aminodiphenyl (CAS number 92-67-1), 2-naphylamine (CAS number 91-59-8) and 4-methoxy-m-phenylene-diamine (CAS number 615-05-4) is found, the use of banned azo colorants cannot be reliably ascertained without additional information, e.g. the chemical structure of the colorants used.



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(4) In case polyurethane materials are used, e.g. PU foams and coatings and in prints, it cannot be ruled out that certain amines, e.g. 4,4'-methylene-dianiline (MDA, CAS number 101-77-9) and 2,4-toluylen-diamine (TDA, CAS number 95-80-7) are released from the PU component and not from a banned azo colorant.

(5) In case of pigment prints care has to be taken that 4,4'-methylene-dianiline (MDA, CAS number 101-77-9) is not released from a source of banned azo colorants but from e.g. a chemical fixing agent.

Phthalates Content

Test Method: With reference to EN 14372:2004, analysis was performed by GC-MS.

Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Dibutyl Phthalate (DBP)	84-74-2	%	0.003	ND
Benzylbutyl Phthalate (BBP)	85-68-7	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	117-81-7	%	0.003	ND
Diisononyl Phthalate (DINP)	28553-12-0	%	0.01	ND
	/68515-48-0			
Di-n-octyl Phthalate (DNOP)	117-84-0	%	0.003	ND
Diisodecyl Phthalate (DIDP)	26761-40-0	%	0.01	ND
	/68515-49-1			
1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP)	68515-50-4	%	0.01	ND
Di-n-hexyl Phthalate (DnHP)	84-75-3	%	0.003	ND
Diisobutyl Phthalate (DIBP)	84-69-5	%	0.003	ND
Bis(2-methoxyethyl) Phthalate (DMEP)	117-82-8	%	0.003	ND
Diisopentylphthalate (DIPP)	605-50-5	%	0.003	ND
Di-n-pentyl Phthalates (DnPP)	131-18-0	%	0.003	ND
N-Pentyl-isopentylphthalate (nPiPP)	776297-69-9	%	0.003	ND
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4	%	0.01	ND
Diisoheptyl phthalate (DIHP)	71888-89-6	%	0.01	ND
1,2-Benzenedicarboxylic acid, dipentyl ester,	84777-06-0	%	0.01	ND
branched and linear				
Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Dibutyl Phthalate (DBP)	84-74-2	%	0.003	ND
Benzylbutyl Phthalate (BBP)	85-68-7	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	117-81-7	%	0.003	ND
Diisononyl Phthalate (DINP)	28553-12-0	%	0.01	ND
	/68515-48-0			
Di-n-octyl Phthalate (DNOP)	117-84-0	%	0.003	ND



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Test Item(s)		CAS NO.	<u>Unit</u>	MDL	002
Diisodecyl Phthalate (DIDP)		26761-40-0	%	0.01	ND
		/68515-49-1			
1,2-Benzenedicarboxylic,dihexyleste linear (DHP)	er, branched and	68515-50-4	%	0.01	ND
Di-n-hexyl Phthalate (DnHP)		84-75-3	%	0.003	ND
Diisobutyl Phthalate (DIBP)		84-69-5	%	0.003	
Bis(2-methoxyethyl) Phthalate (DME	:P)	117-82-8	%	0.003	
Diisopentylphthalate (DIPP)	,	605-50-5	%	0.003	
Di-n-pentyl Phthalates (DnPP)		131-18-0	%	0.003	
N-Pentyl-isopentylphthalate (nPiPP)		776297-69-9	%	0.003	
1,2-Benzenedicarboxylic acid, di-C7		68515-42-4	%	0.01	ND
and linear alkyl esters (DHNUP)					
Diisoheptyl phthalate (DIHP)		71888-89-6	%	0.01	ND
1,2-Benzenedicarboxylic acid, dipen	tyl ester,	84777-06-0	%	0.01	ND
branched and linear					
Test Item(s)		CAS NO.	<u>Unit</u>	MDL	<u>003</u>
Dibutyl Phthalate (DBP)		84-74-2	%	0.003	ND
Benzylbutyl Phthalate (BBP)		85-68-7	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)		117-81-7	%	0.003	ND
Diisononyl Phthalate (DINP)		28553-12-0 /68515-48-0	%	0.01	ND
Di-n-octyl Phthalate (DNOP)		117-84-0	%	0.003	ND
Diisodecyl Phthalate (DIDP)		26761-40-0 /68515-49-1	%	0.01	ND
1,2-Benzenedicarboxylic,dihexyleste linear (DHP)	er, branched and	68515-50-4	%	0.01	ND
Di-n-hexyl Phthalate (DnHP)		84-75-3	%	0.003	ND
Diisobutyl Phthalate (DIBP)		84-69-5	%	0.003	
Bis(2-methoxyethyl) Phthalate (DME	:P)	117-82-8	%	0.003	ND
Diisopentylphthalate (DIPP)	,	605-50-5	%	0.003	ND
Di-n-pentyl Phthalates (DnPP)		131-18-0	%	0.003	ND
N-Pentyl-isopentylphthalate (nPiPP)		776297-69-9	%	0.003	ND
1,2-Benzenedicarboxylic acid, di-C7 and linear alkyl esters (DHNUP)	-11-branched	68515-42-4	%	0.01	ND
Diisoheptyl phthalate (DIHP)		71888-89-6	%	0.01	ND
1,2-Benzenedicarboxylic acid, dipen	tyl ester,	84777-06-0	%	0.01	ND
branched and linear					
Test Item(s)		CAS NO.	<u>Unit</u>	MDL	004
Dibutyl Phthalate (DBP)		84-74-2		0.003	<u>-</u>
Benzylbutyl Phthalate (BBP)		85-68-7	%	0.003	ND



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Test Item(s)		CAS NO.	<u>Unit</u>	MDL	004
Bis-(2-ethylhexyl) Phthalate (DEHP)		117-81-7	%	0.003	
Diisononyl Phthalate (DINP)		28553-12-0	%	0.01	ND
		/68515-48-0			
Di-n-octyl Phthalate (DNOP)		117-84-0	%	0.003	ND
Diisodecyl Phthalate (DIDP)		26761-40-0	%	0.01	ND
		/68515-49-1			
1,2-Benzenedicarboxylic,dihexylester	, branched and	68515-50-4	%	0.01	ND
linear (DHP)		04.75.0	0/	0.000	ND
Di-n-hexyl Phthalate (DnHP)		84-75-3	%	0.003	
Diisobutyl Phthalate (DIBP)	5)	84-69-5	%	0.003	
Bis(2-methoxyethyl) Phthalate (DME))	117-82-8	%	0.003	
Diisopentylphthalate (DIPP)		605-50-5	%	0.003	
Di-n-pentyl Phthalates (DnPP)		131-18-0	%	0.003	
N-Pentyl-isopentylphthalate (nPiPP)		776297-69-9	%	0.003	
1,2-Benzenedicarboxylic acid, di-C7-	11-branched	68515-42-4	%	0.01	ND
and linear alkyl esters (DHNUP)		74000 00 6	0/	0.04	ND
Diisoheptyl phthalate (DIHP)	d aatan	71888-89-6	%	0.01	ND
1,2-Benzenedicarboxylic acid, dipenty branched and linear	yı ester,	84777-06-0	%	0.01	ND
branched and linear					
Test Item(s)		CAS NO.	<u>Unit</u>	MDL	005
Dibutyl Phthalate (DBP)		84-74-2	%	0.003	ND
Benzylbutyl Phthalate (BBP)		85-68-7	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)		117-81-7	%	0.003	ND
Diisononyl Phthalate (DINP)		28553-12-0	%	0.01	ND
		/68515-48-0			
Di-n-octyl Phthalate (DNOP)		117-84-0	%	0.003	
Diisodecyl Phthalate (DIDP)		26761-40-0	%	0.01	ND
		/68515-49-1	0/	0.04	
1,2-Benzenedicarboxylic,dihexylester linear (DHP)	r, branched and	68515-50-4	%	0.01	ND
Di-n-hexyl Phthalate (DnHP)		84-75-3	%	0.003	ND
Diisobutyl Phthalate (DIBP)		84-69-5	%	0.003	ND
Bis(2-methoxyethyl) Phthalate (DMER	P)	117-82-8	%	0.003	ND
Diisopentylphthalate (DIPP)		605-50-5	%	0.003	ND
Di-n-pentyl Phthalates (DnPP)		131-18-0	%	0.003	ND
N-Pentyl-isopentylphthalate (nPiPP)		776297-69-9	%	0.003	ND
1,2-Benzenedicarboxylic acid, di-C7-	11-branched	68515-42-4	%	0.01	ND
and linear alkyl esters (DHNUP)					
Diisoheptyl phthalate (DIHP)		71888-89-6	%	0.01	ND
1,2-Benzenedicarboxylic acid, dipenty branched and linear	yl ester,	84777-06-0	%	0.01	ND



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Test Report No. SHAHG1928588205 A02	Date: 13 Jan 2020	Page 25 of 42
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Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>006</u>
Dibutyl Phthalate (DBP)	84-74-2	%	0.003	ND
Benzylbutyl Phthalate (BBP)	85-68-7	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	117-81-7	%	0.003	ND
Diisononyl Phthalate (DINP)	28553-12-0	%	0.01	ND
	/68515-48-0			
Di-n-octyl Phthalate (DNOP)	117-84-0	%	0.003	ND
Diisodecyl Phthalate (DIDP)	26761-40-0	%	0.01	ND
	/68515-49-1	0/	0.04	
1,2-Benzenedicarboxylic,dihexylester, branched and	68515-50-4	%	0.01	ND
linear (DHP)	04.75.2	%	0.003	ND
Di-n-hexyl Phthalate (DnHP)	84-75-3 84-69-5	% %	0.003	ND
Diisobutyl Phthalate (DIBP)		% %	0.003	
Bis(2-methoxyethyl) Phthalate (DMEP)	117-82-8			ND
Diisopentylphthalate (DIPP)	605-50-5	%	0.003	ND
Di-n-pentyl Phthalates (DnPP)	131-18-0	%	0.003	ND
N-Pentyl-isopentylphthalate (nPiPP)	776297-69-9	%	0.003	ND
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4	%	0.01	ND
Diisoheptyl phthalate (DIHP)	71888-89-6	%	0.01	ND
1,2-Benzenedicarboxylic acid, dipentyl ester,	84777-06-0	%	0.01	ND
branched and linear	04777-00-0	70	0.01	ND
Stationed and linear				
Test Item(s)	CAS NO.	<u>Unit</u>	<u>MDL</u>	<u>011</u>
<u>restricting</u>	<u> </u>			NID
Dibutyl Phthalate (DBP)	84-74-2	%	0.003	ND
• •		% %	0.003 0.003	ND ND
Dibutyl Phthalate (DBP)	84-74-2			
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP)	84-74-2 85-68-7	%	0.003	ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP)	84-74-2 85-68-7 117-81-7	% %	0.003 0.003	ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP)	84-74-2 85-68-7 117-81-7 28553-12-0	% %	0.003 0.003	ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0	% % %	0.003 0.003 0.01	ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1	% % % %	0.003 0.003 0.01 0.003 0.01	ND ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0	% % %	0.003 0.003 0.01 0.003	ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4	% % % % %	0.003 0.003 0.01 0.003 0.01	ND ND ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4	% % % % %	0.003 0.003 0.01 0.003 0.01 0.01	ND ND ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP) Diisobutyl Phthalate (DIBP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4 84-75-3 84-69-5	% % % % %	0.003 0.003 0.01 0.003 0.01 0.001 0.003 0.003	ND ND ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP) Diisobutyl Phthalate (DIBP) Bis(2-methoxyethyl) Phthalate (DMEP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4 84-75-3 84-69-5 117-82-8	% % % % % %	0.003 0.003 0.01 0.003 0.01 0.001 0.003 0.003 0.003	ND ND ND ND ND ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP) Diisobutyl Phthalate (DIBP) Bis(2-methoxyethyl) Phthalate (DMEP) Diisopentylphthalate (DIPP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4 84-75-3 84-69-5 117-82-8 605-50-5	% % % % % %	0.003 0.003 0.01 0.003 0.01 0.001 0.003 0.003 0.003 0.003	ND
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP) Diisobutyl Phthalate (DIBP) Bis(2-methoxyethyl) Phthalate (DMEP) Diisopentylphthalate (DIPP) Di-n-pentyl Phthalates (DnPP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4 84-75-3 84-69-5 117-82-8 605-50-5 131-18-0	% % % % % % %	0.003 0.003 0.01 0.003 0.01 0.003 0.003 0.003 0.003 0.003	ND N
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP) Diisobutyl Phthalate (DIBP) Bis(2-methoxyethyl) Phthalate (DMEP) Diisopentylphthalate (DIPP) Di-n-pentyl Phthalates (DnPP) N-Pentyl-isopentylphthalate (nPiPP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4 84-75-3 84-69-5 117-82-8 605-50-5 131-18-0 776297-69-9	% % % % % % % %	0.003 0.003 0.01 0.003 0.01 0.001 0.003 0.003 0.003 0.003 0.003	ND N
Dibutyl Phthalate (DBP) Benzylbutyl Phthalate (BBP) Bis-(2-ethylhexyl) Phthalate (DEHP) Diisononyl Phthalate (DINP) Di-n-octyl Phthalate (DNOP) Diisodecyl Phthalate (DIDP) 1,2-Benzenedicarboxylic,dihexylester, branched and linear (DHP) Di-n-hexyl Phthalate (DnHP) Diisobutyl Phthalate (DIBP) Bis(2-methoxyethyl) Phthalate (DMEP) Diisopentylphthalate (DIPP) Di-n-pentyl Phthalates (DnPP)	84-74-2 85-68-7 117-81-7 28553-12-0 /68515-48-0 117-84-0 26761-40-0 /68515-49-1 68515-50-4 84-75-3 84-69-5 117-82-8 605-50-5 131-18-0	% % % % % % %	0.003 0.003 0.01 0.003 0.01 0.003 0.003 0.003 0.003 0.003	ND N



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Test Item(s) CAS NO. MDL 011 Unit Diisoheptyl phthalate (DIHP) 71888-89-6 % 0.01 ND 1,2-Benzenedicarboxylic acid, dipentyl ester, 84777-06-0 % 0.01 ND

branched and linear

Remark:

= Exceed the limit



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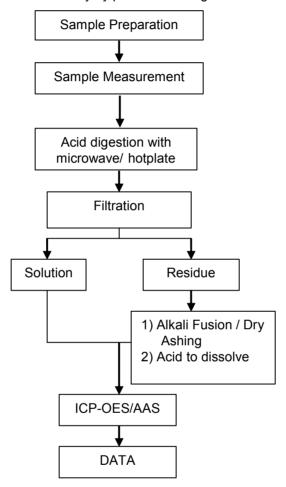
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Elements (IEC62321) Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart.





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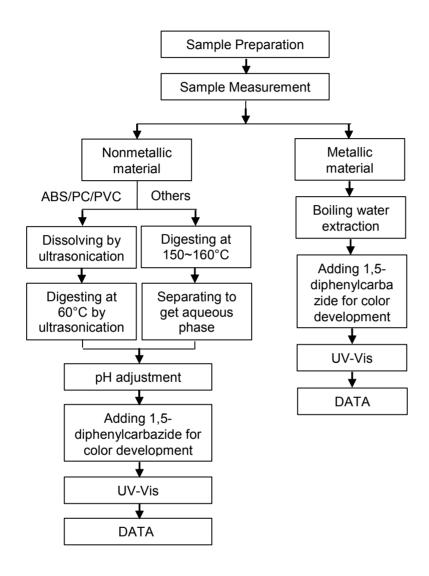
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Hexavalent Chromium (Cr(VI)) Testing Flow Chart





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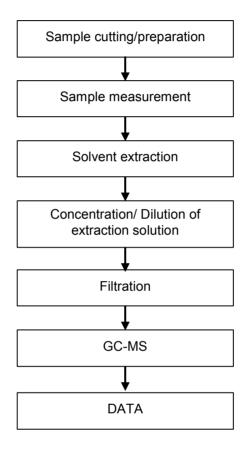


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PBBs/PBDEs Testing Flow Chart





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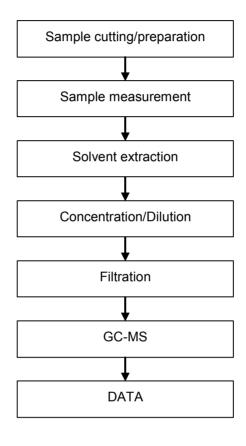


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Phthalates Testing Flow Chart





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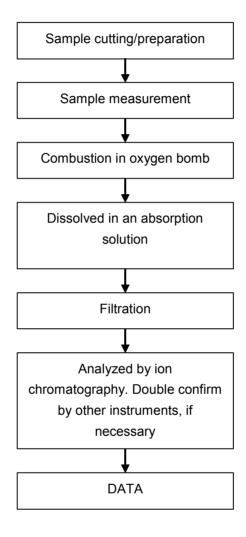
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Halogen Testing (oxygen bomb) Flow Chart





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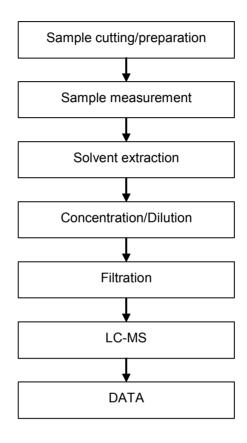


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PFOS/PFOA Testing Flow Chart





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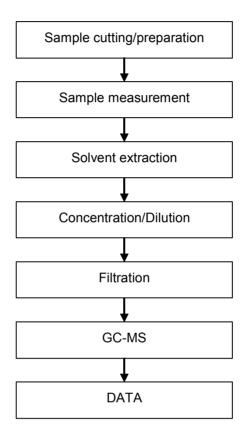


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PAHs Testing Flow Chart





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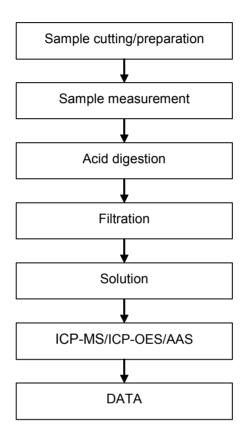


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Elements Testing Flow Chart





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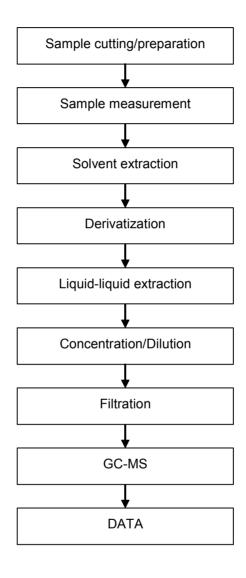


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Organotin Testing Flow Chart





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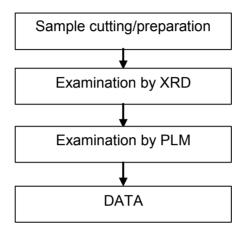
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Asbestos Testing Flow Chart





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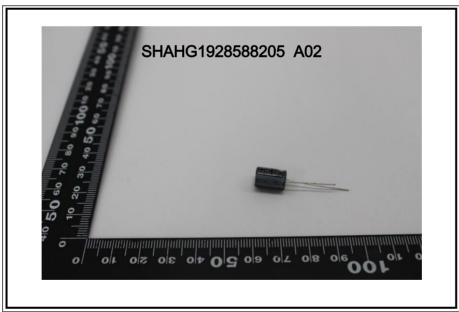
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Sample photo:







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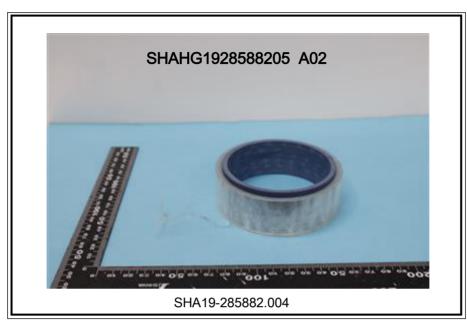
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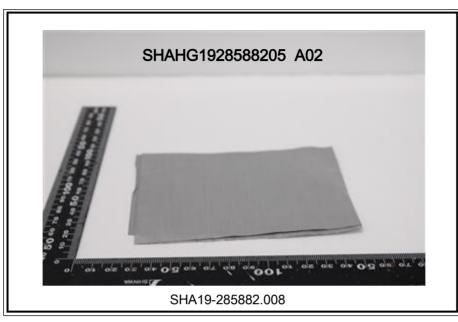
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