

## Test Report

No. SH558100/CHEM

Date: 8.29.2005

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GEM ELECTRONICS (SHANGHAI) CO., LTD.  
NO.438 ZHAOXIAN ROAD, JIADING INDUSTRIAL DEVELOPMENT PARK, JIA DING, SHANGHAI 201821,  
CHINA

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

Sample Name : SOIC 8  
SGS Ref No. : SHEC0050821722

Sample Receiving Date : August 19, 2005  
Testing Period : August 19 to August 29, 2005

Test Requested :

- 1) To determine the Cadmium content of the submitted sample.
- 2) To determine the Lead content of the submitted sample.
- 3) To determine Mercury content of the submitted sample.
- 4) To determine Hexavalent Chromium content of the submitted sample.
- 5) To determine the PBBs(Polybrominated biphenyls) PBDEs(PBDEs) (Polybrominated biphenyl ethers) content of the submitted sample.
- 6) To determine the PCBs(Polychlorinated Biphenyls) content of the submitted sample.
- 7) To determine the Polychlorinated Naphthalene Content of the submitted sample.
- 8) To determine the Chlorinated Paraffin content of the submitted sample.
- 9) To determine the Mirex(CAS NO:002385-85-5) Content of the submitted sample.
- 10) To determine the Organic-tin compounds content of the submitted sample.
- 11) To determine the PVC free (CAS No:9002-86-2) Content of the submitted sample.
- 12) To determine the Formaldehyde (CAS No:000050-00-0) Content of the submitted sample.
- 13) \* To determine the Asbestos Content of the submitted sample.
- 14) \*To determine the TBBP-A-BIS(CAS NO:21850-44-2)Content of the submitted sample.
- 15) \*To determine the CFC's(Chlorofluorocarbons), CHC's(Chlorinated hydrocarbon), HCFC's(Hydrogenated chlorofluorocarbons)Content of the submitted sample.
- 16) \*\*\*As specified by client, to detection and determination of certain listed aromatic amines derived from Azo Colorants

Test method/Test Results: Please refer to next page

Conclusion : 16) \*\*\*Based on the test result, azo colorants which can release one or more of the listed amines by cleavage of their azo group/s were not detected in the sample (s) or the commodity submitted.

Signed for and on behalf of  
SGS-CSTC  
Gila Zhang  
Supervisor  
SHANGHAI



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### Test method

- 1) With reference to BS EN 1122:2001, Method B or other acid digestion  
Analysis was performed by Inductively Coupled Argon Plasma – Atomic Emission Spectrometry (ICP-AES) or Atomic Absorption Spectrometry.
- 2) With reference to US EPA Method 3050B or other acid digestion  
Analysis was performed by Inductively Coupled Argon Plasma – Atomic Emission Spectrometry (ICP-AES) or Atomic Absorption Spectrometry.
- 3) With reference to US EPA 3052 or other acid digestion, Analysis was performed by Inductively Coupled Argon Plasma – Atomic Emission Spectrometry (ICP-AES) or US EPA7473 Analysis was performed by Hg Analyzer.
- 4) With reference to US EPA3060A and US EPA7196A  
Analysis was performed by UV-VIS Spectrometric method.
- 5) With reference to USEPA 8081A/8270C/3540C/3550B, Analysis was performed by GC/MS.
- 6) With reference to US EPA 8082, Analysis was performed by GC/MS.
- 7) With reference to US EPA 8081, Analysis was performed by GC/MS.
- 8) With reference to US EPA 8081, Analysis was performed by GC/MS.
- 9) With reference to US EPA 8081, Analysis was performed by GC/MS.
- 10) With reference to DIN 38407-13, Analysis was performed by GC/MS.
- 11) Analysis was performed by FTIR/HATR.
- 12) With reference to DIN 53315:1996. Analysis was performed by HPLC/DAD/MS
- 13) \* As per NIOSH 9000 method. Analysis was performed by XRD.
- 14) \* Analysis was performed by HPLC/DAD/MS.
- 15) \* With reference to US EPA 8260. Analysis was performed by GC/MS linked Headspace.(CFC's(Chlorofluorocarbons)) (CHC's(Chlorinated hydrocarbon)), HCFC's(Hydrogenated chlorofluorocarbons))
- 16) \*\*\*As per EN14362-2:2003 & § 35 LMBG 82.02.Z (July 2004) -Extraction test on coloured textile - Detection of the use of certain azo colorants are accessible to reducing agents without extraction with the use of Gas Chromatographic Mass Spectrometry (GC-MS)/Thin Layer Chromatography (TLC) Technique.

### Test Results

No.	Item	Unit	MDL	A.
1	Cadmium (Cd)	ppm	2	N.D.
2	Lead (Pb)	ppm	2	N.D.
3	Mercury (Hg)	ppm	2	N.D.
4	Hexavalent Chromium (Cr VI)	ppm	2	N.D.
5	PBBs(Polybrominated biphenyls)	---	---	---
	PBBs(Bromobiphenyl)	ppm	5	N.D.
	PBBs(Dibromobiphenyl)	ppm	5	N.D.
	PBBs(Tribromobiphenyl)	ppm	5	N.D.
	PBBs(Tetrabromobiphenyl)	ppm	5	N.D.
	PBBs(Pentabromobiphenyl)	ppm	5	N.D.
	PBBs(Hexabromobiphenyl)	ppm	5	N.D.

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	PBBs(Heptabromobiphenyl)	ppm	5	N.D.
	PBBs(Octabromobiphenyl)	ppm	5	N.D.
	PBBs(Nonabromobiphenyl)	ppm	5	N.D.
	PBBs(Polybrominated biphenyls)	ppm	5	N.D.
	PBBEs(PBDEs)(Polybrominated biphenyl ethers)	---	---	---
	PBBEs(PBDEs)(Monobromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Dibromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Tribromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Tetrabromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Pentabromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Hexabromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Heptabromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Octabromobiphenyl ether)	ppm	5	N.D.
	PBBEs(PBDEs)(Nonabromobiphenyl ether)	ppm	5	N.D.
PBBEs(PBDEs)(Decabromobiphenyl ether)	ppm	5	N.D.	
6	PCBs(Polychlorinated Biphenyls) Content	---	---	---
	2,4,4'-Trichlorobiphenyl (PCB 28) CAS 7012-37-5	ppm	0.5	N.D.
	2,2',5,5'-Tetrachloro-biphenyl (PCB 52) CAS 35693-99-3	ppm	0.5	N.D.
	2,2',4,5,5'-Pentachloro-biphenyl (PCB 101) CAS 37680-73-2	ppm	0.5	N.D.
	2,3',4,4',5-Pentachlorobiphenyl (PCB 118) CAS 31508-00-6	ppm	0.5	N.D.
	2,2',3,4,4',5'-Hexachloro-biphenyl (PCB 138) CAS 35065-28-2	ppm	0.5	N.D.
	2,2',4,4',5,5'-Hexachloro-biphenyl (PCB 153) CAS 35065-27-1	ppm	0.5	N.D.
	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) CAS 35065-29-3	ppm	0.5	N.D.
7	Polychlorinated Naphthalene Content	---	---	---
	2-Chlorinated Naphthalene	ppm	5	N.D.
	1,4-Dichlorinated Naphthalene	ppm	5	N.D.
	1,5-Dichlorinated Naphthalene	ppm	5	N.D.
	1,2-Dichlorinated Naphthalene	ppm	5	N.D.
	1,8-Dichlorinated Naphthalene	ppm	5	N.D.
	1,2,3,4-Tetrachlorinated Naphthalene	ppm	5	N.D.
	Octa-chlorinated Naphthalene	ppm	5	N.D.
8	Chlorinated Paraffin	ppm	30	N.D.

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9	Mirex	ppm	0.5	N.D.
10	Organic-tin compounds content	---	---	---
	Triphenyl Tin(TPT)	ppm	0.5	N.D.
	Tributyl Tin(TBT)	ppm	0.5	N.D.

### 11) PVC free content

Test Item(s):	Unit	MDL	A•
PVC free(CAS No:9002-86-2)	**	-	Negative

### 12) Formaldehyde content

Test Item(s):	Unit	MDL	A•
Formaldehyde(CAS No:000050-00-0)	ppm	0.2	N.D.

### 13)\* Asbestos Content

Test Item(s):	Unit	MDL	Result
			A•
Asbestos			
Anthrophyllite	**	-	Negative
Crocodolite	**	-	Negative
Amosite	**	-	Negative
Tremolite	**	-	Negative
Chrysotile	**	-	Negative
Actinolite	**	-	Negative

### 14) \* TBBP-A-BIS content

Test Item(s):	Unit	MDL	Result
			A•
TBBP-A-BIS(CAS NO:21850-44-2)	ppm	5	N.D.

### 15) \*CFC's(Chlorofluorocarbons), CHC's(Chlorinated hydrocarbon), HCFC's(Hydrogenated chlorofluorocarbons)Content

Test Item (s):	Unit	MDL	Result
			A•
CFC's(Chlorofluorocarbons)			
Group I			
Chlorofluorocarbon-11(CAS No:000075-69-4)	ppm	1	N.D.
Chlorofluorocarbon-12(CAS No:000075-71-8)	ppm	1	N.D.
Chlorofluorocarbon-113(CAS No:000076-13-1)	ppm	1	N.D.
Chlorofluorocarbon-114(CAS No:000076-14-2)	ppm	1	N.D.
Chlorofluorocarbon-115(CAS No:000076-15-3)	ppm	1	N.D.
Group III			

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Chlorofluorocarbon-13(CAS No:000075-72-9)	ppm	1	N.D.
Chlorofluorocarbon-111(CAS No:000354-56-3)	ppm	1	N.D.
Chlorofluorocarbon-112(CAS No:000076-12-0)	ppm	1	N.D.
Chlorofluorocarbon-211(CAS No:135401-87-5)	ppm	1	N.D.
Chlorofluorocarbon-212(CAS No:076564-99-3)	ppm	1	N.D.
Chlorofluorocarbon-213(CAS No:060285-54-3)	ppm	1	N.D.
Chlorofluorocarbon-214(CAS No:002268-46-4)	ppm	1	N.D.
Chlorofluorocarbon-215(CAS No:000076-17-5)	ppm	1	N.D.
Chlorofluorocarbon-216(CAS No:001652-80-8)	ppm	1	N.D.
Chlorofluorocarbon-217(CAS No:000422-86-6)	ppm	1	N.D.
<b>CHC's(Chlorinated hydrocarbon)</b>			
1,1,1,2-Tetrachloroethane(CAS No.:000630-20-6)	ppm	1	N.D.
1,1,1-Trichloroethane(CAS No.:000071-55-6)	ppm	1	N.D.
1,1,2,2-Tetrachloroethane(CAS No.:000079-34-5)	ppm	1	N.D.
1,1,2-Trichloroethane(CAS No.:000079-00-5)	ppm	1	N.D.
1,1-Dichloroethane(CAS No.:000075-35-4)	ppm	1	N.D.
1,1-Dichloroethane(CAS No.:000075-35-3)	ppm	1	N.D.
1,1-Dichloropropene(CAS No.:000563-58-6)	ppm	1	N.D.
1,2,3-Trichloropropane(CAS No.:000096-19-5)	ppm	1	N.D.
1,2-Dichloroethane(CAS No.:000107-06-2)	ppm	1	N.D.
1,2-Dichloropropane(CAS No.:000078-87-5)	ppm	1	N.D.
1,3-Dichloropropane(CAS No.:000142-28-9)	ppm	1	N.D.
2,2-Dichloropropane(CAS No.:000594-20-7)	ppm	1	N.D.
Carbon tetrachloride(CAS No:000056-23-5)	ppm	1	N.D.
Chloroethane(CAS No.:000075-00-3)	ppm	1	N.D.
Chloroform(CAS No.:000067-66-3)	ppm	1	N.D.
Chloromethane(CAS No.:000074-87-3)	ppm	1	N.D.
Cis-1,2-Dichloroethene(CAS No.:000156-59-2)	ppm	1	N.D.
Cis-1,3-Dichloropropene(CAS No.:010061-01-5)	ppm	1	N.D.
Hexachlorobutadiene(CAS No.:000087-68-3)	ppm	1	N.D.
Methylene Chloride(CAS No.:000075-09-2)	ppm	1	N.D.
Tetachloroethene(CAS No.:000630-20-6)	ppm	1	N.D.
trans-1,2-Dichloroethene(CAS No.:000156-60-5)	ppm	1	N.D.
trans-1,3-Dichloropropene(CAS No.:010061-02-6)	ppm	1	N.D.
Trichloroethylene(CAS No.:000079-01-6)	ppm	1	N.D.
<b>HCFC's(Hydrogenated chlorofluorocarbons)</b>			
Hydrochlorofluorocarbon-21(CAS No.:000075-43-4)	ppm	1	N.D.
Hydrochlorofluorocarbon-22(CAS No.:000075-45-6)	ppm	1	N.D.
Hydrochlorofluorocarbon-31(CAS No.:000593-70-4)	ppm	1	N.D.
Hydrochlorofluorocarbon-121(CAS No.:000354-14-3)	ppm	1	N.D.
Hydrochlorofluorocarbon-122(CAS No.:000354-21-2)	ppm	1	N.D.
Hydrochlorofluorocarbon-123(CAS No.:000306-83-1)	ppm	1	N.D.
Hydrochlorofluorocarbon-124(CAS No.:002837-89-0)	ppm	1	N.D.
Hydrochlorofluorocarbon-131(CAS No.:000359-28-4)	ppm	1	N.D.
Hydrochlorofluorocarbon-131b(CAS No.:000471-43-2)	ppm	1	N.D.
Hydrochlorofluorocarbon-133a(CAS No.:000075-88-7)	ppm	1	N.D.

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Hydrochlorofluorocarbon-141b(CAS No.:001717-00-6)	ppm	1	N.D.
Hydrochlorofluorocarbon-221	ppm	1	N.D.
Hydrochlorofluorocarbon-222(CAS No.:000422-30-0)	ppm	1	N.D.
Hydrochlorofluorocarbon-223	ppm	1	N.D.
Hydrochlorofluorocarbon-224	ppm	1	N.D.
Hydrochlorofluorocarbon-225ca(CAS No.:000422-56-0)	ppm	1	N.D.
Hydrochlorofluorocarbon-225cb(CAS No.:000507-55-1)	ppm	1	N.D.
Hydrochlorofluorocarbon-226(CAS No.:000431-87-8)	ppm	1	N.D.
Hydrochlorofluorocarbon-231	ppm	1	N.D.
Hydrochlorofluorocarbon-232	ppm	1	N.D.
Hydrochlorofluorocarbon-233	ppm	1	N.D.
Hydrochlorofluorocarbon-234	ppm	1	N.D.
Hydrochlorofluorocarbon-235(CAS No.:013838-16-9)	ppm	1	N.D.
Hydrochlorofluorocarbon-241	ppm	1	N.D.
Hydrochlorofluorocarbon-242	ppm	1	N.D.
Hydrochlorofluorocarbon-243(CAS No.:000338-75-0)	ppm	1	N.D.
Hydrochlorofluorocarbon-244	ppm	1	N.D.
Hydrochlorofluorocarbon-251	ppm	1	N.D.
Hydrochlorofluorocarbon-252	ppm	1	N.D.
Hydrochlorofluorocarbon-253(CAS No.:000354-06-1)	ppm	1	N.D.
Hydrochlorofluorocarbon-261(CAS No.:000420-97-3)	ppm	1	N.D.
Hydrochlorofluorocarbon-262(CAS No.:000420-97-3)	ppm	1	N.D.
Hydrochlorofluorocarbon-271	ppm	1	N.D.

16) \*\*\*To detection and determination of certain listed aromatic amines derived from Azo Colorants.

No.	Amines Substances	CAS-No.	Result
			<u>A •</u>
1.	4-aminodiphenyl/xenylamine/ Biphenyl-4-ylamine	92-67-1	n.d.
2.	Benzidin	92-87-5	n.d.
3.	4-chlor-o-toluidine	95-69-2	n.d.
4.	2-naphthylamine	91-59-8	n.d.
5.	o-aminoazotoluene/ 4-o-tolylazo-o-toluidine/ 4-amino-2',3-dimethylazobenzene	97-56-3	n.d.
6.	2-amino-4-nitrotoluol/5-nitro-o-toluidine	99-55-8	n.d.
7.	p-chloranilin/4-chloroaniline	106-47-8	n.d.
8.	2,4-diaminoanisol/ 4-methoxy-m-phenylenediamine	615-05-4	n.d.
9.	4,4'-diaminodiphenylmethane/ 4,4'-methylenedianiline	101-77-9	n.d.
10.	3,3'-dichlorobenzidine/ 3,3'-dichlorobiphenyl-4,4'-ylenediamine	91-94-1	n.d.
11.	3,3'-dimethoxybenzidine/o-dianisidine	119-90-4	n.d.
12.	3,3'-dimethylbenzidine/4,4'-bi-o-Toluidine	119-93-7	n.d.
13.	3,3'-dimethyl-4,4'-diaminodiphenylmethane/	838-88-0	n.d.

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	4,4'-methylenedi-o-toluidine		
14.	p-cresidin/6-methoxy-m-toluidine	120-71-8	n.d.
15.	4,4'-methylen-bis-(2-chloro-aniline)/ 2,2'-dichloro-4,4'methylene-dianiline	101-14-4	n.d.
16.	4,4'-oxydianiline	101-80-4	n.d.
17.	4,4'-thiodianiline	139-65-1	n.d.
18.	o-toluidine/2-aminotoluene	95-53-4	n.d.
19.	2,4-toluylendiamin/ 4-methyl-m-phenylenediamine	95-80-7	n.d.
20.	2,4,5-trimethylaniline	137-17-7	n.d.
21.	4-aminoazobenzene ♦	60-09-3	n.d.
22.	o-anisidine/ 2-methoxyaniline	90-04-0	n.d.
23.	2,4-Xylidin	95-68-1	n.d.
24.	2,6-Xylidin	87-62-7	n.d.

Overall Rating

PASS

Relevant Requirement (2002/61EC)

No relevant amine exceeding 30 ppm (mg/kg).

Note: n.d. = not detectable

Detection Limit = 5 ppm (mg/kg)

♦: the En 14632-2 method will enable further cleavage of 4-aminoazobenzene to non-forbidden amines: aniline and 1-4-phenylenediamine, therefore, the test method of § 35 LMBG 82.02.Z was employed to verify the presence of 4-aminoazobenzene

EN-14362-2 for European directive 2002/61/EC is corresponding to § LMBG B 82.02-4 of German Commodities Ordinance.

Forbidden Arylamines for Azo Dye Regulations

- No, 1-22-Commission of the European Communities: Directive 2002/61/EC adopted by the Council on 19 July 2002
- No, 1-20, 22-24- Client requirement

### Sample Appearance Description:

A. Black solid with grey printing and silvery metal (mix all)

Note : ppm=mg/kg

MDL= Method Detection Limit

N.D. = Not detected. (<MDL)

"---"= Not Applicable

"-" = Not Regulation

\*\*= Qualitative analysis(No Unit)

Negative = Undetectable / Positive = Detectable.

• The sample was analyzed on behalf of the applicant as mixing whole/part sample in one testing. The result(s) in report means average of whole sample. The result(s) will be different obviously if the sample was tested as requirement of ROHS.

\*\*\*These tests were subcontracted to SGS-SHSL TEXTLIE LAB (Date of testing: 2005/08/19-08/23).

\* These tests were subcontracted to SGS Taiwan Ltd (Date of testing: 2005/08/22-08/29).

\*\*\* End of Report \*\*\*

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