



ICP Test Report Certification Packet

Company Name: Littelfuse, Inc.

Product Type: Surface Mount Varistors

Product Series: VxxMLA0201xxNR Series

Issue Date: April 7, 2010

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes.

And it is certified by Littelfuse, Inc. that the series products listed above are compliant with LF Halogen Free Standard ($Cl \leq 800\text{ppm}$, $Br \leq 800\text{ppm}$, $Cl+Br \leq 1000\text{ppm}$).

In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by: *David Huang*
<DGLF EHS Engineer>

For the ICP data on all measurable substances please see appropriate pages.

Remarks :

Pb (lead) contained in glass of electronic components is categorized as exempt under section 5 of the RoHS Annex.



TEST REPORT

NUMBER: SZHH00470692

APPLICANT: LITTELFUSE, INC.
8755 WEST HIGGINS ROAD SUITE 500
CHICAGO IL 60631 USA

DATE: Apr 01, 2010

ATTN: KRISTEEN BACILA/ARSENIO CESISTA JR.

SAMPLE DESCRIPTION:

ONE (1) SUBMITTED SAMPLE SAID TO BE **BLACK CERAMIC WITH SILVER COLOR METAL.**
PART DESCRIPTION : SURFACE MOUNT MLVS.
PART NO. : VxxMLA0201xxNR SERIES.
DATE SAMPLE RECEIVED : MAR 26, 2010.
DATE TEST STARTED : MAR 26, 2010.



TESTS CONDUCTED:

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

AUTHORIZED BY:
FOR INTERTEK TESTING SERVICES
SHENZHEN LTD.



KARBON M.Y. WU
GENERAL MANAGER



TEST REPORT

NUMBER: SZHH00470692

TESTS CONDUCTED

1 RoHS CHEMICAL TEST

(A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT
CADMIUM (Cd) CONTENT (mg/kg)	ND (<2)
LEAD (Pb) CONTENT (mg/kg)	ND (<2)
MERCURY (Hg) CONTENT (mg/kg)	ND (<2)
CHROMIUM (VI)(Cr ⁶⁺) CONTENT (mg/kg)	ND (<1)
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)	
MONOBROMOBIPHENYL (MonoBB)	ND (<5)
DIBROMOBIPHENYL (DiBB)	ND (<5)
TRIBROMOBIPHENYL (TriBB)	ND (<5)
TETRABROMOBIPHENYL (TetraBB)	ND (<5)
PENTABROMOBIPHENYL (PentaBB)	ND (<5)
HEXABROMOBIPHENYL (HexaBB)	ND (<5)
HEPTABROMOBIPHENYL (HeptaBB)	ND (<5)
OCTABROMOBIPHENYL (OctaBB)	ND (<5)
NONABROMOBIPHENYL (NonaBB)	ND (<5)
DECABROMOBIPHENYL (DecaBB)	ND (<5)
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)	
MONOBROMODIPHENYL ETHER (MonoBDE)	ND (<5)
DIBROMODIPHENYL ETHER (DiBDE)	ND (<5)
TRIBROMODIPHENYL ETHER (TriBDE)	ND (<5)
TETRABROMODIPHENYL ETHER (TetraBDE)	ND (<5)
PENTABROMODIPHENYL ETHER (PentaBDE)	ND (<5)
HEXABROMODIPHENYL ETHER (HexaBDE)	ND (<5)
HEPTABROMODIPHENYL ETHER (HeptaBDE)	ND (<5)
OCTABROMODIPHENYL ETHER (OctaBDE)	ND (<5)
NONABROMODIPHENYL ETHER (NonaBDE)	ND (<5)
DECABROMODIPHENYL ETHER (DecaBDE)	ND (<5)

CHEMIST: LV LINNA

mg/kg = MILLIGRAM PER KILOGRAM = ppm

< = LESS THAN

ND = NOT DETECTED



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(B) RoHS REQUIREMENT:

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

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

(C) TEST METHOD:

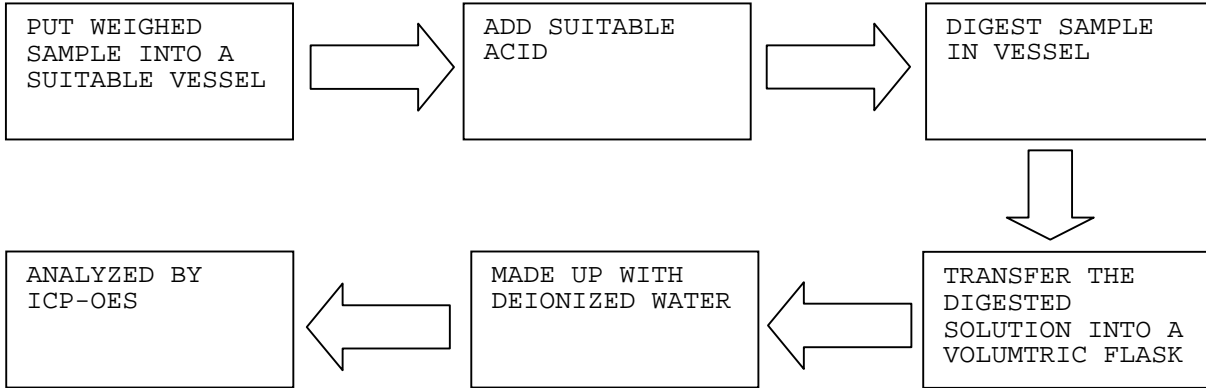
TESTING ITEM	TESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008, BY ACID DIGESTION AND DETERMINED BY ICP - OES	2 mg/kg
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008, BY ACID DIGESTION AND DETERMINED BY ICP - OES	2 mg/kg
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008, BY ACID DIGESTION AND DETERMINED BY ICP - OES	2 mg/kg
CHROMIUM (VI) (Cr ⁶⁺) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER	1 mg/kg
POLYBROMINATED BIPHENYLS (PBBs) & POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS AND FURTHER HPLC CONFIRMATION WHEN NECESSARY	5 mg/kg

DATE SAMPLE RECEIVED : MAR 26, 2010
TESTING PERIOD : MAR 26, 2010 TO MAR 29, 2010

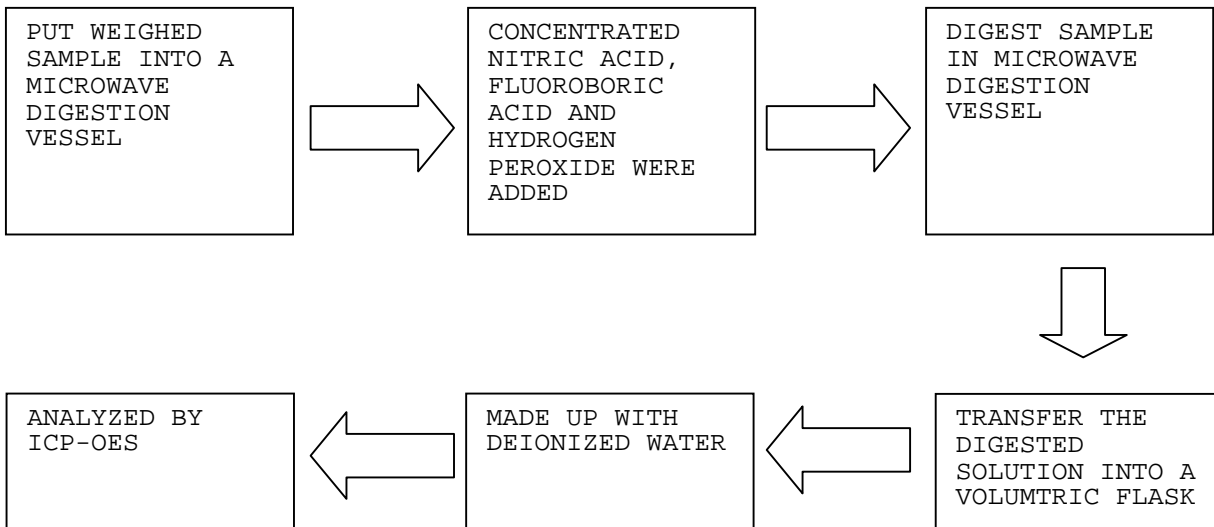
TESTS CONDUCTED

(D) MEASUREMENT FLOWCHART:

1. TEST FOR Cd/Pb CONTENTS

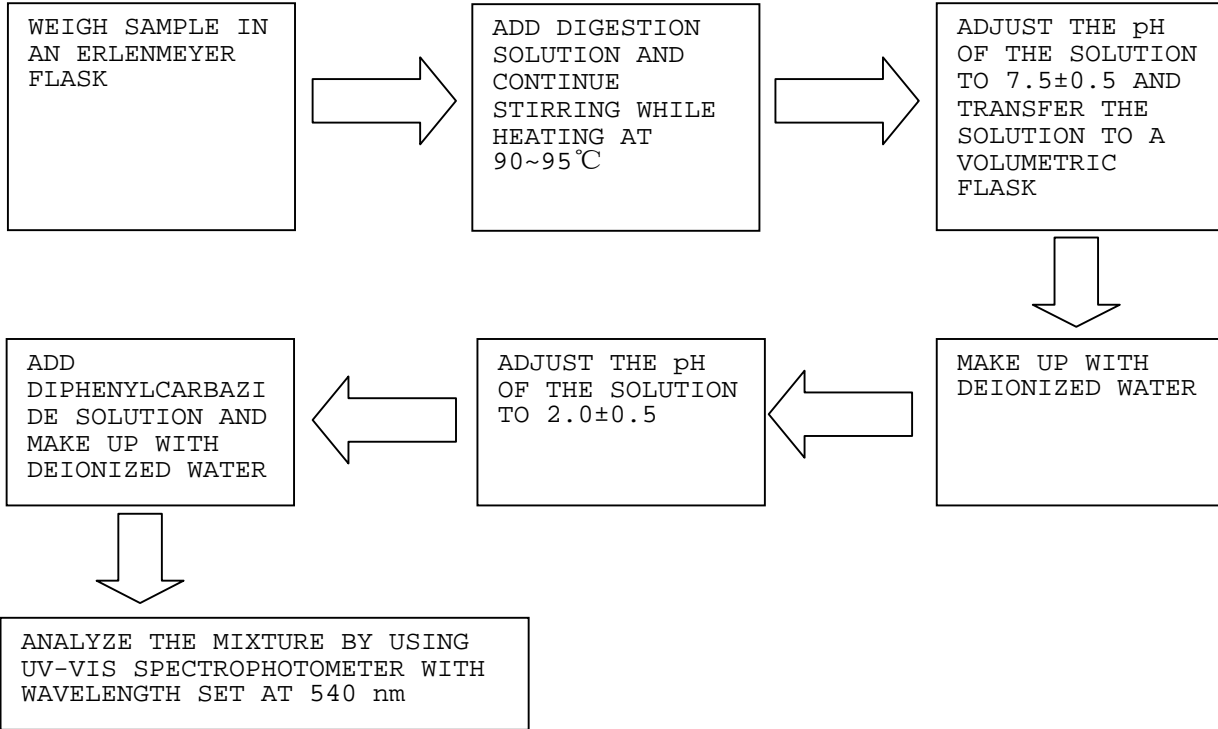


2. TEST FOR Hg CONTENT

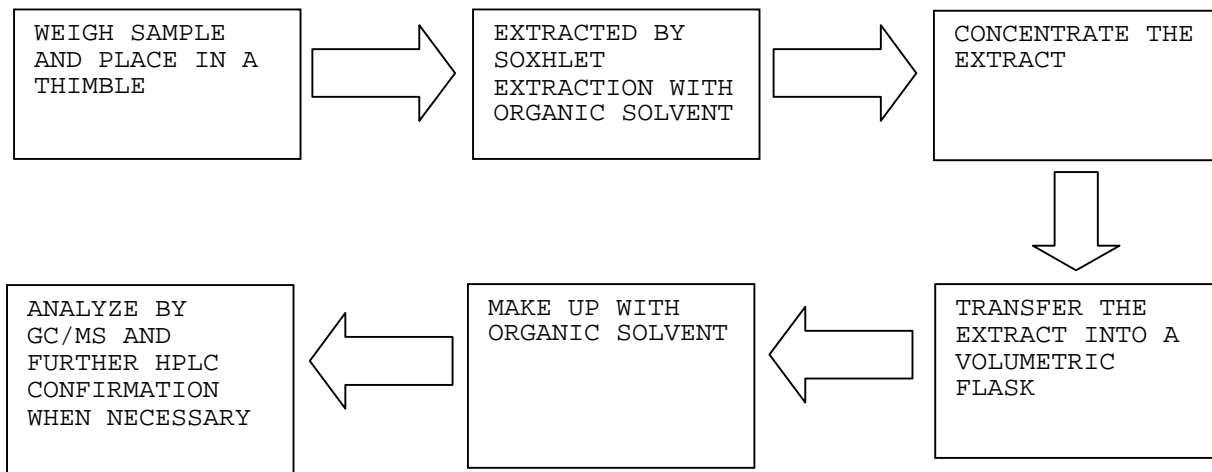


TESTS CONDUCTED

3. TEST FOR CHROMIUM (VI) (Cr⁶⁺) CONTENT (ALKALINE DIGESTION)



4. TEST FOR PBBs/PBDEs CONTENTS





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TESTS CONDUCTED

2 (I) TEST RESULT SUMMARY :

HALOGEN CONTENT :

<u>TESTING ITEM</u>	<u>RESULT (ppm)</u>
FLUORINE (F) CONTENT	ND
CHLORINE (Cl) CONTENT	ND
BROMINE (Br) CONTENT	ND
IODINE (I) CONTENT	ND

REMARKS : ppm = PARTS PER MILLION
 ND = NOT DETECTED

(II) TEST METHOD :

<u>TESTING ITEM</u>	<u>TESTING METHOD</u>	<u>REPORTING LIMIT</u>
HALOGEN (F, Cl, Br, I) CONTENT	WITH REFERENCE TO BS EN 14582:2007 BY CALORIMETRIC BOMB AND DETERMINED BY ION CHROMATOGRAPHY	50 ppm

REMARK : REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE

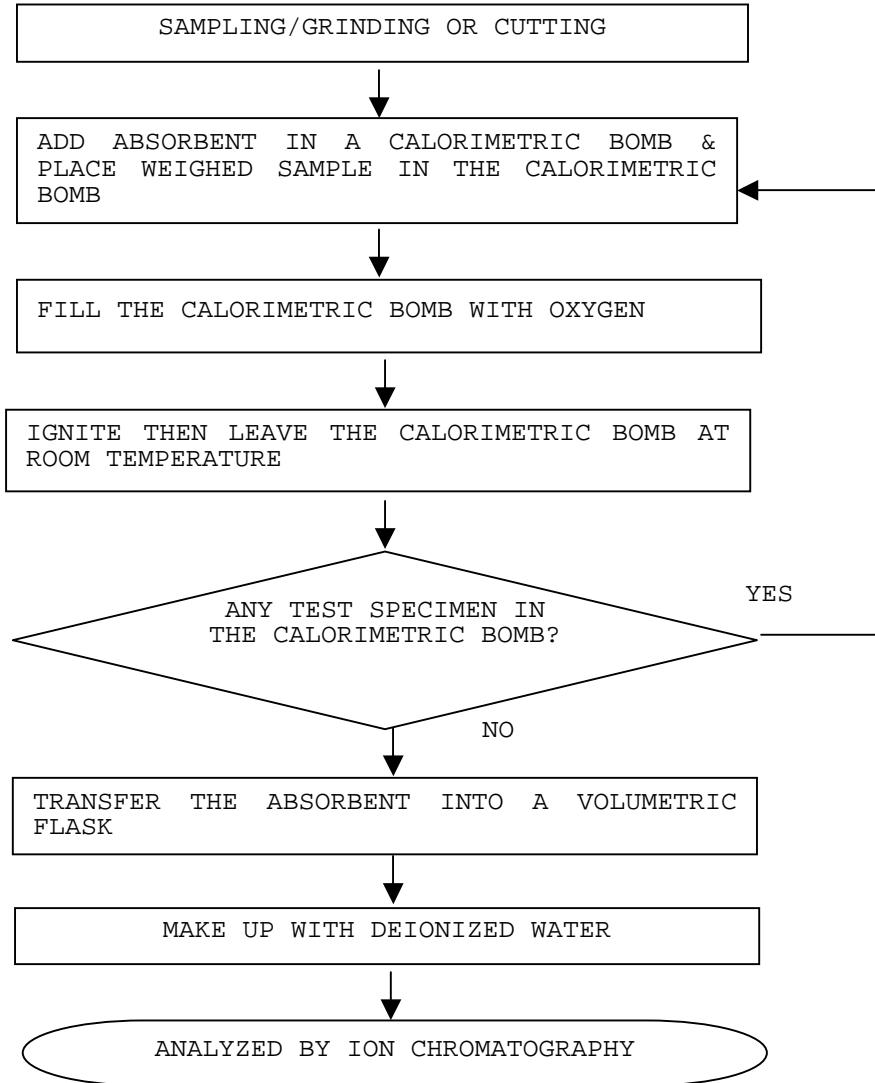
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TESTS CONDUCTED

(III) MEASUREMENT FLOWCHART :

TEST FOR HALOGEN CONTENT

REFERENCE METHOD: BS EN 14582:2007



END OF REPORT