

Company name:

ICP Test Report Certification Packet

Littelfuse, Inc.

Product Series:	Mini-Fuse Body	
Product #:	997 Series	
Issue Date:	September 17, 201	3
2002/95/EC)-restricted supacking/packaging materi	ubstance nor such utals, and for additives ported to you that the packaging materials, a	that there is neither RoHS (EU Directive se, for materials to be used for unit parts, for and the like in the manufacturing processes. parts and sub-materials, the materials to be used and the additives and the like in the manufacturing emponents.
	Issued by:	JORDANUFF H. CABILAN
		<global ehs="" engineer=""></global>
(1) Parts, sub-materials a	and unit parts	
This document co	vers the Mini-Fuse	Body Series RoHS-Compliant series products
manufactured by Li	ttelfuse, Inc.	
< Raw Materials U	sed	
Please see Tab	le 1	
(2) The ICP data on all r	measurable substance ropriate pages as ide	
Remarks :		



Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	425498	Foil Stamp	3-11
2	425711	Foil Stamp	12-20
3	057875	Colorant- Violet	21-30
4	057882	Colorant- Natural	31-40
5	057877	Colorant- Tan	41-50
6	955408	Zinc Strip	51-56
7	057351	Base	57-66
8	057711	Shunt	67-75
9	057874	Colorant- Gray	76-85
10	057883	Colorant- Green	86-94
11	057876	Colorant- Pink	95-104
12	057878	Colorant- Brown	105-114
13	057881	Colorant- Yellow	115-124
14	057879	Colorant- Red	125-134
15	057880	Colorant- Blue	135-144



Number: TWNC00281437 Test Report

Littelfuse, S.A. de C.V. Applicant:

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P. 26070 Piedra Negras, Coahuila,

Mexico

Sample Description:

One (1) group of submitted samples said to be: Part Description : TAPE WHITE FOIL

Part Number : 425498

Date Sample Received : Oct 16, 2012 Date Test Started : Oct 17, 2012

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

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Date : Oct 23, 2012





Test Conducted

(I) Test Result Summary:

Test Item	Result (ppm)
rest item	White Plastic Film
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 (Cl)	12260
Bromine (Br)	ND
Iodine (I)	ND





Test Conducted

(I) Test Result Summary :

Magh. Thom	Result (ppm)
Test Item	White Plastic Film
Phthalates	
Di(2-ethylhexyl) Phthalate (DEHP)	ND
Dibutyl Phthalate (DBP) ND	
Benzyl Butyl Phthalate (BBP) ND	
Others	
Hexabromocyclododecane (HBCDD)	ND

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

ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Oct 16, 2012

Test Period : Oct 17, 2012 To Oct 22, 2012

(Π) 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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

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





Test Conducted (Ⅲ) Test Method:

Test Item	Test 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-MS and further HPLC-DAD 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-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	50 ppm
Phthalates	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	50 ppm
Hexabromocyclododec ane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD.	10 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample



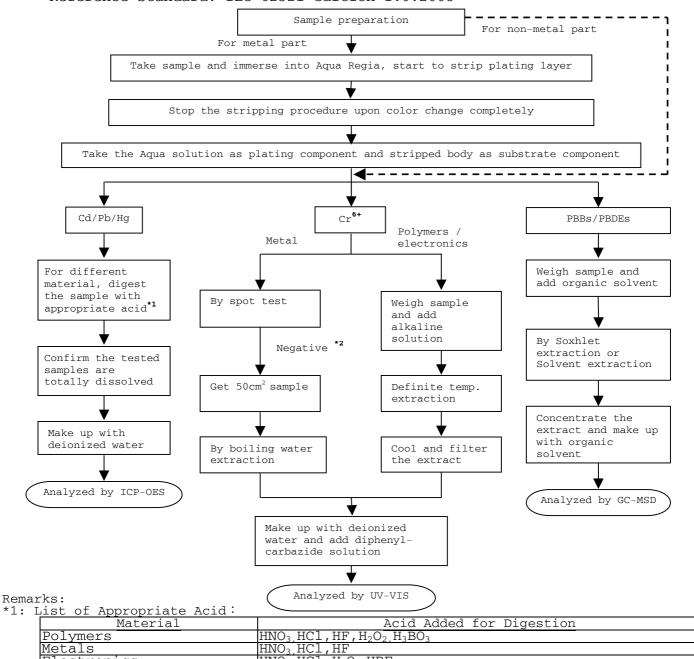


Test Conducted

(IV) Measurement Flowchart:

Electronics

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008



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

HNO3 HC1, H₂O₂ HBF₄



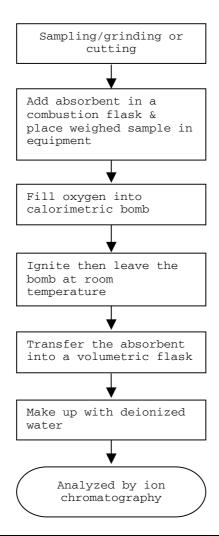
Intertek Testing Services Taiwan Ltd.



Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



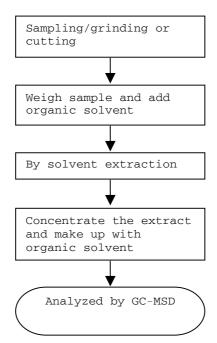




Test Conducted

(IV) Measurement Flowchart:

Test For Phthalates Contents Reference Method: EN 14372: 2004



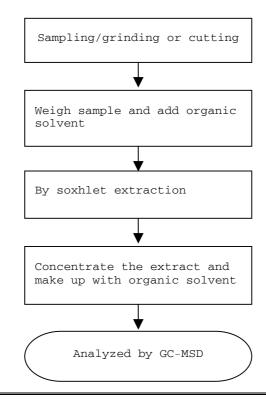




Test Conducted

(IV) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD) Reference Standard: USEPA 3540C



End of Report

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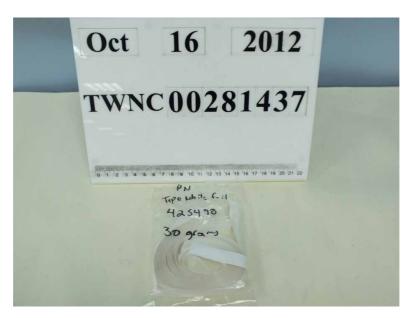


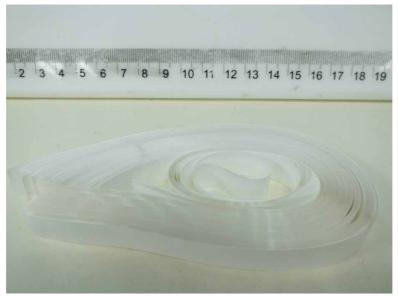


Test Conducted

Number: TWNC00281437

Photo









Test Report Number: TWNC00281442

Applicant: Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P. 26070 Piedra Negras, Coahuila,

Mexico

Sample Description:

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

Part Description : RED FOIL Part Number : 425711

Date Sample Received : Oct 16, 2012 Date Test Started : Oct 17, 2012

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

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Date : Oct 23, 2012





Test Conducted

 $(\ I\)$ Test Result Summary :

Test Item	Result (ppm)
rest item	Red Plastic Film
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)	1114
Chlorine (Cl)	11663
Bromine (Br)	ND
Iodine (I)	ND





Test Conducted

(I) Test Result Summary :

Magh. Thom	Result (ppm)
Test Item	Red Plastic Film
Phthalates	
Di(2-ethylhexyl) Phthalate (DEHP)	ND
Dibutyl Phthalate (DBP)	ND
Benzyl Butyl Phthalate (BBP)	
Others	
Hexabromocyclododecane (HBCDD)	ND

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

ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Oct 16, 2012

Test Period : Oct 17, 2012 To Oct 22, 2012

(Π) RoHS Limits:

Restricted Substances	Limits
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 Ehters (PBDEs)	0.1% (1000ppm)

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





Test Conducted (Ⅲ) Test Method:

Test Item	Test 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-MS and further HPLC-DAD 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-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	50 ppm
Phthalates	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	50 ppm
Hexabromocyclododec ane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD.	10 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample



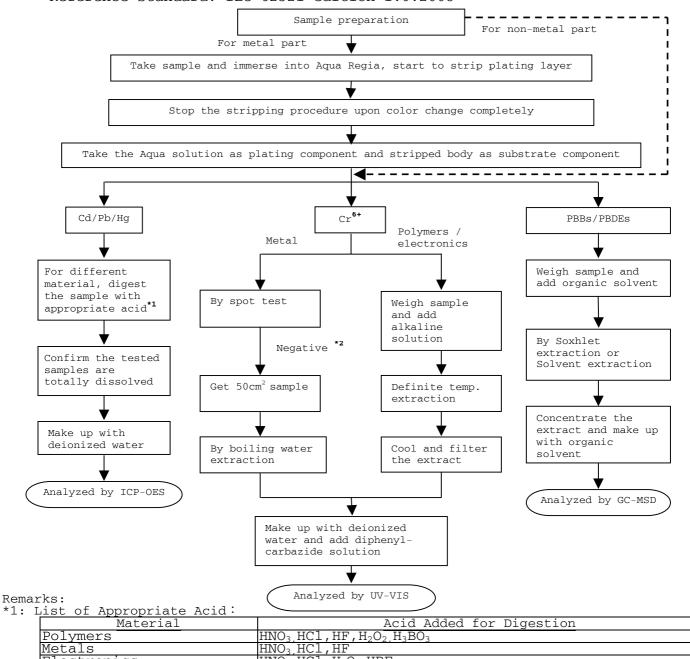


Test Conducted

(IV) Measurement Flowchart:

Electronics

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008



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

HNO3 HC1, H₂O₂ HBF₄



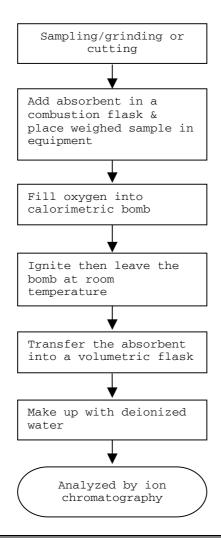
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Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



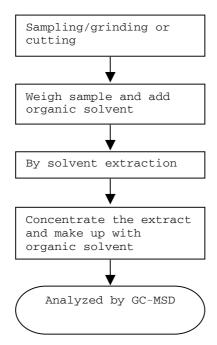




Test Conducted

(IV) Measurement Flowchart:

Test For Phthalates Contents Reference Method: EN 14372: 2004



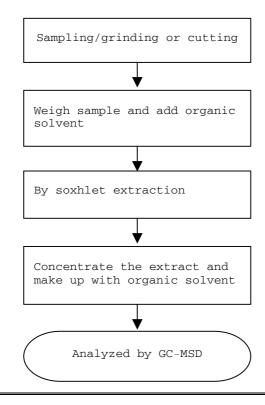




Test Conducted

(IV) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD) Reference Standard: USEPA 3540C



End of Report

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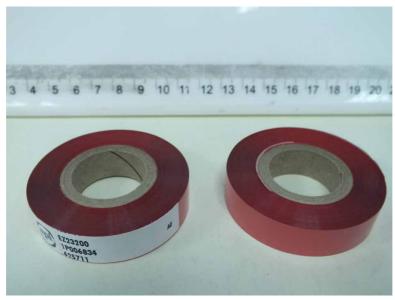


Test Conducted

Number: TWNC00281442

Photo









: TWNC00325494 Number

: Aug 02, 2013 Date

Applicant: Littelfuse, S.A. de C.V.

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

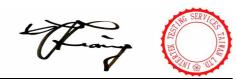
One (1) group of submitted samples said to be:

Part Description Colorant-Violet Part Number 057875 Date Sample Received Jul 30, 2013 **Date Test Started** : Jul 30, 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





Number: TWNC00325494

Test Conducted
Test Result Summary:

Test Item L	<u>Unit</u>	t Test Method	<u>Result</u>	RL
<u>rest item</u>	OHIL	rest Metriod	Violet plastic pellets	IXL
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.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls	(PBBs)			
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Test Conducted

Number: TWNC00325494

<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Result Violet plastic pellets	RL
Polybrominated Diphenyl Ethers (PBDEs)				
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	M/H	ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content				
Fluorine (F)	ppm	With reference to EN	128	50
Chlorine (CI)	ppm	14582:2007 by calorimetric	ND	50
Bromine (Br)	ppm	bomb with oxygen and determined by Ion	ND	50
Iodine (I)	ppm	Chromatograph.	ND	50
Phthalates	PP	Ciri offictographi.		
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10
Dibutyl Phthalate (DBP)	ppm		ND	10
Benzyl Butyl Phthalate (BBP)	ppm		ND	10
Diisobutyl Phthalate (DIBP)	ppm		ND	10



Number: TWNC00325494

Test Conducted

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
<u>rest item</u>	Offic	rest Metriou	Violet plastic pellets	IXL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 02, 2013

RoHS Limit

10110 = 11110	
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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

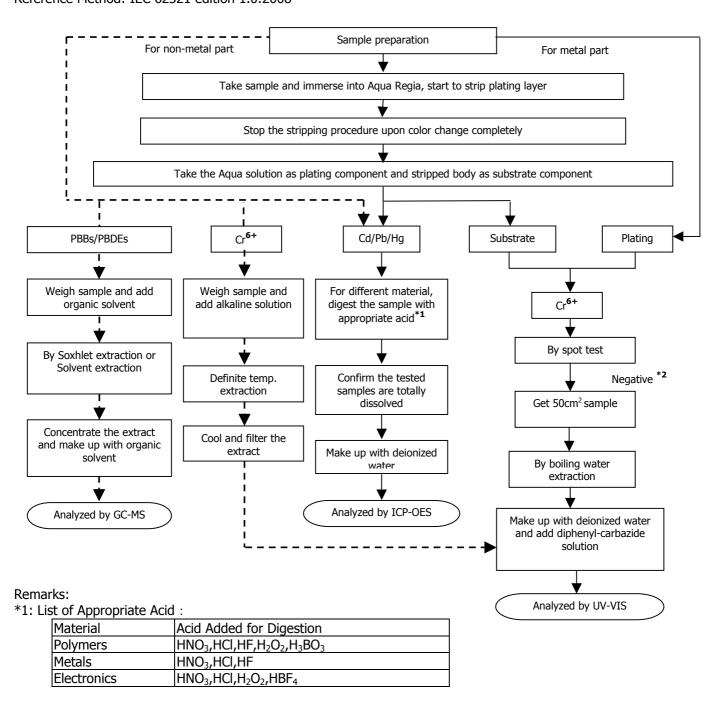
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325494

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

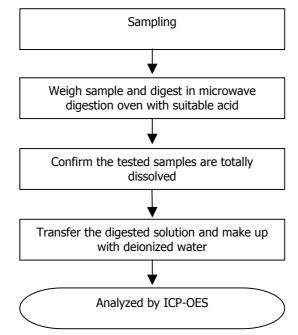


Number: TWNC00325494

Test Conducted

Measurement Flowchart:

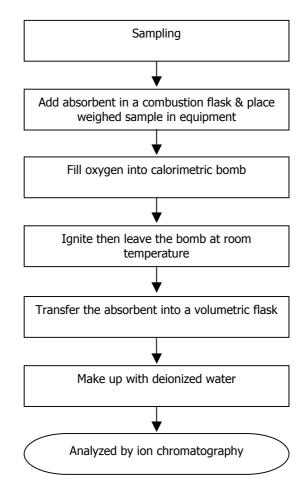
Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052





Number: TWNC00325494

Test Conducted Test for Halogen Contents Reference Method: EN 14582





Number: TWNC00325494

Test Conducted Test for Phthalates Contents Reference Method: EN 14372: 2004

Sampling Weigh sample and add organic solvent By solvent extraction Concentrate the extract and make up with organic solvent

Analyzed by GC-MS

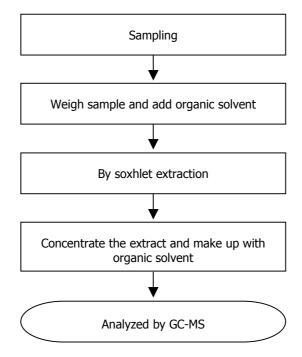


Number: TWNC00325494

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

Reference Method: USEPA 3540C





Number: TWNC00325494





End of Report

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: TWNC00325501 Number

Date : Aug 01, 2013

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : Colorant Natural

Part Number 057882 Date Sample Received Jul 30, 2013 Date Test Started Jul 30, 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





Number: TWNC00325501

Test Conducted Test Result Summary:

Toot Itom	Linit	Test Method	<u>Result</u>	- RL
<u>Test Item</u>	<u>Unit</u>		Orange plastic pellets	
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.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls	(PBBs)			
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB)	ppm		ND	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Test Conducted

Number: TWNC00325501

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	- RL
<u>rest item</u>			Orange plastic pellets	
Polybrominated Diphenyl Ethers (PBDEs)				
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content	•			•
Fluorine (F)	ppm	With reference to EN	ND	50
Chlorine (CI)	ppm	14582:2007 by calorimetric	ND	50
Bromine (Br)	ppm	bomb with oxygen and determined by Ion Chromatograph.	ND	50
Iodine (I)	ppm		ND	50
Phthalates		, , , , , , , , , , , , , , , , , , , ,		l .
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10
Dibutyl Phthalate (DBP)	ppm		ND	10
Benzyl Butyl Phthalate (BBP)	ppm		ND	10
Diisobutyl Phthalate (DIBP)	ppm		ND	10



Number: TWNC00325501

Test Conducted

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
<u>rest item</u>	Offic	rest Metriou	Orange plastic pellets	IXL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 01, 2013

RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

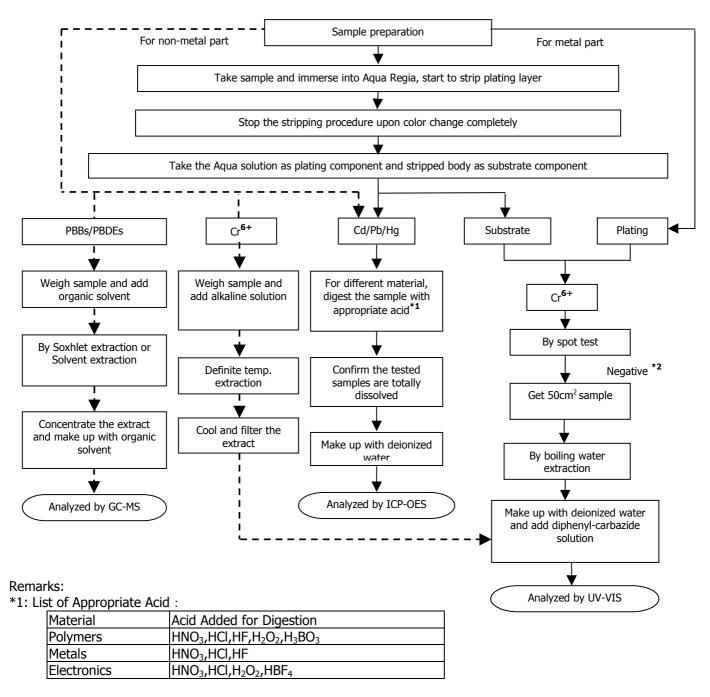
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325501

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

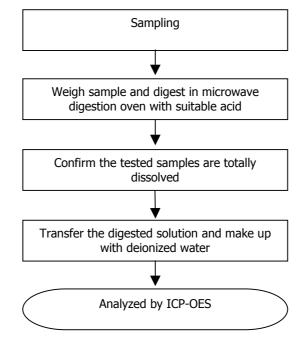


Number: TWNC00325501

Test Conducted

Measurement Flowchart:

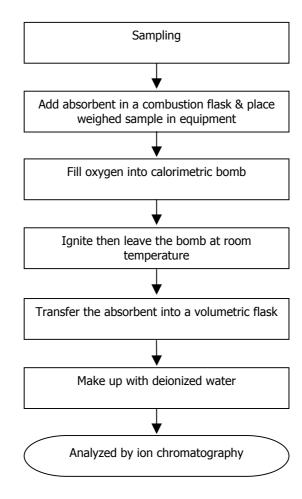
Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052





Number: TWNC00325501

Test Conducted Test for Halogen Contents Reference Method: EN 14582

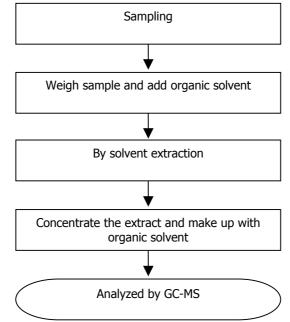




Number: TWNC00325501

Test Conducted Test for Phthalates Contents

Reference Method: EN 14372: 2004



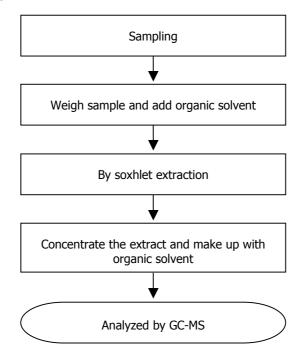


Number: TWNC00325501

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

Reference Method: USEPA 3540C





Number: TWNC00325501





End of Report

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: TWNC00325497 Number

Date : Aug 01, 2013

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : Colorant-Tan Part Number 057877 Date Sample Received Jul 30, 2013 **Date Test Started** Jul 30, 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





Number: TWNC00325497

Test Conducted Test Result Summary:

Test Item	<u>Unit</u>	Test Method	Method Result	
<u>rest item</u>	OHIL	<u>rest Metriod</u>	Light brown plastic pellets	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.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs)				
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	With reference to IFC (2221)	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Test Conducted

Number: TWNC00325497

Test Item	Unit	Test Method	<u>Result</u>	RL	
<u>rest item</u>	Offic	<u>rest Metriou</u>	Light brown plastic pellets	- KL	
Polybrominated Diphenyl Ethers (PBDEs)					
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5	
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5	
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5	
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With metallic 150 (2221)	ND	5	
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5	
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5	
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5	
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5	
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5	
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5	
Halogen Content					
Fluorine (F)	ppm	With reference to EN	ND	50	
Chlorine (Cl)	ppm	14582:2007 by calorimetric	ND	50	
Bromine (Br)	ppm	bomb with oxygen and determined by Ion	ND	50	
Iodine (I)	ppm	Chromatograph.	ND	50	
Phthalates					
Di(2-ethylhexyl) Phthalate (DEHP)	ppm		ND	10	
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372:	ND	10	
Benzyl Butyl Phthalate (BBP)	ppm	2004, by solvent extraction and determined by GC-MS.	ND	10	
Diisobutyl Phthalate (DIBP)	ppm		ND	10	



Number: TWNC00325497

Test Conducted

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
<u>rest item</u>	Offic	rest Method	Light brown plastic pellets	IXL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 01, 2013

RoHS Limit

10110 = 11110	
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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

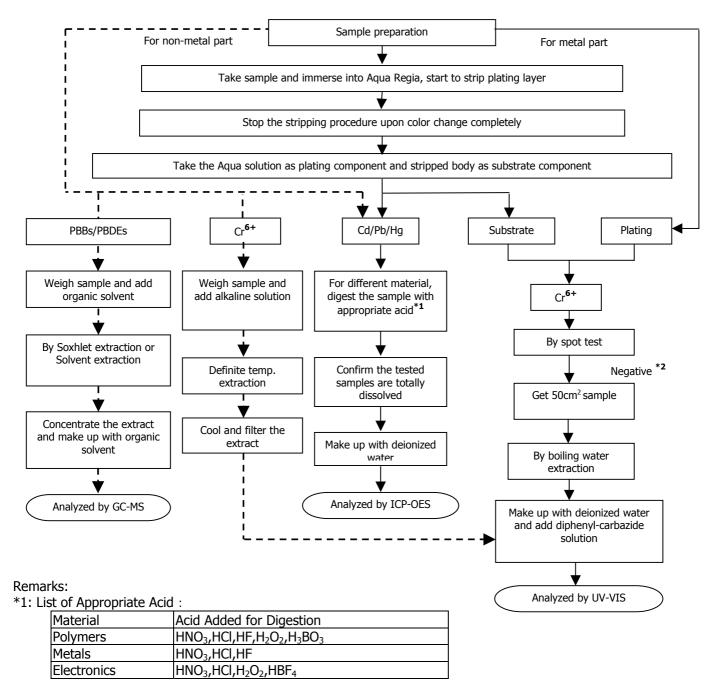
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325497

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

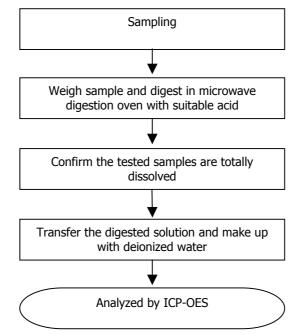


Number: TWNC00325497

Test Conducted

Measurement Flowchart:

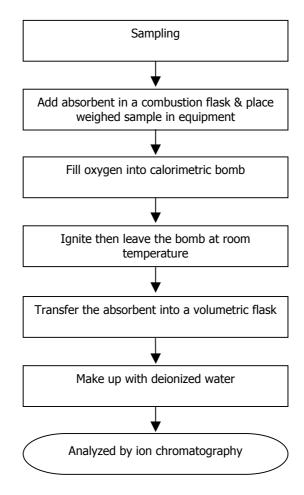
Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052





Number: TWNC00325497

Test Conducted Test for Halogen Contents Reference Method: EN 14582





Number: TWNC00325497

Test Conducted Test for Phthalates Contents Reference Method: EN 14372: 2004

Sampling Weigh sample and add organic solvent By solvent extraction Concentrate the extract and make up with organic solvent Analyzed by GC-MS

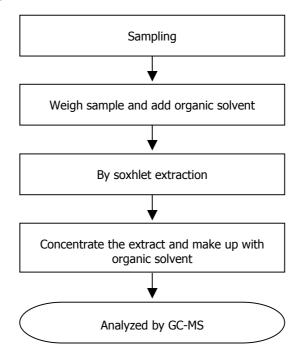


Number: TWNC00325497

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

Reference Method: USEPA 3540C





Number: TWNC00325497





End of Report

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Test Report Number: TWNC00281445

Applicant: Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P. 26070 Piedra Negras, Coahuila,

Mexico

Sample Description:

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

Part Description : MINI SKIVED ZINC STRIP 5A

Part Number : 955408-108
Date Sample Received : Oct 16, 2012
Date Test Started : Oct 18, 2012

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

This report shall not be reproduced except in full, without the written approval of the laboratory.

Date : Oct 23, 2012





Test Conducted

(I) Test Result Summary:

	T			
Most Itom	Result	Result (ppm)		
<u>Test Item</u>	(1)	(2)		
Heavy Metal	•			
Cadmium (Cd) content	2	3		
Lead (Pb) content	14	109		
Mercury (Hg) content	ND	ND		
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)	Negative (< 0.02)(#)	Negative (< 0.02)(#)		

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

ND = Not detected
< = Less than</pre>

mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre Negative = A negative test result indicated positive observation was not found at the time of Test.

= Due to the insufficient sample area, reduced total sample surface of 10 cm² was used and the dilution factor was adjusted accordingly.

Tested Components

- (1) Black Metal Base Material
- (2) Silvery Plating Layer

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Oct 16, 2012

Test Period : Oct 18, 2012 To Oct 23, 2012

(II) 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

(Ⅲ) Test Method:

Test Item	Test 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 B, by boiling water extraction and determined by UV-Vis Spectrophotometer.	0.02 mg/kg with 50cm ²

Remark: Reporting limit = Quantitation limit of analyte in sample

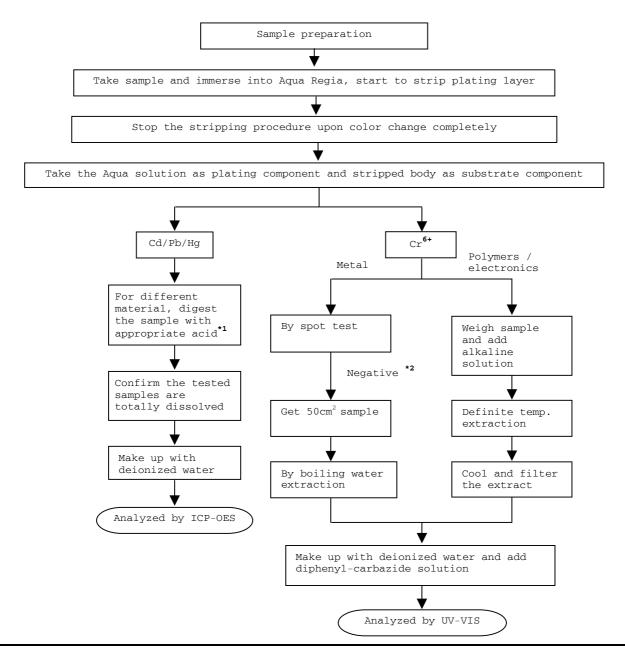




Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)
Reference Standard: IEC 62321 edition 1.0:2008





Page 4 of 6

Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

Material	Acid Added for Digestion
Polymers	HNO ₃ ,HC1,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.

End of Report

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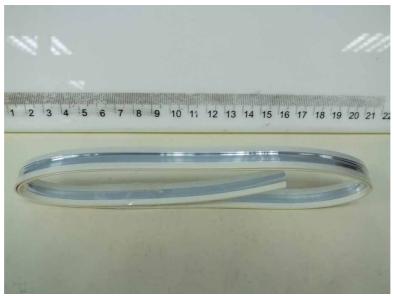




Test Conducted

Photo









Test Report Number: TWNC00299233

Applicant: Littelfuse, S.A. de C.V. Date : Feb 25, 2013

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : NANO COMPOSITE NYLON

: 057351 Part Number

Date Sample Received : Feb 19, 2013 Date Test Started : Feb 19, 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





Test Conducted

(I) Test Result Summary:

(I) Test Result Summary:				
Test Item	Unit	Test Method	Result Semitrans- parent plastic pellets	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.	ND	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	mqq	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs)			
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	With reference to IEC	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5





Test Conducted

<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Result Semitrans- parent plastic pellets	<u>RL</u>
Polybrominated Diphenyl Ethers	(PBDEs)			
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IEC 62321: 2008, by solvent	ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	extraction and determined by GC-MS and	ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	further HPLC-DAD confirmation when	ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	necessary.	ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Phthalates			1	
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent	ND	50
Dibutyl Phthalate (DBP)	ppm	extraction and	ND	50
Benzyl Butyl Phthalate (BBP)	ppm	determined by GC-MS.	ND	50
Halogen Content				
Fluorine (F)	ppm	With reference to EN	4728	50
Chlorine (Cl)	ppm	14582:2007 by calorimetric bomb with oxygen and determined	ND	50
Bromine (Br)	ppm		ND	50
Iodine (I)	ppm	by Ion Chromatograph.	ND	50
Others			1	
Hexabromo cyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10





Test Conducted

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

ND = Not detected

RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Feb 19, 2013

: Feb 19, 2013 to Feb 21, 2013 Test Period

(Ⅱ) Limit: RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

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

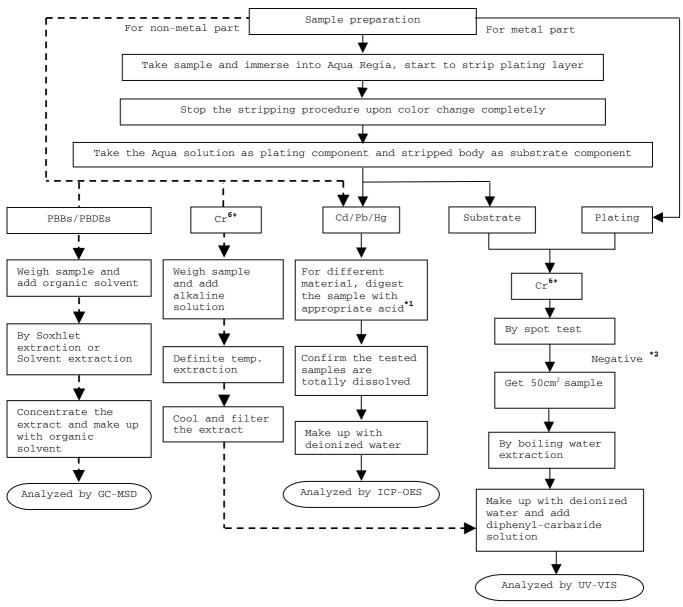




Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

<u>Material</u>	Acid Added for Digestion
Polymers	HNO ₃ ,HC1,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO ₃ ,HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

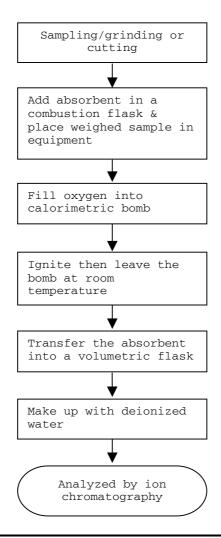
*2: If the result of spot test is positive, Chromium VI would be determined as detected.





Test Conducted

Test for Halogen Content Reference Standard: EN 14582

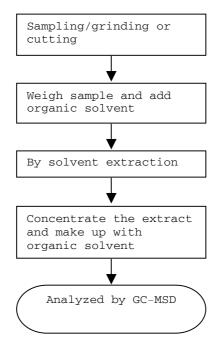






Test Conducted

Test For Phthalates Contents Reference Method: EN 14372: 2004

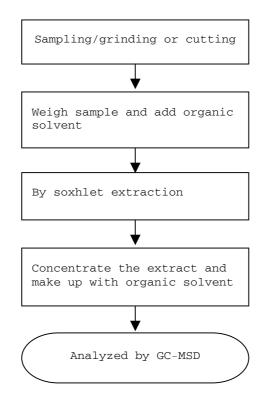






Test Conducted

Test For Hexabromocyclododecane (HBCDD) Reference Standard: USEPA 3540C



End of Report

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Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.



Number

: TWNC00322212

Applicant:

Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Date

: Jul 16, 2013

Sample Description:

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

Part Description Part Number

: Radel A200

057711 Jul 08, 2013

Date Sample Received Date Test Started

: Jul 09, 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

Page 1 of 11

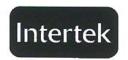


Number:

TWNC00322212

Test Conducted Test Result Summary:

Test Item	Unit	Test Method	Result	RL
	Onic	reservetion	Transparent plastic pellets	132
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.	ND	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	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls	(PBBs)			-5.5
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	l	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Number:

TWNC00322212

Test Conducted

Test Item	<u>Unit</u>	Test Method	Result Transparent plastic pellets	RL
Polybrominated Diphenyl	Ethers (PBDEs)	Transparent plastic peliets	
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IEC 62321:	ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	2008, by solvent extraction	ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content				
Fluorine (F)	ppm	With reference to EN	ND	50
Chlorine (CI)	ppm	14582:2007 by calorimetric bomb with oxygen and	3088	50
Bromine (Br)	ppm	determined by Ion	ND	50
Iodine (I)	ppm	Chromatograph.	ND	50
Phthalates	-			sile.
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14272	ND	10
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10
Benzyl Butyl Phthalate (BBP)	ppm	and determined by GC-MS.	ND	10



Number:

TWNC00322212

Test Conducted

Test Item	<u>Unit</u>	Test Method	Result Transparent plastic pellets	RL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> ND Not detected

RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received

: Jul 08, 2013

Test Period

: Jul 08, 2013 To Jul 12, 2013

RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

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

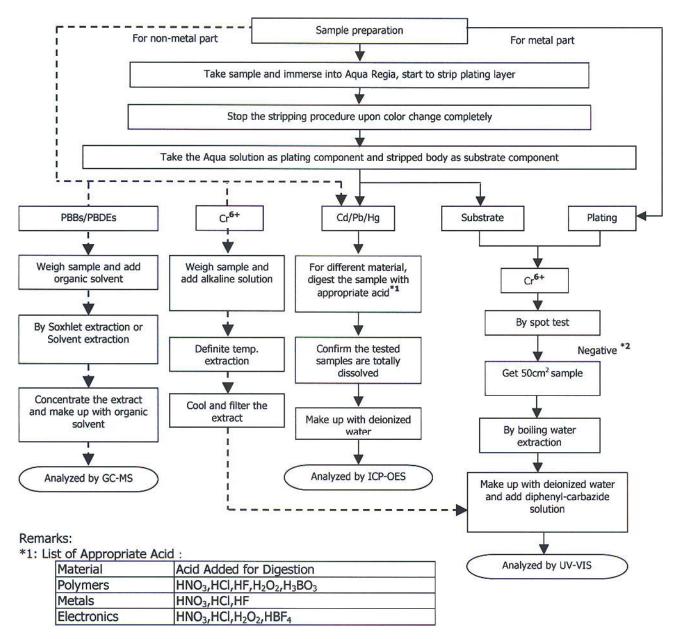


Number: TWNC00322212

Test Conducted Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents

Reference Method: IEC 62321 edition 1.0:2008



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

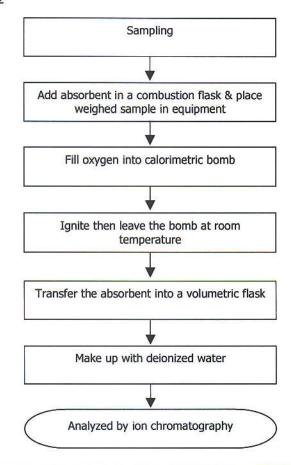


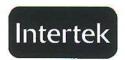


Number:

TWNC00322212

Test Conducted Test for Halogen Contents Reference Method: EN 14582

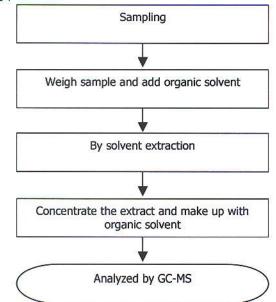




Number: TWNC00322212

Test Conducted Test for Phthalates Contents

Reference Method: EN 14372: 2004





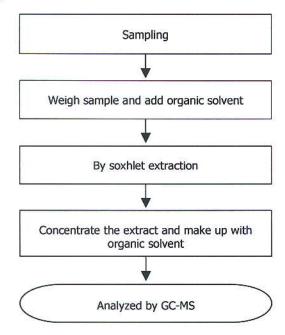
Number:

TWNC00322212

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

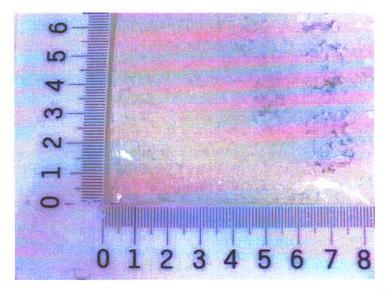
Reference Method: USEPA 3540C





Number: TWNC00322212





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Test Report Number: TWNC00299230

Applicant: Littelfuse, S.A. de C.V. Date : Feb 25, 2013

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : Color concentrate gray

: 057874 Part Number

Date Sample Received : Feb 19, 2013 Date Test Started : Feb 19, 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





Test Conducted

(I) Test Result Summary:

(1) Test Result Summary:				
Test Item	<u>Unit</u>	Test Method	Result Dark gray plastic pellets	RL
Heavy Metal	•	1		
Cadmium (Cd) Content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Lead (Pb) Content	mqq	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	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	mqq	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs	;)			
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	With reference to IEC	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	62321: 2008, by solvent extraction and	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	determined by GC-MS and further HPLC-DAD	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	confirmation when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm]	ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5





Test Conducted

			Result	
Test Item	<u>Unit</u>	<u>Test Method</u>	Dark gray plastic pellets	RL
Polybrominated Diphenyl Ethers	(PBDEs)		<u> </u>	
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IEC	ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	62321: 2008, by solvent extraction and determined by GC-MS and	ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	further HPLC-DAD confirmation when	ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	necessary.	ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Phthalates	Į.			
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent	ND	50
Dibutyl Phthalate (DBP)	ppm	extraction and	ND	50
Benzyl Butyl Phthalate (BBP)	ppm	determined by GC-MS.	ND	50
Halogen Content				
Fluorine (F)	ppm	With reference to EN	ND	50
Chlorine (Cl)	ppm	14582:2007 by	ND	50
Bromine (Br)	ppm	calorimetric bomb with oxygen and determined	ND	50
Iodine (I)	ppm	by Ion Chromatograph.	ND	50
Others	•	<u> </u>		
Hexabromo cyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10





Test Conducted

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

ND = Not detected

RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Feb 19, 2013

: Feb 19, 2013 to Feb 21, 2013 Test Period

(Ⅱ) Limit: RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

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

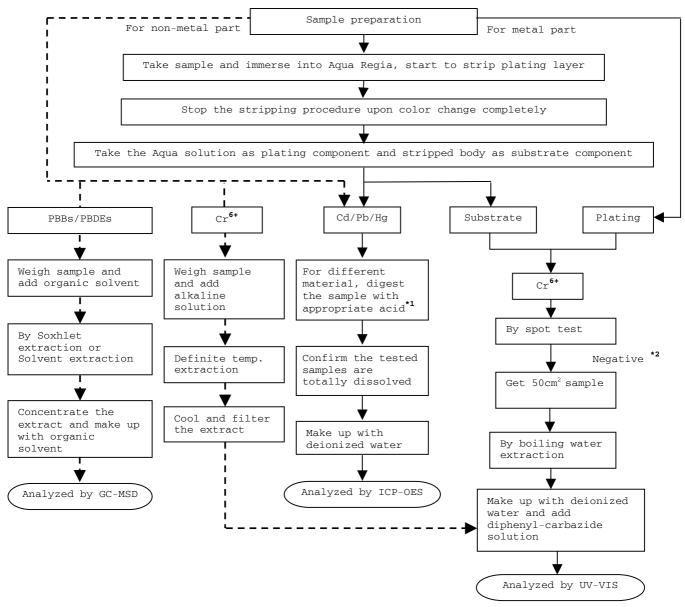




Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

<u>Material</u>	Acid Added for Digestion
Polymers	HNO ₃ , HC1, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ ,HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

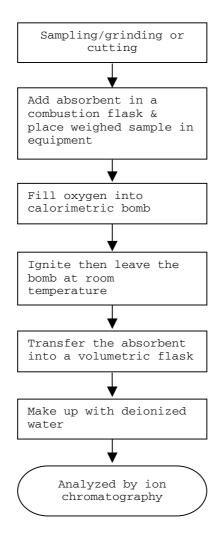
*2: If the result of spot test is positive, Chromium VI would be determined as detected.





Test Conducted

Test for Halogen Content Reference Standard: EN 14582

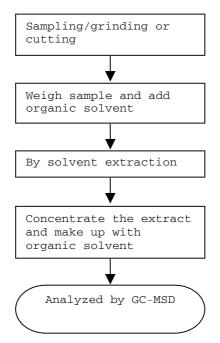






Test Conducted

Test For Phthalates Contents Reference Method: EN 14372: 2004

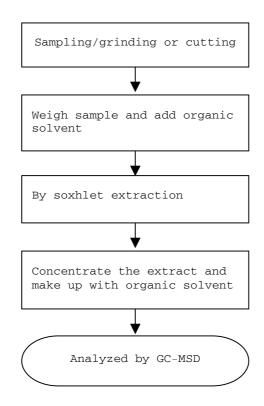






Test Conducted

Test For Hexabromocyclododecane (HBCDD) Reference Standard: USEPA 3540C



End of Report

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Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.



Number

: TWNC00322214

Applicant:

Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Date

: Jul 16, 2013

Sample Description:

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

Part Description

: Green colorant

Part Number

057883

Date Sample Received

Jul 08, 2013

Date Test Started

: Jul 09, 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





Number:

TWNC00322214

Test Conducted Test Result Summary:

Test Item	<u>Unit</u>	Test Method	Result Green plastic pellets	<u>RL</u>
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.	ND	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	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls	(PBBs)			
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	W/W 5 1- 150 (2224	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Number:

TWNC00322214

Test Conducted

Test Item	<u>Unit</u>	Test Method	Result Green plastic pellets	<u>RL</u>	
Polybrominated Diphenyl Ethers (PBDEs)					
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5	
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5	
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5	
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IEC (2221)	ND	5	
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and	ND	5	
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	further HPLC-DAD confirmation	ND	5	
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5	
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5	
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5	
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5	
Halogen Content				1	
Fluorine (F)	ppm	With reference to EN	ND	50	
Chlorine (CI)	ppm	14582:2007 by calorimetric	ND	50	
Bromine (Br)	ppm	bomb with oxygen and determined by Ion	ND	50	
Iodine (I)	ppm	Chromatograph.	ND	50	
Phthalates					
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	Mith reference to EN 14272	ND	10	
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10	
Benzyl Butyl Phthalate (BBP)	ppm		ND	10	





Number:

TWNC00322214

Test Conducted

Test Item	<u>Unit</u>	Test Method	Result Green plastic pellets	RL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> ND = Not detected

RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received

: Jul 08, 2013

Test Period

: Jul 08, 2013 To Jul 12, 2013

RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

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

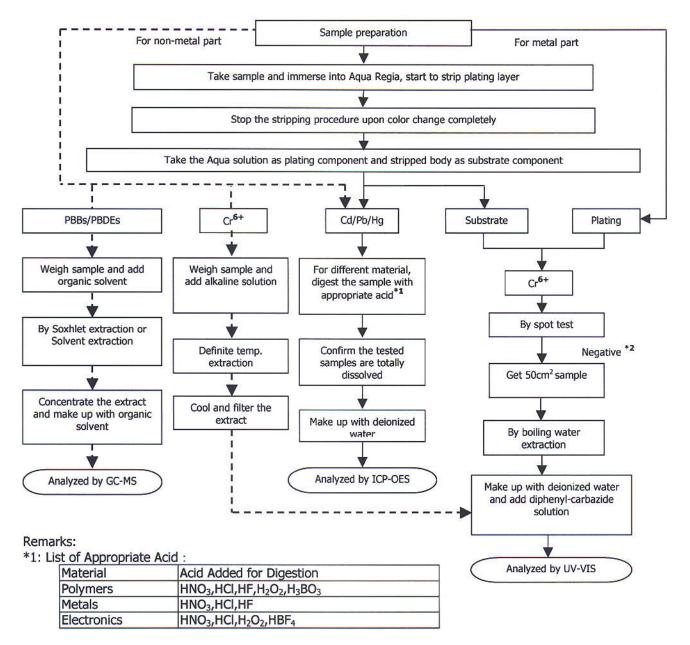


Number: TWNC00322214

Test Conducted Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents

Reference Method: IEC 62321 edition 1.0:2008



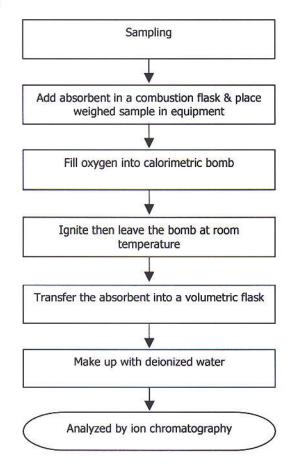
*2: If the result of spot test is positive, Chromium VI would be determined as detected.





TWNC00322214 Number:

Test Conducted Test for Halogen Contents Reference Method: EN 14582





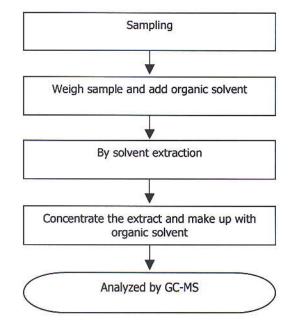
Number:

TWNC00322214

Test Conducted

Test for Phthalates Contents

Reference Method: EN 14372: 2004



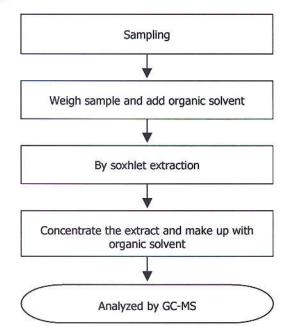


Number: TWNC00322214

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

Reference Method: USEPA 3540C

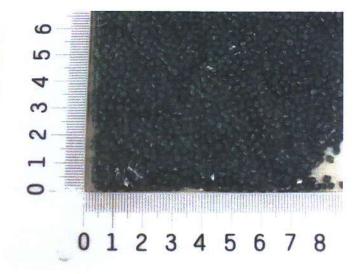




Number:

TWNC00322214





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Page 9 of 11

Intertek Testing Services Taiwan Ltd.

8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.



: TWNC00325496 Number

Date : Aug 02, 2013

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

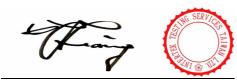
One (1) group of submitted samples said to be:

Part Description : Colorant Pink Part Number 057876 **Date Sample Received** Jul 30, 2013 **Date Test Started** Jul 30, 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





Number: TWNC00325496

Test Conducted
Test Result Summary:

Toot Itom	Linit	Tost Mothed	<u>Result</u>	RL
<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Pink plastic pellets	KL
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.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls	(PBBs)			
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	N	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Test Conducted

Number: TWNC00325496

<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Result Pink plastic pellets	- RL	
Polybrominated Diphenyl Ethers (PBDEs)					
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5	
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5	
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5	
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IEC 62321:	ND	5	
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	2008, by solvent extraction and determined by GC-MS and	ND	5	
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	further HPLC-DAD confirmation when necessary.	ND	5	
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5	
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5	
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5	
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5	
Halogen Content					
Fluorine (F)	ppm	With reference to EN	ND	50	
Chlorine (CI)	ppm	14582:2007 by calorimetric	74	50	
Bromine (Br)	ppm	bomb with oxygen and determined by Ion	ND	50	
Iodine (I)	ppm	Chromatograph.	ND	50	
Phthalates		<u> </u>			
Di(2-ethylhexyl) Phthalate (DEHP)	ppm		ND	10	
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10	
Benzyl Butyl Phthalate (BBP)	ppm		ND	10	
Diisobutyl Phthalate (DIBP)	ppm		ND	10	



Number: TWNC00325496

Test Conducted

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
<u>rest item</u>	Offic	rest Metriou	Pink plastic pellets	IXL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 02, 2013

RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

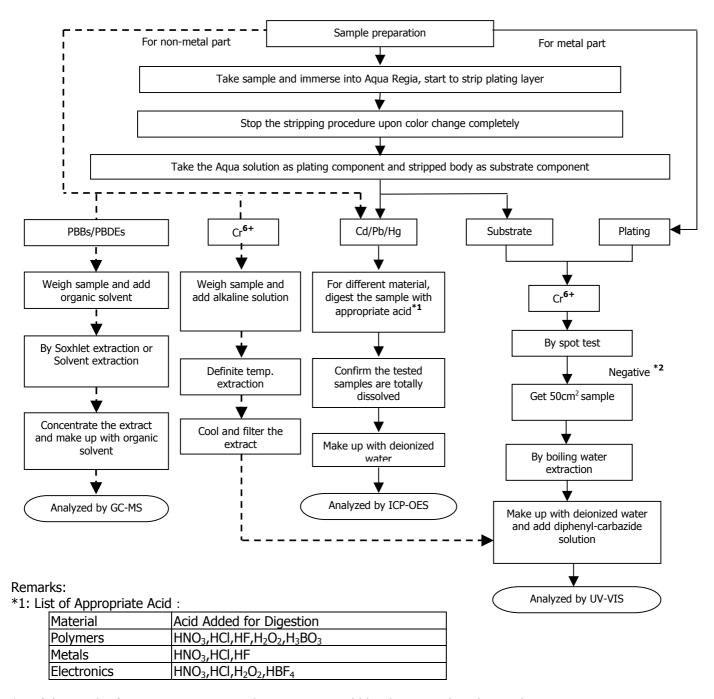
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325496

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

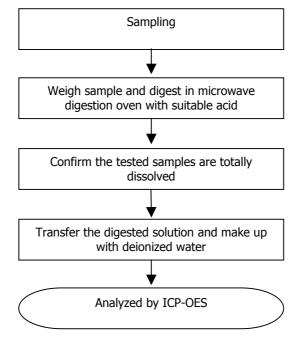


Number: TWNC00325496

Test Conducted

Measurement Flowchart:

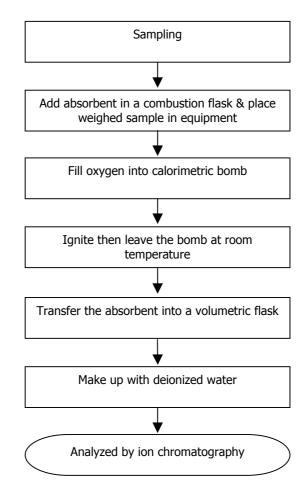
Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052





Number: TWNC00325496

Test Conducted Test for Halogen Contents Reference Method: EN 14582

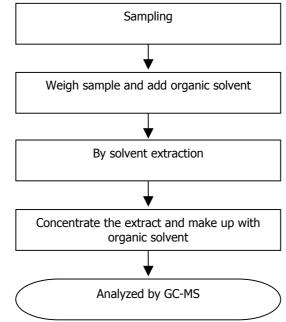




Number: TWNC00325496

Test Conducted Test for Phthalates Contents

Reference Method: EN 14372: 2004



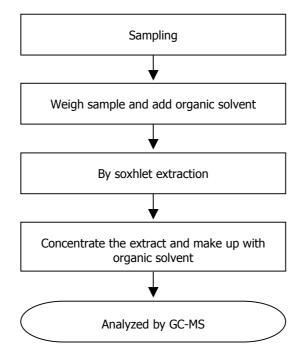


Number: TWNC00325496

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

Reference Method: USEPA 3540C





Number: TWNC00325496





End of Report

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: TWNC00325498 Number

Date : Aug 01, 2013

Littelfuse, S.A. de C.V. Applicant:

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : Colorant-Brown Part Number 057878 Date Sample Received

Jul 30, 2013 **Date Test Started** Jul 30, 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





Number: TWNC00325498

Test Conducted Test Result Summary:

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	- RL	
			Brown plastic pellets		
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.	ND	2	
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2	
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2	
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1	
Polybrominated Biphenyls	(PBBs)				
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5	
Dibrominated Biphenyls (DiBB)	ppm		ND	5	
Tribrominated Biphenyls (TriBB)	ppm		ND	5	
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5	
Pentabrominated Biphenyls (PentaBB)	ppm		ND	5	
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5	
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5	
Octabrominated Biphenyls (OctaBB)	ppm		ND	5	
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5	
Decabrominated Biphenyl (DecaBB)	ppm		ND	5	



(DBP)

(BBP)

(DIBP)

Benzyl Butyl Phthalate

Diisobutyl Phthalate

Test Report

Number: **Test Conducted**

ppm

ppm

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
		<u>rest Metriod</u>	Brown plastic pellets	
Polybrominated Diphenyl	Ethers ((PBDEs)		
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content				
Fluorine (F)	ppm	With reference to EN	ND	50
Chlorine (CI)	ppm	14582:2007 by calorimetric	ND	50
Bromine (Br)	ppm	bomb with oxygen and determined by Ion Chromatograph.	ND	50
Iodine (I)	ppm		ND	50
Phthalates				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm		ND	10
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372:	ND	10

ND

ND

10

10

TWNC00325498

2004, by solvent extraction

and determined by GC-MS.



Number: TWNC00325498

Test Conducted

Test Item	<u>Unit</u>	Test Method	Result Brown plastic pellets	RL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 01, 2013

RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

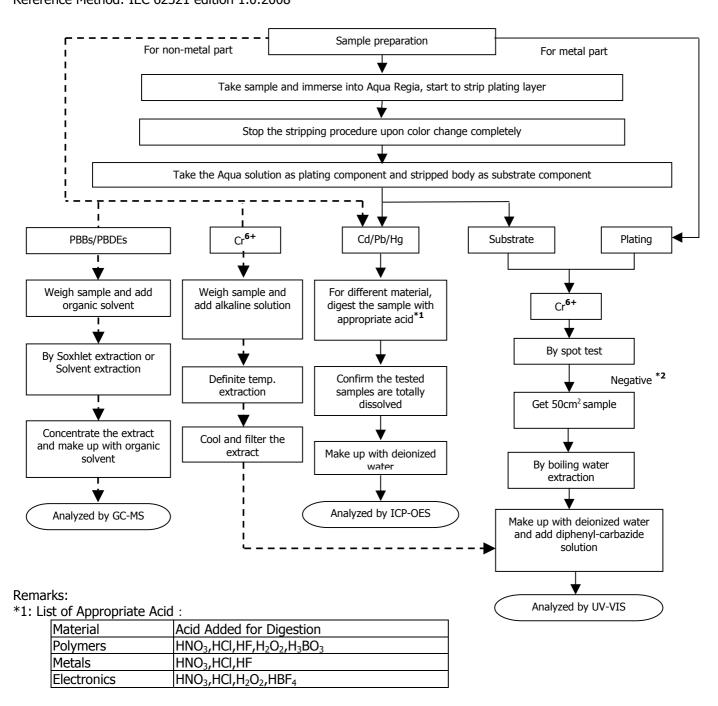
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325498

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

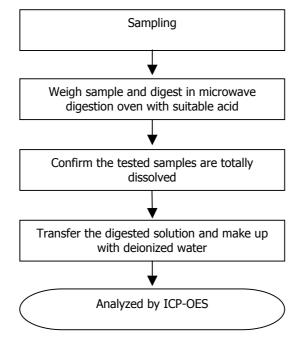


Number: TWNC00325498

Test Conducted

Measurement Flowchart:

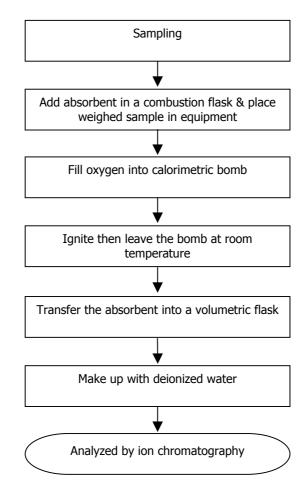
Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052





Number: TWNC00325498

Test Conducted Test for Halogen Contents Reference Method: EN 14582





Number: TWNC00325498

Test Conducted Test for Phthalates Contents Reference Method: EN 14372: 2004

Sampling Weigh sample and add organic solvent By solvent extraction Concentrate the extract and make up with organic solvent Analyzed by GC-MS

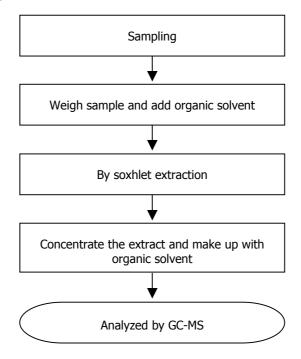


Number: TWNC00325498

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

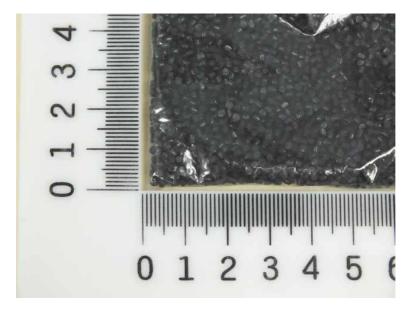
Reference Method: USEPA 3540C





Number: TWNC00325498





End of Report

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: TWNC00325500 Number

Date : Aug 05, 2013

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : Colorant Yellow

Part Number 057881 Date Sample Received Jul 30, 2013 **Date Test Started** Jul 30, 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





Number: TWNC00325500

Test Conducted
Test Result Summary:

Test Item	Unit	nit Test Method	<u>Result</u>	RL		
<u>rest item</u>	OHIL	rest Metriou	Yellow plastic pellets	INL		
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.	ND	2		
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2		
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	331	2		
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1		
Polybrominated Biphenyls (PBBs)						
Monobrominated Biphenyls (MonoBB)	ppm		ND	5		
Dibrominated Biphenyls (DiBB)	ppm		ND	5		
Tribrominated Biphenyls (TriBB)	ppm		ND	5		
Tetrabrominated Biphenyls (TetraBB)	ppm	W	ND	5		
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5		
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5		
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5		
Octabrominated Biphenyls (OctaBB)	ppm		ND	5		
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5		
Decabrominated Biphenyl (DecaBB)	ppm		ND	5		



Test Conducted

Number: TWNC00325500

<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Result Yellow plastic pellets	RL		
Polybrominated Diphenyl Ethers (PBDEs)						
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5		
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5		
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5		
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	Mill unforce to IEC (2221)	ND	5		
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5		
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5		
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5		
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5		
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5		
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5		
Halogen Content						
Fluorine (F)	ppm	With reference to EN	ND	50		
Chlorine (CI)	ppm	14582:2007 by calorimetric	ND	50		
Bromine (Br)	ppm	bomb with oxygen and determined by Ion	ND	50		
Iodine (I)	ppm	Chromatograph.	ND	50		
Phthalates	PP	Cili Offictographi.				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm		ND	10		
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10		
Benzyl Butyl Phthalate (BBP)	ppm		ND	10		
Diisobutyl Phthalate (DIBP)	ppm		ND	10		



Number: TWNC00325500

Test Conducted

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
<u>rest item</u>	Offic	rest Metriou	Yellow plastic pellets	NL.
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 05, 2013

RoHS Limit

10110 = 11110	
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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

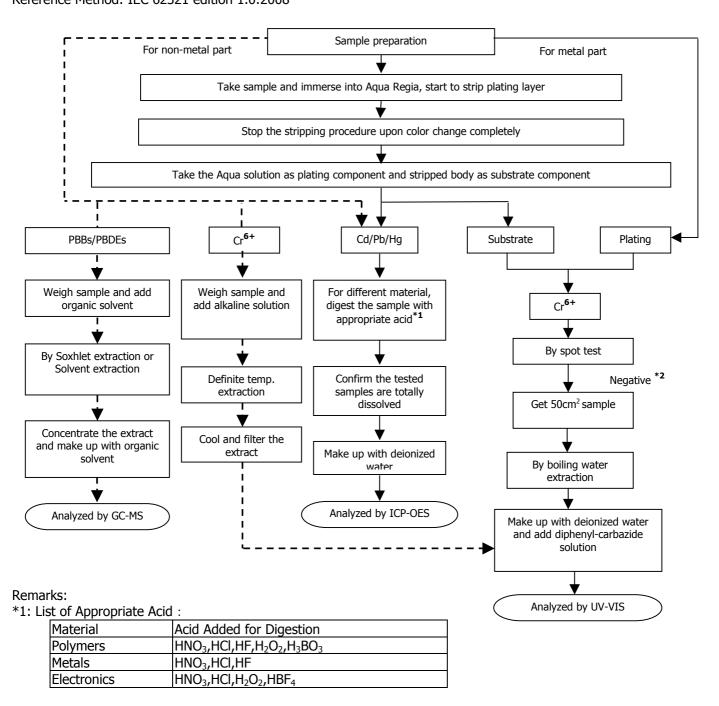
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325500

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

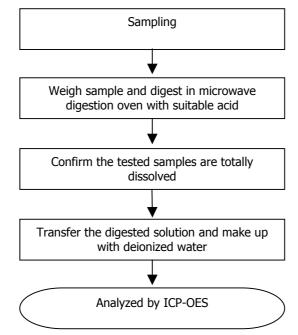


Number: TWNC00325500

Test Conducted

Measurement Flowchart:

Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052

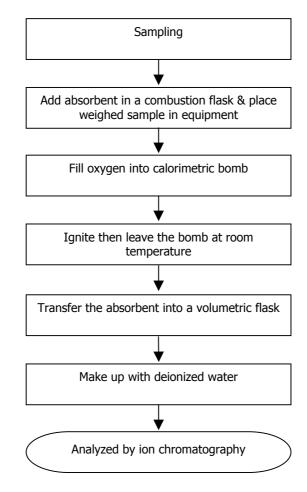




Number: TWNC00325500

Test Conducted Measurement Flowchart:

Test for Halogen Contents Reference Method: EN 14582



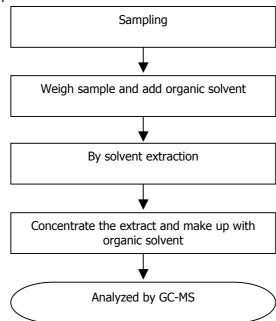


Number: TWNC00325500

Test Conducted Measurement Flowchart:

Test for Phthalates Contents

Reference Method: EN 14372: 2004



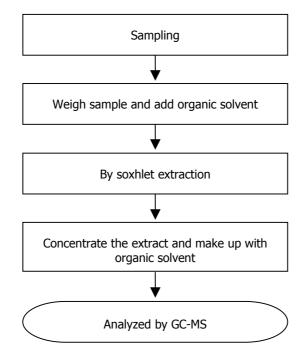


Number: TWNC00325500

Test Conducted Measurement Flowchart:

Test for Hexabromocyclododecane (HBCDD) Content

Reference Method: USEPA 3540C





Number: TWNC00325500





End of Report

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: TWNC00325499 Number

Date : Aug 01, 2013

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

Part Description : Colorant-Red Part Number 057879 Date Sample Received Jul 30, 2013 **Date Test Started** Jul 30, 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





Number: TWNC00325499

Test Conducted
Test Result Summary:

Toot Itom	Linit	Tost Mothed	<u>Result</u>	RL
<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Red plastic pellets	KL
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.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr ⁶⁺) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls	(PBBs)			
Monobrominated Biphenyls (MonoBB)	ppm		ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm	Mail 6 1 150 60004	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm	when necessary.	ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Test Conducted

Number: TWNC00325499

<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Result Red plastic pellets	RL		
Polybrominated Diphenyl Ethers (PBDEs)						
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5		
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5		
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5		
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	Mill unforce to IEC (2221)	ND	5		
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction	ND	5		
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	and determined by GC-MS and further HPLC-DAD confirmation	ND	5		
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	when necessary.	ND	5		
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5		
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5		
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5		
Halogen Content						
Fluorine (F)	ppm	With reference to EN	ND	50		
Chlorine (CI)	ppm	14582:2007 by calorimetric	ND	50		
Bromine (Br)	ppm	bomb with oxygen and determined by Ion	ND	50		
Iodine (I)	ppm	Chromatograph.	ND	50		
Phthalates	PP	Cili Offictographi.				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm		ND	10		
Dibutyl Phthalate (DBP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10		
Benzyl Butyl Phthalate (BBP)	ppm		ND	10		
Diisobutyl Phthalate (DIBP)	ppm		ND	10		



Number: TWNC00325499

Test Conducted

Test Item	<u>Unit</u>	Test Method	<u>Result</u>	RL
<u>rest item</u>	Offic	rest Metriou	Red plastic pellets	IXL
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

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

> = Not detected ND

RL= Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received Jul 30, 2013

Test Period : Jul 30, 2013 To Aug 01, 2013

RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)

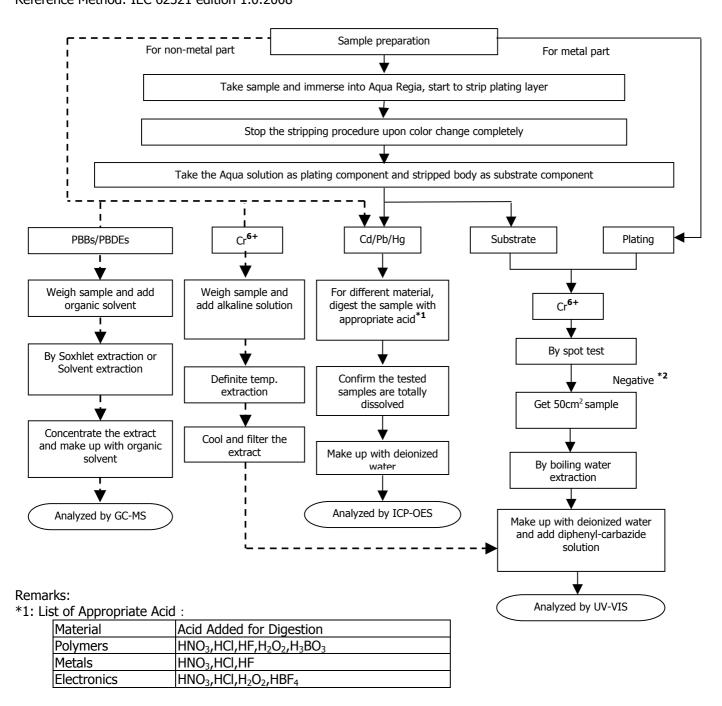
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.



Number: TWNC00325499

Test Conducted Measurement Flowchart:

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



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



Page 5 of 12

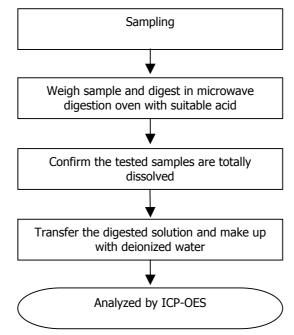


Number: TWNC00325499

Test Conducted

Measurement Flowchart:

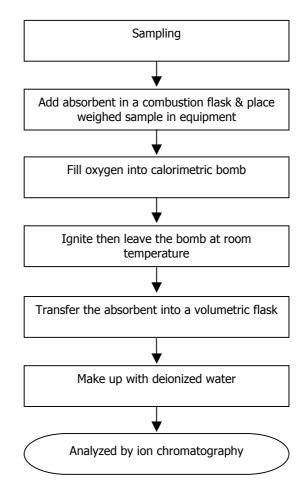
Test for Heavy Metal (Sb) Contents Reference Method: USEPA 3052





Number: TWNC00325499

Test Conducted Test for Halogen Contents Reference Method: EN 14582

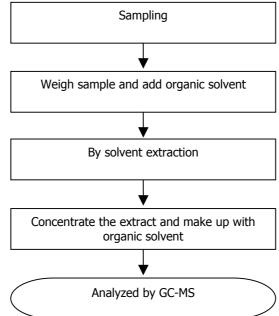




Number: TWNC00325499

Test Conducted Test for Phthalates Contents

Reference Method: EN 14372: 2004



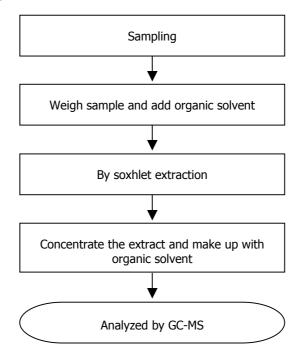


Number: TWNC00325499

Test Conducted

Test for Hexabromocyclododecane (HBCDD) Content

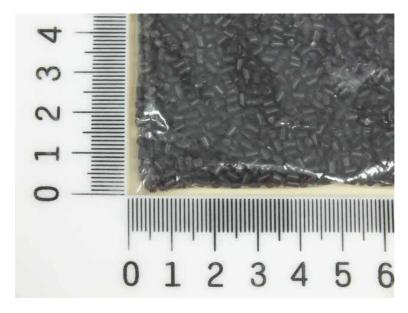
Reference Method: USEPA 3540C





Number: TWNC00325499





End of Report

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Test Report Number: TWNC00299231

Applicant: Littelfuse, S.A. de C.V.

Date : Feb 25, 2013

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

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

: Color concentrate blue Part Description

: 057880 Part Number

Date Sample Received : Feb 19, 2013 Date Test Started : Feb 19, 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





Test Conducted

(I) Test Result Summarv:

(1) Test Result Summary:				
<u>Test Item</u>	Unit	Test Method	Result Blue plastic pellets	<u>RL</u>
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.	ND	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	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs	3)			
Monobrominated Biphenyls (MonoBB)	mqq		ND	5
Dibrominated Biphenyls (DiBB)	mqq		ND	5
Tribrominated Biphenyls (TriBB)	mqq		ND	5
Tetrabrominated Biphenyls (TetraBB)	mqq	With reference to IEC 62321: 2008, by solvent	ND	5
Pentabrominated Biphenyls (PentaBB)	ppm	extraction and	ND	5
Hexabrominated Biphenyls (HexaBB)	ppm	determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Heptabrominated Biphenyls (HeptaBB)	mqq		ND	5
Octabrominated Biphenyls (OctaBB)	mqq		ND	5
Nonabrominated Biphenyls (NonaBB)	mqq		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5





Test Conducted

	1			
<u>Test Item</u>	<u>Unit</u>	<u>Test Method</u>	Result Blue plastic pellets	<u>RL</u>
Polybrominated Diphenyl Ethers	(PBDEs)			
Monobrominated Diphenyl Ethers (MonoBDE)	ppm		ND	5
Dibrominated Diphenyl Ethers (DiBDE)	mqq		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm	With reference to IEC	ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm	62321: 2008, by solvent extraction and	ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm	determined by GC-MS and further HPLC-DAD confirmation when	ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm	necessary.	ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Phthalates	I.			
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent	ND	50
Dibutyl Phthalate (DBP)	ppm	extraction and	ND	50
Benzyl Butyl Phthalate (BBP)	ppm	determined by GC-MS.	ND	50
Halogen Content				
Fluorine (F)	ppm	With reference to EN	ND	50
Chlorine (Cl)	ppm	14582:2007 by calorimetric bomb with oxygen and determined	ND	50
Bromine (Br)	ppm		ND	50
Iodine (I)	ppm	by Ion Chromatograph.	ND	50
Others	I	, <u> </u>		
Hexabromo cyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10





Test Conducted

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

ND = Not detected

RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Feb 19, 2013

: Feb 19, 2013 to Feb 21, 2013 Test Period

(Ⅱ) Limit: RoHS Limit

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

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

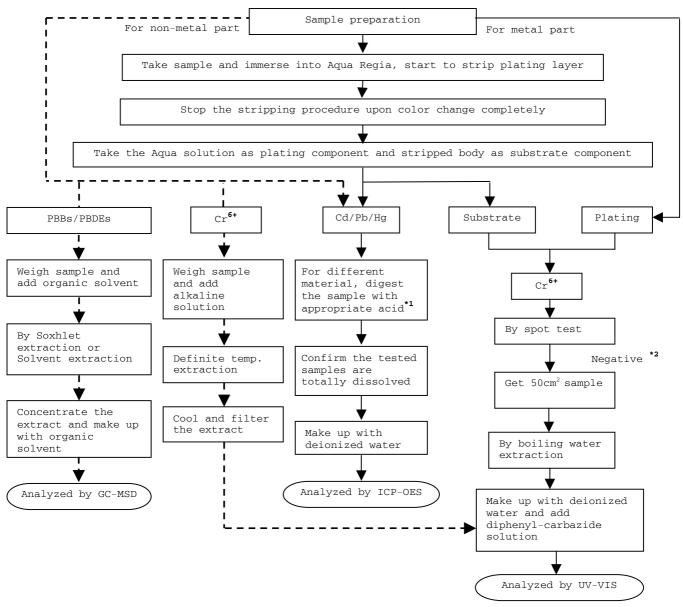




Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

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

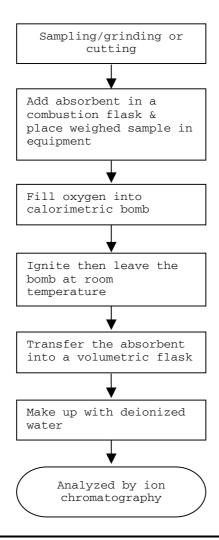
*2: If the result of spot test is positive, Chromium VI would be determined as detected.





Test Conducted

Test for Halogen Content Reference Standard: EN 14582

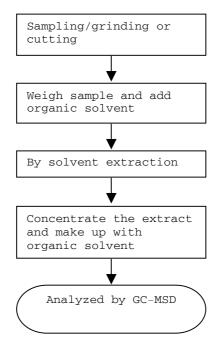






Test Conducted

Test For Phthalates Contents Reference Method: EN 14372: 2004

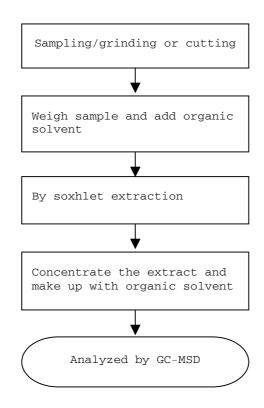






Test Conducted

Test For Hexabromocyclododecane (HBCDD) Reference Standard: USEPA 3540C



End of Report

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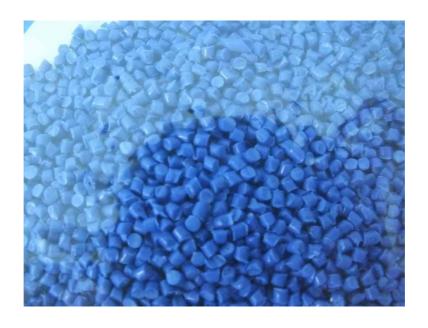




Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.