# ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: In Line Holder

Product #: 150xxx series

Issue Date: July 4, 2012

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC, 2011/65/EU)-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.
In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by: KRISTEEN BACILA

<Global EHS Engineer>

(16) Parts, sub-materials and unit parts

This document covers the In Line Holder RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identifed in Table 1

Remarks :

**Table 1: List of Raw Materials covered by this report**

| Total Parts | Raw Material Part Number | Raw Material Description | Page(s) |
|---|---|---|---|
| 1 | 155004-1 | Body-Housing (RoHS 4) | 3-11 |
| 2 | 155004-4 | Knob | 12-20 |
| 3 | 155004-3 | Knob Insert | 21-25 |
| 4 | 912-065 | Spring | 26-30 |
| 5 | 904-216-001 | Rivet | 31-35 |
| 6 | 912-067 | Spring | 36-40 |
| 7 | 878-112 | Wire-Plastic Insulated | 41-47 |

**Test Report** Number : TWNC00241009

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Jan 20, 2012

Sample Description:
One (1) group of submitted samples said to be :
Part Description : BODY
Part Number : 155004-1
Date Sample Received : Jan 16, 2012
Date Test Started : Jan 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





**Intertek Testing Services Taiwan Ltd.**
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Number : TWNC00241009

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) |
|---|---|
| | Black Plastic |
| **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) | 121 |
| Bromine (Br) | ND |
| Iodine (I) | ND |



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Number : TWNC00241009

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) |
|---|---|
| | Black Plastic |
| **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 : Jan 16, 2012
Test Period : Jan 17, 2012 To Jan 20, 2012

(Ⅱ) RoHS Requirement:

| 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 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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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 ASTM D3421-75, by solvent extraction and determined by GC-MSD or GC-FID | 10 ppm |
| Hexabromocyclododecane (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



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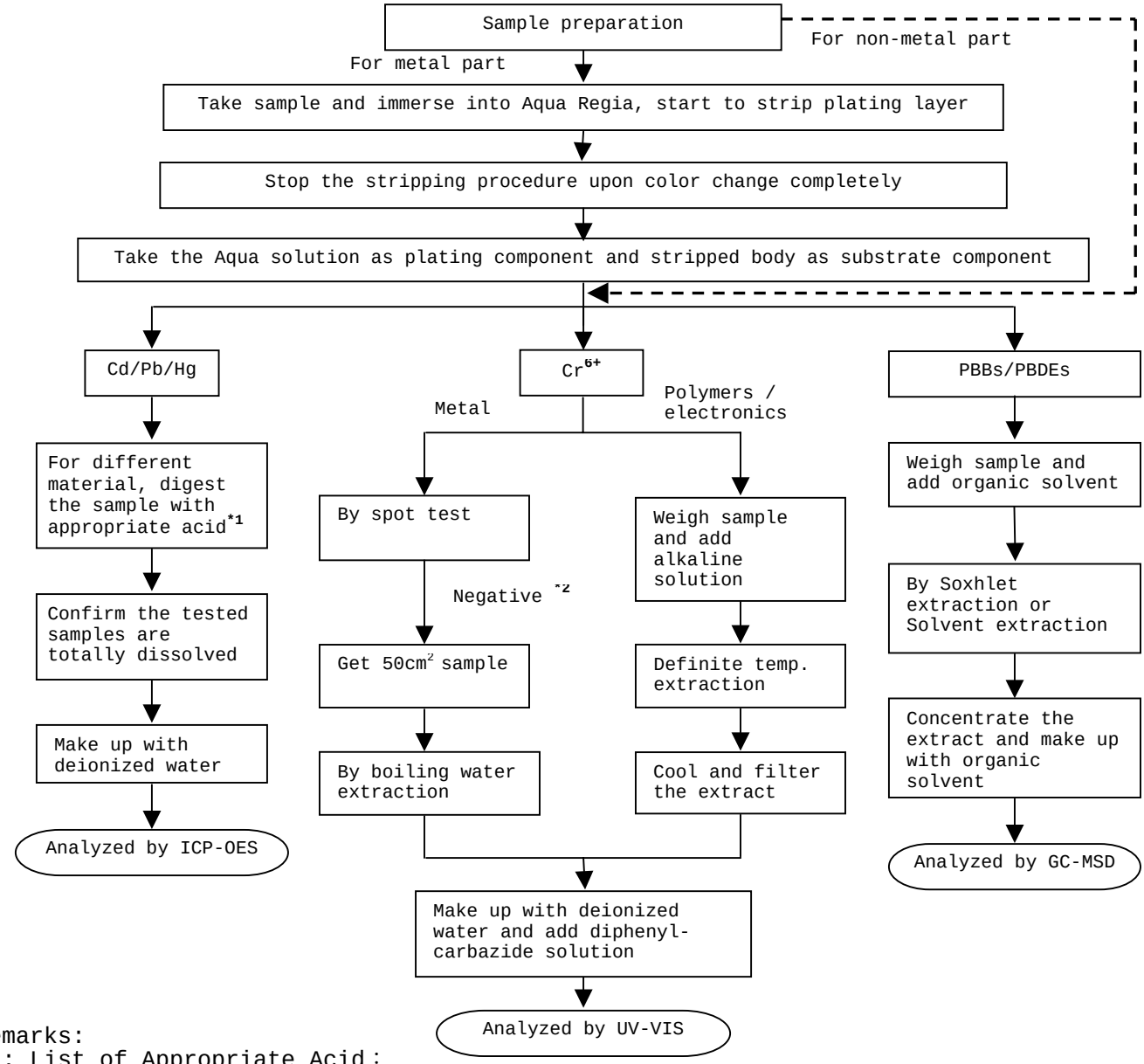
Number : TWNC00241009

Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

Reference Standard: IEC 62321 edition 1.0:2008




Remarks:

*1: List of Appropriate Acid：

| Material | Acid Added for Digestion |
|---|---|
| Polymers | $HNO_3$, HCl, HF, $H_2O_2$, $H_3BO_3$ |
| Metals | $HNO_3$, HCl, HF |
| Electronics | $HNO_3$, HCl, $H_2O_2$, $HBF_4$ |

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



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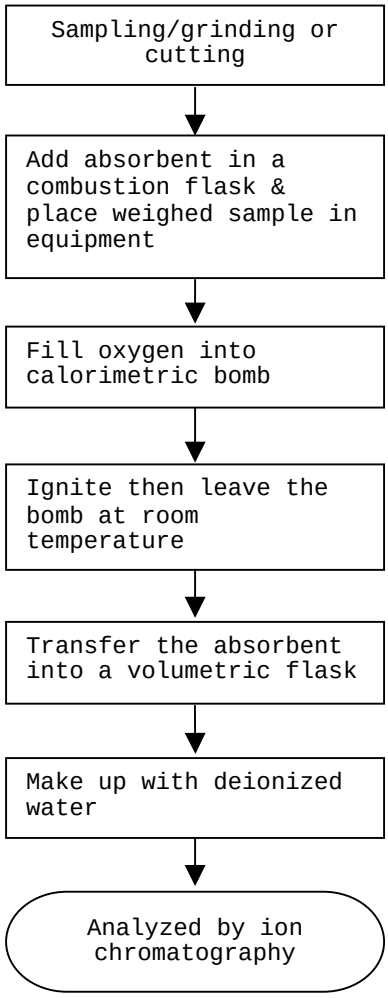
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content
Reference Standard：EN 14582



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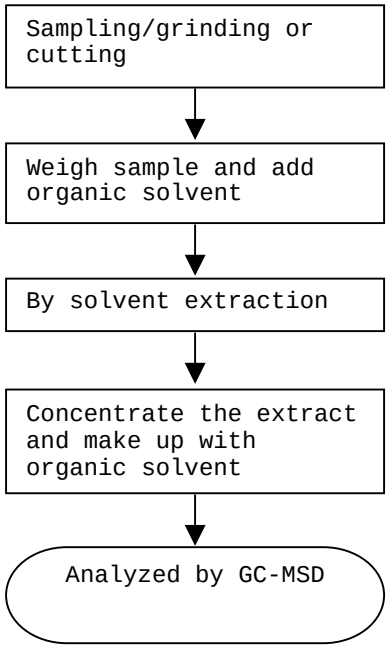
Test Conducted

(Ⅳ) Measurement Flowchart:

Test For Phthalates Contents
Reference Method: EN 14372: 2004



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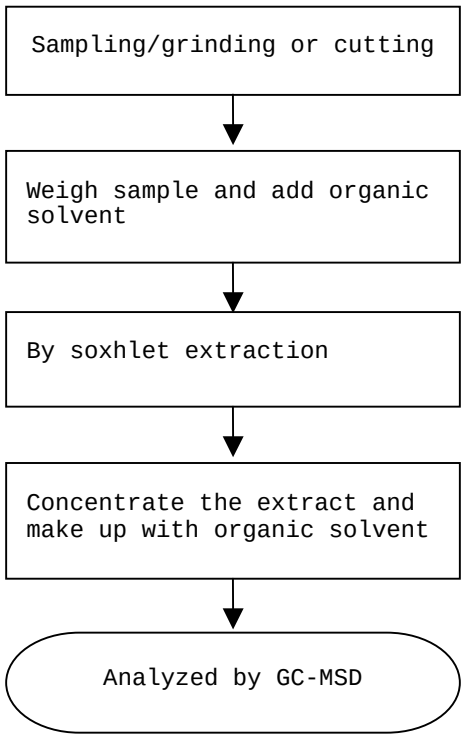
Test Conducted

(Ⅳ) Measurement Flowchart:

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




End of Report



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Number : TWNC00241009

Test Conducted

**Photo**





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**Test Report** Number : TWNC00241011

Applicant: Littelfuse, S.A. de C.V. Date : Jan 30, 2012
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 : KNOB
Part Number : 155004-4
Date Sample Received : Jan 16, 2012
Date Test Started : Jan 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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Number : TWNC00241011

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) |
|---|---|
| | Black Plastic |
| **Heavy Metal** | |
| Cadmium (Cd) content | ND |
| Lead (Pb) content | 6 |
| 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 |



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Number : TWNC00241011

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) |
|---|---|
| | Black Plastic |
| **Halogen Content** | |
| Fluorine (F) | ND |
| Chlorine (Cl) | 169 |
| Bromine (Br) | ND |
| Iodine (I) | ND |
| **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 : Jan 16, 2012
Test Period : Jan 17, 2012 To Jan 20, 2012

(Ⅱ) RoHS Requirement:

| 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 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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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 ASTM D3421-75, by solvent extraction and determined by GC-MSD or GC-FID | 10 ppm |
| Hexabromocyclododecane (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



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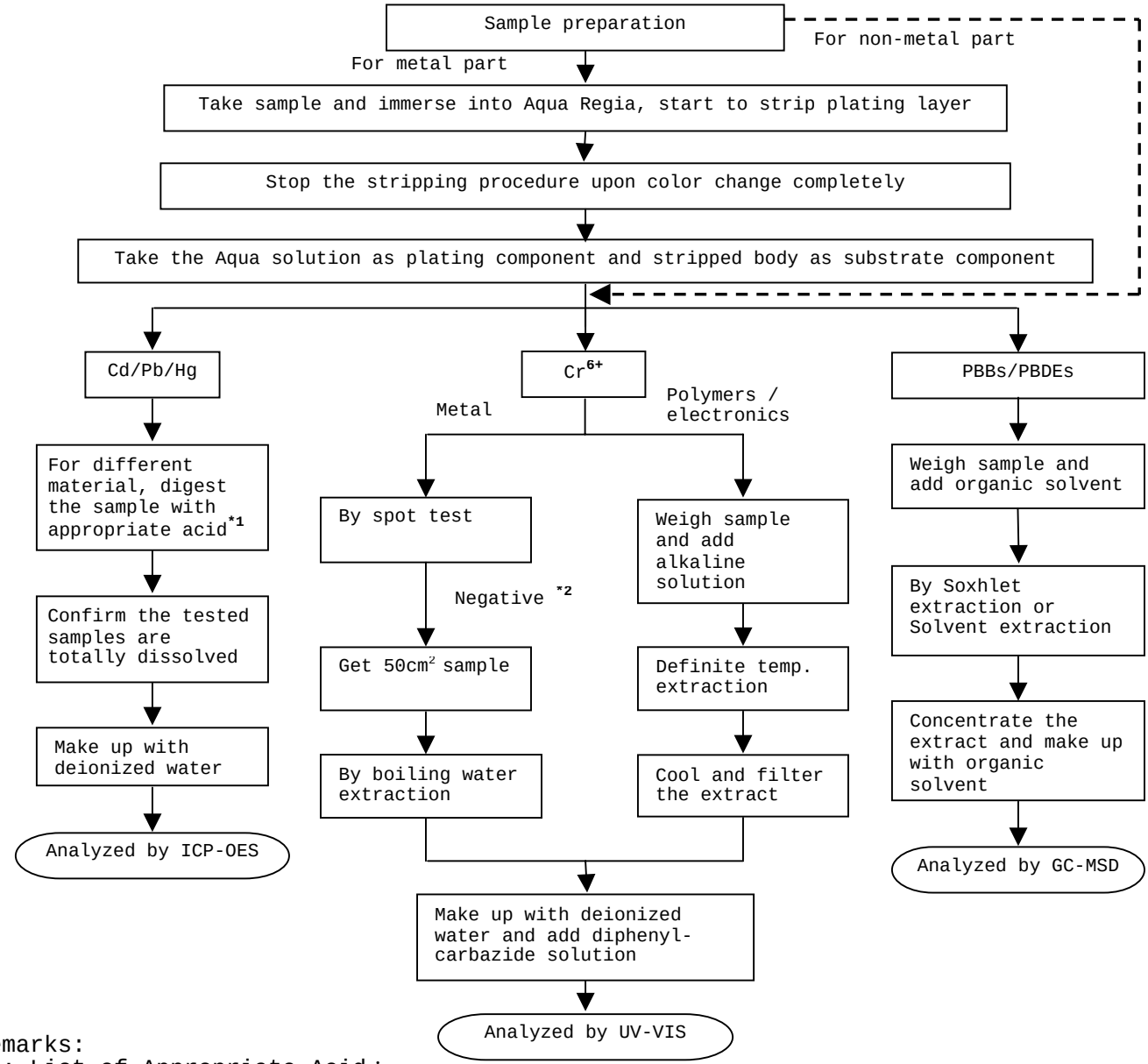
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

Reference Standard: IEC 62321 edition 1.0:2008




Remarks:

*1: List of Appropriate Acid：

| Material | Acid Added for Digestion |
|---|---|
| Polymers | $HNO_3, HCl, HF, H_2O_2, H_3BO_3$ |
| Metals | $HNO_3, HCl, HF$ |
| Electronics | $HNO_3, HCl, H_2O_2, HBF_4$ |

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



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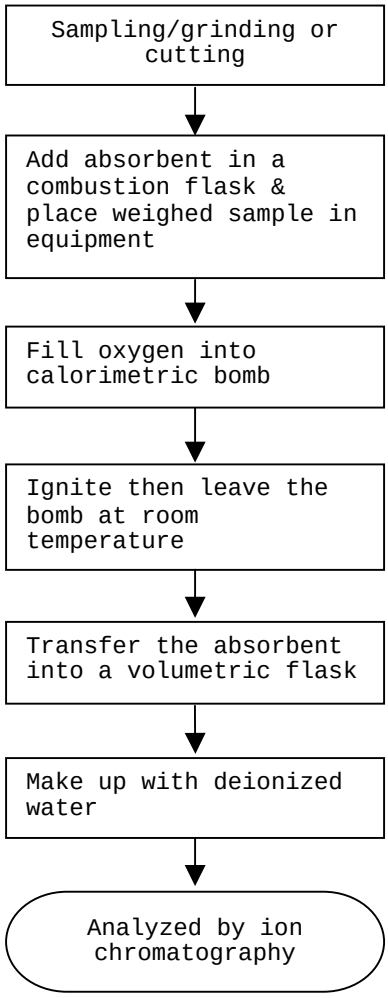
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content
Reference Standard：EN 14582



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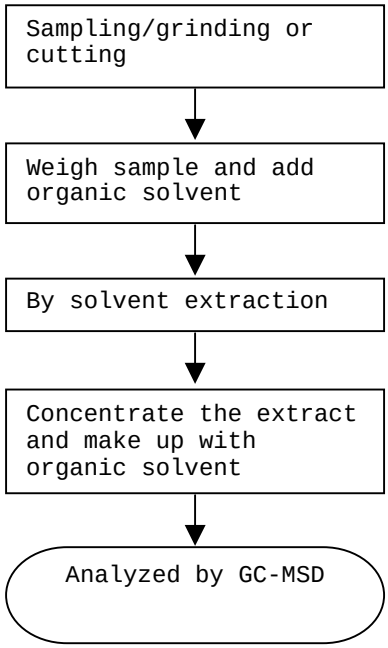
Test Conducted

(Ⅳ) Measurement Flowchart:

Test For Phthalates Contents
Reference Method: EN 14372: 2004



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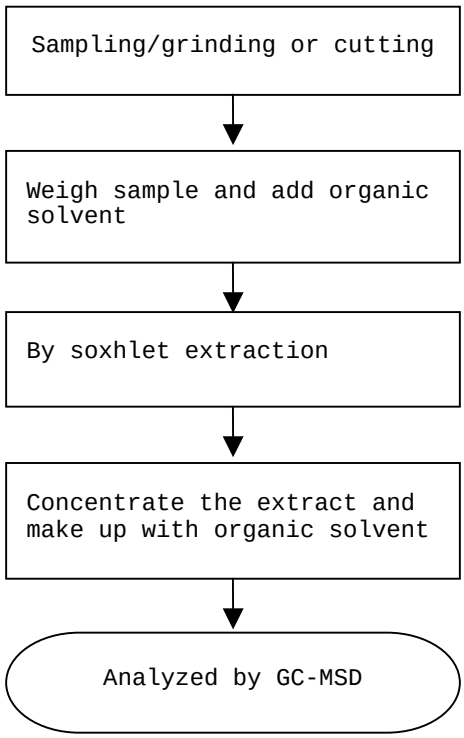
Test Conducted

(Ⅳ) Measurement Flowchart:

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




End of Report



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Number : TWNC00241011

Test Conducted

**Photo**





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**Test Report** Number : TWNC00241010

Applicant: Littelfuse, S.A. de C.V. Date : Jan 20, 2012
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 : INSERT
Part Number : 155004-3
Date Sample Received : Jan 16, 2012
Date Test Started : Jan 17, 2012

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

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Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director





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Number : TWNC00241010

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) | |
|---|---|---|
| | (1) | (2) |
| **Heavy Metal** | | |
| Cadmium (Cd) content | ND | ND |
| Lead (Pb) content | ND | 861 |
| 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
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 $cm^2$ was used and the dilution factor was adjusted accordingly.

Tested Components
(1) Silvery Metal Base Material
(2) Silvery Plating Layer

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Jan 16, 2012
Test Period : Jan 17, 2012 To Jan 20, 2012

(Ⅱ) RoHS Requirement:

| 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 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

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 (mg/kg with $50cm^2$) | 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



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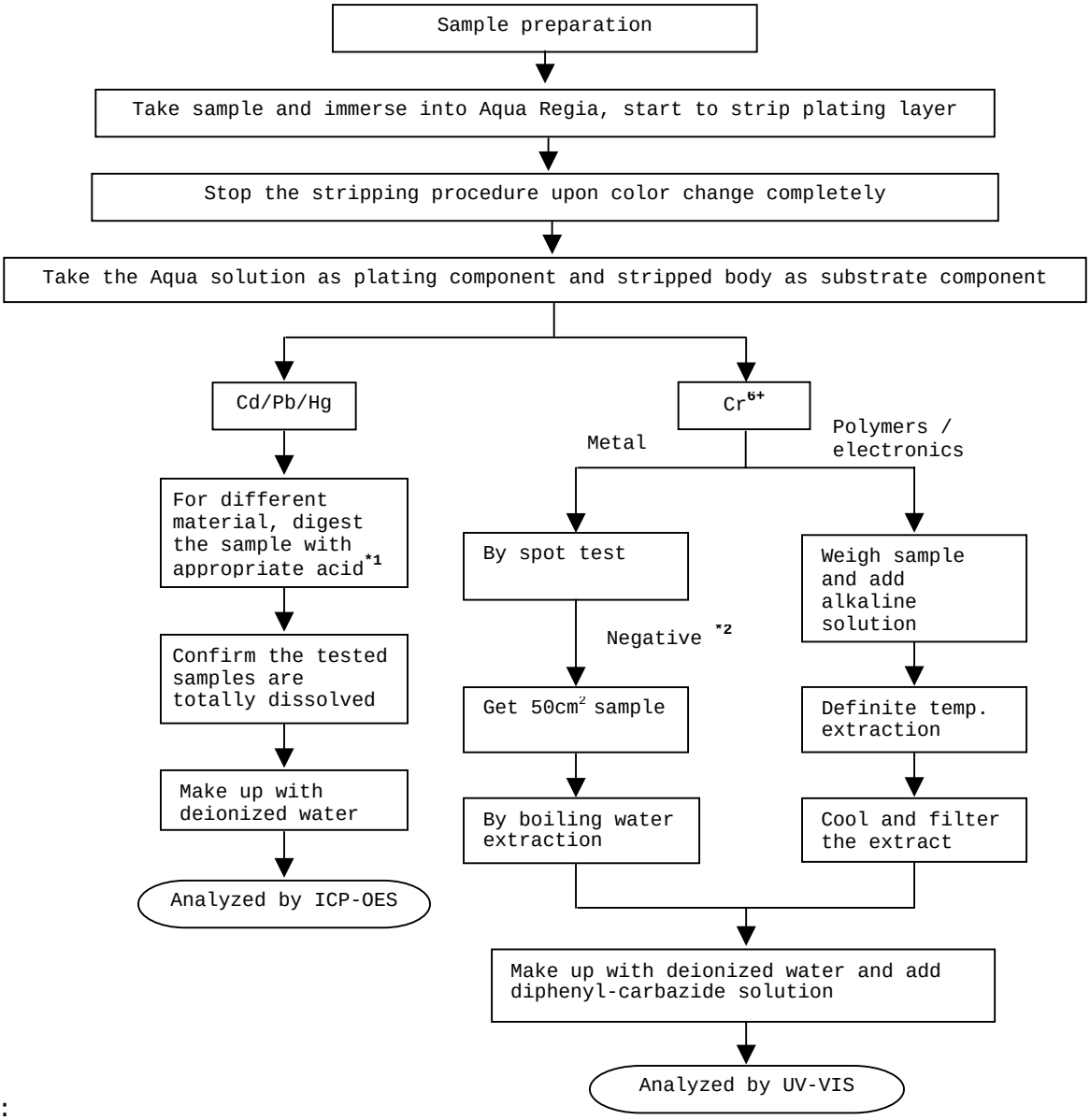
Test Conducted

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




Remarks:
*1: List of Appropriate Acid：

| Material | Acid Added for Digestion |
|---|---|
| Polymers | $HNO_3$, HCl, HF, $H_2O_2$, $H_3BO_3$ |
| Metals | $HNO_3$, HCl, HF |
| Electronics | $HNO_3$, HCl, $H_2O_2$, $HBF_4$ |

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

End of Report



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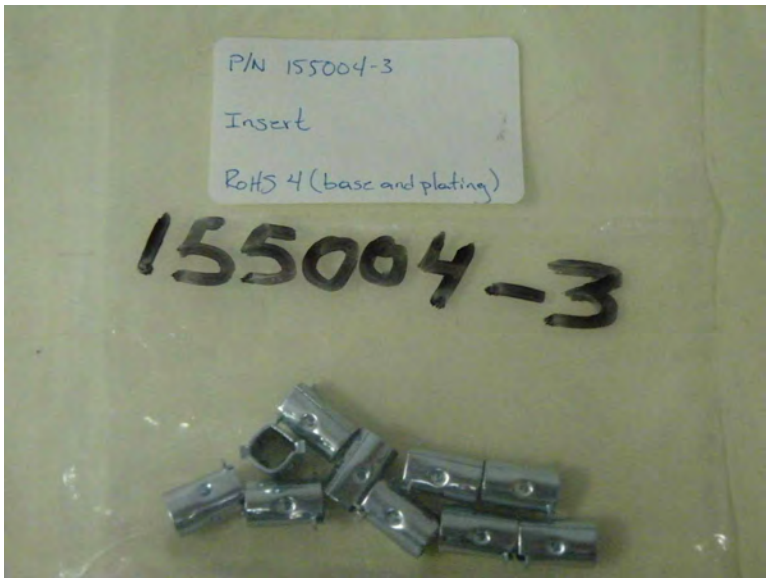
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

Number : TWNC00241010

Test Conducted

**Photo**

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Report No.: MX11-1223-07
Date : 2011-06-28

# TEST REPORT

## APPLICANT

Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martínez 1800, Col. Magisterio Sección 38, Piedras Negras, Coahuila
Ing. María Valdez

## SAMPLE DESCRIPTION

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

| | |
|---|---|
| Sample Description | NP |
| Item No. | 7) N/P 912-065 Spring |
| Country of Origin | NP |
| Buyer's Name | NP |
| Supplier's Name | NP |
| Date sample received | 2011-06-08 |
| Testing period | 2011-06-09 to 2011-06-16 |

**********

## TEST CONDUCTED

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

## CONCLUSION

| Sample Number | Testing item | Conclusion | Failed component | Failed result |
|---|---|---|---|---|
| 7 (Base) | N/P 912-065 Spring | Pass See Result summary | --- | --- |
| 7 (Plated) | N/P 912-065 Spring | Pass See Result summary | --- | --- |

**********

000002



**Intertek Testing Services de México, S.A. de C.V.**
Poniente 134 No. 660, Col. Industrial Vallejo
C.P. 02300, Del. Azcapotzalco, México, D.F. Tel.: 50912150
www.intertek.com

Report No.: MX11-1223-07
Date : 2011-06-28

**TEST CONDUCTED**

Samples:

7) Base N/P 912-065 Spring
7) Plated N/P 912-065 Spring

**TEST RESULT SUMMARY FOR RoHS DIRECTIVE :**

| TESTING ITEM | Ω RESULT (ppm) | | Limit |
|---|---|---|---|
| | (7) Base | (7) Plated | |
| Cadmium (Cd) content | 83,78 | 25,71 | 0,01% (100 ppm) |
| Lead (Pb) content | 36,26 | 614,6 | 0,1% (1000 ppm) |
| Mercury (Hg) content | ND | ND | 0,1% (1000 ppm) |
| Chromium (VI) ($Cr^{6+}$) | ND | ND | 0,1% (1000 ppm) |

ppm = parts per million based on dry weight of sample.
$\mu g/cm^2$ = microgram per square centimeter.
mg/kg WITH $50cm^2$ = milligram per kilogram with 50 square centimeter.
< = less than.
ND = Not detected.
The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

These Accreditations only apply for the methods listed in such. Not accredited under EMA Ω.

Prepared and checked by :
For Intertek

Irma López M.
Coord. de área

Laboratory Manager

The Official Mexican Standard NOM-008-SCFI-1993 establishes like separator decimal the comma (,).

NOTE : DecaBDE IN POLYMERIC APPLICATIONS IS EXEMPTED ACCORDING TO ROHS DIRECTIVE AMENDMENT 2005/717/EC.

# =ACCORDING TO IEC 62321, A POSITIVE RESULT INDICATES THE PRESENCE OF Cr(VI) COATING. IT IS THE Cr(VI) CONCENTRATION DETECTED IN THE BOILING-WATER-EXTRACTION SOLUTION AND SHOULD NOT BE INTERPRETED AS THE Cr(VI) CONCENTRATION IN THE COATING LAYER OF THE SAMPLE.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX11-1223-07 WERE TESTED SEPARATED.

000003



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www.intertek.com

Report No.: MX11-1223-07
Date : 2011-06-28

## Test method :

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 7 | Chromium VI ($Cr^{6+}$) content | With reference to USEPA 3060, by EPA 7196 | QHU2010-45p23 | 2011-06-16 | MELA | 20,0 |

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 7 (Base) | Lead (Pb) content | With reference to USEPA 3050MOD, by EPA 7420 | MET2011-12p11,12 | 2011-06-14 | MARY | 20,0 |
| 7 (Plated) | Lead (Pb) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2010-21p06 | 2011-06-13 | MARY | 62,5 |

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 7 (Base) | Cadmium (Cd) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2011-12p11 | 2011-06-13 | MARY | 2,0 |
| 7 (Plated) | Cadmium (Cd) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2010-21p06 | 2011-06-13 | MARY | 25,0 |

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 7 (Base) | Mercury (Hg) content | With reference to USEPA 7471 by USEPA 7471 | MET2010-12p06 | 2011-06-09 | RNC | 0,25 |
| 7 (Plated) | Mercury (Hg) content | With reference to USEPA 7471 by USEPA 7471 | MET2010-22p05 | 2011-06-10 | RNC | 2,5 |

000004



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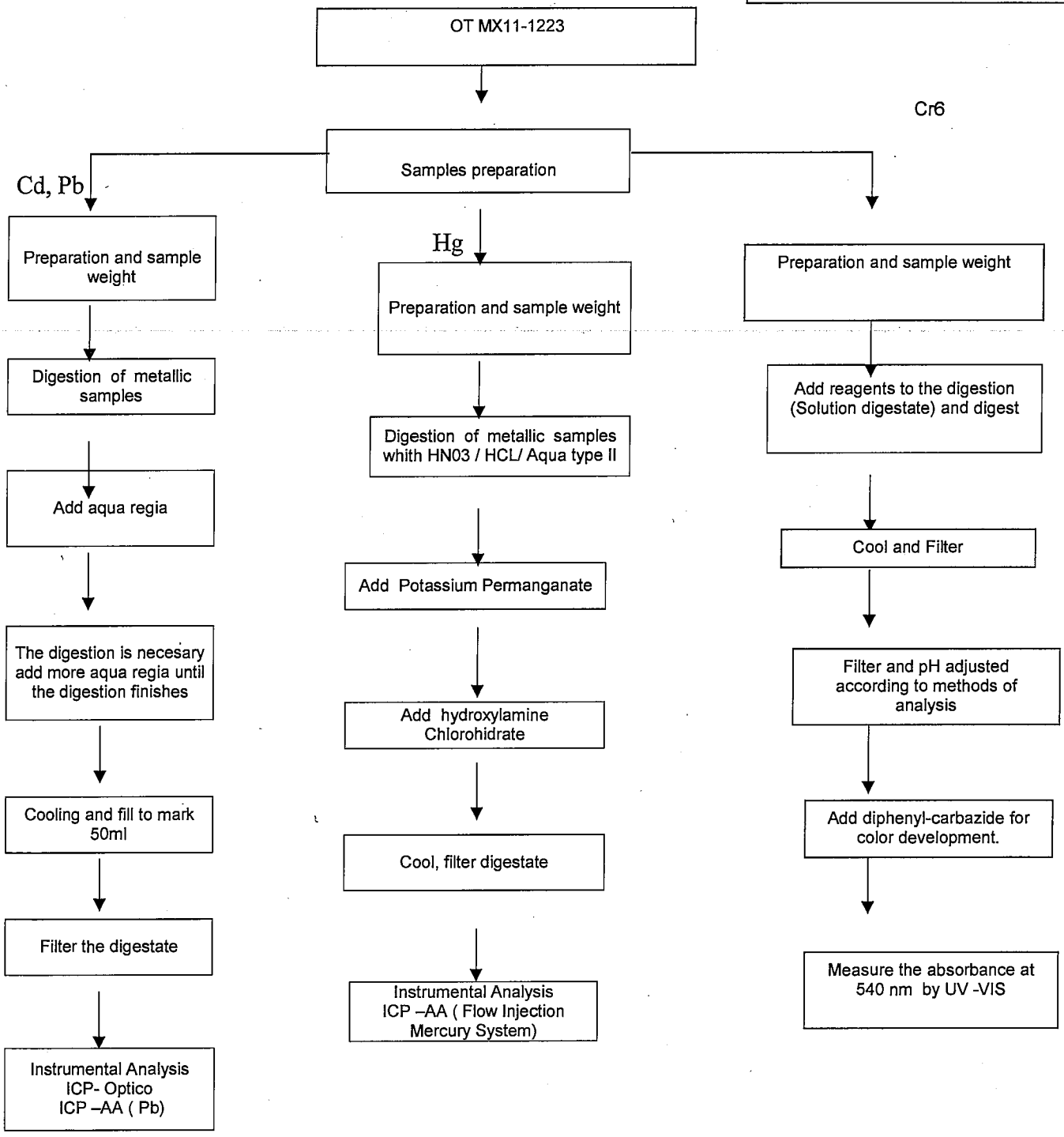
Metallic samples
Flow chart for sample: 7

Report No.: MX11-1223-07
Date: 2011-06-28




000005



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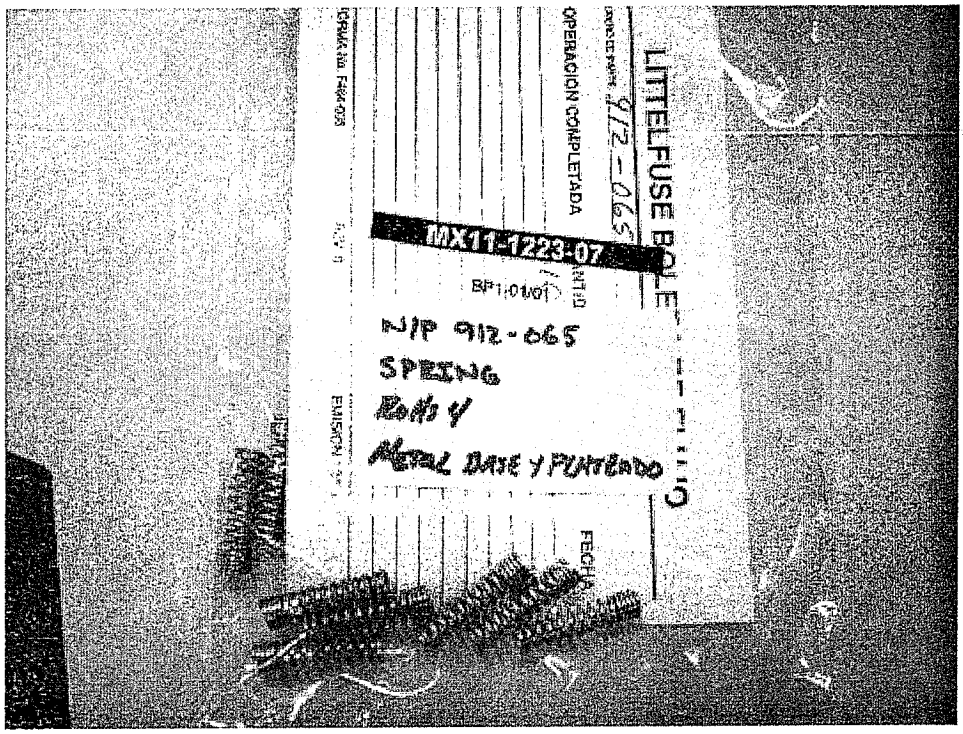
LITTELFUSE
OPERACIÓN COMPLETADA
MX11-1223-07
NJP 912-065
SPRING
Body y
Metal Base y Plateado

000006

Report No.: MX11-1223-06
Date : 2011-06-28

# TEST REPORT

## APPLICANT

Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martínez 1800, Col. Magisterio Sección 38, Piedras Negras, Coahuila
Ing. María Valdez

## SAMPLE DESCRIPTION

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

| | |
|---|---|
| Sample Description | NP |
| Item No. | 6) N/P 904-216-001 Rivet |
| Country of Origin | NP |
| Buyer's Name | NP |
| Supplier's Name | NP |
| Date sample received | 2011-06-08 |
| Testing period | 2011-06-09 to 2011-06-16 |

**********

## TEST CONDUCTED

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

**********

## CONCLUSION

| Sample Number | Testing item | Conclusion | Failed component | Failed result |
|---|---|---|---|---|
| 6 (Base) | N/P 904-216-001 Rivet | Pass See Result summary | --- | --- |
| 6 (Plated) | N/P 904-216-001 Rivet | Pass See Result summary | --- | --- |

**********

000002





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www.intertek.com

Report No.: MX11-1223-06
Date : 2011-06-28

**TEST CONDUCTED**

Samples:

6) Base N/P 904-216-001 Rivet
6) Plated N/P 904-216-001 Rivet

**TEST RESULT SUMMARY FOR RoHS DIRECTIVE :**

| TESTING ITEM | Ω RESULT (ppm) | | Limit |
|---|---|---|---|
| | (6) Base | (6) Plated | |
| Cadmium (Cd) content | ND | ND | 0,01% (100 ppm) |
| Lead (Pb) content | 31,33 | ND | 0,1% (1000 ppm) |
| Mercury (Hg) content | ND | ND | 0,1% (1000 ppm) |
| Chromium (VI) ($Cr^{6+}$) | ND | ND | 0,1% (1000 ppm) |

ppm = parts per million based on dry weight of sample.
$\mu g/cm^2$ = microgram per square centimeter.
mg/kg WITH $50cm^2$ = milligram per kilogram with 50 square centimeter.
< = less than.
ND = Not detected.
The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

These Accreditations only apply for the methods listed in such. Not accredited under EMA Ω.

Prepared and checked by :
For Intertek

Laboratory Manager

The Official Mexican Standard NOM-008-SCFI-1993 establishes like separator decimal the comma (,).

NOTE : DecaBDE IN POLYMERIC APPLICATIONS IS EXEMPTED ACCORDING TO ROHS DIRECTIVE AMENDMENT 2005/717/EC.

# =ACCORDING TO IEC 62321, A POSITIVE RESULT INDICATES THE PRESENCE OF Cr(VI) COATING. IT IS THE Cr(VI) CONCENTRATION DETECTED IN THE BOILING-WATER-EXTRACTION SOLUTION AND SHOULD NOT BE INTERPRETED AS THE Cr(VI) CONCENTRATION IN THE COATING LAYER OF THE SAMPLE.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX11-1223-06 WERE TESTED SEPARATED.

000003



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Report No.: MX11-1223-06
Date : 2011-06-28

## Test method :

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 6 | Chromium VI ($Cr^{6+}$) content | With reference to USEPA 3060, by EPA 7196 | QHU2010-45p23 | 2011-06-16 | MELA | 20,0 |

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 6 (Base) | Lead (Pb) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2011-12p11 | 2011-06-13 | MARY | 5,0 |
| 6 (Plated) | Lead (Pb) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2010-21p06 | 2011-06-13 | MARY | 250,0 |

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 6 (Base) | Cadmium (Cd) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2011-12p11 | 2011-06-13 | MARY | 2,0 |
| 6 (Plated) | Cadmium (Cd) content | With reference to USEPA 3050MOD, by EPA 6010 | MET2010-21p06 | 2011-06-13 | MARY | 100,0 |

| Sample Number | Testing item | Ω Testing method | Quality control Batch: | Analysis Date: | Analyzed By: | Reporting limit ppm |
|---|---|---|---|---|---|---|
| 6 (Base) | Mercury (Hg) content | With reference to USEPA 7471 by USEPA 7471 | MET2011-12p06 | 2011-06-10 | RNC | 0,25 |
| 6 (Plated) | Mercury (Hg) content | With reference to USEPA 7471 by USEPA 7471 | MET2010-22p05 | 2011-06-10 | RNC | 2,5 |

000004



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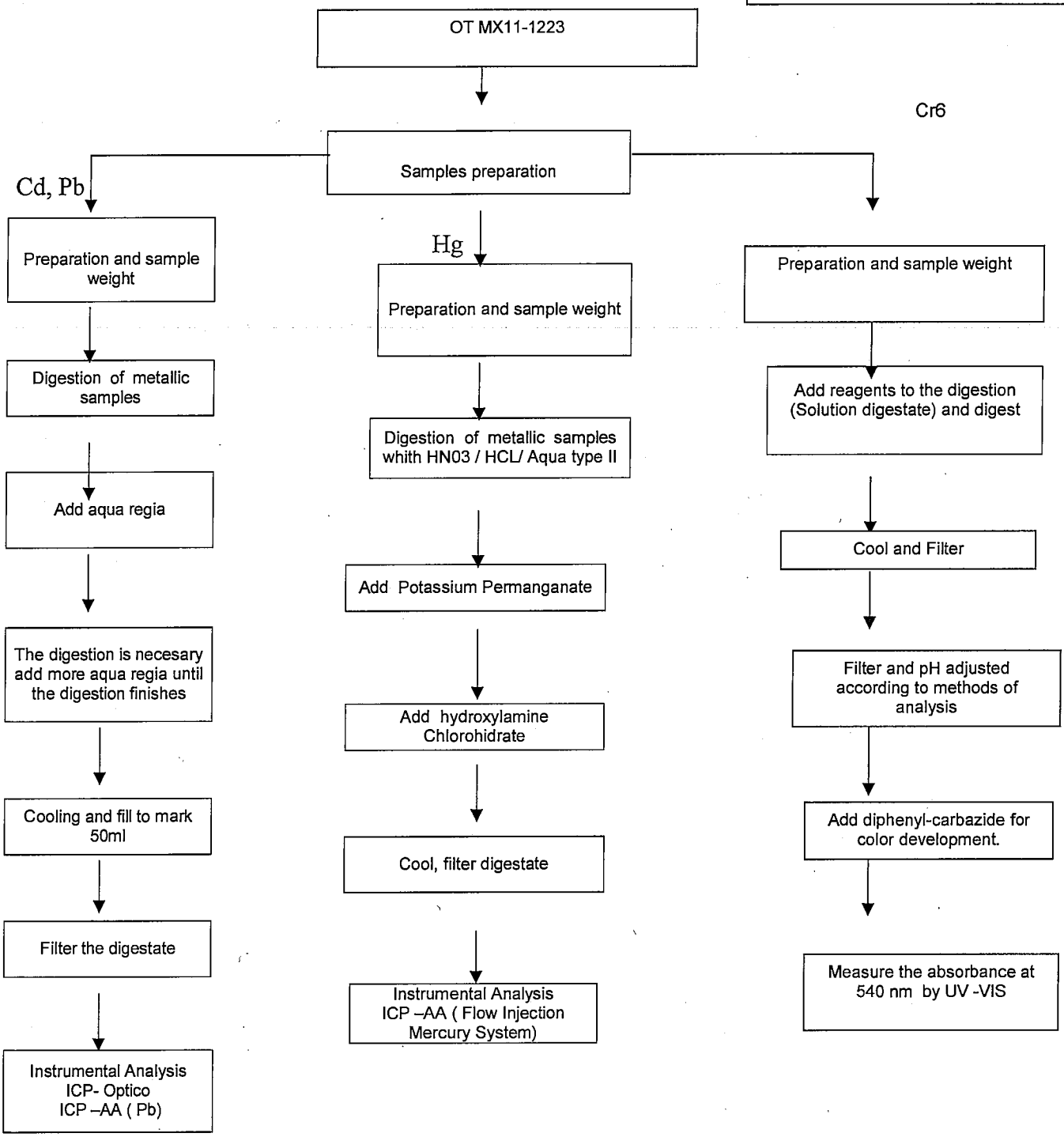
**C.P. 02300, Del. Azcapotzalco, México, D.F. Tel.: 50912150**
www.intertek.com

Intertek

Metallic samples
Flow chart for sample: 6

Report No.: MX11-1223-06
Date: 2011-06-28




000005



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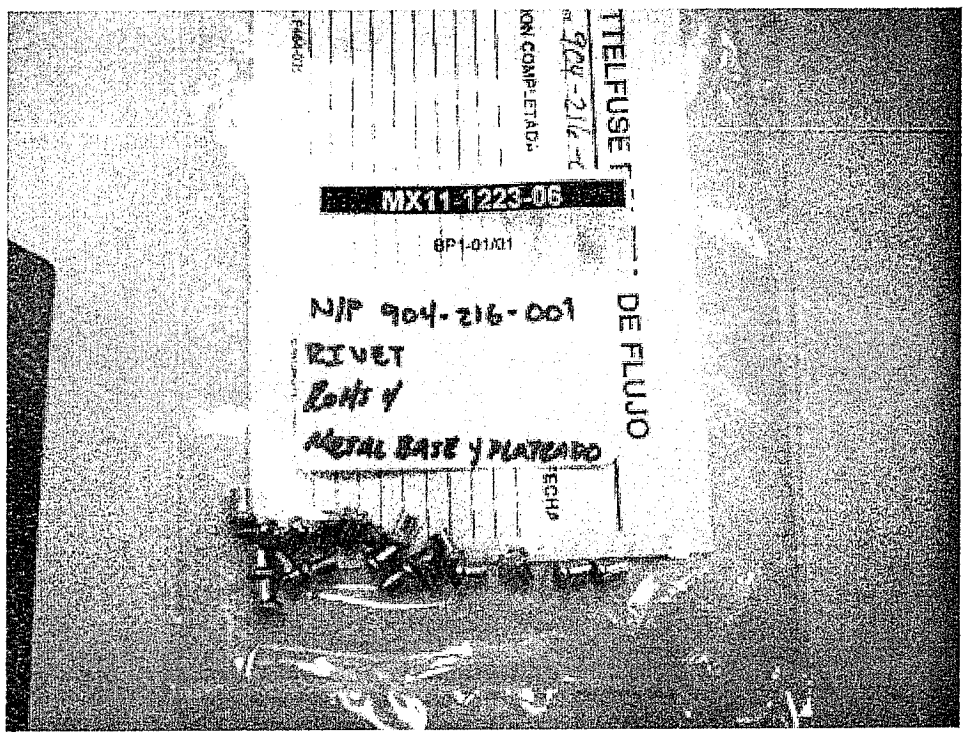




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Poniente 134 No. 660, Col. Industrial Vallejo
C.P. 02300, Del. Azcapotzalco, México, D.F. Tel.: 50912150
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**Test Report** Number : TWNC00241008

Applicant: Littelfuse, S.A. de C.V. Date : Jan 20, 2012
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 : SPRING
Part Number : 912-067
Date Sample Received : Jan 16, 2012
Date Test Started : Jan 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





**Intertek Testing Services Taiwan Ltd.**
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Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

Number : TWNC00241008

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) | |
|---|---|---|
| | (1) | (2) |
| **Heavy Metal** | | |
| Cadmium (Cd) content | ND | ND |
| Lead (Pb) content | ND | 394 |
| 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
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.

Tested Components
(1) Silvery Metal Base Material
(2) Silvery Plating Layer

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Jan 16, 2012
Test Period : Jan 17, 2012 To Jan 20, 2012

(Ⅱ) RoHS Requirement:

| 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 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

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 (mg/kg with $50cm^2$) | 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



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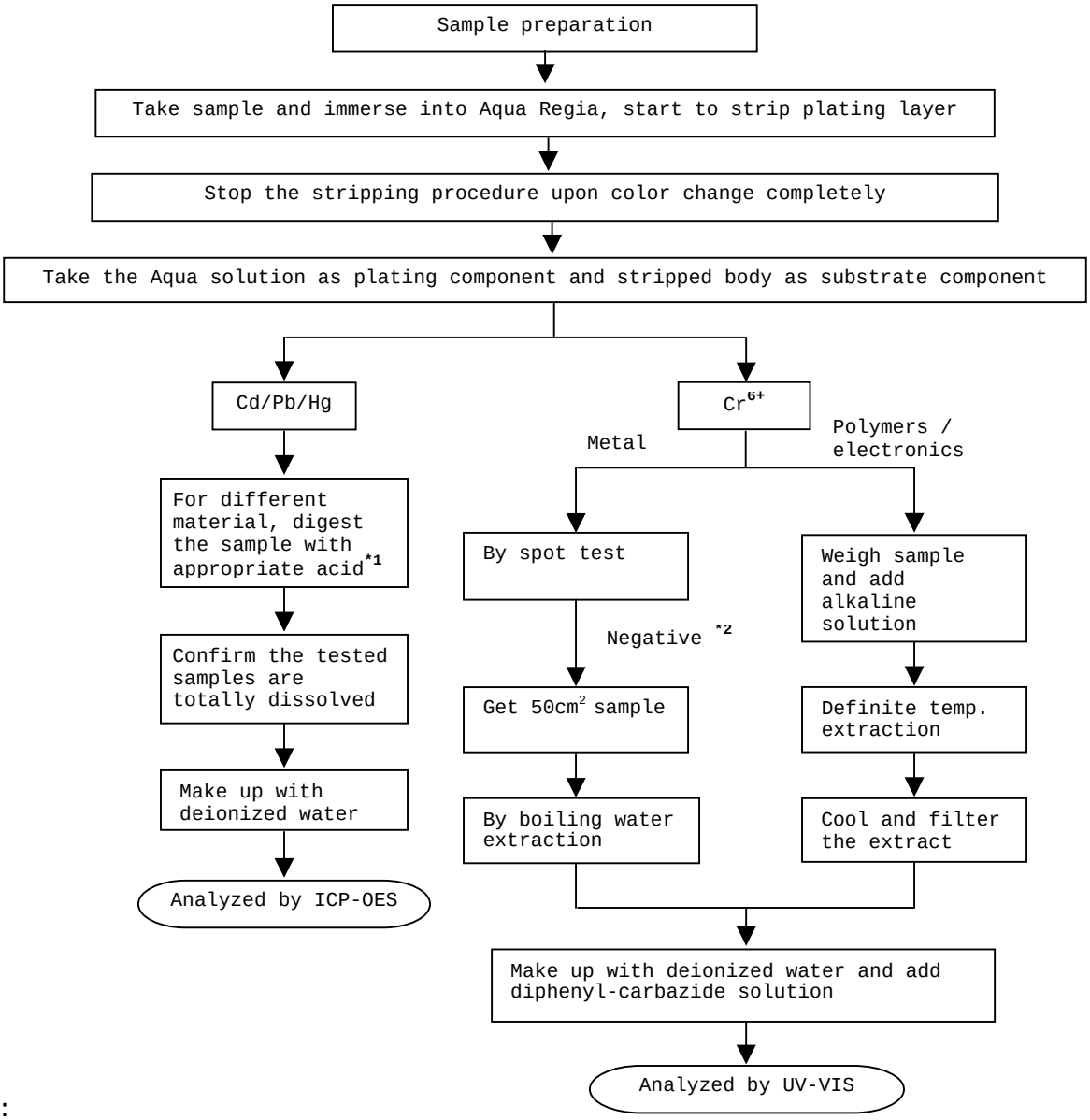
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

Test Conducted

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




Remarks:
*1: List of Appropriate Acid：

| Material | Acid Added for Digestion |
|---|---|
| Polymers | $HNO_3$, HCl, HF, $H_2O_2$, $H_3BO_3$ |
| Metals | $HNO_3$, HCl, HF |
| Electronics | $HNO_3$, HCl, $H_2O_2$, $HBF_4$ |

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

End of Report



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114 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

Number : TWNC00241008

Test Conducted

**Photo**




**Intertek Testing Services Taiwan Ltd.**
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Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

**Test Report** Number : TWNC00224370

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Sep 23, 2011

Sample Description:
One (1) group of submitted samples said to be :
Part Description : Lead wire
Part Number : 878-112
Date Sample Received : Sep 16, 2011
Date Test Started : Sep 19, 2011

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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Number : TWNC00224370

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) | |
|---|---|---|
| | (A) | (B) |
| **Heavy Metal** | | |
| Cadmium (Cd) content | ND | ND |
| Lead (Pb) content | ND | ND |
| Mercury (Hg) content | ND | ND |
| Chromium VI ($Cr^{6+}$) content (for non-metal material) | ND | -- |
| Chromium VI ($Cr^{6+}$) content (by boiling water extraction on metal)(mg/kg with $50cm^2$) | -- | Negative (< 0.02) |
| **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 | -- |



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Number : TWNC00224370

Test Conducted

(Ⅰ) Test Result Summary :

| Test Item | Result (ppm) | |
|---|---|---|
| | (A) | (B) |
| **Halogen Content** | | |
| Fluorine (F) | ND | -- |
| Chlorine (Cl) | 285219 | -- |
| Bromine (Br) | ND | -- |
| Iodine (I) | ND | -- |

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
< = Less than
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.

Tested Components
(1) Red Cable Jacket
(2) Coppery Metal Wire

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

Date Sample Received : Sep 16, 2011
Test Period : Sep 19, 2011 To Sep 23, 2011

(Ⅱ) RoHS Requirement:

| 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 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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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 (for non-metal material) | With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer. | 1 ppm |
| Chromium VI ($Cr^{6+}$) content (by boiling water extraction on metal)(mg/kg with $50cm^2$) | 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 $50cm^2$ |
| Polybrominated Biphenyls (PBBs) | With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. | 5 ppm |
| Polybrominated Diphenyl Ethers (PBDEs) | With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary. | 5 ppm |
| Halogen Content | With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography | 50 ppm |

Remark: Reporting limit = Quantitation limit of analyte in sample



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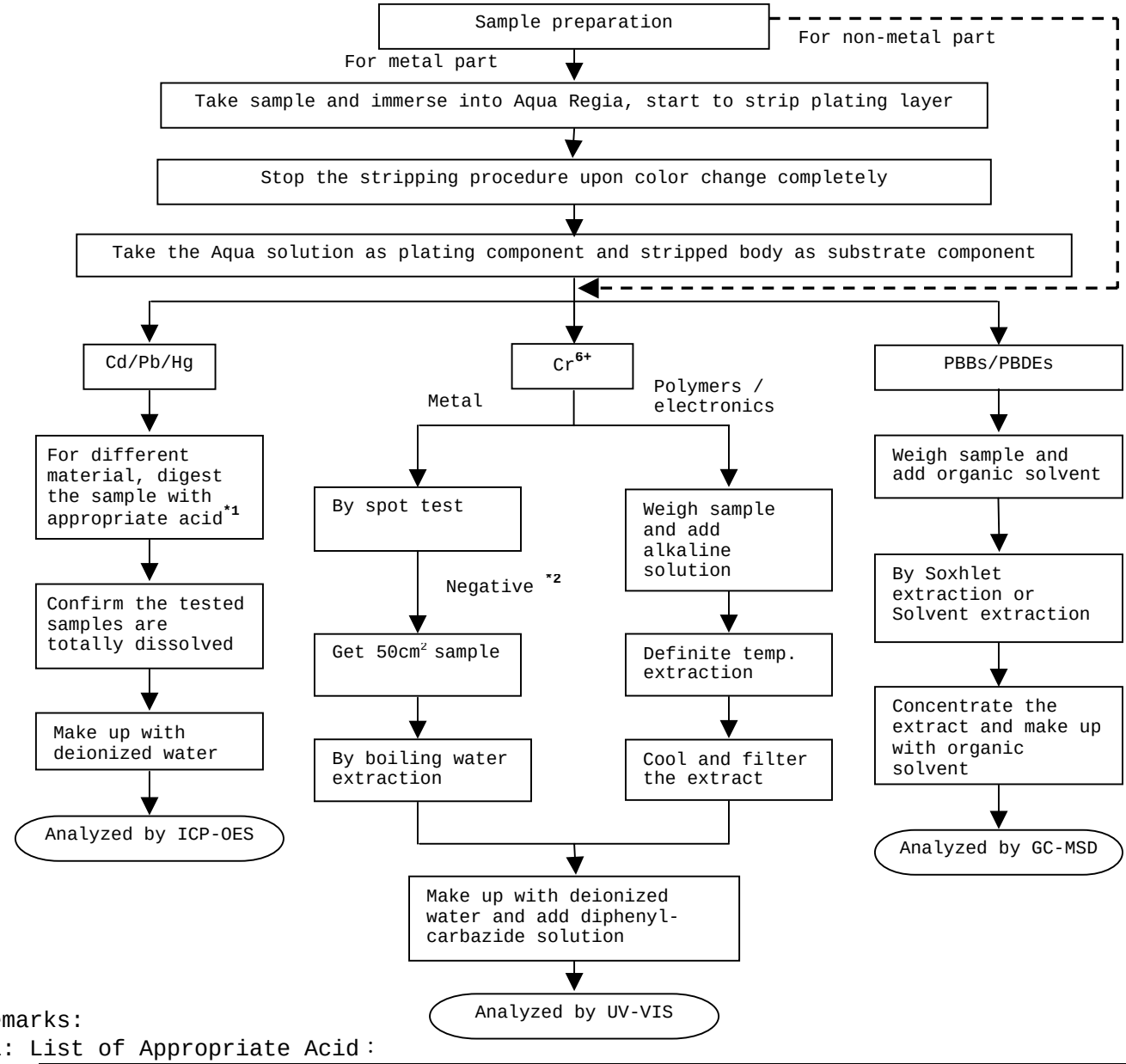
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

Reference Standard: IEC 62321 edition 1.0:2008




Remarks:

*1: List of Appropriate Acid：

| Material | Acid Added for Digestion |
|---|---|
| Polymers | $HNO_3$, HCl, HF, $H_2O_2$, $H_3BO_3$ |
| Metals | $HNO_3$, HCl, HF |
| Electronics | $HNO_3$, HCl, $H_2O_2$, $HBF_4$ |

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



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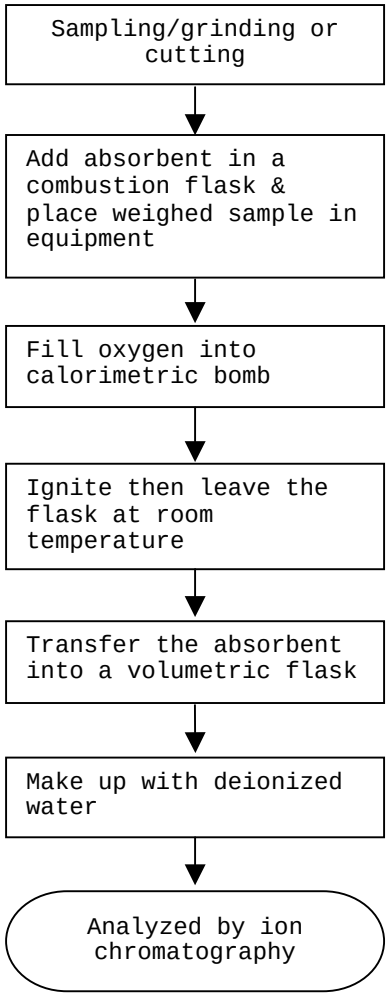
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content

Reference Standard：EN 14582




End of Report



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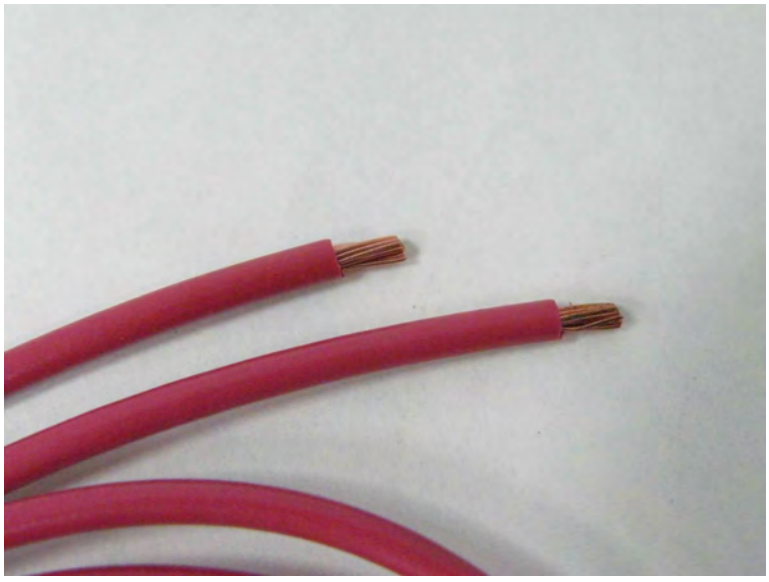
Test Conducted

**Photo**



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AVIC JONHON

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(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

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