

ICP Test Report Certification Packet

Company name:	Littelfuse, Inc.
Product Series:	3AB Fuse
Product #:	314xxxP Series
Issue Date:	February 28, 2013
2011/65/EU)-restricted s packing/packaging mater In addition, it is hereby re for unit parts, the packing	Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC/ubstance nor such use, for materials to be used for unit parts, for rials, and for additives and the like in the manufacturing processes. Exported to you that the parts and sub-materials, the materials to be used /packaging materials, and the additives and the like in the manufacturing used of the following components.
	Issued by: KRISTEEN BACILA
(1) Parts, sub-materials This document co- Littelfuse, Inc.	
< Raw Materials U Please see Tab	
	measurable substances propriate pages as identifed in Table 1
Remarks :	



Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	910-282/ 910-005	Cap	3-6
	C610 (909-162, 909-165,	·	
2	909-532)	Ceramic Tube - Body	7-35
3	(3M-3779-PG) 087244	HMA	36-48
4	10-1185 (497xxx-001)	Element – Ni42Fe58MCuMSn	49-54
5	4-1357 (497xxx)	Ni 99.9	55-60
6	082xxx	Element - Ag Plated Cu	61-65
7	082xxx-001	Element - 99% Cu Sn Plated	66-73
8	YTW206 (692529)	Solder	74-78
9	AIM230 Fastcore H RSA605 (692539-003)	Solder	79-83
10	090187	Filler	84-90
11	090184	Filler	91-98
12	425901	Ink-Red	99-109
13	425902	Ink-Black	110-120
14	425904	Ink-Blue	121-131
15	425900	Ink-orange	132-142
16	425903	Ink-yellow	143-153
17	425907	Ink -green	154-164
18	425911	Ink-violet	165-175
19	934-006/934-057/ 934-058/934-061	Overcap (Fuse Copper Shell) (Base & Plating)	176-179
20	091254	Mineral Sand	180-186
21	YTW108 (692535-003)	Solder	187-191
22	EP608 (087355)	Glue (RoHS & Halogens)	192-203
	LF079020 (079xxx, 917-445xxxxx-P/	0 (0.1.00) 0 110 0 :	224.22-
23	917-480xxxx-P)	Cu(CA102) Cu110 Strip	204-207
24	917-481xxxx-P	Element – Zinc Alloy	208-211



NO.: A002R12050740-1R02 Date: May. 09, 2012 Page 1 of 4

Customer: SuZhou FuHong Electronic Industrial Co., Ltd.

Address: NO. 89 WEI DU ROAD, WANGTING TOWN, XIANGCHENG DISTRICT, SUZHOU, CHINA

Report on the submitted sample said to be

Sample name: Copper shell

Model: /

Item/Lot No.: / Material: / Buyer: / Supplier: /

Manufacturer: /

Sample received date: May. 07, 2012

Testing period: From May. 07, 2012 to May. 09, 2012

Testing Requested

As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample in accordance with Directive 2002/95/EC (RoHS).

Testing method:

Testing Item	Pretreatment method	Measuring instrument	MQL
Lead (Pb)	IEC 62321: 2008, section 9	ICP-OES	2mg/kg
Cadmium (Cd)	IEC 62321: 2008, section 9	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321: 2008, section 7	ICP-OES	2 mg/kg
Chromium (Cr VI)	IEC 62321: 2008, Annex B	UV-VIS	0.02mg/kg*

Note:

Conclusion:

-When tested as specified the submitted sample complied with the requirements of commission Decision of 18 Aug 2005 amending Directive 2002/95/EC notified under document 2005/618/EC.

******FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)******

Signed for and on behalf of Shenzhen AOV Testing Technology Co., Ltd, Kunshan Branch

Project Leader:

Li Tingting, Maggie

Chemical Test Director

Reviewed by: Weik

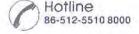
Wang Wexin, Weikin

Technical Director

Approved by:

Yuan Qi, Mickey

Lab Manager



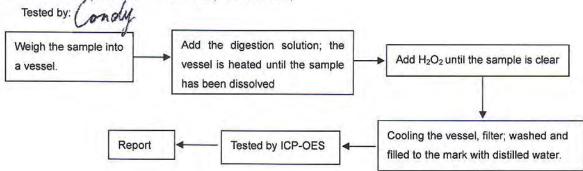
^{-* 0.02} mg/kg refers to the MQL of sample extraction liquid.



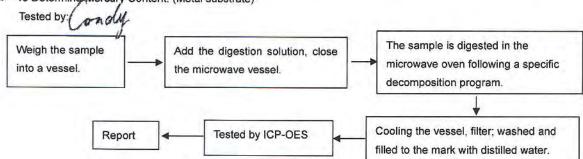
NO.: A002R12050740-1R02 Date: May. 09, 2012 Page 2 of 4

Test Flow:

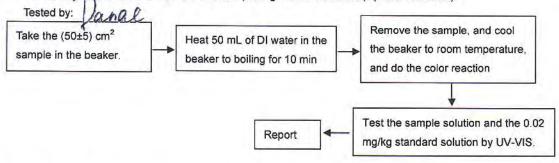
1. To Determine Lead, Cadmium Content: (Metal substrate)



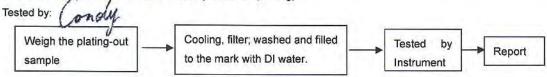
2. To Determine Mercury Content: (Metal substrate)



3. To Determine Hexavalent Chromium Content (boiling- water- extraction): (Metal substrate)



4. To Determine Lead, Cadmium and Mercury Content: (Plating)







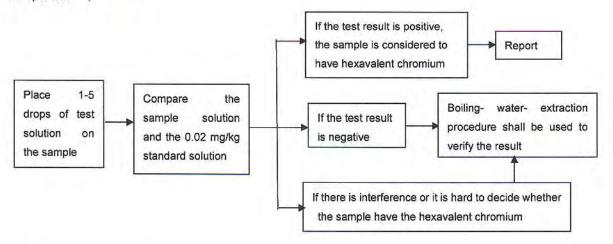
NO.: A002R12050740-1R02

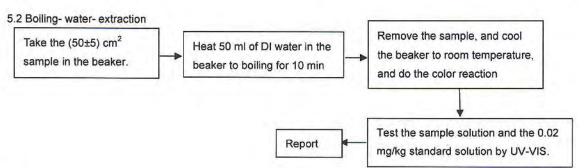
Date: May. 09, 2012

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To Determine Hexavalent Chromium Content in colorless and colored chromate coating on metals: (Plating)
 Tested by: 1







Sample Description:

Code	Sample Description
1-1	Substrate
1-2	Plating

Test Results:

Item	Unit	Unit RoHS Limit		ults
_			1-1	1-2**
Lead (Pb)	mg/kg	1000	N.D.	N.D.
Cadmium (Cd)	mg/kg	100	N.D.	N.D.
Mercury (Hg)	mg/kg	1000	N.D.	N.D.
Chromium (CrVI)	mg/kg	1000	Negative	Negative





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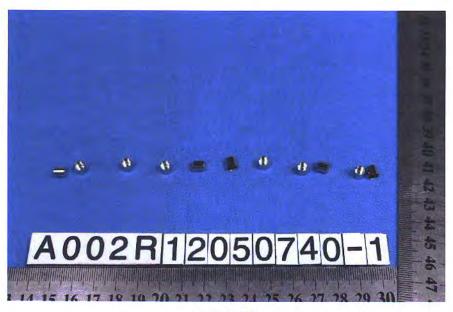
Note:

- -The new RoHS directive 2011/65/EU, on Jul. 21, 2011 come into force, on Jan. 03, 2013 the formal implementation, Directive 2002/95/EC shall be repealed simultaneously.
- -Specimens, which requested to determine Lead, Cadmium and Mercury Content, have been dissolved completely.
- -mg/kg=ppm
- -N.D.=not detected(<MQL)
- -MQL=Method Quantitation Limit
- -Negative=Absence of Cr (VI);
- -Positive=Presence of Cr (VI);

Uncertain= can not verify whether the sample have Hexavalent Chromium by spot-test.

- (The tested sample should be further verified by boiling-water-extraction method if the spot test result is uncertain or negative.)
- -**The test is based on the following assumption: The sample plating is a single layer and each part is uniform. The test result maybe cannot stand for the physical truth of sample plating.
- -Photo is included

Photograph of Sample



Copper shell

End of Report





Signature yalid For Question Please Contact with SGS www.tw.sgs.com

Test Report

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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

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

Sample Description

: CERAMIC

Style/Item No.

C610

Sample Receiving Date

: 2013/1/14

Testing Period

: 2013/1/14 TO 2013/01/21

Test Result(s)

: Please refer to next page(s).

Conclusion

: Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits as set by

RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Chenyu Kung / Signed for and on be SGS TAIWAN LTD. Chemical Laboratory - Taipei



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Test Result(s)

PART NAME No.1 : CREAM CERAMIC

Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	100
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	204	1000
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	1000
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	1
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	1
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	17
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	A
Polychlorinated Biphenyls (PCBs) (CAS No.: 1336-36-3)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.	

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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Polychlorinated Terphenyls (PCTs)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.	
Polychlorinated Naphthalene (PCNs)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	91
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	100	n.d.	
PVC	**	Analysis was performed by FTIR and FLAME Test.	-	Negative	1.2
Formaldehyde (CAS No.: 50-00-0)	mg/kg	With reference to ISO 17226-1(2008). Analysis was performed by HPLC/DAD.	3	n.d.	1.3
Monomethyl dibromodiphenyl methane (DBBT)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.	ĬĔ
Monomethyl dichlorodiphenyl methane (Ugilec121)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.	*
Monomethyl tetrachlorodiphenyl methane (Ugilec141)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.	
Halogen					100
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg		50	n.d.	
Halogen-Chlorine (CI) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2007.	50	n.d.	
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	Analysis was performed by IC.	50	n.d.	-
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.	
Organic-tin compounds				The second	
Tributyl Tin (TBT)	mg/kg	With reference to DIN 38407-13.	0.03	n.d.	34.
Triphenyl Tin (TphT)	mg/kg	Analysis was performed by GC/FPD.	0.03	n.d.	



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Asbestos					
Actinolite (CAS No.: 77536-66-4)	%	1	-	Negative	(-)
Amosite (CAS No.: 12172-73-5)	%	With reference to EPA 600/R-93/116	12	Negative	141
Anthophyllite (CAS No.: 77536-67- 5)	%	method. Analysis was performed by Stereo Microscope (SM), Dispersion	-	Negative	(8)
Chrysotile (CAS No.: 12001-29-5)	%	Staining Polarized Light Microscope (DS-PLM) and X-ray Diffraction	-	Negative	
Crocidolite (CAS No.: 12001-28-4)	%	Spectrometer (XRD).	17.50	Negative	-
Tremolite (CAS No.: 77536-68-6)	%	pestionietei (ARD).		Negative	-
AZO					
1): 4-AMINODIPHENYL (CAS No.: 92-67-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
2): BENZIDINE (CAS No.: 92-87- 5)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
3): 4-CHLORO-O-TOLUIDINE (CAS No.: 95-69-2)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
4): 2-NAPHTHYLAMINE (CAS No.: 91-59-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	1.0
5): O-AMINOAZOTOLUENE (CAS No.: 97-56-3)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
6): 2-AMINO-4-NITROTOLUENE (CAS No.: 99-55-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
7): P-CHLOROANILINE (CAS No.: 106-47-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
8): 2,4-DIAMINOANISOLE (CAS No.: 615-05-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
9): 4,4'- DIAMINODIPHENYLMETHANE (CAS No.: 101-77-9)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
10): 3,3'-DICHLOROBENZIDINE (CAS No.: 91-94-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
11): 3,3'-DIMETHOXYBENZIDINE (CAS No.: 119-90-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	•
12): 3,3'-DIMETHYLBENZIDINE (CAS No.: 119-93-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	4

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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Test Item(s)	Unit	Method	MDL	Result	Limit
	Oille	Metriod	MIDL	No.1	
13): 3,3'-DIMETHYL-4,4'- DIAMINODIPHENYLMETHANE (CAS No.: 838-88-0)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
14): P-CRESIDINE (2-METHOXY- 5-METHYLANILINE) (CAS No.: 120-71-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
15): 4,4'-METHYLENE-BIS- (2- CHLOROANILINE) (CAS No.: 101-14-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	4
16): 4,4'-OXYDIANILINE (CAS No.: 101-80-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	- 2
17): 4,4'-THIODIANILINE (CAS No.: 139-65-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
18): O-TOLUIDINE (CAS No.: 95- 53-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
19): 2,4-TOLUYLENEDIAMINE (CAS No.: 95-80-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	3
20): 2,4,5-TRIMETHYLANILINE (CAS No.: 137-17-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	3
21): O-ANISIDINE (CAS No.: 90- 04-0)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
22): P-AMINOAZOBENZENE (CAS No.: 60-09-3)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
23): 2,4-XYLIDINE (CAS No.: 95- 68-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-2
24): 2,6-XYLIDINE (CAS No.: 87- 62-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
CFC's (Chlorofluorocarbons)					
Group I					
Chlorofluorocarbon-11 (CAS No.: 75-69-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-12 (CAS No.: 75-71-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Chlorofluorocarbon-113 (CAS No.: 76-13-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	4
Chlorofluorocarbon-114 (CAS No.: 76-14-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-115 (CAS No.: 76-15-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Group III			-		
Chlorofluorocarbon-13 (CAS No.: 75-72-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	7.2
Chlorofluorocarbon-111 (CAS No.: 354-56-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-112 (CAS No.: 76-12-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Chlorofluorocarbon-211 (CAS No.: 422-78-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•
Chlorofluorocarbon-212 (CAS No.: 3182-26-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	Ī
Chlorofluorocarbon-213 (CAS No.: 2354-06-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•
Chlorofluorocarbon-214 (CAS No.: 29255-31-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	9
Chlorofluorocarbon-215 (CAS No.: 4259-43-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•

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Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Chlorofluorocarbon-216 (CAS No.: 661-97-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Chlorofluorocarbon-217 (CAS No.: 422-86-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFCs (Hydrochlorofluorocarbons)					
HCFC-21 (CAS No.: 75-43-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	- 1
HCFC-22 (CAS No.: 75-45-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-31 (CAS No.: 593-70-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-121 (CAS No.: 354-14-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-122 (CAS No.: 354-21-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-123 (CAS No.: 306-83-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-124 (CAS No.: 2837-89-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-131 (CAS No.: 359-28-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1-
HCFC-132b (CAS No.: 1649-08-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Test Item(s)	Links	Method	MDL	Result	Limit
Test Item(s)	Unit	Wethod	MIDL	No.1	
HCFC-133a (CAS No.: 75-88-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•
HCFC-141b (CAS No.: 1717-00-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	÷.
HCFC-142b (CAS No.: 75-68-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-221 (CAS No.: 422-26-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-222 (CAS No.: 422-49-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-223 (CAS No.: 422-52-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-224 (CAS No.: 422-54-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-225ca (CAS No.: 422-56-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	19
HCFC-225cb (CAS No.: 507-55-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	2
HCFC-226 (CAS No.: 431-87-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-231 (CAS No.: 421-94-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-232 (CAS No.: 460-89-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Test Item(s)	Unit	Method	MDL	Result	Limit
				No.1	
HCFC-233 (CAS No.: 7125-84-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	2
HCFC-234 (CAS No.: 425-94-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-235 (CAS No.: 460-92-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	10
HCFC-241 (CAS No.: 666-27-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-242 (CAS No.: 460-63-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-3
HCFC-243 (CAS No.: 460-69-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	4
HCFC-244	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-251 (CAS No.: 421-41-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•
HCFC-252 (CAS No.: 819-00-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-253 (CAS No.: 460-35-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-261 (CAS No.: 420-97-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-2
HCFC-262 (CAS No.: 421-02-03)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Halons					
Halon-1211 (CAS No.: 353-59-3)	mg/kg	With reference to US EPA 5021	1	n.d.	. . .
Halon-1301 (CAS No.: 75-63-8)	mg/kg	method. Analysis was performed by	1	n.d.	- 2
Halon-2402 (CAS No.: 124-73-2)	mg/kg	GC/MS.	1	n.d.	
CHCs (Chlorinate hydrocarbon)					
1,1,1,2-Tetrachloroethane (CAS No.: 630-20-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,1,1-Trichloroethane (CAS No.: 71-55-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,1,2,2-Tetrachloroethane (CAS No.: 79-34-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,1,2-Trichloroethane (CAS No.: 79-00-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
1,1-Dichloroethane (CAS No.: 75- 34-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
1,1-Dichloroethene (CAS No.: 75- 35-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
1,1-Dichloropropene (CAS No.: 563-58-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,2,3-Trichloropropane (CAS No.: 96-18-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1.20
1,2-Dichloroethane (CAS No.: 107-06-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	7



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Test Item(s)	Unit	Method	MDL	Result No.1	Limit
1,3-Dichloropropane (CAS No.: 142-28-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
2,2-Dichloropropane (CAS No.: 594-20-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	7.17
Carbon tetrachloride (CAS No.: 56-23-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	14
Chloroethane (CAS No.: 75-00-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Chloroform (CAS No.: 67-66-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chloromethane (CAS No.: 74-87- 3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•
cis-1,2-Dichloroethene (CAS No.: 156-59-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
cis-1,3-Dichloropropene (CAS No.: 10061-01-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Hexachlorobutadiene (CAS No.: 87-68-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	2
Methylene Chloride (CAS No.: 75- 09-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Tetrachloroethene (CAS No.: 127- 18-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Test Item(s)	Unit	Unit Method	MDL	Result No.1	Limit
	Omt	Wethod			
trans-1,2-Dichloroethene (CAS No.: 156-60-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
trans-1,3-Dichloropropene (CAS No.: 10061-02-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Trichloroethylene (CAS No.: 79- 01-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Sum of PBBs	mg/kg		-	n.d.	1000
Monobromobiphenyl	mg/kg	1	5	n.d.	
Dibromobiphenyl	mg/kg	1	5	n.d.	-
Tribromobiphenyl	mg/kg	1	5	n.d.	
Tetrabromobiphenyl	mg/kg	1	5	n.d.	-
Pentabromobiphenyl	mg/kg	1	5	n.d.	
Hexabromobiphenyl	mg/kg	1	5	n.d.	
Heptabromobiphenyl	mg/kg		5	n.d.	- 20
Octabromobiphenyl	mg/kg	1	5	n.d.	-
Nonabromobiphenyl	mg/kg		5	n.d.	141
Decabromobiphenyl	mg/kg	With reference to IEC 62321: 2008 and	5	n.d.	1 5
Sum of PBDEs	mg/kg	performed by GC/MS.		n.d.	1000
Monobromodiphenyl ether	mg/kg		5	n.d.	1
Dibromodiphenyl ether	mg/kg		5	n.d.	40
Tribromodiphenyl ether	mg/kg		5	n.d.	-
Tetrabromodiphenyl ether	mg/kg		5	n.d.	-
Pentabromodiphenyl ether	mg/kg		5	n.d.	-
Hexabromodiphenyl ether	mg/kg		5	n.d.	3-
Heptabromodiphenyl ether	mg/kg		5	n.d.	-
Octabromodiphenyl ether	mg/kg		5	n.d.	
Nonabromodiphenyl ether	mg/kg		5	n.d.	1 = 1 + 1
Decabromodiphenyl ether	mg/kg		5	n.d.	(-1

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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Note:

- 1. mg/kg = ppm : 0.1wt% = 1000ppm
- 2. n.d. = Not Detected
- 3. MDL = Method Detection Limit
- 4. " " = Not Regulated
- 5. ** = Qualitative analysis (No Unit)
- 6. Negative = Undetectable / Positive = Detectable
- 7. Testing range of asbestos qualitative analysis is from less than 0.1% to 100%. The judgment criterion: asbestos fibers being found is shown as "Positive"; asbestos fibers not being found is shown as "Negative".

PFOS Reference Information: POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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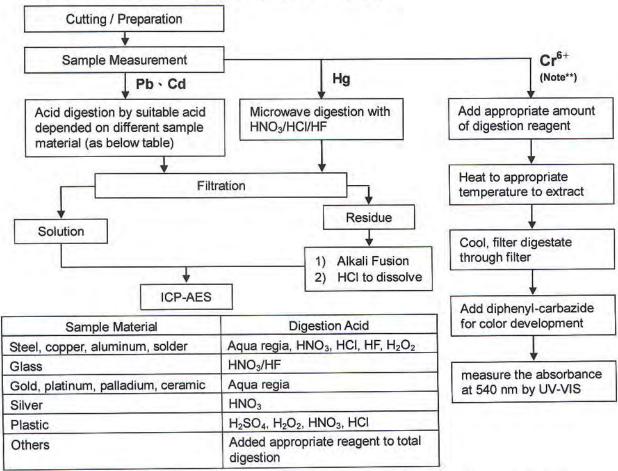


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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



Note**: (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95 ℃.

(2) For metallic material, add pure water and heat to boiling.

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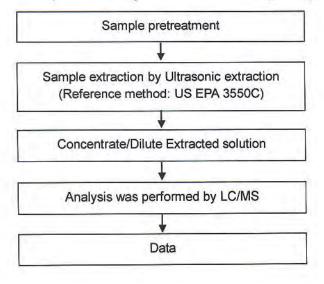
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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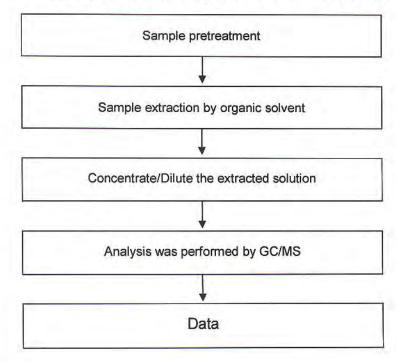
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



PCTs analytical flow chart

- Name of the person who made measurement: Barry Tseng
- Name of the person in charge of measurement: Troy Chang



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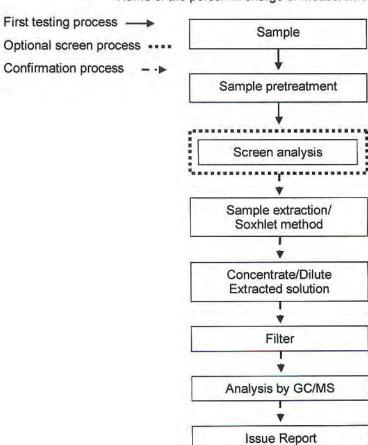
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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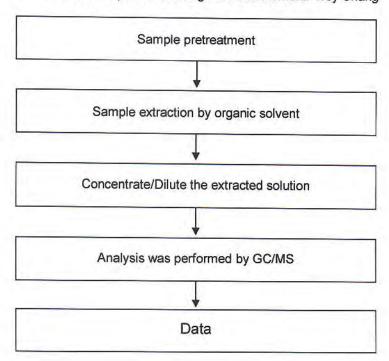
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



PCBs analytical flow chart

Name of the person who made measurement: Barry Tseng Name of the person in charge of measurement: Troy Chang





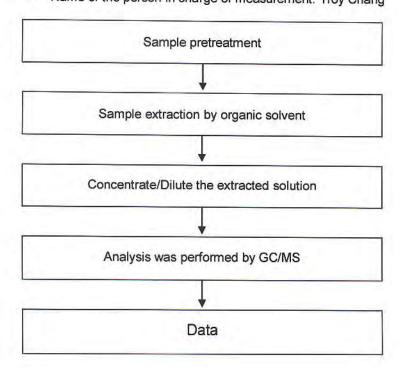
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Chlorinated Paraffins analytical flow chart

Name of the person who made measurement: Barry Tseng Name of the person in charge of measurement: Troy Chang



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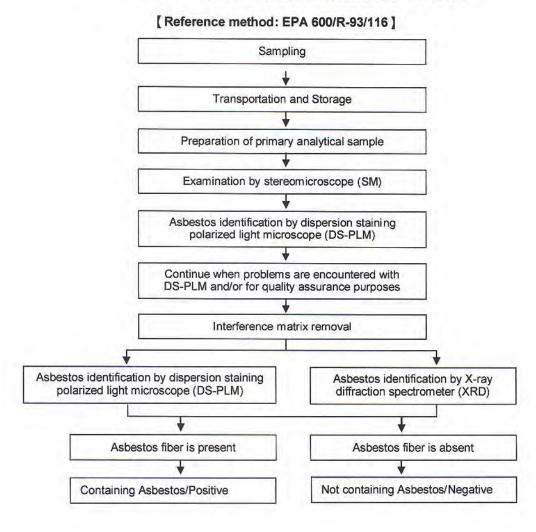
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Analysis flow chart for determination of Asbestos

- Name of the person who made measurement: Victor Kao
- Name of the person in charge of measurement: Wendy Wei



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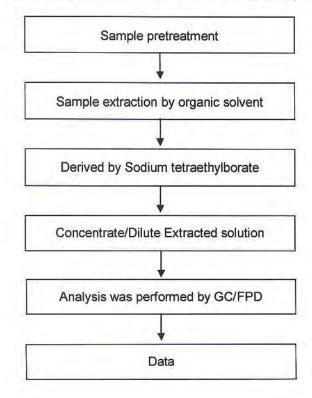
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Analytical flow chart of Organic-Tin content

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang





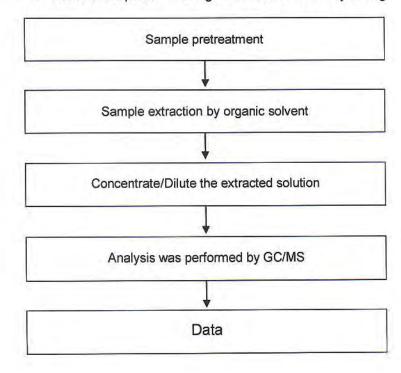
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



PCNs analytical flow chart

- Name of the person who made measurement: Barry Tseng
- Name of the person in charge of measurement: Troy Chang



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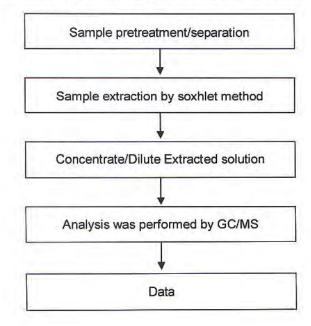
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Analytical flow chart of phthalate content

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang





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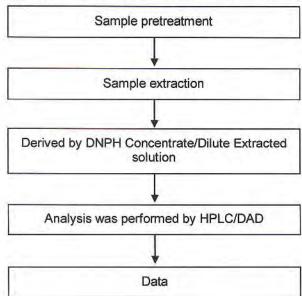
CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Formaldehyde analytical flow chart

- Name of the person who made measurement: Scott Ku
- Name of the person in charge of measurement: Troy Chang

[Test Method : US EPA 8315A . ISO 17226-1]



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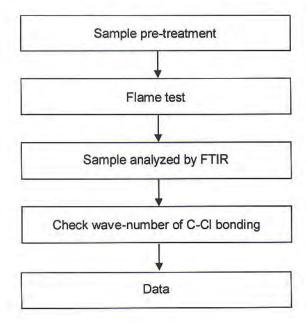
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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Analysis flow chart for determination of PVC in material

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang



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CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



DBBT analytical flow chart

- Name of the person who made measurement: Roman Wong Name of the person in charge of measurement: Troy Chang
 - Sample pretreatment/separation Sample extraction by soxhlet method Concentrate/Dilute Extracted solution Analysis was performed by GC/MS Data

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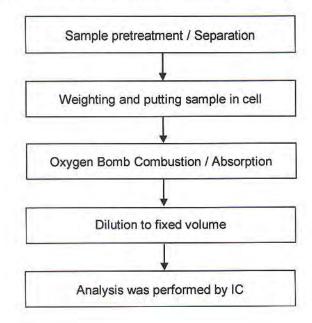
No.: CE/2013/13191 Date: 2013/01/21 Page: 27 of 29

CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang





Page: 28 of 29 No.: CE/2013/13191 Date: 2013/01/21

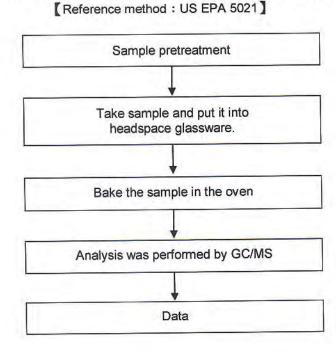
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Analytical flow chart of volatile organic compounds (VOCs)

Name of the person who made measurement: Chun Wu

Name of the person in charge of measurement: Shinjyh Chen



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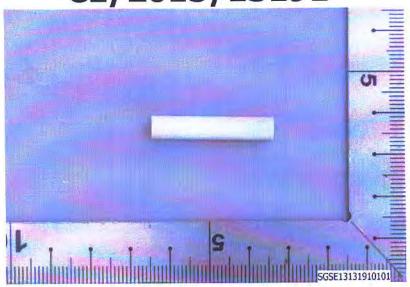
No.: CE/2013/13191 Date: 2013/01/21 Page: 29 of 29

CERAMTEC GMBH GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF



* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2013/13191



** End of Report **

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No. SHAEC1219975401

Date: 19 Nov 2012

Page 1 of 7

3M CHINA LIMITED 222# TIAN LIN ROAD, SHANGHAI (200233)

The following sample(s) was/were submitted and identified on behalf of the clients as: 3M 3779-PG

SGS Job No. : SP12-033081 - SH

Date of Sample Received: 14 Nov 2012

Testing Period : 14 Nov 2012 - 19 Nov 2012

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).

Conclusion: Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

JJ Fan

Approved Signatory

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No. SHAEC1219975401

Date: 19 Nov 2012

Page 2 of 7

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description
1 SHA12-199754.001 Brown solid

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs content by GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	001
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))	1000	mg/kg	2	ND
Sum of PBBs	1000	mg/kg	+	ND
Monobromobiphenyl	19	mg/kg	5	ND
Dibromobiphenyl	4	mg/kg	5	ND
Tribromobiphenyl	1.4	mg/kg	5	ND
Tetrabromobiphenyl	(+)	mg/kg	5	ND
Pentabromobiphenyl		mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	0.9	mg/kg	5	ND
Octabromobiphenyl	i i	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

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Test Report	No. SHAEC12199754	01	Date: 19	Nov 2012	Page 3 of 7
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>001</u>	
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	4	mg/kg	5	ND	
Heptabromodiphenyl ether		mg/kg	5	ND	
Octabromodiphenyl ether		mg/kg	5	ND	
Nonabromodiphenyl ether		mg/kg	5	ND	
Decabromodiphenyl ether	< <u>€</u>	mg/kg	5	ND	

Notes:

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

Hexabromocyclododecane (HBCDD)

Test Method: Determination of HBCDD by GC-MS based on IEC 62321:2008.

Test Item(s)	<u>Unit</u>	MDL	001
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Notes:

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

Phthalates

Test Method: Determination of phthalates by GC-MS based on EN 14372:2004.

Test Item(s)	<u>Unit</u>	MDL	001
Dibutyl Phthalate (DBP)	%	0.003	ND
Benzylbutyl Phthalate (BBP)	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	ND

Notes:

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.

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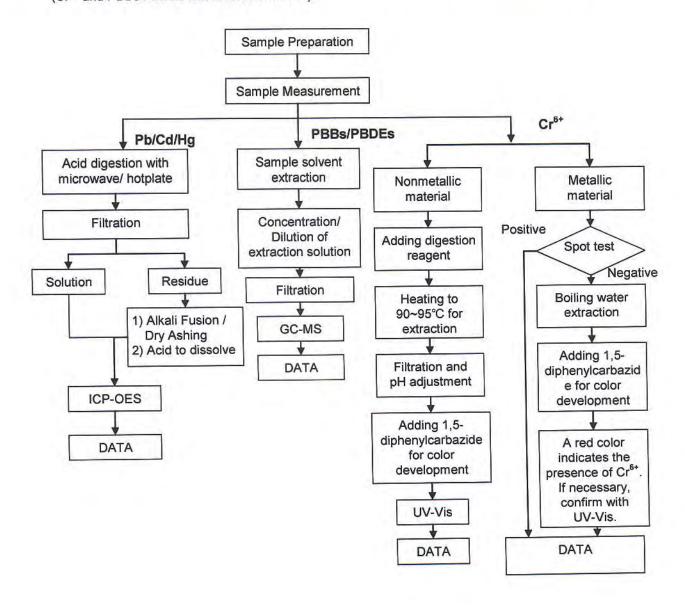
Date: 19 Nov 2012

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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Linda Li
- These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)



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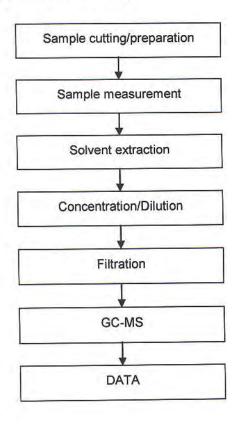
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Date: 19 Nov 2012

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Phthalates Testing Flow Chart

- 1) Name of the person who made testing: Elyn Yao
- 2) Name of the person in charge of testing: Rachel Zhang



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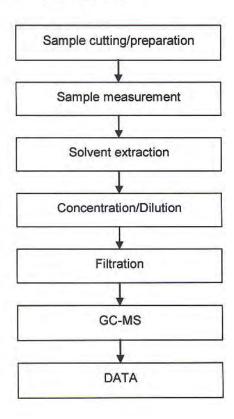
No. SHAEC1219975401

Date: 19 Nov 2012

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HBCDD Testing Flow Chart

- 1) Name of the person who made testing: Gary Xu
- 2) Name of the person in charge of testing: Jessy Huang



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Sample photo:



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No. SHAEC1219975401

Date: 19 Nov 2012

Page 1 of 6

3M CHINA LIMITED 222# TIAN LIN ROAD, SHANGHAI (200233)

The following sample(s) was/were submitted and identified on behalf of the clients as: 3M 3779-PG

SGS Job No.: SP12-033081 - SH

Date of Sample Received: 14 Nov 2012

Testing Period: 14 Nov 2012 - 19 Nov 2012

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).

Signed for and on behalf of SGS-CSTC Ltd.

JJ Fan

Approved Signatory

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No. SHAEC1219975401

Date: 19 Nov 2012

Page 2 of 6

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description

1 SHA12-199754.001 Brown solid

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

Halogen

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

Test Item(s)	<u>Unit</u>	MDL	001
Fluorine (F)	mg/kg	50	ND
Chlorine (CI)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
lodine (I)	mg/kg	50	ND

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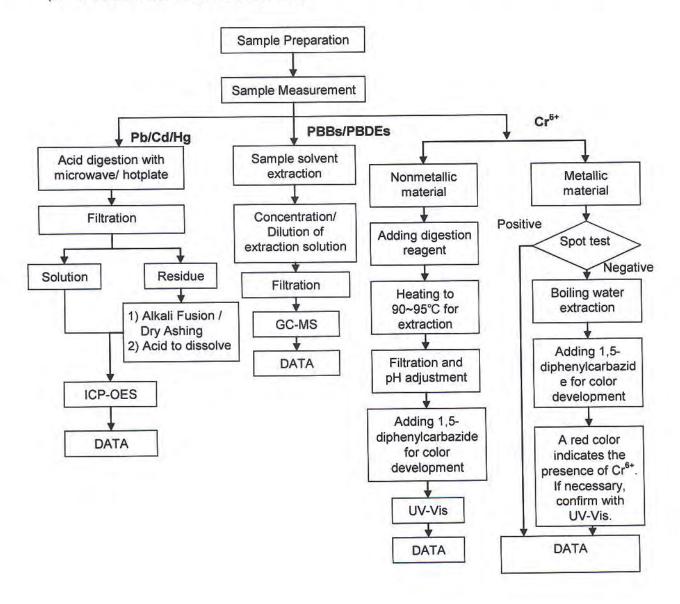
Date: 19 Nov 2012

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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Linda Li
- These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)



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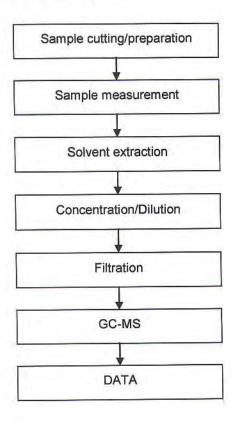
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Phthalates Testing Flow Chart

- 1) Name of the person who made testing: Elyn Yao
- 2) Name of the person in charge of testing: Rachel Zhang



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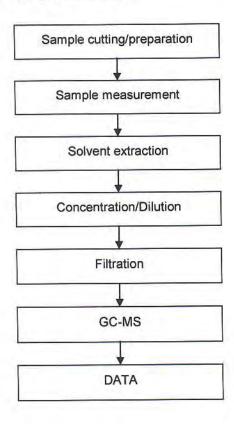
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HBCDD Testing Flow Chart

- 1) Name of the person who made testing: Gary Xu
- 2) Name of the person in charge of testing: Jessy Huang



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Intertek Consumer Goods GmbH · Würzburger Straße 152 · 90766 Fürth

Polyfil AG

Gina Gregorio Oberallmendstrasse 20A

6300 Zug / Switzerland

Fürth, 2012-12-19

Test report No. FUHL1236938

Testing of a material sample according to the RoHS directive 2011/65/EC

Sample description: Ni42Fe58MCuMSn wire; part no. 4500237197; batch 0380.6025

Arrival in lab: 2012-012-04; Period of XRF analysis incl. sample preparation and photo documentation: 2012-12-07 - 2012-12-10 Head of Inorganic Lab: Claudia List

Copying this test report is permitted only in agreement with the contracted lab. The test results refer only to the tested item. This report consists of 6 page(s).

The test methods signed with * are not listed in the attachment of the accreditation certificate.

Conclusion based on tested item

Test order	Status
testing according to the RoHS directive 2011/65/EC	conform°

Please see overview of test results

- Test results see next pages -





Page 2 of 6 page(s) of our test report No. FUHL1236938 dated 2012-12-19

Sample description: Ni42Fe58MCuMSn wire; part no. 4500237197; batch 0380.6025

nM = non Metal M = Metal cM = composite Material

List of component parts:

Sample No.	Part No.	Material	Description
236938	1	М	Ni42Fe58MCuMSn wire; part no. 4500237197; batch 0380.6025

Sitz Fürth Amtsgericht Fürth, HRB 5756 Ust-IdNr. DE169317871 Geschäftsführer Kay Grönhardt Rainer Mast



Page 3 of 6 page(s) of our test report No. FUHL1236938 dated 2012-12-19

Sample description: Ni42Fe58MCuMSn wire; part no. 4500237197; batch 0380.6025

Comment

LOD = Limit of Detection

BL = Below Limit
OL = Over Limit

X = Inconclusive, further test necessary

 σ = Standard deviation

CS = Composite sample

Remark:

Results were obtained by EDXRF for primary screening. Additional chemical testing using ICP (for Cd, Pb), AAS (for Hg), IC-UC/VIS (for CrVI) and GC/MS (for PBBs/PBDEs) are recommended, if the concentration exceeds the below warning value according to IEC 62321.

Element	Unit	non - metal	metal
Cd	mg / kg	$BL \le (70-3\sigma) < X < (130+3\sigma) \le OL$	$BL \le (70-3\sigma) < X < (130+3\sigma) \le OL$
Pb	mg / kg	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$
Hg	mg / kg	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$
Br	mg / kg	BL ≤ (300-3σ) < X	
Cr	mg / kg	BL ≤ (700-3σ) < X	BL ≤ (700-3σ) < X

Element	Unit	composite material
Cd	mg / kg	$LOD < X < (150+3\sigma) \le OL$
Pb	mg / kg	$BL \le (500-3\sigma) < X < (1500+3\sigma) \le OL$
Hg	mg / kg	$BL \le (500-3\sigma) < X < (1500+3\sigma) \le OL$
Br	mg / kg	BL ≤ (250-3σ) < X
Cr	mg / kg	BL ≤ (500-3σ) < X

Sitz Fürth Amtsgericht Fürth, HRB 5756 Ust-IdNr. DE169317871



Page 4 of 6 page(s) of our test report No. FUHL1236938 dated 2012-12-19

Sample description: Ni42Fe58MCuMSn wire; part no. 4500237197; batch 0380.6025

1. XRF screening

Method: XRF according to IEC 62321:2008*

Ì	Sample No.	Part No.	Pb	Hg	Cd	Cr _{total}	Br	
Ī	236938	1	BL	BL	BL	BL		•

Comment:

Elements	RoHS-limit value
Lead (Pb)	1000 mg/kg
Mercury (Hg)	1000 mg/kg
Cadmium (Cd)	100 mg/kg
Chromium VI (Cr VI)	1000 mg/kg
Polybrominated Biphenyle (PBBs)	1000 mg/kg
Polybrominated Diphenyl ether (PBDEs)	1000 mg/kg

Intertek Consumer Goods GmbH

Prüfleitung / Lab Manager

□ A. Breunig, □ K. Grönhardt, □ Dr. K. Laue-Schuler,
□ R. Micolay, □ M. Neumeister, □ Dr. R. Rätze, □ K. Scharrer, □ M. Tutsch

- Flow charts see next page(s) -

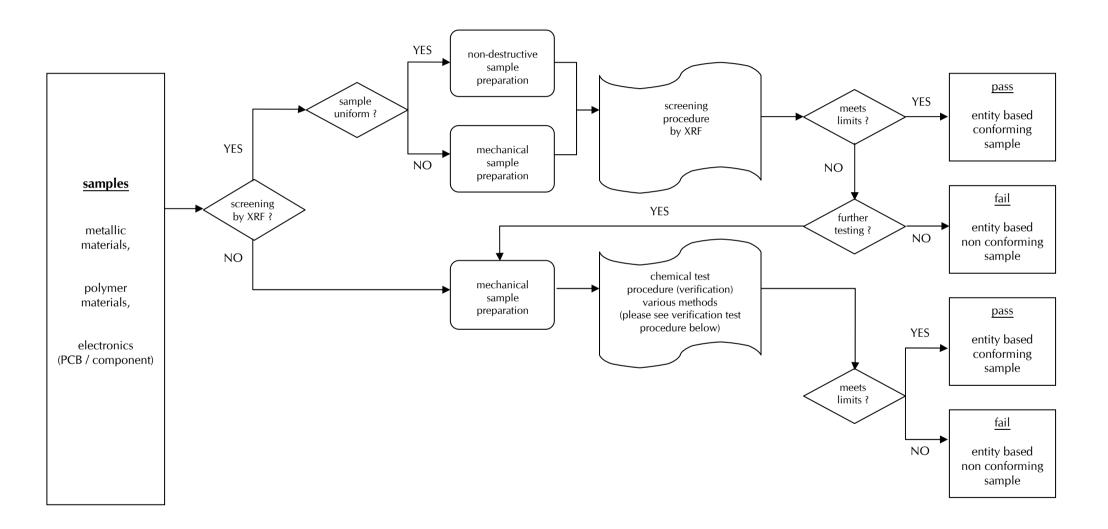
Sitz Fürth Amtsgericht Fürth, HRB 5756 Ust-IdNr. DE169317871

Status conform



Page 5 of 6 page(s)

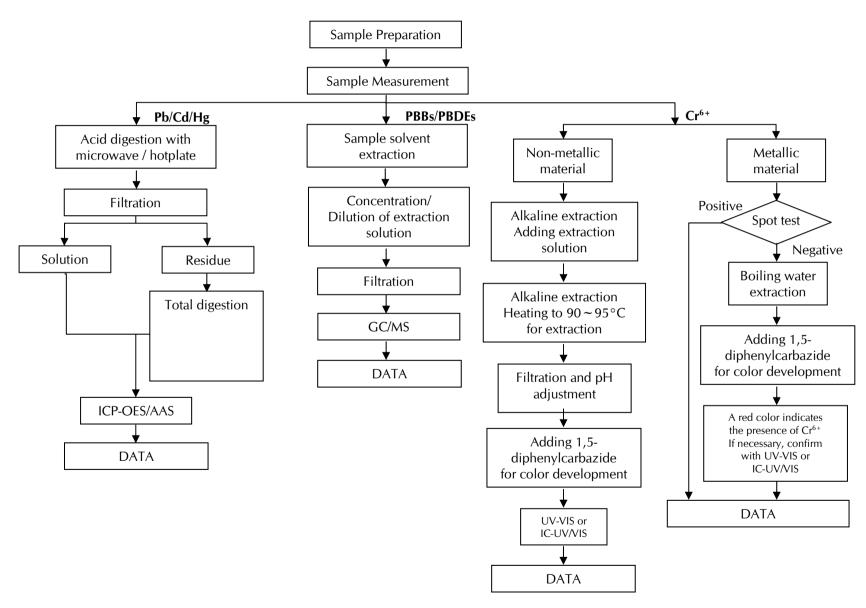
Test procedure





Page 6 of 6 page(s)

Verification test procedure



Sitz Fürth Amtsgericht Fürth, HRB 5756 Ust-IdNr. DE169317871 Geschäftsführer Kay Grönhardt Rainer Mast



Intertek Consumer Goods GmbH · Würzburger Straße 152 · 90766 Fürth

Polyfil AG

Gina Gregorio Oberallmendstrasse 20A

6300 Zug / Switzerland

Fürth, 2012-12-19

Test report No. FUHL1236940

Testing of a material sample according to the RoHS directive 2011/65/EC

Sample description: Ni99.9 wire

Arrival in lab: 2012-012-04; Period of XRF analysis incl. sample preparation and photo documentation: 2012-12-07 - 2012-12-10 Head of Inorganic Lab: Claudia List

Copying this test report is permitted only in agreement with the contracted lab. The test results refer only to the tested item. This report consists of 6 page(s).

The test methods signed with * are not listed in the attachment of the accreditation certificate.

Conclusion based on tested item

Test order	Status
testing according to the RoHS directive 2011/65/EC	conform°

Please see overview of test results

- Test results see next pages -





Page 2 of 6 page(s) of our test report No. FUHL1236940 dated 2012-12-19

Sample description: Ni99.9 wire

nM = non Metal M = Metal cM = composite Material

List of component parts:

Sample No.	Part No.	Material	Description
236940	1	М	Ni99.9 wire

Tel.: +49 911 74075 0

Fax: +49 911 74075 30

cg.germany@intertek.com

Sitz Fürth

Amtsgericht Fürth, HRB 5756

Ust-IdNr. DE169317871

Geschäftsführer

Kay Grönhardt

Rainer Mast



Page 3 of 6 page(s) of our test report No. FUHL1236940 dated 2012-12-19

Sample description: Ni99.9 wire

Comment

LOD = Limit of Detection

BL = Below Limit
OL = Over Limit

X = Inconclusive, further test necessary

 σ = Standard deviation

CS = Composite sample

Remark:

Results were obtained by EDXRF for primary screening. Additional chemical testing using ICP (for Cd, Pb), AAS (for Hg), IC-UC/VIS (for CrVI) and GC/MS (for PBBs/PBDEs) are recommended, if the concentration exceeds the below warning value according to IEC 62321.

Element	Unit	non - metal	metal
Cd	mg / kg	$BL \le (70-3\sigma) < X < (130+3\sigma) \le OL$	$BL \le (70-3\sigma) < X < (130+3\sigma) \le OL$
Pb	mg / kg	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$
Hg	mg / kg	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$	$BL \le (700-3\sigma) < X < (1300+3\sigma) \le OL$
Br	mg / kg	BL ≤ (300-3σ) < X	
Cr	mg / kg	BL ≤ (700-3σ) < X	BL ≤ (700-3σ) < X

Element Unit		composite material	
Cd mg/kg		$LOD < X < (150+3\sigma) \le OL$	
Pb mg/kg		$BL \le (500-3\sigma) < X < (1500+3\sigma) \le OL$	
Hg mg/kg		$BL \le (500-3\sigma) < X < (1500+3\sigma) \le OL$	
Br	mg / kg	BL ≤ (250-3σ) < X	
Cr	mg / kg	BL ≤ (500-3σ) < X	



Page 4 of 6 page(s) of our test report No. FUHL1236940 dated 2012-12-19

Sample description: Ni99.9 wire

1. XRF screening

Method: XRF according to IEC 62321:2008*

Sample No.	Part No.	Pb	Hg	Cd	Cr _{total}	Br	St
236940	1	BL	BL	BL	BL		cor

tatus onform

Comment:

Elements	RoHS-limit value
Lead (Pb)	1000 mg/kg
Mercury (Hg)	1000 mg/kg
Cadmium (Cd)	100 mg/kg
Chromium VI (Cr VI)	1000 mg/kg
Polybrominated Biphenyle (PBBs)	1000 mg/kg
Polybrominated Diphenyl ether (PBDEs)	1000 mg/kg

Intertek Consumer Goods GmbH

Prüfleitung / Lab Manager

□ A. Breunig, □ K. Grönhardt, □ Dr. K. Laue-Schuler,
□ R. Micolay, □ M. Neumeister, □ Dr. R. Rätze, □ K. Scharrer, □ M. Tutsch

- Flow charts see next page(s) -

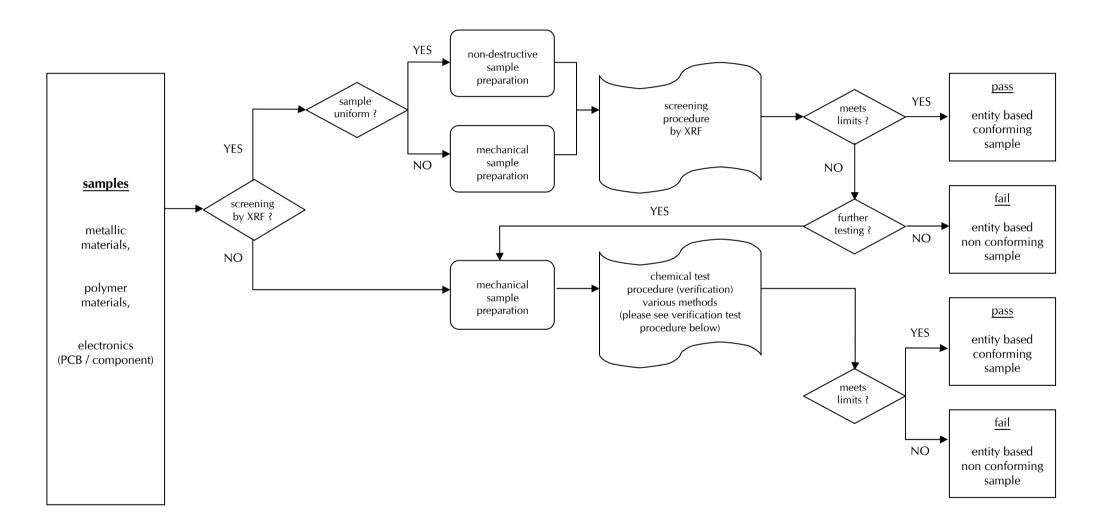
Sitz Fürth Amtsgericht Fürth, HRB 5756 Ust-IdNr. DE169317871

Geschäftsführer Kay Grönhardt Rainer Mast



Page 5 of 6 page(s)

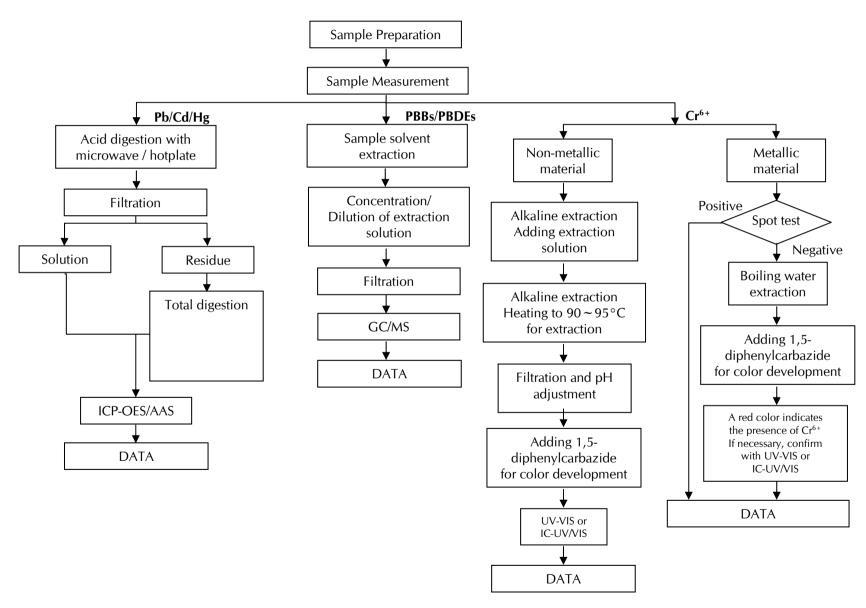
Test procedure





Page 6 of 6 page(s)

Verification test procedure



Sitz Fürth Amtsgericht Fürth, HRB 5756 Ust-IdNr. DE169317871 Geschäftsführer Kay Grönhardt Rainer Mast



Test Report Number: SHAH0036227401

Applicant: ELSCHUKOM ELEKTROSCHUTZKOMPONENTENBAU

GEWERBESTRASSE 87, D-98669 VEILSDORF,

GERMANY

Sample Description:

Two(2) pieces of submitted samples said to be:

(1) Mixed all kinds of metal substrates.

(2) Mixed all kinds of plating layers.

Item Name : Silver Plated & Pure Silver Wires.

Item No. : (B-1) 101.014 -. ----

- silver plated copper wire - Cu, Ag--%

(B-2) 101.0131.----

- pure silver wire - Ag 1000

(B-3) 101.0123.0---

- silver plated purest nickel wire - Ni99.98%, Ag1%

(B-4) 101.0182.0---

- silver-copper alloy plated copper plated iron nickel alloy wire

Date:

JAN 18, 2013

- ElconD, AgCu5%

(B-5) 101.0120.0---

- silver plated constantan wire - CuNi44, Ag5%

(B-6) 101.0151.0---

- silver plated copper - nickel 44 alloy wire

- CuNi44, Ag10%

(B-7) 1050--31.----

pure silver strips – Ag 1000 pure

Country Of Origin Germany.

Tests Conducted:

As requested by the applicant, for details refer to attached page(s).

To Be Continued

Authorized by:

For intertek testing services Ltd., Shanghai

Jacob Lin

General Manager





Test Report SHAH0036227401 Number:

Tests Conducted

(A) Test result of RoHS Directive:

Tasting item	<u>Result</u>		
Testing item	(1)		
Cadmium (Cd) content (mg/kg)	ND		
Lead (Pb) content (mg/kg)	ND		
Mercury (Hg) content (mg/kg)	ND		
Chromium (VI)(Cr ⁶⁺) result (by boiling water extraction on metal) (mg/kg with 50cm ²)	ND		

Testing item	<u>Result</u>		
resung item	(2)		
Cadmium (Cd) content (mg/kg) /Plating	ND		
Lead (Pb) content (mg/kg) /Plating	ND		
Mercury (Hg) content (mg/kg) /Plating	ND		
Chromium (VI)(Cr ⁶⁺) result (by boiling water extraction on metal) (mg/kg with 50cm ²) /Plating	ND		

Remark: mg/kg with 50cm² = milligram per kilogram with 50 square centimeter

ND = not detected

(B) RoHS Requirement:

Restricted substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ^{o+})	0.1% (1000 mg/kg)

The above limits were quoted from RoHS Directive 2011/65/EU for homogeneous material.

(C) Test method:

Testing item	Testing method	Reporting limit
Cadmium (Cd) content	With reference to IEC 62321 Edition 1.0: 2008, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES.	2 mg/kg
Lead (Pb) content	determined by ICP-OES.	2 mg/kg
Mercury (Hg) content	With reference to IEC 62321 Edition 1.0: 2008, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES.	2 mg/kg
Chromium (VI) (Cr ⁶⁺) content (for metal)	With reference to IEC 62321 Edition 1.0: 2008, by boiling water extraction and determined by UV-VIS Spectrophotometer.	0.02mg/kg with 50cm ² (in testing solution)

Date sample received: Jan.14, 2013 Testing period: Jan.14, 2013 To Jan.17, 2013

To Be Continued

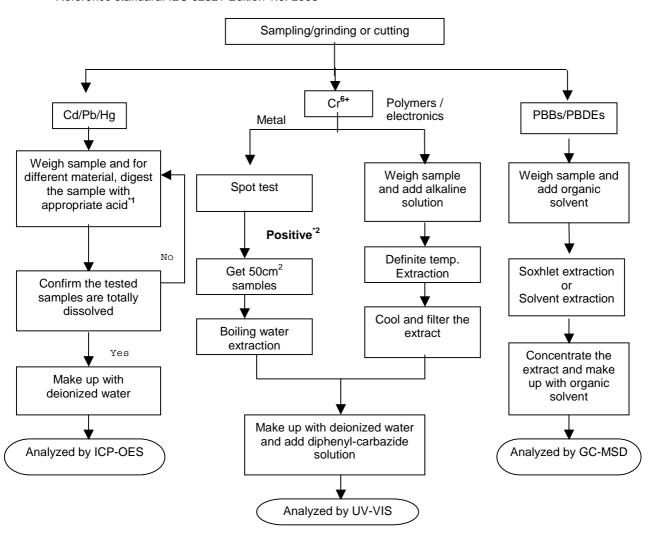


Test Report Number: SHAH0036227401

Tests Conducted

(D) Measurement flowchart:

Test for Cd/Pb/Hg/Cr (VI)/PBBs/PBDEs contents Reference standard: IEC 62321 Edition 1.0: 2008



Remarks:

*1: list of appropriate acid:

c. appropriate acia;		
<u>Material</u>	Acid added for digestion	
Polymers	HNO ₃ ,HCL,HF,H ₂ O ₂ ,H ₃ BO ₃	
Metals	HNO _{3,} HCL,HF	
Electronics	HNO ₃ ,HCL,H ₂ O ₂ ,HBF ₄	

^{*2:} If the result of spot test is positive, Chromium VI would be determined as detected.

To Be Continued



Test Report Number: SHAH0036227401



To Be Continued



Test Report Number: SHAH0036227401

Tests Conducted



End Of Report

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Number: TWNC00296620 Test Report

Applicant: Elschukom Elektroschutzkomponentenbau

Gewerbestrasse 87, D-98669 Veilsdorf,

Germany

Sample Description:

One (1) group of submitted samples said to be :

Sample Description : Tin plated Wires

Style / Item No. :Please see page two to three.

Country of Origin :Germany Date Sample Received : Jan 23, 2013 Date Test Started :Jan 23, 2013

Test Conducted :

As requested by the applicant, for details please refer to attached pages.

Authorized by: On Behalf of Intertek Testing Services Taiwan Limited



K. Y. Liang Director



Date : Jan 30, 2013



Number: TWNC00296620 Test Report

```
Sample Description:
Style / Item No. : (A-1)101--271.0---
                   - tin plated copper wire - Cu, Sn--%
                   (A-2)101--283.0---
                   - tin plated, copper plated copper nickel alloy wire
                   - Elcon30, Sn--%
                   (A-3)101--272.0---
                   - tin plated, copper plated steel wire - ElconF, Sn--%
                   (A-4)101--281.0---
                   - tin plated, copper plated iron nickel alloy wire
                   - ElconD, Sn--%
                   (A-5)101--221.0---
                   - tin plated copper nickel alloy wire - CuNi44, Sn--%
                   (A-6)101--24-.0---
                   - tin plated, silver plated copper wire - Cu, Ag--%, Sn--%
                   (A-7)101--257.0---
                   - tin plated brass wire - Cu80Zn20, Sn--%
```

Authorized by: On Behalf of Intertek Testing Services Taiwan Limited



K. Y. Liang Director





Number: TWNC00296620 Test Report

```
Sample Description:
Style / Item No.
                  : (A-9)101--234.0---
                   - tin plated silver copper alloy wire
                   - AgCu90, Sn--% (ElCu90, Sn--%)
                   (A-10)101--255.----
                   - tin plated copper zinc alloy wire - Cu70Zn30, Sn--%
                   (A-11)101--229.---
                   - tin plated copper nickel alloy wire - CuNi12, Sn--%
                   (A-12)101--235.---
                   - tin plated silver copper alloy wire - Ag72Cu28, Sn--%
                   (A-13)101--231.----
                   - tin plated silver wire - Ag1000, Sn--%
                   (A-14)101--236.---
                   - tin plated silver copper alloy wire
                   - Ag45Cu55, Sn--%(AgCu55, Sn)
                   (A-15)101--266.----
                   - tin plated silver copper alloy wire
                   - AgCu70, Sn--%(ElCu70, Sn)
                   (A-16)101--238.----
                   - tin plated silver copper alloy wire
                   - AgCu80, Sn--%(Elcu80, Sn)
                   (A-17)101--228.0---
                   - tin plated tungsten wire - W, Sn
```

Authorized by: On Behalf of Intertek Testing Services Taiwan Limited



K. Y. Liang Director





Test Conducted

(I) Test Result Summary:

Test Item	<u>Unit</u>	Test Method	Result Mixed all kinds of metal wire	RL
Heavy Metal				
Cadmium (Cd) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	37	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr ⁶⁺) content	mg/kg with 50 cm ²	With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.	Negative (#)	0.02

ppm = parts per million based on weight of tested sample = mg/kg Remarks:

> = Not detected ND

= Reporting Limit, Quantitation limit of analyte in sample mg/kg with 50cm² = milligram per kilogram with 50 square centimeter

Negative = A negative test result indicated positive observation was not found at the time of Test. When the spot test showed a negative result, the boiling water extraction procedure shall be used to verify the result.

= Due to the insufficient sample area, reduced total sample surface of $10~{\rm cm}^2$ was used and the dilution factor was adjusted accordingly.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Jan 23, 2013

Test Period : Jan 23, 2013 To Jan 29, 2013





Test Conducted

(${\rm I\hspace{-.1em}I}$) RoHS Limits:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) content	0.01% (100ppm)
Lead (Pb) content	0.1% (1000ppm)
Mercury (Hg) content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) content	0.1% (1000ppm)

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.

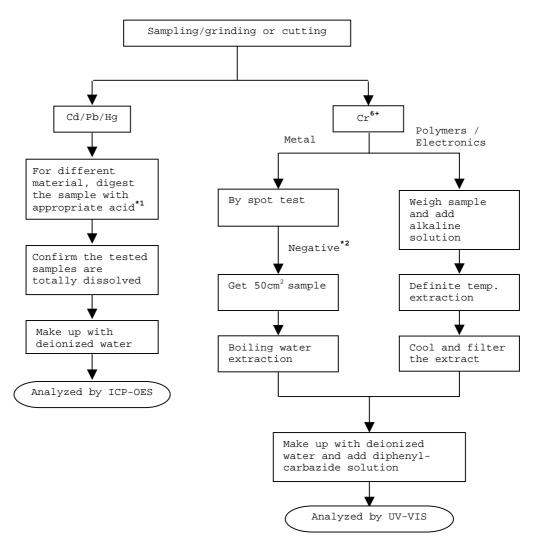




Test Conducted

Test for Cd/Pb/Hg/Chromium (VI)

Reference Standard: IEC 62321 edition 1.0:2008







Test Conducted

Remarks:

*1: List of Appropriate Acid:

<u>Material</u>	Acid Added for Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO_3 , HCl , H_2O_2 , HBF_4

*2: If the result of spot test is positive, Chromium VI would be determined as

End of Report

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Number : TWNC00296620

Test Conducted

<u>Photo</u>









Test Report

No. SHAEC1216714738

Date: 25 Sep 2012

Page 1 of 5

ZHEJIANG ASIA GENERAL SOLDERING&BRAZING MATERIAL CO., LTD
XIHU INDUSTRIAL PARK, SANDUN, HANGZHOU CITY, ZHEJIANG, PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : LEAD-FREE SOLDER WIRE

SGS Job No. : SP12-028285 - SH

Part No. (P/N): YTW206

Composition : Sn0.3Ag0.7CuCe

Date of Sample Received : 21 Sep 2012

Testing Period : 21 Sep 2012 - 25 Sep 2012

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).

Conclusion: Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ Approved Signatory

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Test Report

No. SHAEC1216714738

Date: 25 Sep 2012

Page 2 of 5

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description
1 SHA12-167147.035 Silvery wire

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>035</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	50
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))			\Diamond	Negative
Sum of PBBs	1000	mg/kg	B.	ND
Monobromobiphenyl	9	mg/kg	5	ND
Dibromobiphenyl	4	mg/kg	5	ND
Tribromobiphenyl	4	mg/kg	5	ND
Tetrabromobiphenyl	0-1	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl		mg/kg	5	ND
Heptabromobiphenyl	2.1	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	191	mg/kg	5	ND
Sum of PBDEs	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Test Report	No. SHAEC12167147	38	Date: 25	Sep 2012	Page 3 of 5
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>035</u>	
Dibromodiphenyl ether	1.0	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	
Decabromodiphenyl ether	4	mg/kg	5	ND	

Notes:

- (1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II
- (2) \$Spot-test:

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)

◇Boiling-water-extraction:

Negative = Absence of Cr(VI) coating

Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Test Report

No. SHAEC1216714738

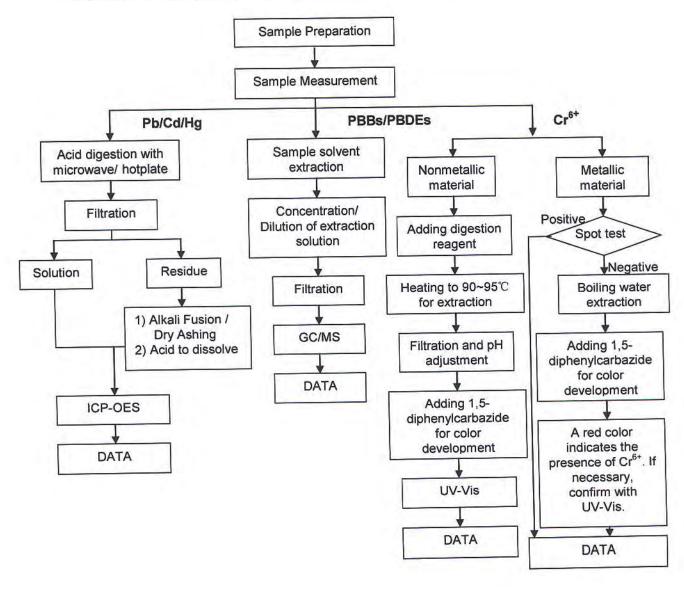
Date: 25 Sep 2012

Page 4 of 5

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Linda Li
- These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)



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Test Report

No. SHAEC1216714738

Date: 25 Sep 2012

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

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Test Report No. CANEC1208305601 Date: 02 Jul 2012 Page 1 of 5

AIM SOLDER (SHEN ZHEN) CO.,LTD.

BLOCK 69,THIRD INDUSTRIAL ZONE,LUOTIAN VILLAGE,SONGGANG TOWN,BAOAN DISTRICT,SZ CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as: SOLDER WIRE AIM230 FAST CORE H RSA605

SGS Job No.: CP12-030363 - SZ

Date of Sample Received: 26 Jun 2012

Testing Period: 26 Jun 2012 - 02 Jul 2012

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).

Conclusion: Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Kenny Wang Approved Signatory



Test Report

No. CANEC1208305601

Date: 02 Jul 2012

Page 2 of 5

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description

1 CAN12-083056.001 Silvery metal wire

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	78
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	· ·	\Diamond	Negative
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl		mg/kg	5	ND
Dibromobiphenyl		mg/kg	5	ND
Tribromobiphenyl	1.5	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl		mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	2	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	2	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	1.40	ND
Monobromodiphenyl ether	9	mg/kg	5	ND

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Test Report	No. CANEC12083056	01	Date: 02	Jul 2012	Page 3 of 5
Test Item(s)	Limit	<u>Unit</u>	MDL	001	
Dibromodiphenyl ether		mg/kg	5	ND	
Tribromodiphenyl ether	1.4	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	4	mg/kg	5	ND	
Decabromodiphenyl ether	-	mg/kg	5	ND	

Notes:

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II (2) Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)

◇Boiling-water-extraction:

Negative = Absence of CrVI coating

Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Test Report

No. CANEC1208305601

Date: 02 Jul 2012

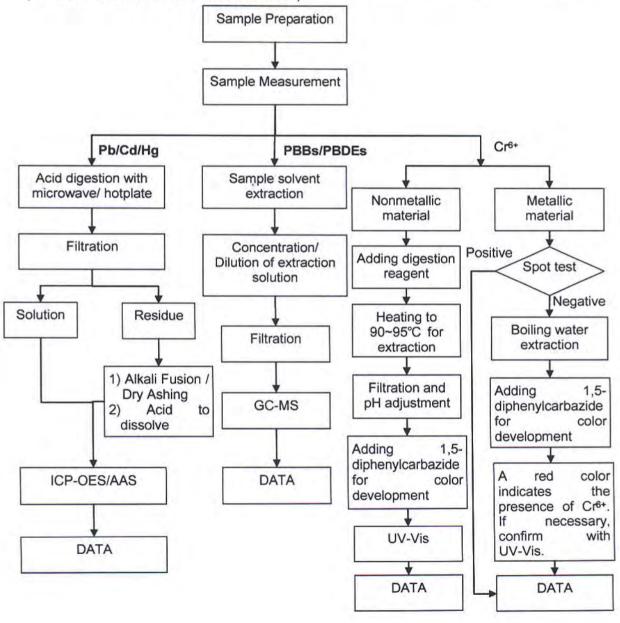
Page 4 of 5

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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Bella Wang / Cutey Yu
- 2) Name of the person in charge of testing: Adams Yu / Ryan Yang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ and PBBs/PBDEs test method excluded).



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Test Report

No. CANEC1208305601

Date: 02 Jul 2012

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***



APPLICANT: LITTELFUSE, INC. DATE: DEC 13, 2012

800 E. NORTHWEST HWY ΑT A.DIVIETRO/D.UNTIEDT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE WHITE POWDER.

ITEM NAME FILLER. PART NO. 090187.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

(I) Test Result Summary:

TESTING ITEM R	ESULT (ppm)
HEAVY METAL	
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	ND
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr ⁶⁺) CONTENT	ND
POLYBROMINATED BIPHENYLS (PBBs)	
MONOBROMINATED BIPHENYLS (MonoBB)	ND
DIBROMINATED BIPHENYLS (DIBB)	ND
TRIBROMINATED BIPHENYLS (TriBB)	ND
TETRABROMINATED BIPHENYLS (TetraBB)	ND
PENTABROMINATED BIPHENYLS (PentaBB)	ND
HEXABROMINATED BIPHENYLS (HexaBB)	ND
HEPTABROMINATED BIPHENYLS (HeptaBB)	ND
OCTABROMINATED BIPHENYLS (OctaBB)	ND
NONABROMINATED BIPHENYLS (NonaBB)	ND
DECABROMINATED BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	
MONOBROMINATED DIPHENYL ETHERS (MonoBDE)	ND
DIBROMINATED DIPHENYL ETHERS (DIBDE)	ND
TRIBROMINATED DIPHENYL ETHERS (TriBDE)	ND
TETRABROMINATED DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMINATED DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMINATED DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMINATED DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMINATED DIPHENYL ETHERS (OctaBDE)	ND
NONABROMINATED DIPHENYL ETHERS (NonaBDE)	ND
DECABROMINATED DIPHENYL ETHER (DecaBDE)	ND

NUMBER: SH

AH00355828

REMARKS: ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(II) ROHS REQUIREMENT:

(II) NOTO REGUIRENT:	
RESTRICTED SUBSTANCES LIM	ITS
CADMIUM (Cd) CONTENT	0.01% (100ppm)
LEAD (Pb) CONTENT	0.1% (1000ppm)
MERCURY (Hg) CONTENT	0.1% (1000ppm)
CHROMIUM VI (Cr ⁶⁺) CONTENT	0.1% (1000ppm)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000ppm)
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	0.1% (1000ppm)

THE ABOVE LIMITS WERE QUOTED FROM ROHS DIRECTIVE 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.



TESTS CONDUCTED

(I) Test Result Summary:

TESTING ITEM R	ESULT (ppm)
HALOGEN CONTENT	
FLUORINE (F)	ND
CHLORINE (CI)	ND
BROMINE (Br)	ND
IODINE (I)	ND

NUMBER: SH

AH00355828

ppm = PARTS PER MILLION = mg/kg **REMARKS:**

ND = NOT DETECTED

(III) TEST METHOD:

TESTING ITEM T	ESTING METHOD	REPORTING LIMIT
IHALOGENICONTENT	WITH REFERENCE TO EN 14582:2007 BY COMBUSTION FLASK WITH OXYGEN AND DETERMINED BY ION CHROMATOGRAPHY	50 ppm



TESTS CONDUCTED

(III) TEST METHOD:

(m) reor merrios.		
TESTING ITEM T	ESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (CR ⁶⁺) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX C, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER.	1 ppm
POLYBROMINATED BIPHENYLS (PBBs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm

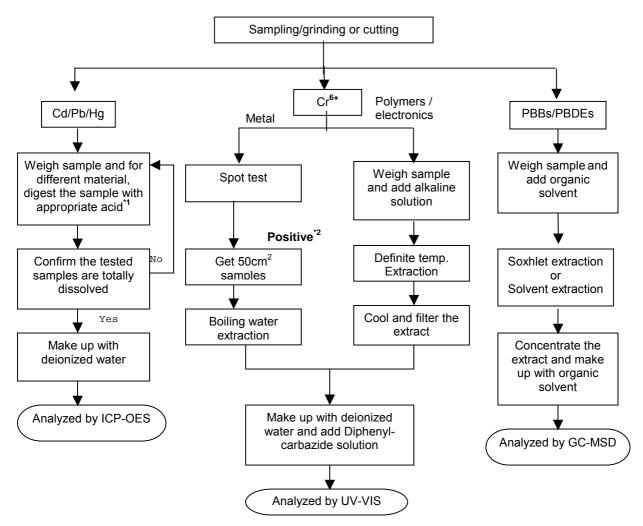
REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYZE IN SAMPLE



TESTS CONDUCTED

(IV) MEASUREMENT FLOWCHART:

TEST FOR Cd/ Pb/ Hg/Cr (VI)/ PBBS/PBDES CONTENTS REFERENCE STANDARD: IÉC 62321 EDITION 1.0:2008



REMARKS:

*1: LIST OF APPROPRIATE ACID:

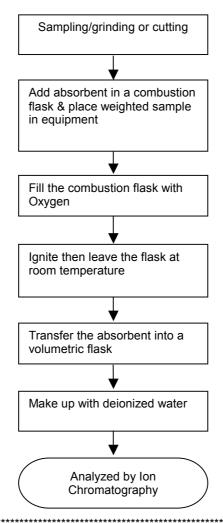
MATERIAL	ACID ADDED FOR DIGESTION
POLYMERS HNO	_{3,} HCL,HF,H ₂ O _{2,} H ₃ BO ₃
METALS HNO	_{3,} HCL,HF
ELECTRONICS HNO	3,HCL,H ₂ O ₂ ,HBF ₄

*2: IF THE RESULT OF SPOT TEST IS POSITIVE, CHROMIUM (VI) WOULD BE DETERMINED AS DETECTED.



TESTS CONDUCTED

(V) MEASUREMENT FLOWCHART: TEST FOR HALOGEN CONTENT REFERENCE STANDARD: EN 14582



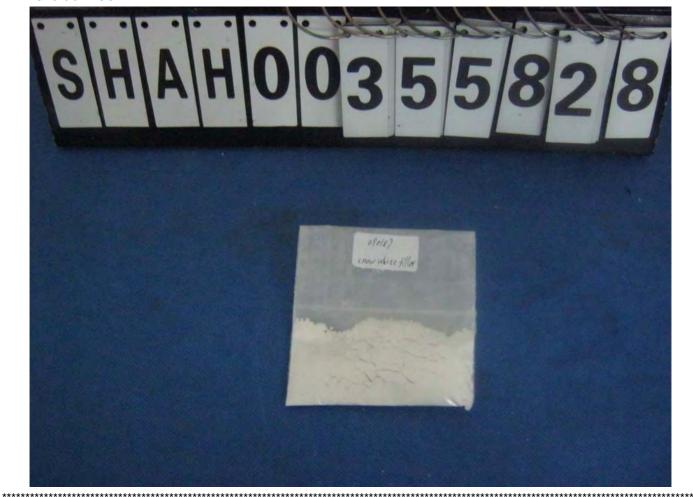
NUMBER: SH

AH00355828



TESTS CONDUCTED

NUMBER: SH AH00355828



END OF REPORT

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APPLICANT: LITTELFUSE, INC. DATE: DEC 13, 2012

800 E. NORTHWEST HWY ΑT A.DIVIETRO/D.UNTIEDT

SAMPLE DESCRIPTION:

ONE(1) SUBMITTED SAMPLE SAID TO BE BEIGE POWDER.

ITEM NAME FILLER. PART NO. 090184.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

1 (I) Test Result Summary:

TESTING ITEM R	ESULT (ppm)
HEAVY METAL	
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	ND
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr ⁶⁺) CONTENT	ND
POLYBROMINATED BIPHENYLS (PBBs)	
MONOBROMINATED BIPHENYLS (MonoBB)	ND
DIBROMINATED BIPHENYLS (DiBB)	ND
TRIBROMINATED BIPHENYLS (TriBB)	ND
TETRABROMINATED BIPHENYLS (TetraBB)	ND
PENTABROMINATED BIPHENYLS (PentaBB)	ND
HEXABROMINATED BIPHENYLS (HexaBB)	ND
HEPTABROMINATED BIPHENYLS (HeptaBB)	ND
OCTABROMINATED BIPHENYLS (OctaBB)	ND
NONABROMINATED BIPHENYLS (NonaBB)	ND
DECABROMINATED BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	
MONOBROMINATED DIPHENYL ETHERS (MonoBDE)	ND
DIBROMINATED DIPHENYL ETHERS (DIBDE)	ND
TRIBROMINATED DIPHENYL ETHERS (TriBDE)	ND
TETRABROMINATED DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMINATED DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMINATED DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMINATED DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMINATED DIPHENYL ETHERS (OctaBDE)	ND
NONABROMINATED DIPHENYL ETHERS (NonaBDE)	ND
DECABROMINATED DIPHENYL ETHER (DecaBDE)	ND

REMARKS: ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

RESPONSIBILITY OF CHEMIST: DENT FANG / LEAF LIU

(II) ROHS REQUIREMENT:

RESTRICTED SUBSTANCES LIM	ITS
CADMIUM (Cd) CONTENT	0.01% (100ppm)
LEAD (Pb) CONTENT	0.1% (1000ppm)
MERCURY (Hg) CONTENT	0.1% (1000ppm)
CHROMIUM VI (Cr ⁶⁺) CONTENT	0.1% (1000ppm)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000ppm)
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	0.1% (1000ppm)

THE ABOVE LIMITS WERE QUOTED FROM ROHS DIRECTIVE 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.



TESTS CONDUCTED

(III) TEST METHOD:

(III) ILOI WEITIOD.		
TESTING ITEM T	ESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (CR ⁶⁺) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX C, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER.	1 ppm
POLYBROMINATED BIPHENYLS (PBBs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm

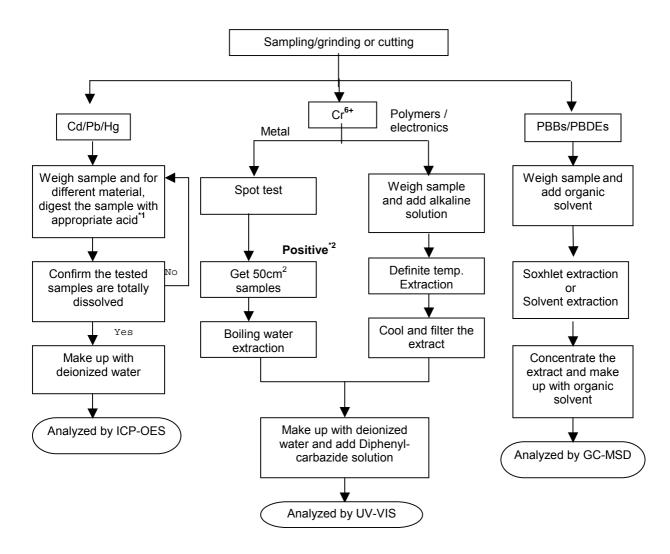
REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYZE IN SAMPLE



TESTS CONDUCTED

(IV) MEASUREMENT FLOWCHART:

TEST FOR Cd/ Pb/ Hg/Cr (VI)/ PBBS/PBDES CONTENTS REFERENCE STANDARD: IEC 62321 EDITION 1.0:2008



REMARKS:

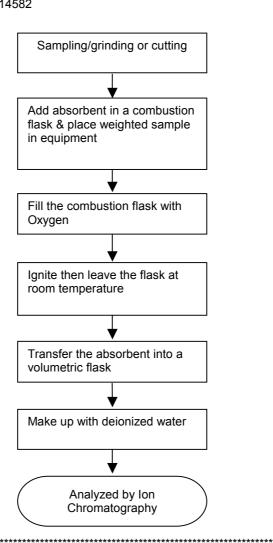
*1: LIST OF APPROPRIATE ACID:

MATERIAL	ACID ADDED FOR DIGESTION
POLYMERS HNO	_{3,} HCL,HF,H ₂ O _{2,} H ₃ BO ₃
METALS HNO	_{3,} HCL,HF
ELECTRONICS HNO	3,HCL,H ₂ O ₂ ,HBF ₄

*2: IF THE RESULT OF SPOT TEST IS POSITIVE, CHROMIUM (VI) WOULD BE DETERMINED AS DETECTED.



TESTS CONDUCTED (\boldsymbol{V}) MEASUREMENT FLOWCHART: TEST FOR HALOGEN CONTENT REFERENCE STANDARD: EN 14582



NUMBER: SH

AH00355836



TESTS CONDUCTED

2 (I) Test Result Summary:

	Testing Item	Result (ppm)
Halogen Content		
Fluorine (F)		ND
Chlorine (CI)		100
Bromine (Br)		ND
lodine (I)		ND

ppm = Parts per million = mg/kg Remarks:

Not detected

Responsibility Of Chemist : Grace Wang

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
inalonen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

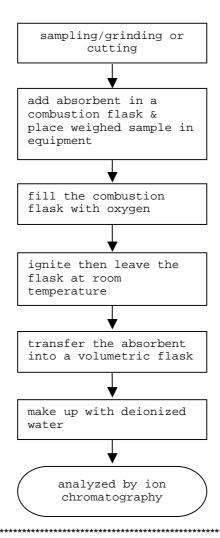
Date Sample Received : Dec.5, 2012

Testing Period : Dec.5, 2012 To Dec.11, 2012



TESTS CONDUCTED ($\!\operatorname{IV}\!$) Measurement Flowchart:

> Test For Halogen Content Reference Standard: EN 14582



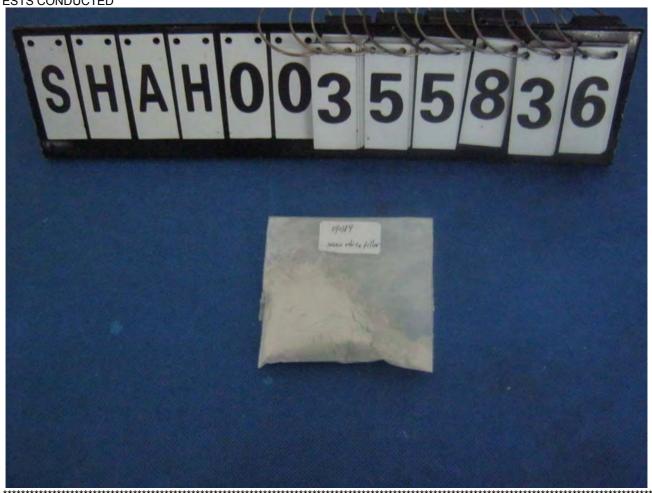
NUMBER: SH

AH00355836



NUMBER: SH AH00355836

TESTS CONDUCTED



END OF REPORT

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APPLICANT: LITTELFUSE, INC. DATE: OCT 29, 2012

800 E. NORTHWEST HWY A.DIVIETRO/D.UNTIEDT ATT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE RED INK. PART DESCRIPTION INK-RED. PART NUMBER 425901.

DATE SAMPLE RECEIVED OCTOBER.19, 2012. DATE TEST STARTED OCTOBER.19, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)
Heavy Metal	·
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	·
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND

NUMBER: SH

AH00346635

(III) Test Method:

esting Method R	eporting Limit
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further

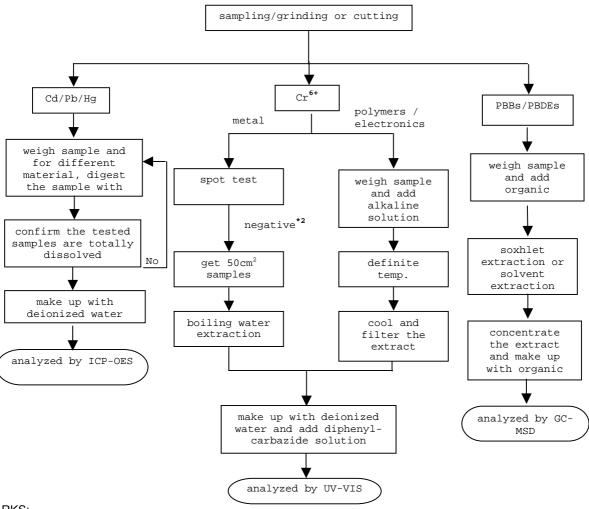
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid:

1. List of appropriate acid:	
<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCI,HF,H ₂ O _{2,} H ₃ BO ₃
Metals HNO	_{3,} HCl,HF
Electronics H	NO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (CI)	1000
Bromine (Br)	ND
lodine (I)	ND

ppm = Parts per million = mg/kg Remarks:

ND = Not detected

Responsibility Of Chemist : Leaf Liu

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
IHAIOGEN CONTENT	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

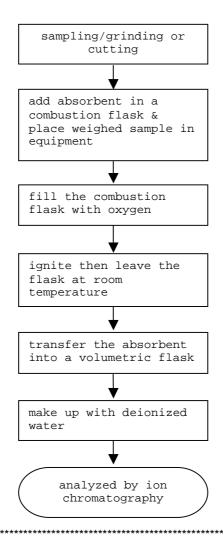
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





TESTS CONDUCTED

3 (A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM TE	STING METHOD	REPORTING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



NUMBER: SH AH00346635

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT

WEIGH SAMPLE AND PLACE INTO A THIMBLE IJ SOXHLET EXTRACTION WITH ORGANIC SOLVENT CONCENTRATE THE EXTRACT TRANSFER THE EXTRACT INTO A VOLUMETRIC FLASK IJ MAKE UP WITH ORGANIC SOLVENT IJ ANALYZE BY GC-MSD



TESTS CONDUCTED

4 PHT HALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	<u>ESULT (%,W/W)</u>	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH

REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 FOR PHTHALATE CONTENT IN TOYS

AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHT HALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	<u>ESULT (%,W/W)</u>	LIMIT(%,W/W)
		(MAX.)
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY

IMPROVEMENT ACT 2008 & AMENDMENT H.R.2715 FOR PROHIBITION ON SALE OF CERTAIN

PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

DATE SAMPLE RECEIVED: OCT.19, 2012

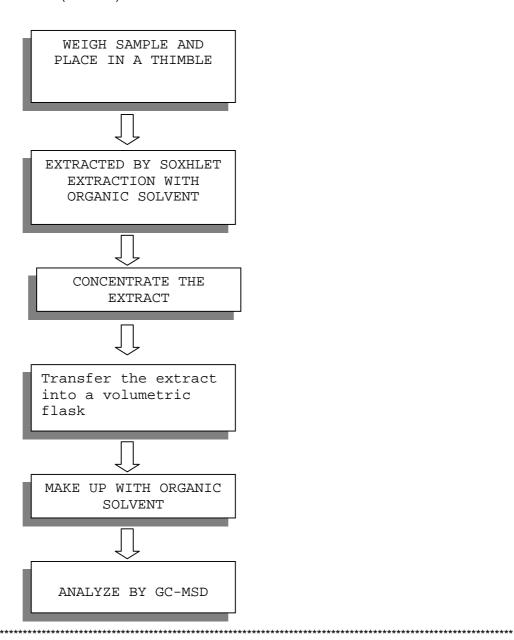
TESTING PERIOD: OCT.19, 2012 TO OCT.23, 2012



NUMBER: SH AH00346635

TESTS CONDUCTED MEASUREMENT FLOWCHART:

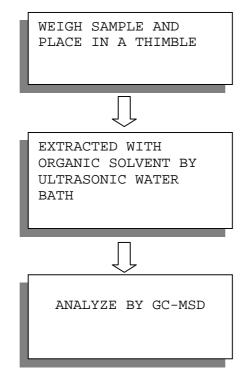
TEST FOR PHTHALATES CONTENTS (EN14372)





TESTS CONDUCTED MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)





TESTS CONDUCTED



END OF REPORT

This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a recommendation for any particular course of action. Intertek does not accept a duty of care or any other responsibility to any person other than the Client in respect of this report and only accepts liability to the Client insofar as is expressly contained in the terms and conditions governing Intertek's provision of services to you. Intertek makes no warranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conduct the Review on a diligent and careful basis and we do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute or otherwise, except in the event of our gross negligence or wilful misconduct.



APPLICANT: LITTELFUSE,INC. DATE:

800 E. NORTHWEST HWY

A.DIVIETRO/D.UNTIEDT ATT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE **BLACK INK.** PART DESCRIPTION INK-BLACK. 425902. PART NUMBER

DATE SAMPLE RECEIVED OCTOBER.15, 2012. DATE TEST STARTED OCTOBER.15, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

OCT 29, 2012

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)
Heavy Metal	·
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	·
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND

NUMBER: SH

AH00345635

(III) Test Method:

esting Method R	eporting Limit
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further

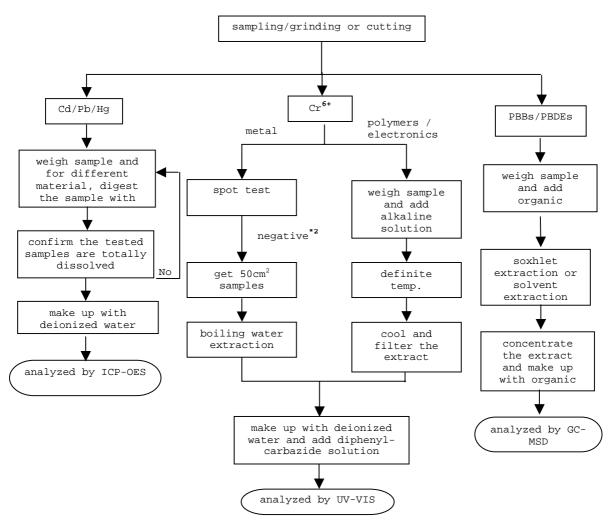
Reporting limit = Quantitation limit of analyte in sample Remark:



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals HNO	3,HCI,HF
Electronics H	NO _{3,} HCI,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (CI)	150
Bromine (Br)	ND
lodine (I)	ND

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Leaf Liu

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
IHAIOOEN CONIENT	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

Reporting limit = Quantitation limit of analyte in sample Remark:

TO BE CONTINUED

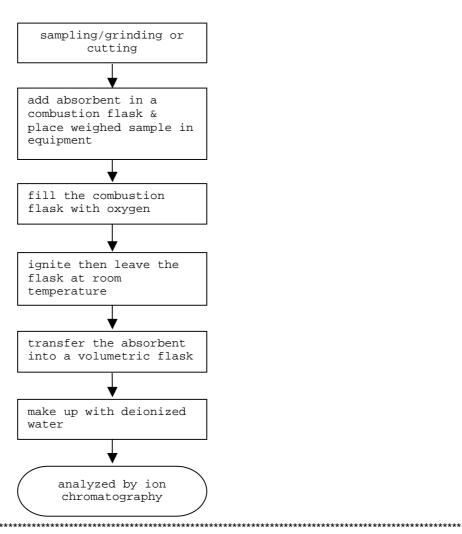
AH00345635



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582



NUMBER: SH

AH00345635



NUMBER: SH AH00345635

TESTS CONDUCTED

3 (A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM TE	STING METHOD	REPORTING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT

WEIGH SAMPLE AND PLACE INTO A THIMBLE IJ SOXHLET EXTRACTION WITH ORGANIC SOLVENT CONCENTRATE THE EXTRACT TRANSFER THE EXTRACT INTO A VOLUMETRIC FLASK IJ MAKE UP WITH ORGANIC SOLVENT IJ ANALYZE BY GC-MSD

TO BE CONTINUED



TESTS CONDUCTED

4 PHT HALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	<u>ESULT (%,W/W)</u>	LIMIT(%,W/W)
		<u>(MAX.)</u>
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH

REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 FOR PHTHALATE CONTENT IN TOYS

AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHT HALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	ESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY

IMPROVEMENT ACT 2008 & AMENDMENT H.R.2715 FOR PROHIBITION ON SALE OF CERTAIN

PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

DATE SAMPLE RECEIVED: OCT.15, 2012

TESTING PERIOD: OCT.15, 2012 TO OCT.18, 2012

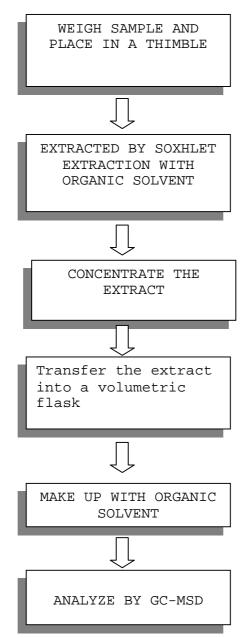


NUMBER: SH AH00345635

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (EN14372)

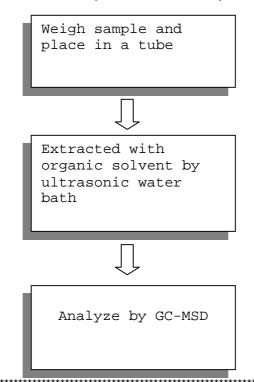




TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)





TESTS CONDUCTED

NUMBER: SH AH00345635

SHAH00345635

END OF REPORT

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APPLICANT: LITTELFUSE, INC. DATE:

ΑT A.DIVIETRO/D.UNTIEDT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE **BLUE INK**. PART DESCRIPTION INK-BLUE. PART NUMBER 425904.

800 E. NORTHWEST HWY

DATE SAMPLE RECEIVED OCTOBER.15, 2012. DATE TEST STARTED OCTOBER.15, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

OCT 26, 2012

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

1 (I) Test Result Summary:

<u>Testing Item</u>	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND

(III) Test Method:

(III) Test Method.		
Testing Item T	esting Method R	eporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm

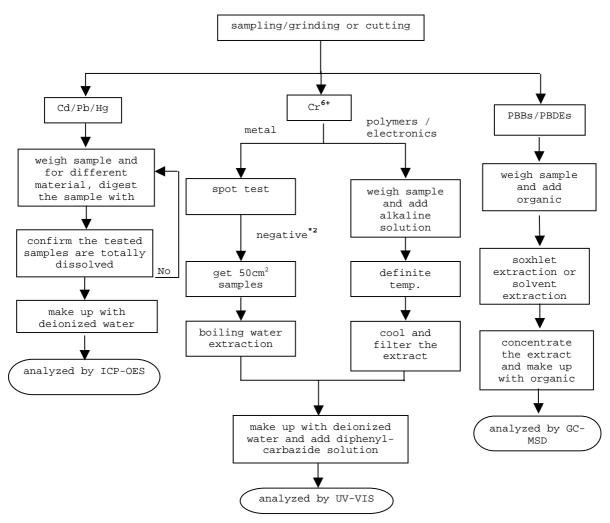
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid

i. List of appropriate acid:		
	<u>Material</u>	Acid added for digestion
	Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
	Metals HNO	_{3,} HCl,HF
	Electronics H	NO _{3,} HCl,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (CI)	600
Bromine (Br)	ND
lodine (I)	ND

ppm = Parts per million = mg/kg Remarks:

Ν = Not detected D

Responsibility Of Chemist : Leaf Liu

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

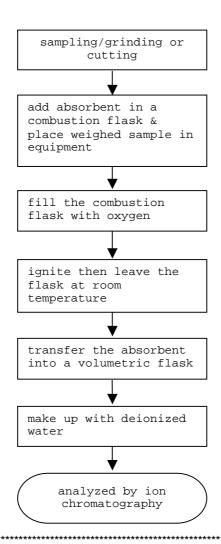
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582



NUMBER: SH

AH00345415



TESTS CONDUCTED

3 (A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

	(R)	TEST	MET	LHUD	
1	(D)	ILOI	IVIC I	טטחו	

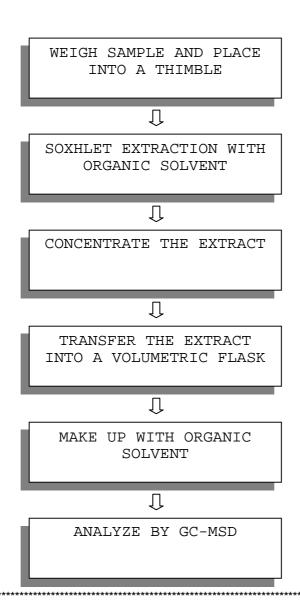
TESTING ITEM T	_ESTING METHOD	REPORTING LIMIT
THRCD (HEXARROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



NUMBER: SH AH00345415

TESTS CONDUCTED MEASUREMENT FLOWCHART:

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT





TESTS CONDUCTED

NUMBER: SH AH00345415

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND RESULT	(%,W/W)	LIMIT(%,W/W)
		<u>(MAX.)</u>
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH

REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 FOR PHTHALATE CONTENT IN TOYS

AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHTHALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND RESULT	(%,W/W)	LIMIT(%,W/W)
		(MAX.)
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY

IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING

SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

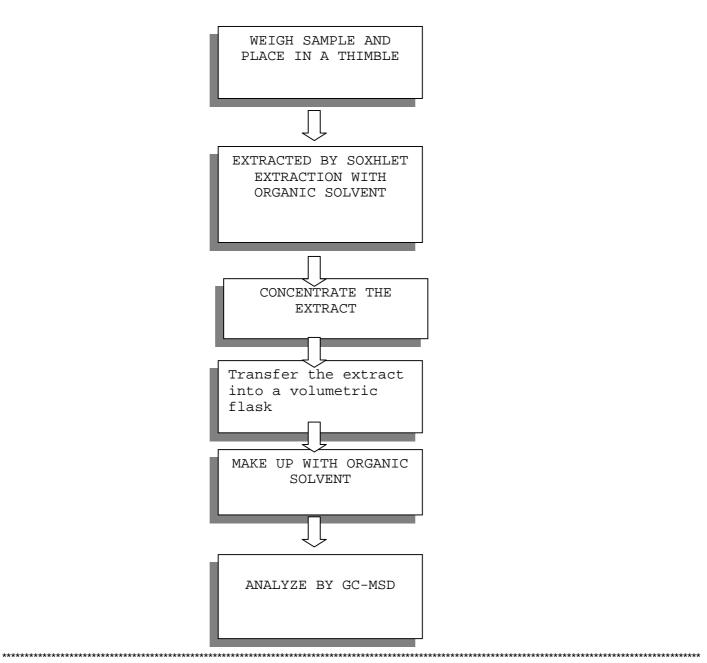


MEASUREMENT FLOWCHART:

TEST REPORT

TESTS CONDUCTED

TEST FOR PHTHALATES CONTENTS (EN14372)



NUMBER: SH

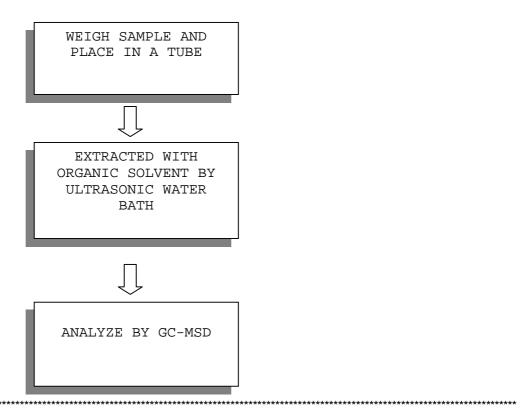
AH00345415



NUMBER: SH AH00345415

TESTS CONDUCTED MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)





NUMBER: SH AH00345415

TESTS CONDUCTED



END OF REPORT

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APPLICANT: LITTELFUSE, INC. DATE: OCT 29, 2012

800 E. NORTHWEST HWY ΑT A.DIVIETRO/D.UNTIEDT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE **ORANGE INK.** PART DESCRIPTION INK-ORANGE. 425900. PART NUMBER

DATE SAMPLE RECEIVED OCTOBER.15, 2012. DATE TEST STARTED OCTOBER.15, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

I) Test Result Summary:

<u>Testing Item</u>	Result (ppm)	
Heavy Metal		
Cadmium (Cd) content	ND	
Lead (Pb) content	ND	
Mercury (Hg) content	ND	
Chromium VI (Cr ⁶⁺) content	ND	
Polybrominated Biphenyls (PBBs)		
Monobrominated Biphenyls (MonoBB)	ND	
Dibrominated Biphenyls (DiBB)	ND	
Tribrominated Biphenyls (TriBB)	ND	
Tetrabrominated Biphenyls (TetraBB)	ND	
Pentabrominated Biphenyls (PentaBB)	ND	
Hexabrominated Biphenyls (HexaBB)	ND	
Heptabrominated Biphenyls (HeptaBB)	ND	
Octabrominated Biphenyls (OctaBB)	ND	
Nonabrominated Biphenyls (NonaBB)	ND	
Decabrominated Biphenyl (DecaBB)	ND	
Polybrominated Diphenyl Ethers (PBDEs)		
Monobrominated Diphenyl Ethers (MonoBDE)	ND	
Dibrominated Diphenyl Ethers (DiBDE)	ND	
Tribrominated Diphenyl Ethers (TriBDE)	ND	
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND	
Pentabrominated Diphenyl Ethers (PentaBDE)	ND	
Hexabrominated Diphenyl Ethers (HexaBDE)	ND	
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND	
Octabrominated Diphenyl Ethers (OctaBDE)	ND	
Nonabrominated Diphenyl Ethers (NonaBDE)	ND	
Decabrominated Diphenyl Ether (DecaBDE)	ND	

(III) Test Method:

(III) Test Method.		
Testing Item T	esting Method R	eporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm

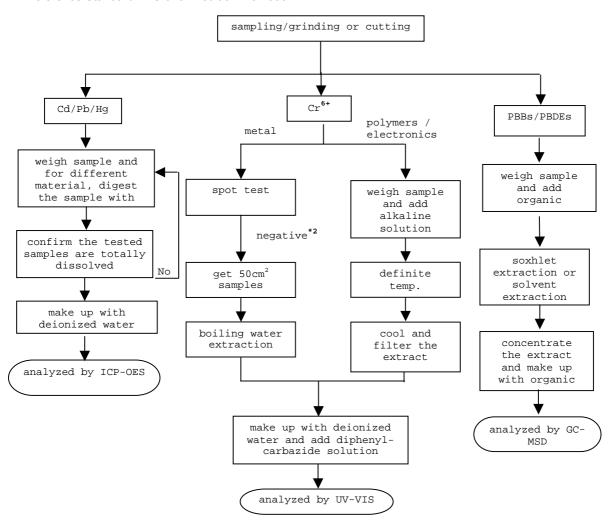
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid

i oi appropriate aciu:	
<u>Material</u>	Acid added for digestion
Polymers HNO	3,HCl,HF,H2O2,H3BO3
Metals HNO	_{3,} HCl,HF
Electronics H	NO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

2 (I) Test Result Summary:

	Testing Item	Result (ppm)
Halogen Content		<u> </u>
Fluorine (F)		ND
Chlorine (CI)		14500
Bromine (Br)		ND
lodine (I)		ND

ppm = Parts per million = mg/kg Remarks:

= Not detected

Responsibility Of Chemist : LEAF LIU

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
nalogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

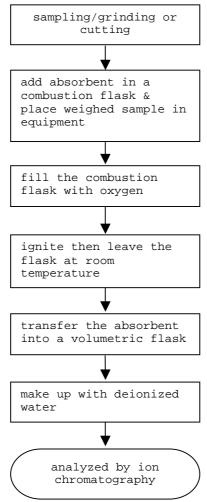
Reporting limit = Quantitation limit of analyte in sample Remark:



TESTS CONDUCTED

(${\rm IV}$) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582



NUMBER: SH

AH00345629



TESTS CONDUCTED

(A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM T	ESTING METHOD REPORT	ING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



NUMBER: SH AH00345629

TESTS CONDUCTED MEASUREMENT FLOWCHART

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT

WEIGH SAMPLE AND PLACE INTO A THIMBLE SOXHLET EXTRACTION WITH ORGANIC SOLVENT IJ CONCENTRATE THE EXTRACT TRANSFER THE EXTRACT INTO A VOLUMETRIC FLASK $\mathbf{1}$ MAKE UP WITH ORGANIC SOLVENT Ŋ ANALYZE BY GC-MSD

TO BE CONTINUED



TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND RESULT	(%,W/W)	LIMIT(%,W/W)
		<u>(MAX.)</u>
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII

ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009

FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHTHALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND RESULT	(%,W/W)	<u>LIMIT(%,W/W)</u>
		(MAX.)
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER

PRODUCT SAFETY IMPROVEMENT ACT 2008 & AMENDMENT H.R.2715 FOR PROHIBITION ON

SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

DATE SAMPLE RECEIVED: OCT.15, 2012

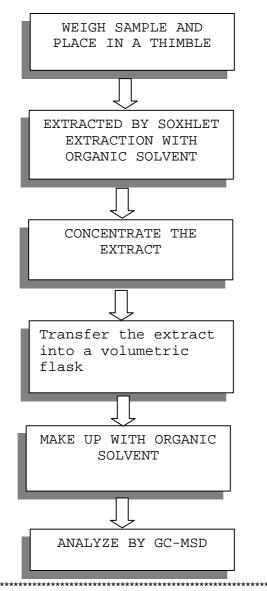
TESTING PERIOD: OCT.15, 2012 TO OCT.18, 2012



TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (EN14372)

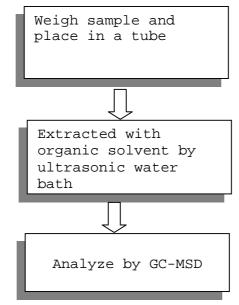




TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)





TESTS CONDUCTED





END OF REPORT

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APPLICANT: LITTELFUSE, INC. DATE: OCT 26, 2012

800 E. NORTHWEST HWY ΑT A.DIVIETRO/D.UNTIEDT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE YELLOW INK. PART DESCRIPTION INK-YELLOW. 425903. PART NUMBER

DATE SAMPLE RECEIVED OCTOBER.15, 2012. DATE TEST STARTED OCTOBER.15, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)		
Heavy Metal			
Cadmium (Cd) content	ND		
Lead (Pb) content	ND		
Mercury (Hg) content	ND		
Chromium VI (Cr ⁶⁺) content	ND		
Polybrominated Biphenyls (PBBs)			
Monobrominated Biphenyls (MonoBB)	ND		
Dibrominated Biphenyls (DiBB)	ND		
Tribrominated Biphenyls (TriBB)	ND		
Tetrabrominated Biphenyls (TetraBB)	ND		
Pentabrominated Biphenyls (PentaBB)	ND		
Hexabrominated Biphenyls (HexaBB)	ND		
Heptabrominated Biphenyls (HeptaBB)	ND		
Octabrominated Biphenyls (OctaBB)	ND		
Nonabrominated Biphenyls (NonaBB)	ND		
Decabrominated Biphenyl (DecaBB)	ND		
Polybrominated Diphenyl Ethers (PBDEs)			
Monobrominated Diphenyl Ethers (MonoBDE)	ND		
Dibrominated Diphenyl Ethers (DiBDE)	ND		
Tribrominated Diphenyl Ethers (TriBDE)	ND		
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND		
Pentabrominated Diphenyl Ethers (PentaBDE)	ND		
Hexabrominated Diphenyl Ethers (HexaBDE)	ND		
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND		
Octabrominated Diphenyl Ethers (OctaBDE)	ND		
Nonabrominated Diphenyl Ethers (NonaBDE)	ND		
Decabrominated Diphenyl Ether (DecaBDE)	ND		

NUMBER: SH

AH00345662

(III) Test Method:

esting Method R	eporting Limit
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further

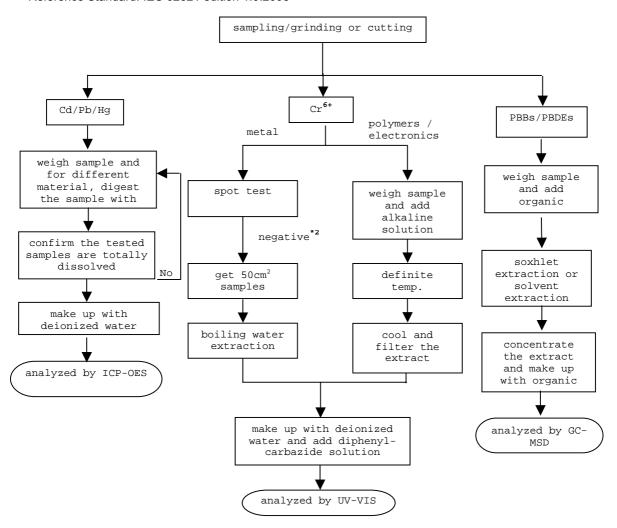
Reporting limit = Quantitation limit of analyte in sample Remark:



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals HNO	_{3,} HCl,HF
Electronics H	NO _{3,} HCI,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (CI)	7400
Bromine (Br)	ND
lodine (I)	ND

NUMBER: SH

AH00345662

ppm = Parts per million = mg/kg Remarks:

Ν = Not detected D

Responsibility Of Chemist : Leaf Liu

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

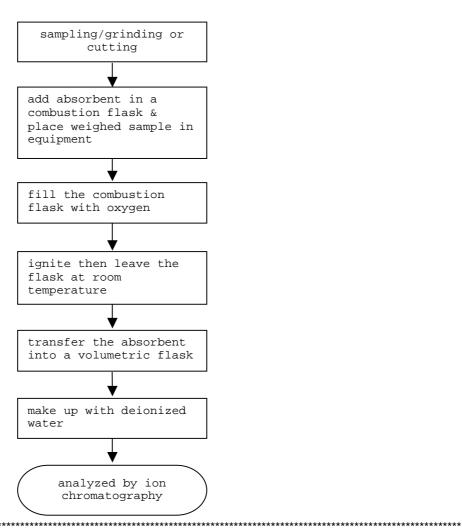
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





TESTS CONDUCTED

3 (A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

NUMBER: SH

AH00345662

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM T	ESTING METHOD	REPORTING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT

WEIGH SAMPLE AND PLACE INTO A THIMBLE IJ SOXHLET EXTRACTION WITH ORGANIC SOLVENT CONCENTRATE THE EXTRACT TRANSFER THE EXTRACT INTO A VOLUMETRIC FLASK IJ MAKE UP WITH ORGANIC SOLVENT IJ ANALYZE BY GC-MSD

TO BE CONTINUED



TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND RESULT	(%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH

REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 FOR PHTHALATE CONTENT IN TOYS

AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHTHALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND RESULT	(%,W/W)	LIMIT(%,W/W)
		(MAX.)
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY

IMPROVEMENT ACT 2008 & AMENDMENT H.R.2715 FOR PROHIBITION ON SALE OF CERTAIN

PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

DATE SAMPLE RECEIVED: OCT.15, 2012

TESTING PERIOD : OCT.15, 2012 TO OCT.19, 2012

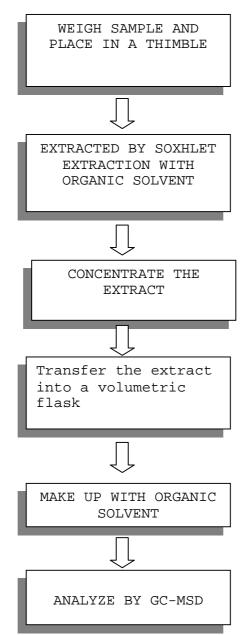


NUMBER: SH AH00345662

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (EN14372)



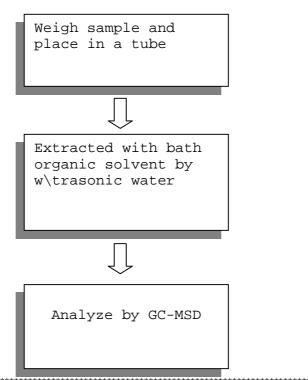


NUMBER: SH AH00345662

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)





TESTS CONDUCTED

NUMBER: SH AH00345662



END OF REPORT

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DATE:

OCT 29, 2012

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY A.DIVIETRO/D.UNTIEDT

ATT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE **GREEN INK.** PART DESCRIPTION INK-GREEN. PART NUMBER 425907.

DATE SAMPLE RECEIVED OCTOBER.15, 2012. DATE TEST STARTED OCTOBER.15, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)		
Heavy Metal			
Cadmium (Cd) content	ND		
Lead (Pb) content	ND		
Mercury (Hg) content	ND		
Chromium VI (Cr ⁶⁺) content	ND		
Polybrominated Biphenyls (PBBs)			
Monobrominated Biphenyls (MonoBB)	ND		
Dibrominated Biphenyls (DiBB)	ND		
Tribrominated Biphenyls (TriBB)	ND		
Tetrabrominated Biphenyls (TetraBB)	ND		
Pentabrominated Biphenyls (PentaBB)	ND		
Hexabrominated Biphenyls (HexaBB)	ND		
Heptabrominated Biphenyls (HeptaBB)	ND		
Octabrominated Biphenyls (OctaBB)	ND		
Nonabrominated Biphenyls (NonaBB)	ND		
Decabrominated Biphenyl (DecaBB)	ND		
Polybrominated Diphenyl Ethers (PBDEs)	·		
Monobrominated Diphenyl Ethers (MonoBDE)	ND		
Dibrominated Diphenyl Ethers (DiBDE)	ND		
Tribrominated Diphenyl Ethers (TriBDE)	ND		
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND		
Pentabrominated Diphenyl Ethers (PentaBDE)	ND		
Hexabrominated Diphenyl Ethers (HexaBDE)	ND		
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND		
Octabrominated Diphenyl Ethers (OctaBDE)	ND		
Nonabrominated Diphenyl Ethers (NonaBDE)	ND		
Decabrominated Diphenyl Ether (DecaBDE)	ND		

NUMBER: SH

AH00345639

(III) Test Method:

esting Method R	eporting Limit
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further

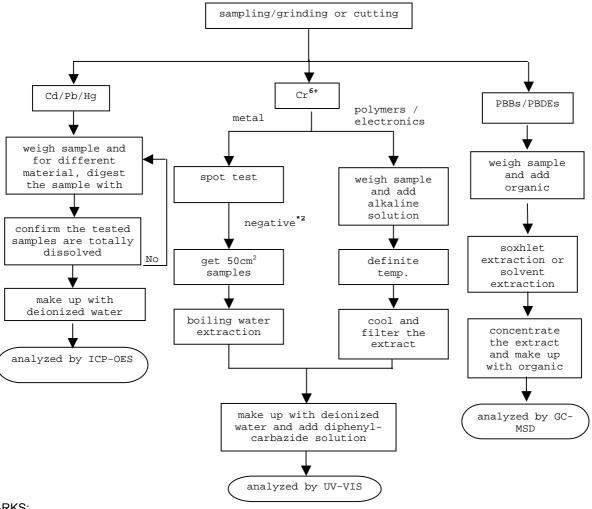
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid:

i. List of appropriate acid:	
Material Acid added for digestion	
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals HNO	3,HCI,HF
Electronics H	NO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

2 (I) Test Result Summary:

	Testing Item	Result (ppm)
Halogen Content		
Fluorine (F)		200
Chlorine (CI)		650
Bromine (Br)		ND
lodine (I)		ND

ppm = Parts per million = mg/kg Remarks:

ND = Not detected

Responsibility Of Chemist : Leaf Liu

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
imalogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

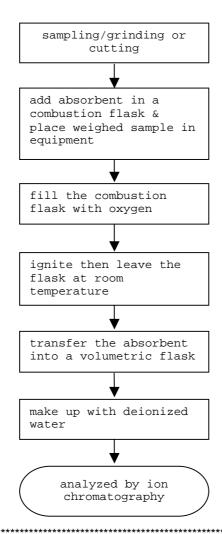
Remark: Reporting limit = Quantitation limit of analyte in sample



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582



NUMBER: SH

AH00345639



TESTS CONDUCTED

3 (A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

NUMBER: SH

AH00345639

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM TE	STING METHOD	REPORTING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



NUMBER: SH AH00345639

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT

WEIGH SAMPLE AND PLACE INTO A THIMBLE IJ SOXHLET EXTRACTION WITH ORGANIC SOLVENT CONCENTRATE THE EXTRACT TRANSFER THE EXTRACT INTO A VOLUMETRIC FLASK IJ MAKE UP WITH ORGANIC SOLVENT IJ ANALYZE BY GC-MSD



TESTS CONDUCTED

4 PHT HALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	<u>ESULT (%,W/W)</u>	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH

REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 FOR PHTHALATE CONTENT IN TOYS

AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHT HALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	ESULT (%,W/W)	LIMIT(%,W/W)
		<u>(MAX.)</u>
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY

IMPROVEMENT ACT 2008 & AMENDMENT H.R.2715 FOR PROHIBITION ON SALE OF CERTAIN

PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

DATE SAMPLE RECEIVED: OCT.15, 2012

TESTING PERIOD: OCT.15, 2012 TO OCT.18, 2012

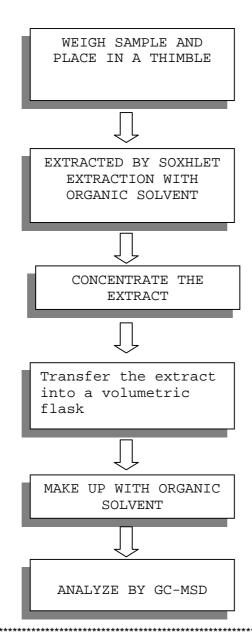


NUMBER: SH AH00345639

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (EN14372)



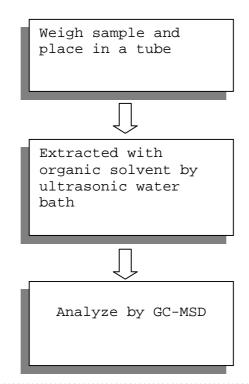


NUMBER: SH AH00345639

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)





TESTS CONDUCTED

NUMBER: SH AH00345639



END OF REPORT

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APPLICANT: LITTELFUSE,INC. DATE: OCT 29, 2012

800 E. NORTHWEST HWY

A.DIVIETRO/D.UNTIEDT ATT

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE VIOLET INK. PART DESCRIPTION INK-VIOLET. PART NUMBER 425911.

DATE SAMPLE RECEIVED OCTOBER.15, 2012. DATE TEST STARTED OCTOBER.15, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)		
Heavy Metal			
Cadmium (Cd) content	ND		
Lead (Pb) content	ND		
Mercury (Hg) content	ND		
Chromium VI (Cr ⁶⁺) content	ND		
Polybrominated Biphenyls (PBBs)			
Monobrominated Biphenyls (MonoBB)	ND		
Dibrominated Biphenyls (DiBB)	ND		
Tribrominated Biphenyls (TriBB)	ND		
Tetrabrominated Biphenyls (TetraBB)	ND		
Pentabrominated Biphenyls (PentaBB)	ND		
Hexabrominated Biphenyls (HexaBB)	ND		
Heptabrominated Biphenyls (HeptaBB)	ND		
Octabrominated Biphenyls (OctaBB)	ND		
Nonabrominated Biphenyls (NonaBB)	ND		
Decabrominated Biphenyl (DecaBB)	ND		
Polybrominated Diphenyl Ethers (PBDEs)	·		
Monobrominated Diphenyl Ethers (MonoBDE)	ND		
Dibrominated Diphenyl Ethers (DiBDE)	ND		
Tribrominated Diphenyl Ethers (TriBDE)	ND		
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND		
Pentabrominated Diphenyl Ethers (PentaBDE)	ND		
Hexabrominated Diphenyl Ethers (HexaBDE)	ND		
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND		
Octabrominated Diphenyl Ethers (OctaBDE)	ND		
Nonabrominated Diphenyl Ethers (NonaBDE)	ND		
Decabrominated Diphenyl Ether (DecaBDE)	ND		

NUMBER: SH

AH00345663

(III) Test Method:

esting Method R	eporting Limit
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES. With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further

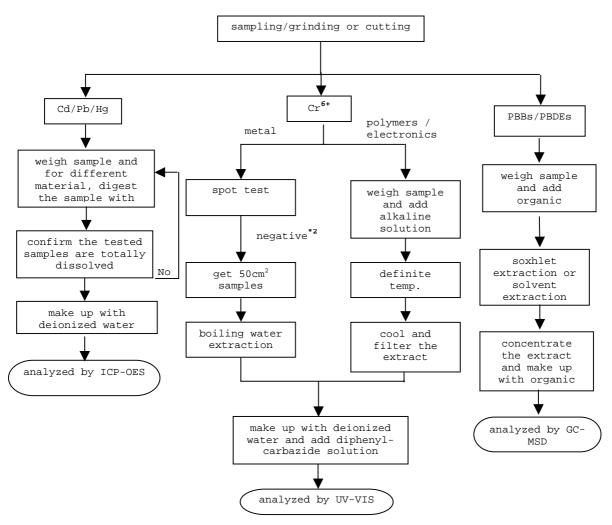
Reporting limit = Quantitation limit of analyte in sample Remark:



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals HNO	_{3,} HCl,HF
Electronics H	NO _{3,} HCI,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



TESTS CONDUCTED

I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (CI)	6800
Bromine (Br)	ND
lodine (I)	ND

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Leaf Liu

(III) Test Method:

Testing Item T	esting Method R	eporting Limit
IHAIOOEN CONIENT	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

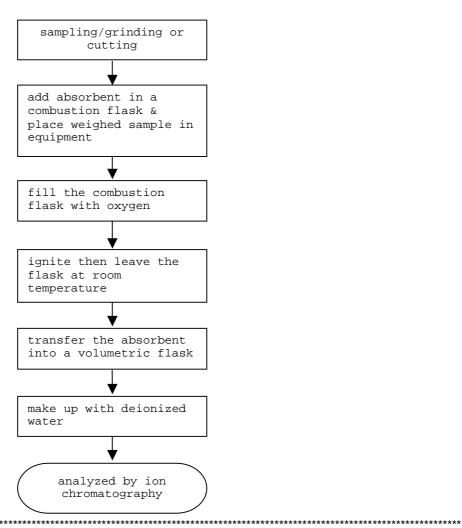
Reporting limit = Quantitation limit of analyte in sample Remark:



TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582



NUMBER: SH

AH00345663



TESTS CONDUCTED

3 (A) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

NUMBER: SH

AH00345663

REMARKS:

ppm = PARTS PER MILLION = mg/kg ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM TE	STING METHOD	REPORTING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm



NUMBER: SH AH00345663

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCD (HEXABROMOCYCLODODECANE) CONTENT

WEIGH SAMPLE AND PLACE INTO A THIMBLE IJ SOXHLET EXTRACTION WITH ORGANIC SOLVENT CONCENTRATE THE EXTRACT TRANSFER THE EXTRACT INTO A VOLUMETRIC FLASK IJ MAKE UP WITH ORGANIC SOLVENT IJ ANALYZE BY GC-MSD

TO BE CONTINUED



TESTS CONDUCTED

4 PHT HALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	<u>ESULT (%,W/W)</u>	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH

REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 FOR PHTHALATE CONTENT IN TOYS

AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

5 PHT HALATE CONTENT TEST

WITH REFERENCE TO CPSC-CH-C1001-09.3, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND R	<u>ESULT (%,W/W)</u>	LIMIT(%,W/W)
		<u>(MAX.)</u>
DI-BUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY

IMPROVEMENT ACT 2008 & AMENDMENT H.R.2715 FOR PROHIBITION ON SALE OF CERTAIN

PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

DATE SAMPLE RECEIVED: OCT.15, 2012

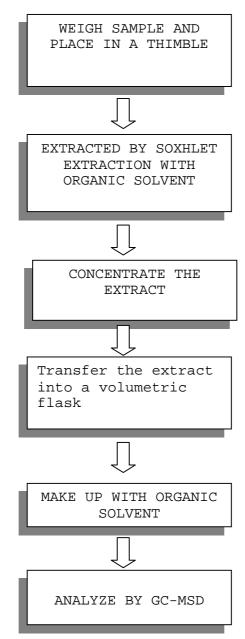
TESTING PERIOD : OCT.15, 2012 TO OCT.23, 2012



TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (EN14372)



TO BE CONTINUED

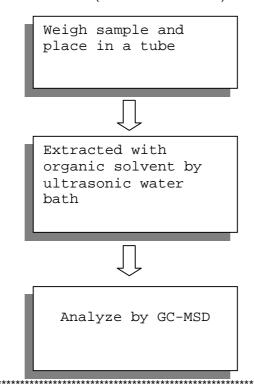
NUMBER: SH AH00345663



TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS (CPSC-CH-C1001-09.3)



TO BE CONTINUED

NUMBER: SH

AH00345663



TESTS CONDUCTED

NUMBER: SH AH00345663



END OF REPORT

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NO.: A002R121008024-2R02

Date: Oct.10, 2012

Page 1 of 4

Customer: SuZhou FuHong Electronic Industrial Co., Ltd.

Address: NO. 89 WEI DU ROAD, WANGTING TOWN, XIANGCHENG DISTRICT, SUZHOU, CHINA

Report on the submitted sample said to be

Sample name: Lead wire copper shell

Model: /

Item/Lot No.: /

Material: /

Buyer: /

Supplier: / Manufacturer: /

Comple resolved date.

Sample received date: Oct. 08, 2012

Testing period: From Oct. 08, 2012 to Oct. 10, 2012

Testing Requested

As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample in accordance with Directive 2002/95/EC (RoHS).

Testing method:

Testing Item	Pretreatment method	Measuring instrument	MQL	
Lead (Pb)	IEC 62321: 2008, section 9	ICP-OES	2mg/kg	
Cadmium (Cd)	IEC 62321: 2008, section 9	ICP-OES	2 mg/kg	
Mercury (Hg)	IEC 62321: 2008, section 7	ICP-OES	2 mg/kg	
Chromium (Cr VI)	IEC 62321: 2008, Annex B	UV-VIS	0.02mg/kg*	

Note:

Conclusion:

-When tested as specified the submitted sample complied with the requirements of commission Decision of 18 Aug 2005 amending Directive 2002/95/EC notified under document 2005/618/EC.

******FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)******

Signed for and on behalf of Shenzhen AOV Testing Technology Co., Ltd, Kunshan Branch

Project Leader:

Li Tingting, Maggie

Chemical Test Director

Reviewed by: WEIKIN

Wang Wexin, Weikin

Technical Director

Approved by:

Yuan Qi, Mickey

Lab Manager

^{-* 0.02} mg/kg refers to the MQL of sample extraction liquid.



out sample

TEST REPORT

NO.: A002R121008024-2R02 Date: Oct.10, 2012 Page 2 of 4 Test Flow: 1. To Determine Lead, Cadmium Content: (Metal substrate) Tested by: onoul Weigh the sample into Add the digestion solution; the Add H2O2 until the sample is clear vessel is heated until the sample a vessel. has been dissolved Cooling the vessel, filter; washed and Tested by ICP-OES Report filled to the mark with distilled water. 2. To Determine Mercury Content: (Metal substrate) Tested by: The sample is digested in the Weigh the sample Add the digestion solution, close microwave oven following a specific into a vessel. the microwave vessel. decomposition program. Cooling the vessel, filter; washed and Tested by ICP-OES Report filled to the mark with distilled water. 3. To Determine Hexavalent Chromium Content (boiling- water- extraction): (Metal substrate) Tested by: Remove the sample, and cool Take the (50±5) cm2 Heat 50 mL of DI water in the beaker to room temperature, sample in the beaker. the beaker to boiling for 10 and do the color reaction Test the sample solution and the 0.02 Report mg/kg standard solution by UV-VIS. 4. To Determine Lead, Cadmium and Mercury Content: (Plating) Tested by: now Cooling, filter; washed and Weigh the plating-Tested by Report

filled to the mark with DI water.

Instrument



NO.: A002R121008024-2R02

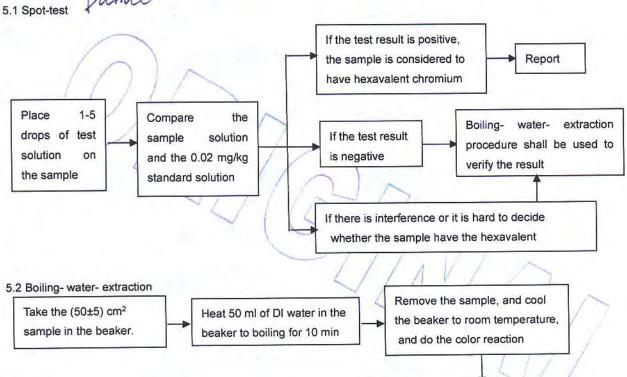
Date: Oct.10, 2012

Page 3 of 4

Test the sample solution and the 0.02

mg/kg standard solution by UV-VIS.

5. To Determine Hexavalent Chromium Content in colorless and colored chromate coating on metals: (Plating) Tested by:



Report

ample D	escription.			
Code	Sample Description	Code	Sample Description	
2-1	Lead wire substrate	2-3	Copper shell substrate	
2-2	Lead wire Plating 2-4		Copper shell Plating	

st Results:

Item	Unit	RoHS Limit	Result			
			2-1	2-2**	2-3	2-4**
Lead (Pb)	mg/kg	1000	N.D.	N.D.	N.D.	N.D.
Cadmium (Cd)	mg/kg	100	N.D.	N.D.	N.D.	N.D.
Mercury (Hg)	mg/kg	1000	N.D.	N.D.	N.D.	N.D.
Chromium (CrVI)	mg/kg	1000	Negative	Negative	Negative	Negative





NO.: A002R121008024-2R02

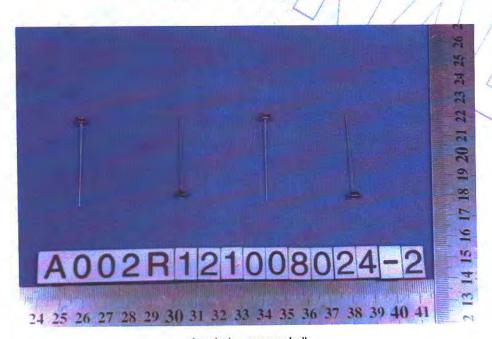
Date: Oct.10, 2012

Page 4 of 4

Note:

- -The new RoHS directive 2011/65/EU, on Jul. 21, 2011 come into force, on Jan. 03, 2013 the formal implementation, Directive 2002/95/EC shall be repealed simultaneously.
- -Specimens, which requested to determine Lead, Cadmium and Mercury Content, have been dissolved completely.
- -mg/kg=ppm
- -N.D.=not detected(<MQL)
- -MQL=Method Quantitation Limit
- -Negative=Absence of Cr (VI);
- -Positive=Presence of Cr (VI);
- Uncertain= can not verify whether the sample have Hexavalent Chromium by spot-test.
- (The tested sample should be further verified by boiling-water-extraction method if the spot test result is uncertain or negative.)
- -**The test is based on the following assumption: The sample plating is a single layer and each part is uniform. The test result maybe cannot stand for the physical truth of sample plating.
- -Photo is included

Photograph of Sample



Lead wire copper shell

End of Report





APPLICANT: LITTELFUSE,INC. DATE: DEC 10, 2012

800 E. NORTHWEST HWY ATT A.DIVIETRO/D.UNTIEDT

SAMPLE DESCRIPTION:

ONE(1) SUBMITTED SAMPLE SAID TO BE WHITE SAND. ITEM NAME SAND. PART NO. 091254.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN

GENERAL MANAGER



TEST REPORT

TESTS CONDUCTED

1 (I) TEST RESULT SUMMARY:

TESTING ITEM R	ESULT (ppm)
HEAVY METAL	
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	ND
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr ⁶⁺) CONTENT	ND
POLYBROMINATED BIPHENYLS (PBBs)	
MONOBROMINATED BIPHENYLS (MonoBB)	ND
DIBROMINATED BIPHENYLS (DIBB)	ND
TRIBROMINATED BIPHENYLS (TriBB)	ND
TETRABROMINATED BIPHENYLS (TetraBB)	ND
PENTABROMINATED BIPHENYLS (PentaBB)	ND
HEXABROMINATED BIPHENYLS (HexaBB)	ND
HEPTABROMINATED BIPHENYLS (HeptaBB)	ND
OCTABROMINATED BIPHENYLS (OctaBB)	ND
NONABROMINATED BIPHENYLS (NonaBB)	ND
DECABROMINATED BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	
MONOBROMINATED DIPHENYL ETHERS (MonoBDE)	ND
DIBROMINATED DIPHENYL ETHERS (DIBDE)	ND
TRIBROMINATED DIPHENYL ETHERS (TriBDE)	ND
TETRABROMINATED DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMINATED DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMINATED DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMINATED DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMINATED DIPHENYL ETHERS (OctaBDE)	ND
NONABROMINATED DIPHENYL ETHERS (NonaBDE)	ND
DECABROMINATED DIPHENYL ETHER (DecaBDE)	ND
HALOGEN CONTENT	
FLUORINE (F)	ND
CHLORINE (CI)	ND
BROMINE (Br)	ND
IODINE (I)	ND

NUMBER: SH AH00355778

REMARKS: ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

RESPONSIBILITY OF CHEMIST: DENT FANG / LEAF LIU

(II) ROHS REQUIREMENT:

RESTRICTED SUBSTANCES LIM	ITS
CADMIUM (Cd) CONTENT	0.01% (100ppm)
LEAD (Pb) CONTENT	0.1% (1000ppm)
MERCURY (Hg) CONTENT	0.1% (1000ppm)
CHROMIUM VI (Cr ⁶⁺) CONTENT	0.1% (1000ppm)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000ppm)
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	0.1% (1000ppm)

THE ABOVE LIMITS WERE QUOTED FROM ROHS DIRECTIVE 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.

TO BE CONTINUED



TEST REPORT NUMBER: SH

TESTS CONDUCTED

(III) TEST METHOD:

(III) TEST WETHOD:		
TESTING ITEM TE	STING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (CR ⁶⁺) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX C, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER.	1 ppm
POLYBROMINATED BIPHENYLS (PBBs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm

REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYZE IN SAMPLE

TO BE CONTINUED

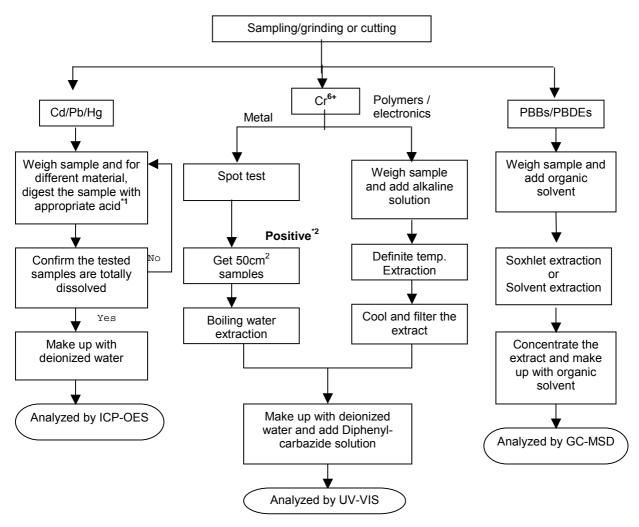
AH00355778



TEST REPORT NUMBER: SH

TESTS CONDUCTED

(IV) MEASUREMENT FLOWCHART: TEST FOR Cd/ Pb/ Hg/Cr (VI)/ PBBS/PBDES CONTENTS REFERENCE STANDARD: IÉC 62321 EDITION 1.0:2008



REMARKS:

*1: LIST OF APPROPRIATE ACID.

1. LIST OF ALT NOT NIATE A	CID:
MATERIAL	ACID ADDED FOR DIGESTION
POLYMERS HNO	_{3,} HCL,HF,H ₂ O _{2,} H ₃ BO ₃
METALS HNO	_{3,} HCL,HF
ELECTRONICS HNO	3.HCL,H2O2.HBF4

*2: IF THE RESULT OF SPOT TEST IS POSITIVE, CHROMIUM (VI) WOULD BE DETERMINED AS DETECTED.

TO BE CONTINUED

AH00355778



TEST REPORT NUMBER: SH AH00355778

TESTS CONDUCTED

2 (I) TEST RESULT SUMMARY:

TESTING ITEM	RESULT (ppm)
HALOGEN CONTENT	
FLUORINE (F)	ND
CHLORINE (CI)	ND
BROMINE (Br)	ND
IODINE (I)	ND

REMARKS: ppm = PARTS PER MILLION = mg/kg

= NOT DETECTED

RESPONSIBILITY OF CHEMIST : GRAVE WANG

(III) TEST METHOD:

TESTING ITEM TE	STING METHOD REPOR	TING LIMIT
HALOGEN CONTENT	WITH REFERENCE TO EN 14582:2007 BY COMBUSTION FLASK WITH OXYGEN AND DETERMINED BY ION CHROMATOGRAPHY	50 ppm

REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE

DATE SAMPLE RECEIVED : DEC.5, 2012

TESTING PERIOD: DEC.5, 2012 TO DEC.7, 2012

TO BE CONTINUED

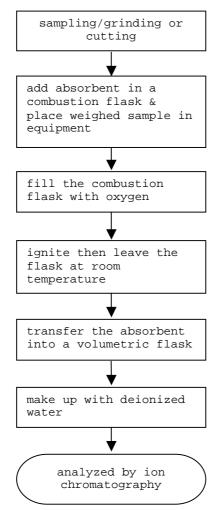


TEST REPORT

TESTS CONDUCTED

(IV) MEASUREMENT FLOWCHART:

TEST FOR HALOGEN CONTENT REFERENCE STANDARD: EN 14582



NUMBER: SH

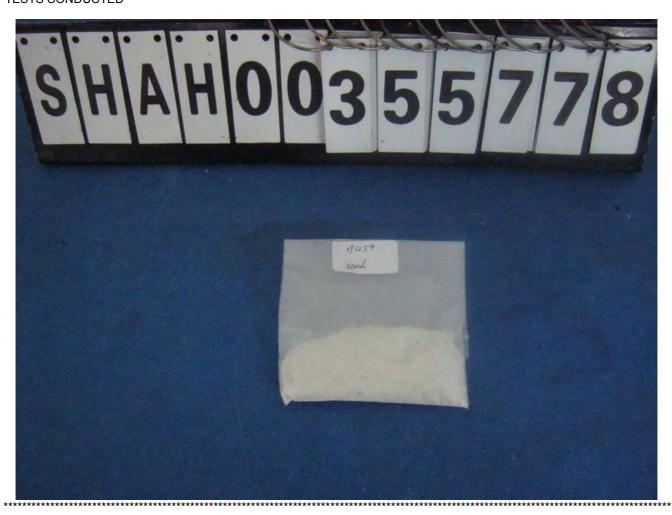
AH00355778

TO BE CONTINUED



TESTS CONDUCTED

NUMBER: SH AH00355778



END OF REPORT

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No. SHAEC1216714748

Date: 25 Sep 2012

Page 1 of 5

ZHEJIANG ASIA GENERAL SOLDERING&BRAZING MATERIAL CO., LTD
XIHU INDUSTRIAL PARK, SANDUN, HANGZHOU CITY, ZHEJIANG, PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : LEAD-FREE SOLDER WIRE

SGS Job No. :

SP12-028285 - SH

Part No. (P/N):

YTW108 (692535-001、692535-003)

Composition:

Sn3.0CuRE

Date of Sample Received :

21 Sep 2012

Testing Period:

21 Sep 2012 - 25 Sep 2012

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).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ Approved Signatory

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No. SHAEC1216714748

Date: 25 Sep 2012

Page 2 of 5

Test Results:

Test Part Description:

Specimen No. SGS Sample ID

Description

1

SHA12-167147.041

Silvery wire

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method:

With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	041
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	55
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))		-	\Diamond	Negative
Sum of PBBs	1000	mg/kg	9.1	ND
Monobromobiphenyl	(4)	mg/kg	5	ND
Dibromobiphenyl	12	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	0.00	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl		mg/kg	5	ND
Octabromobiphenyl	4	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
	2.1	mg/kg	5	ND
Decabromobiphenyl	1000	mg/kg	1.4	ND
Sum of PBDEs Monobromodiphenyl ether	-	mg/kg	5	ND
Several de Augustin and Santan Santan				

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Test Report	No. SHAEC121671474	18	Date: 25	Sep 2012	Page 3 of 5
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	041	
Dibromodiphenyl ether	-	mg/kg	5	ND	
Tribromodiphenyl ether	-	mg/kg	5	ND	
Tetrabromodiphenyl ether	G-	mg/kg	5	ND	
Pentabromodiphenyl ether	-	mg/kg	5	ND	
Hexabromodiphenyl ether	C	mg/kg	5	ND	
Heptabromodiphenyl ether	2	mg/kg	5	ND	
Octabromodiphenyl ether	D4	mg/kg	5	ND	
Nonabromodiphenyl ether	4	mg/kg	5	ND	
Decabromodiphenyl ether	-	mg/kg	5	ND	

Notes:

- (1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II
- (2) Spot-test:

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)

◇Boiling-water-extraction:

Negative = Absence of Cr(VI) coating

Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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No. SHAEC1216714748

Date: 25 Sep 2012

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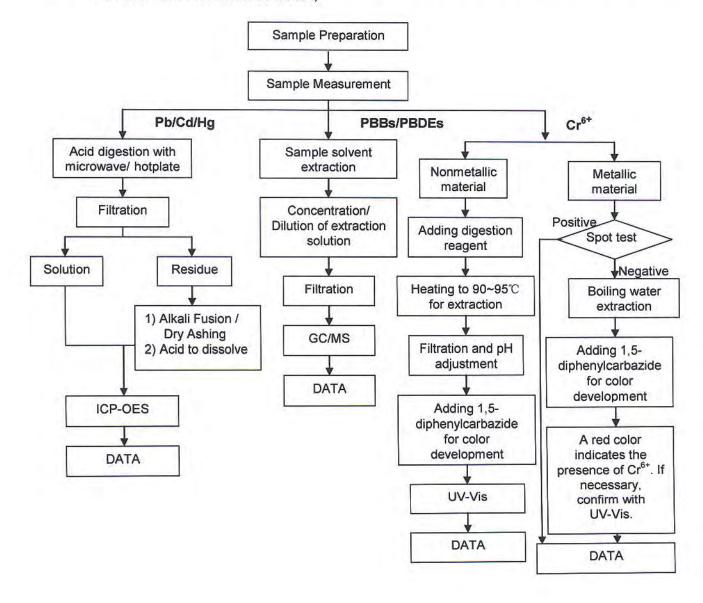
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu

2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Linda Li

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)



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No. SHAEC1216714748

Date: 25 Sep 2012

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Sample photo:



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No. TSNEC1200272601

Date: 09 Apr 2012

Page 1 of 8

BEIJING HYSTIC NEW MATERIALS CO., LTD. 5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING. 100041, CHINA

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

SGS Job No.:

TP12-004950 - TJ

Model No.:

EP608

Date of Sample Received:

31 Mar 2012

Testing Period:

31 Mar 2012 - 09 Apr 2012

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).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Aimy Wang

Approved Signatory

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No. TSNEC1200272601

Date: 09 Apr 2012

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Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description TSN12-002726.001 1 ivory-white paste

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs content by GC-MS.

Test Item(s)	Limit	<u>Unit</u>	MDL	001
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))	1000	mg/kg	2	ND
Sum of PBBs	1000	mg/kg	-	ND
Monobromobiphenyl	4	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	0-0	mg/kg	5	ND
Tetrabromobiphenyl	40	mg/kg	5	ND
Pentabromobiphenyl	<u> </u>	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl		mg/kg	5	ND
Octabromobiphenyl		mg/kg	5	ND
Nonabromobiphenyl	1.0	mg/kg	5	ND
Decabromobiphenyl	. 4	mg/kg	5	ND
Sum of PBDEs	1000	mg/kg	,2	ND
Monobromodiphenyl ether	1.9	mg/kg	5	ND

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Test Report	No. TSNEC120027260	01	Date: 09	Apr 2012	Page 3 of 8
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	001	
Dibromodiphenyl ether		mg/kg	5	ND	
Tribromodiphenyl ether	-	mg/kg	5	ND	
Tetrabromodiphenyl ether	40	mg/kg	5	ND	
Pentabromodiphenyl ether	-	mg/kg	5	ND	
Hexabromodiphenyl ether	ė.	mg/kg	5	ND	
Heptabromodiphenyl ether	000	mg/kg	5	ND	
Octabromodiphenyl ether	-	mg/kg	5	ND	
Nonabromodiphenyl ether	181	mg/kg	5	ND	
Decabromodiphenyl ether	ů.	mg/kg	5	ND	

Notes:

Hexabromocyclododecane (HBCDD)

Test Method: With reference to IEC 62321:2008, analysis was performed by GC-MS.

Test Item(s)	<u>Unit</u>	MDL	001
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Notes:

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

Phthalates

Test Method: With reference to EN14372: 2004, analysis was performed by GC-MS.

Test Item(s)	<u>Unit</u>	MDL	001
Dibutyl Phthalate (DBP)	% (w/w)	0.003	ND
Benzylbutyl Phthalate (BBP)	% (w/w)	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	% (w/w)	0.003	ND
Notes:			

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.

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⁽¹⁾ The maximum permissible limit is quoted from directive 2011/65/EU, Annex II.



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Result shown is of the total weight of wet sample

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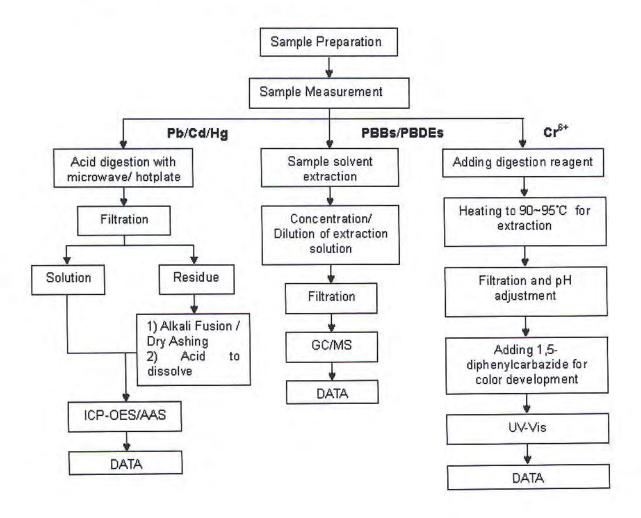
Date: 09 Apr 2012

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ATTACHMENTS

Cd/Pb/Hg/Cr^{S+}/PBBs&PBDEs Flow Chart

- 1) Name of the person who made testing: Aaron Wang/Jason Li /Angell Yao
- 2) Name of the person in charge of testing: Cindy Yin/Rex Zhu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr8+ and PBBs/PBDEs test method excluded)



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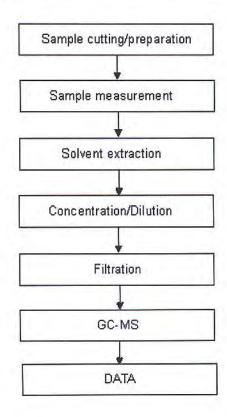
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ATTACHMENTS

HBCDD Testing Flow Chart

- 1) Name of the person who made testing: Marina Sun
- 2) Name of the person in charge of testing: Rex Zhu



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No. TSNEC1200272601

Date: 09 Apr 2012

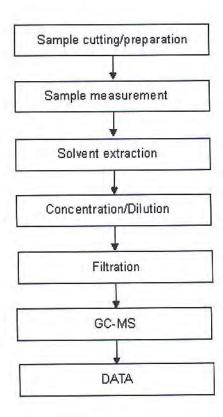
Page 7 of 8

ATTACHMENTS

Phthalate Testing Flow Chart

1) Name of the person who made testing: Marina Sun

2) Name of the person in charge of testing: Rex Zhu



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No. TSNEC1200272601

Date: 09 Apr 2012

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Sample photo:



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No. TSNEC1200272602

Date: 09 Apr 2012

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BEIJING HYSTIC NEW MATERIALS CO., LTD. 5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING. 100041, CHINA

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

SGS Job No.:

TP12-004950 - TJ

Model No.:

EP608

Date of Sample Received:

31 Mar 2012

Testing Period:

31 Mar 2012 - 09 Apr 2012

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).

Signed for and on behalf of SGS-CSTC Ltd.

Aimy Wang

Approved Signatory

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No. TSNEC1200272602

Date: 09 Apr 2012

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Test Results:

Test Part Description:

Specimen No.

SGS Sample ID

Description

TSN12-002726.002

ivory-white paste

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

Halogen

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

<u>Unit</u>	MDL	002
mg/kg	50	57
mg/kg	50	7557
mg/kg	50	ND
mg/kg	50	ND
	mg/kg mg/kg mg/kg	mg/kg 50 mg/kg 50 mg/kg 50

Result shown is of the total weight of wet sample

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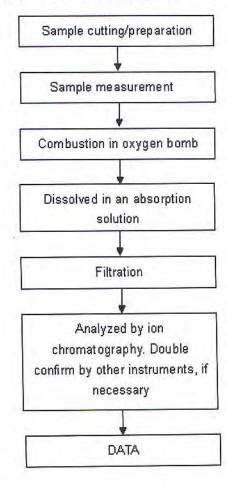
Date: 09 Apr 2012

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ATTACHMENTS

Halogen Testing Flow Chart

- 1) Name of the person who made testing: Angell Yao
- 2) Name of the person in charge of testing: Rex Zhu



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No. TSNEC1200272602

Date: 09 Apr 2012

Page 4 of 4

Sample photo:



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No. SHAEC1215842621

Date: 13 Sep 2012

Page 1 of 4

CHINALO LUOYANG COPPER CO., LTD.
NO.50, JIANSHE ROAD, LUOYANG, HENAN PROVINCE

The following sample(s) was/were submitted and identified on behalf of the clients as: C10100(TU1)

SGS Job No. :

SP12-027024 - SH

Date of Sample Received:

10 Sep 2012

Testing Period:

10 Sep 2012 - 13 Sep 2012

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).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ

Approved Signatory

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No. SHAEC1215842621

Date: 13 Sep 2012

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Test Results:

Test Part Description:

SGS Sample ID Specimen No.

Description

SHA12-158426.015

Copper metal sheet

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>015</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))		-	\Diamond	Negative

Notes:

(1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II

(2) Spot-test:

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating

Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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No. SHAEC1215842621

Date: 13 Sep 2012

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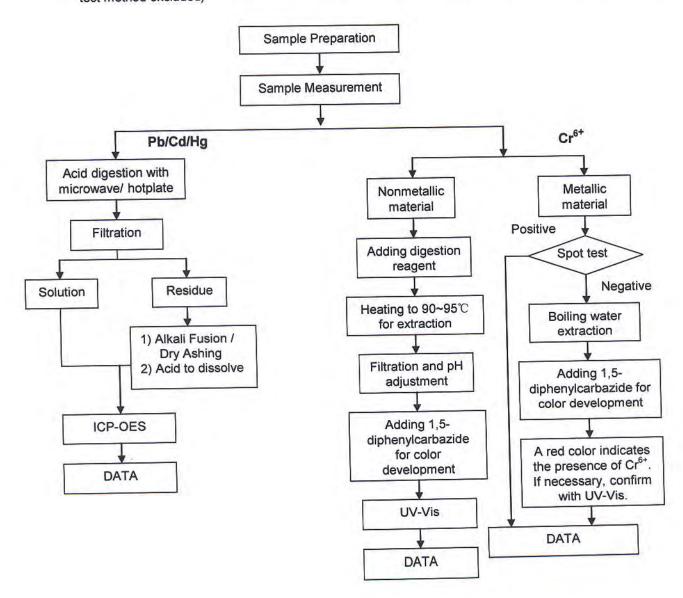
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao

2) Name of the person in charge of testing: Jeff Zhang/George Xu

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)



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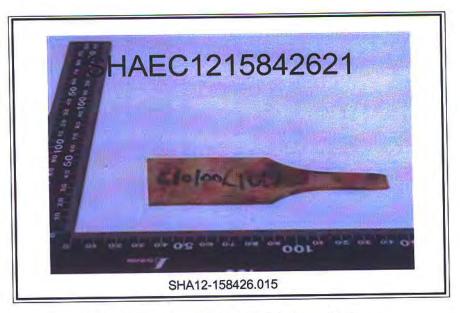


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Sample photo:



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Pony Testing International Group

检测报告 报告编号: H01252016704D

日期: 2013.01.30

第1页, 共4页

委托单位:

苏州新吴光电科技有限公司

地址:

苏州吴江区松陵镇友谊开发区友谊路 368 号

委托单位提供样品信息如下:

样品名称:

锌带

买家:

苏州新吴光电科技有限公司

样品接收日期: 2013.01.25

样品检测口期: 2013.01.25 至 2013.01.30

检测要求:

参照 RoHS 2011/65/EU 指令附录Ⅱ要求

检测方法:

依照 IEC62321 Edition 1.0:2008 的方法: 电子电气产品中限用物质含量的测定程序

- (1) 用原子吸收光谱仪测定铅的含量
- (2) 用原子吸收光谱仪测定镉的含量
- (3) 用电感耦合等离子体原子发射光谱仪测定汞的含量
- (4) 用点测试法/沸水萃取法测定六价铬的含量
- (5) 用气相色谱-质谱仪测定多溴联苯和多溴联苯醚的含量

检测结果:

请参见下页

批准人:

本检测单位保证 于检测结果的(则无效;任何x

PONY

Pony Testing International Group

John Man

Code: x3kb2mpj

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检测结果 (单位: mg/kg)

检测项目	方法检出限	检测结果	RoHS 限量
铅	1	7	1000
镉	1	24	100
汞	1	未检出	1000
六价铬	参见备注(5)	阴性	
多溴联苯	_		1000
 一溴	5	未检出	
二溴	5	未检出	
三溴	5	未检出	
四溴	5	未检出	
五溴	5	未检出	-
六溴	5	未检出	<u> </u>
七溴	5	未检出	
八溴	5	未检出	
九溴	5	未检出	_
十溴	5	未检出	-
多溴联苯醚	-	_	1000
	5	未检出	
二溴	5	未检出	
三溴	5	未检出	
四溴	5	未检出	
五溴	5	未检出	_
六溴	5	未检出	
七溴	5	未检出	
八溴	5	未检出	
	5	未检出	
十溴	5	未检出	_

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检测报告 报告编号: H01252016704D

日期: 2013.01.30

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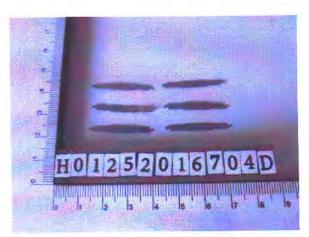
备注: (1) mg/kg = ppm

- (2) "一"= 未规定
- (3) 最大允许极限值引用 RoHS 指令 2011/65/EU 附录 II 的限值要求
- (4) 未检出(<方法检出限)
- (5) 点测试:

阴性=表层中不存在六价铬,阳性=表层中存在六价铬; (如果点测试的检测结果为阴性或不确定,应进一步用沸水萃取法验证) 沸水萃取法:

阴性=表层中不存在六价铬,阳性=表层中存在六价铬; 沸水萃取法中的检测浓度为每 50cm²的测试面积等于或大于 0.02mg/kg

照片:



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检测报告 报告编号: H01252016704D

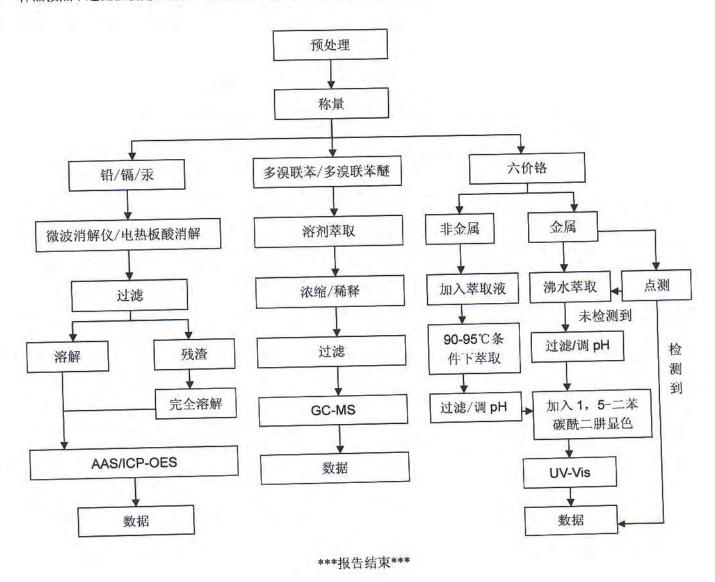
日期: 2013.01.30

第4页, 共4页

检测流程图

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