



TEST REPORT

Applicant : SAMHWA NON-FERROUS METAL
Address : 156, Ojanggal-gil, Gunbuk-myeon, Haman-gun,
Gyeongsangnam-do, Korea

Page: 1 of 9

Report No. RT16R-U2438-001-E

Date: Jan. 04, 2017

Sample Description : The following submitted sample(s) said to be:-

Name/Type of Product : PF142 BAR
Name of Material : Sn99.3% Cu0.7%
Sample ID No. : RT16R-U2438-001
Manufacturer/Vendor : SAMHWA NON-FERROUS METAL

Sample received : Dec. 30, 2016
Testing Date : Dec. 30, 2016 ~ Jan. 04, 2017

Test Type : RoHS wet chemical analysis
Test Method(s) : Please see the following page(s).
Test Result(s) : Please see the following page(s).

* Note 1 : The test results presented in this report relate only to the object tested.

* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.

Approved by,

E.Y.Lee / Lab. Technical Manager

Authorized by,

H.W.Yoo / Lab. General Manager



Authenticity check

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TEST REPORT

Report No. RT16R-U2438-001-E

Sample ID No. : RT16R-U2438-001

Sample Description : PF142 BAR

Test Item	Unit	Test Method	MDL	Result
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg		5	219
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES	2	N.D.
Hexavalent Chromium (Cr ⁶⁺) (For metal)	μg/cm ²	With reference to IEC 62321-7-1 Edition 1.0 : 2015, by boiling water extraction and determined by UV-VIS Spectrophotometer	0.10	Negative

Tested by : SH Kim, JH Jin

Notes : mg/kg = ppm = parts per million
 μg/cm² = microgram per square centimeter
 < = Less than
 N.D. = Not detected (<MDL)
 MDL = Method detection limit

Remarks : Interpretation of Cr⁶⁺ results

Qualitative result	Concentration of Cr ⁶⁺ (μg/cm ²)	Meaning
Negative	< 0.10	The sample coating is considered a non-Cr ⁶⁺ based coating.
Inconclusive	0.10 ≤ and ≤ 0.13	Unavoidable coating variation may influence the determination.
Positive	> 0.13	The sample coating is considered to contain Cr ⁶⁺ .

1. The qualitative results should be determination by the average result of three test results.
(If concentration of Cr⁶⁺ is over 0.10 μg/cm²)
2. The above results will be carried out by visual comparison only with the standard.

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Report No. RT16R-U2438-001-E

Sample ID No. : RT16R-U2438-001

Sample Description : PF142 BAR

Test Item	Unit	Test Method	MDL	Result
Polybrominated Biphenyl (PBBs)				
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS	5	N.D.
Dibromobiphenyl	mg/kg		5	N.D.
Tribromobiphenyl	mg/kg		5	N.D.
Tetrabromobiphenyl	mg/kg		5	N.D.
Pentabromobiphenyl	mg/kg		5	N.D.
Hexabromobiphenyl	mg/kg		5	N.D.
Heptabromobiphenyl	mg/kg		5	N.D.
Octabromobiphenyl	mg/kg		5	N.D.
Nonabromobiphenyl	mg/kg		5	N.D.
Decabromobiphenyl	mg/kg		5	N.D.
Polybrominated Diphenyl Ether (PBDEs)				
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg		5	N.D.
Tribromodiphenyl ether	mg/kg		5	N.D.
Tetrabromodiphenyl ether	mg/kg		5	N.D.
Pentabromodiphenyl ether	mg/kg		5	N.D.
Hexabromodiphenyl ether	mg/kg		5	N.D.
Heptabromodiphenyl ether	mg/kg		5	N.D.
Octabromodiphenyl ether	mg/kg		5	N.D.
Nonabromodiphenyl ether	mg/kg		5	N.D.
Decabromodiphenyl ether	mg/kg		5	N.D.

Tested by : MB Song

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Report No. RT16R-U2438-001-E

Sample ID No. : RT16R-U2438-001

Sample Description : PF142 BAR

Test Item	CAS No.	Unit	Test Method	MDL	Result
Phthalates					
Dibutyl phthalate (DBP)	84-74-2	mg/kg	With reference to IEC 62321-8 (111/321/CD), by solvent extraction and determined by GC/MS	50	N.D.
Di(2-ethylhexyl) phthalate (DEHP)	117-81-7	mg/kg		50	N.D.
Benzyl butyl phthalate (BBP)	85-68-7	mg/kg		50	N.D.
Diisobutyl phthalate (DIBP)	84-69-5	mg/kg		50	N.D.

Tested by : MB Song

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Sample ID No. : RT16R-U2438-001

Sample Description : PF142 BAR

Test Item	Unit	Test Method	MDL	Result
Beryllium (Be)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Bromine (Br)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Chlorine (Cl)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.

Tested by : SH Kim

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* View of sample as received;-



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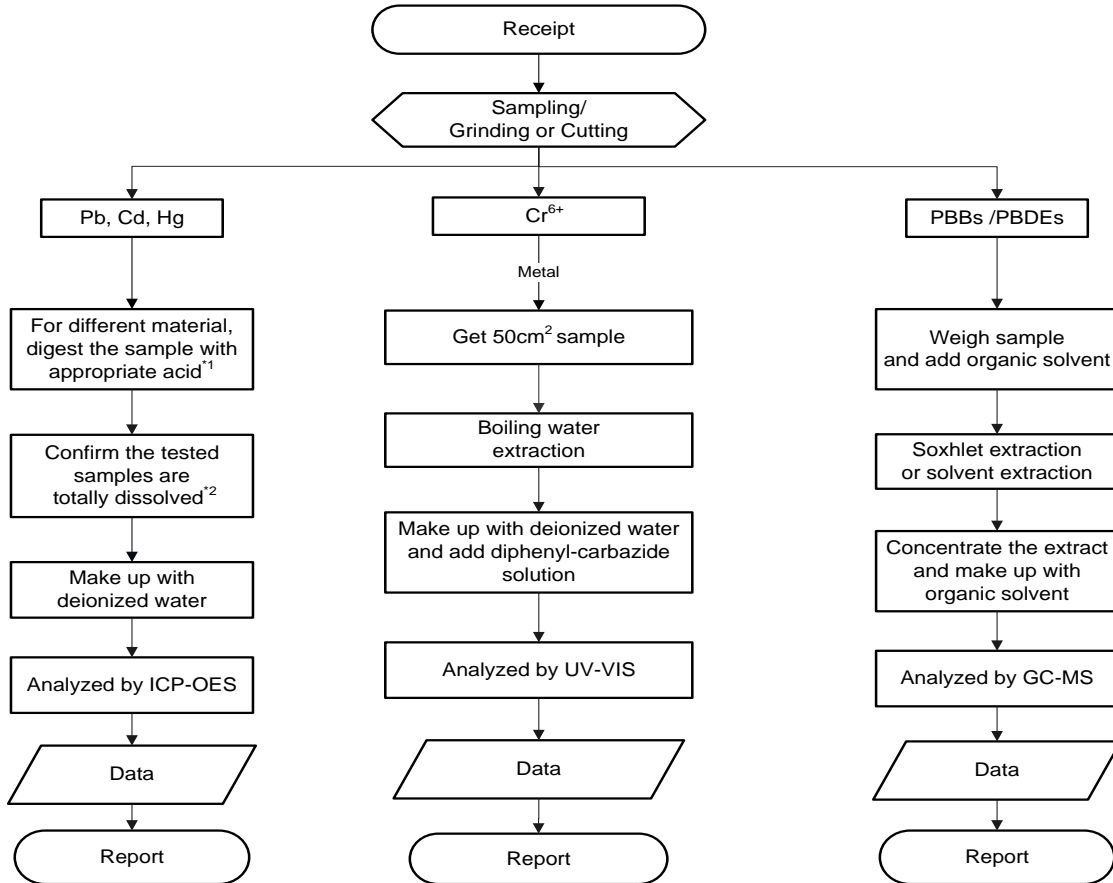
TEST REPORT

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Sample ID No. : RT16R-U2438-001

Sample Description : PF142 BAR

Flow Chart
(IEC 62321 Edition 1.0)



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 : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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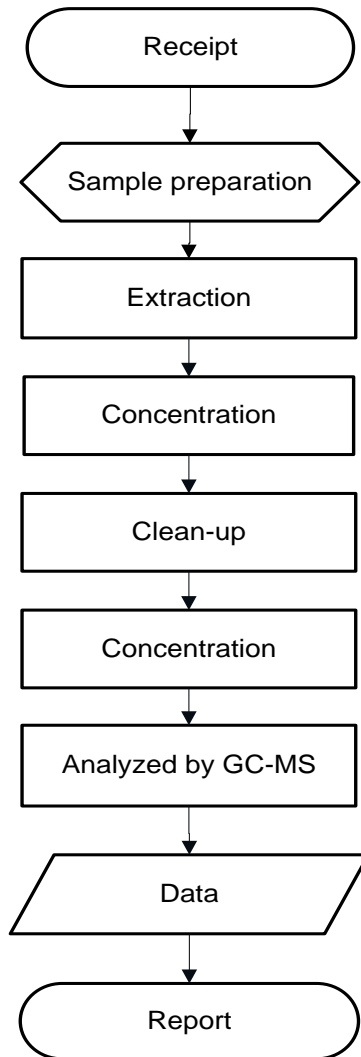


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Flow Chart (Phthalates)



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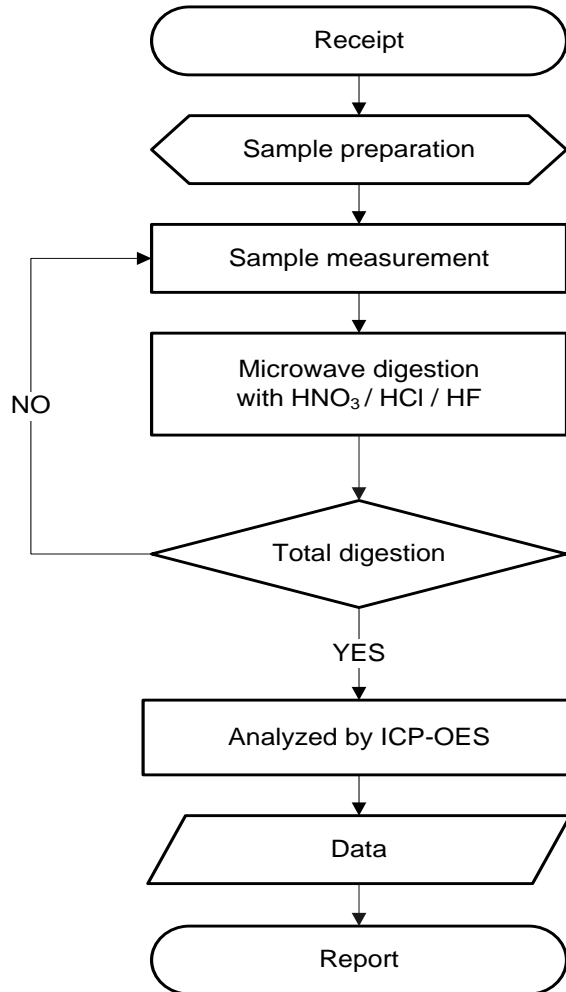


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TEST REPORT

Report No. RT16R-U2438-001-E
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Sample Description : PF142 BAR

Flow Chart (Metal Testing)



** Remarks : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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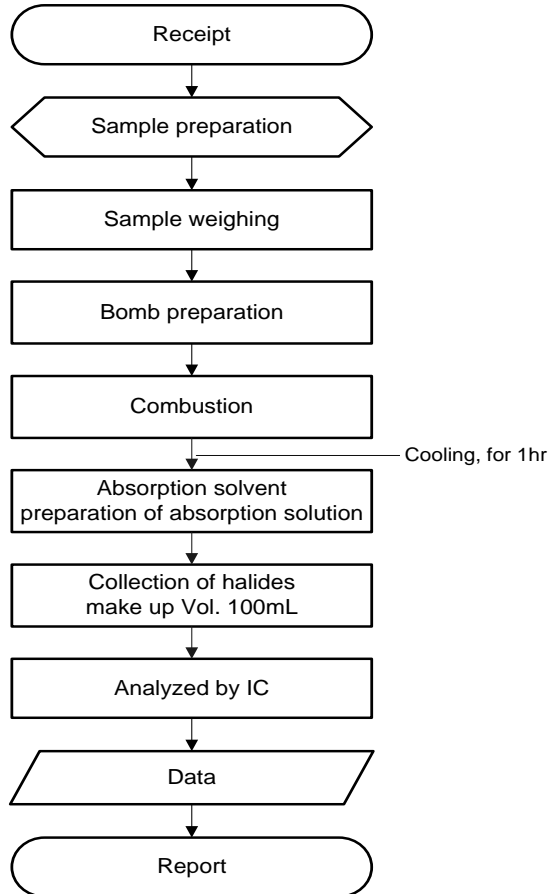
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Sample Description : PF142 BAR

Flow Chart (Halogen)



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

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