

TEST REPORT

Number : WUXH00119293

Applicant : MATERION TAIWAN CO., LTD
1F.,NO.6, HOUSHENG RD., LUZHU DIST.,
TAOYUAN 33855, TAIWAN, R.O.C.
Attn : CJ LIU

Date : Aug 24, 2021

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Golden Metal.**
Item Name : 4N Au & 4N5 Au &5N Au.

Tests Conducted:

As Requested By The Applicant, For Details Refer To Attached Pages

Conclusion:

<u>Tested Sample</u>	<u>Standard</u>	<u>Result</u>
Submitted Sample	Restriction Of The Use Of Certain Hazardous Substance In Electrical And Electronic Equipment (RoHS Directive 2011/65/EU And (EU) 2015/863)	Pass

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.



Peter Chen
General Manager



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Tests Conducted (As Requested By The Applicant)

1 RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	ND
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI)(Cr ⁶⁺) Result (By Boiling Water Extraction on Metal) (µg/cm ²)	N
Polybrominated Biphenyls (PBBs) Content (mg/kg)	
Monobromobiphenyl (MonoBB)	ND
Dibromobiphenyl (DiBB)	ND
Tribromobiphenyl (TriBB)	ND
Tetrabromobiphenyl (TetraBB)	ND
Pentabromobiphenyl (PentaBB)	ND
Hexabromobiphenyl (HexaBB)	ND
Heptabromobiphenyl (HeptaBB)	ND
Octabromobiphenyl (OctaBB)	ND
Nonabromobiphenyl (NonaBB)	ND
Decabromobiphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs) Content (mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND
Dibromodiphenyl Ether (DiBDE)	ND
Tribromodiphenyl Ether (TriBDE)	ND
Tetrabromodiphenyl Ether (TetraBDE)	ND
Pentabromodiphenyl Ether (PentaBDE)	ND
Hexabromodiphenyl Ether (HexaBDE)	ND
Heptabromodiphenyl Ether (HeptaBDE)	ND
Octabromodiphenyl Ether (OctaBDE)	ND
Nonabromodiphenyl Ether (NonaBDE)	ND
Decabromodiphenyl Ether (DecaBDE)	ND
Phthalates Content (mg/kg)	
Bis(2-ethylhexyl)phthalate (DEHP)	ND
Butyl benzyl phthalate (BBP)	ND
Dibutyl phthalate (DBP)	ND
Diisobutyl phthalate (DIBP)	ND

ppm = Parts Per Million = mg/kg

ND = Not Detected

N=Negative = A negative test result indicated the absorbance value of testing sample solution for Cr(VI) testing is less than the absorbance value of the 0.10µg/cm² equivalent comparison standard solution, the Cr(VI) concentration is below the limit of quantification, then the sample is considered to be negative for Cr(VI).



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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)
Phthalates (DEHP, BBP, DBP, DIBP)	0.1% (1000 ppm)

The above limits were quoted from 2011/65/EU and (EU) 2015/863 for homogeneous material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion until the tested sample was totally dissolved and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion until the tested sample was totally dissolved and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321-4 Edition 1.1:2017, by acid digestion until the tested sample was totally dissolved and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr ⁶⁺) Content	With reference to IEC 62321-7-1 Edition 1.0:2015, by boiling water extraction and determined by UV-VIS Spectrophotometer.	Positive(>0.13µg/cm ²) / Negative(<0.10µg/cm ²) / Inconclusive(0.10µg/cm ² -- 0.13µg/cm ²)
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs) Content	With reference to IEC 62321-6 Edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 ppm
Phthalates (DEHP, BBP, DBP, DIBP) Content	With reference to IEC 62321-8 Edition 1.0:2017, by solvent extraction and determined by GC/MS	50 mg/kg

Date Sample Received: Aug 18, 2021

Testing Period: Aug 18, 2021 To Aug 23, 2021



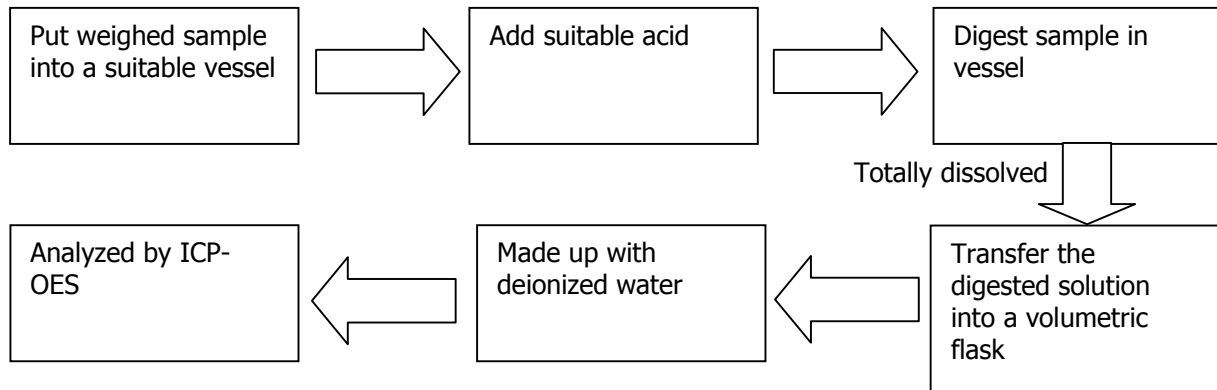
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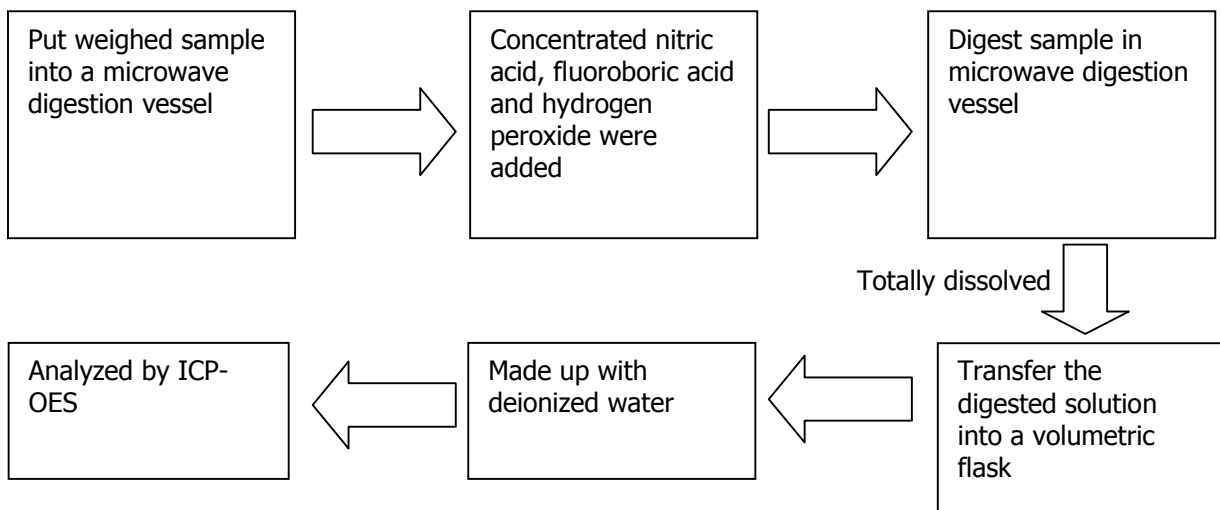
Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



2. Test for Hg Content

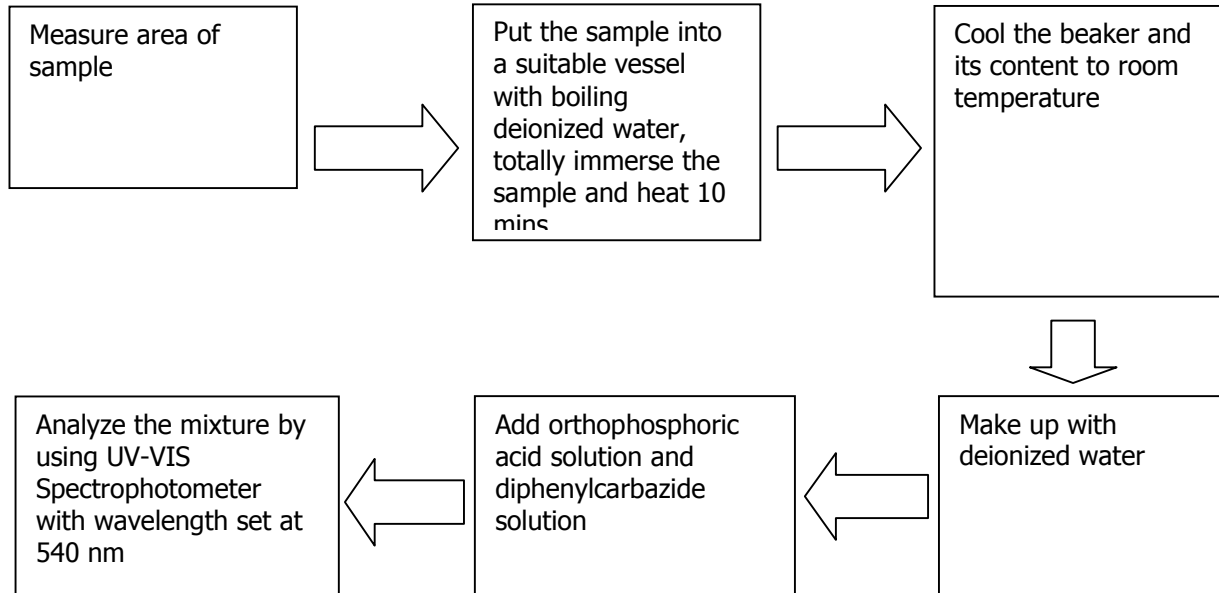


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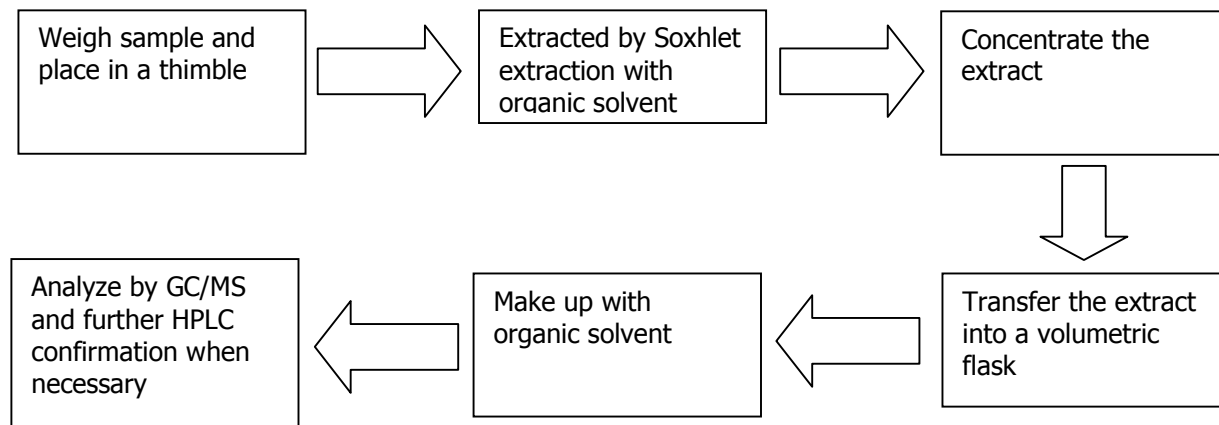
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Tests Conducted (As Requested By The Applicant)

3. Test for Chromium (VI) (Cr^{6+}) Content (Boiling Water Extraction)



4. Test for PBBs/PBDEs Contents

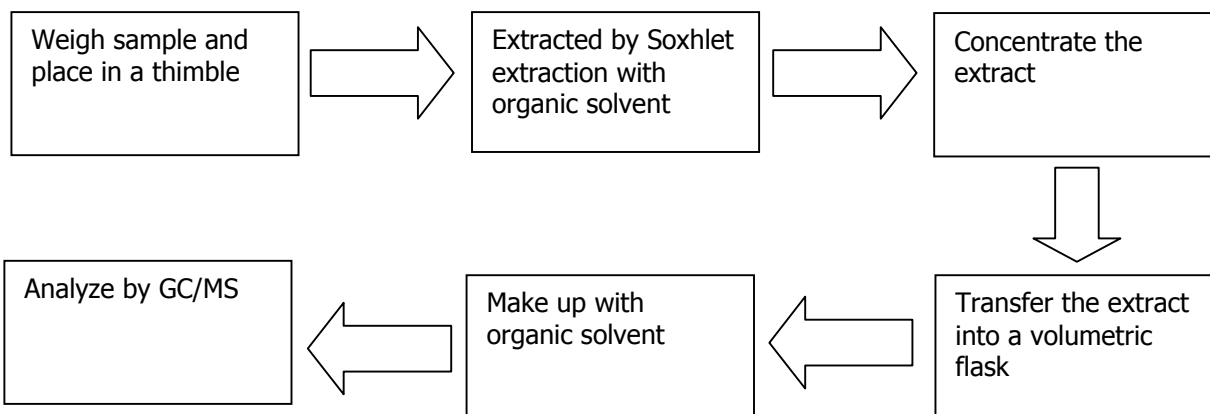


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5. Test for Phthalate Contents



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Tests Conducted (As Requested By The Applicant)

2 Total Antimony(Sb) / Beryllium(Be) Content

With Reference To USEPA 3052, Acid Digestion Method Was Used And Total Antimony(Sb) / Beryllium(Be) Content Was Determined By Inductively Coupled Argon Plasma Spectrometry.

	<u>Result In ppm</u>
Sb	ND
Be	ND

ppm = Parts Per Million =mg/kg

Detection Limit= 2 ppm

ND=Not Detected

Date Sample Received: Aug 18, 2021

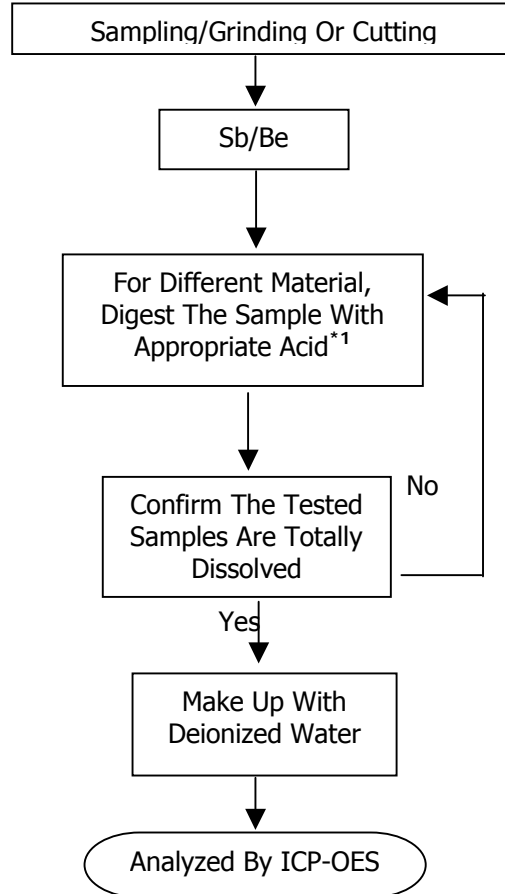
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Tests Conducted (As Requested By The Applicant)
Measurement Flowchart:



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



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3 Phthalate Content Test

With Reference To EN14372, By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis.

<u>Tested Compound</u>	<u>Result (In ppm)</u>
Di-Iso-Decyl Phthalate (DIDP)	ND
Di-N-Hexyl Phthalate (DNHP)	ND
Bis(2-methoxyethyl)phthalate (DMEP)	ND
Di-isopentylphthalate (DIPP)	ND
D-pentyl iso-pentylphthalate (NPIPP)	ND
Dipentyl phthalate (DNPP)	ND

With Reference To IEC 62321-8:2017, By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis.

<u>Tested Compound</u>	<u>Result (In ppm)</u>
Di-Iso-Nonyl Phthalate (DINP)	ND
Di-N-Octyl Phthalate (DNOP)	ND

Detection Limit = 50 ppm

ND = Not Detected

ppm = parts per million = mg/kg

Date Sample Received: Aug 18, 2021

Testing Period: Aug 18, 2021 To Aug 23, 2021

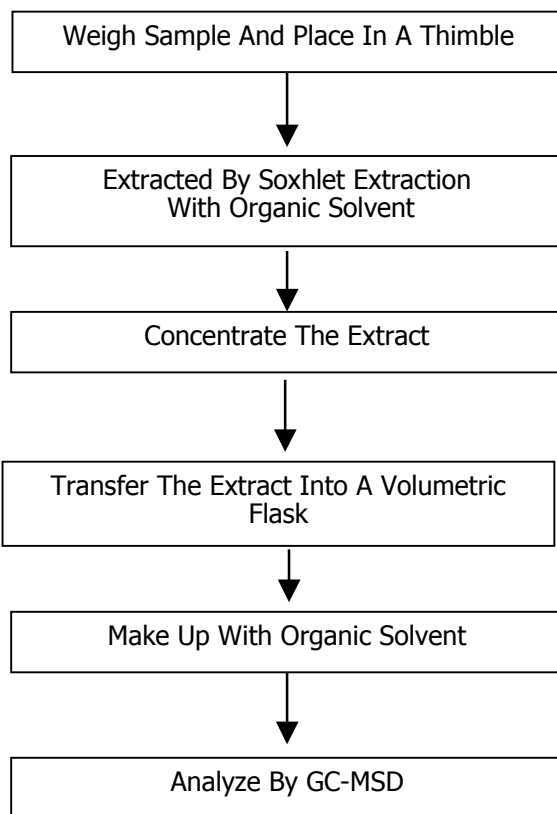


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Tests Conducted (As Requested By The Applicant)
Measurement Flowchart:

Test For Phthalates Contents



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Tests Conducted (As Requested By The Applicant)

4 Halogen Test

(I) Test Result Summary :

Halogen Content:

<u>Testing Item</u>	<u>Result (ppm)</u>
	<u>Submitted Samples</u>
Fluorine (F) Content	ND
Chlorine (Cl)Content	ND
Bromine (Br) Content	ND
Iodine (I) Content	ND

Remarks : ppm = Parts Per Million = mg/kg

ND = Not Detected

Date Sample Received: Aug 18, 2021

Testing Period: Aug 18, 2021 To Aug 23, 2021

(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 14582:2016 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

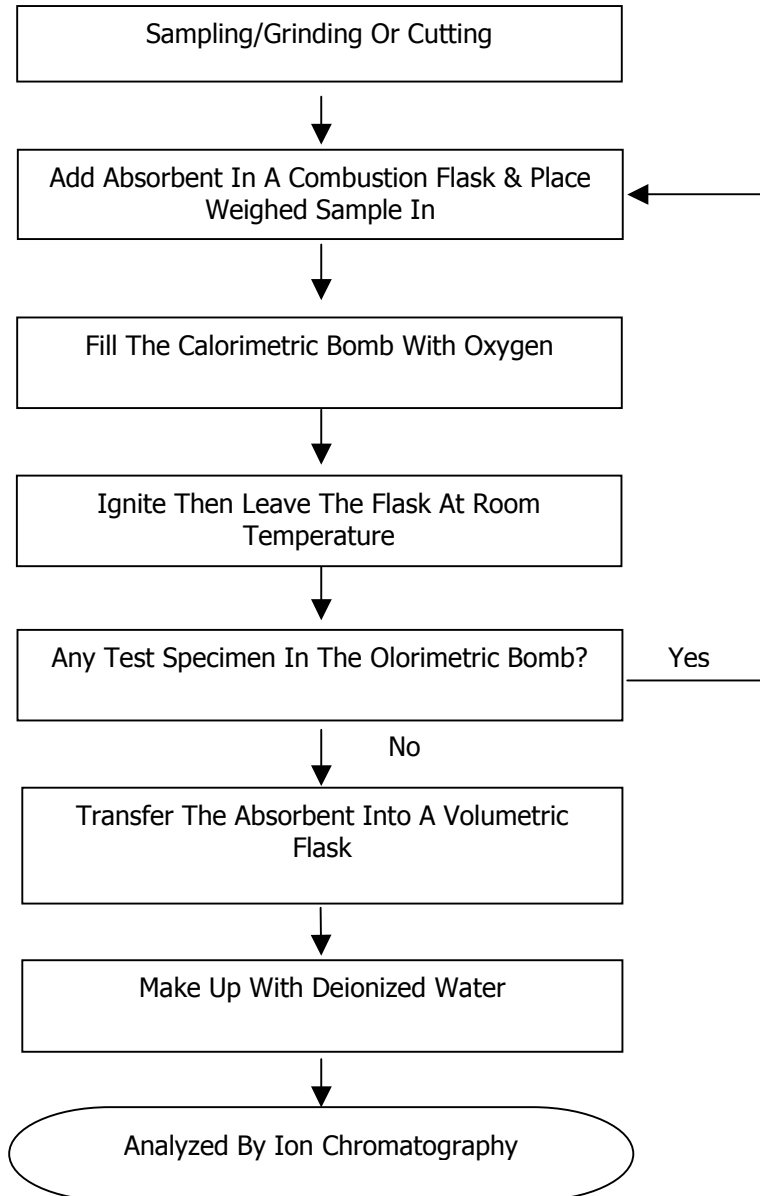
Remarks : Reporting Limit = Quantitation Limit Of Analyte In Sample



Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: BS EN 14582:2016



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Tests Conducted (As Requested By The Applicant)

5 Perfluorooctane Sulfonates (PFOS) And Perfluorooctanoic Acid (PFOA) Content:

With Reference To EPA 3550C, By Solvent Extraction And Followed By Liquid Chromatography-Mass Spectrometric (LC-MS) Analysis.

<u>Compound</u>	<u>Result(ppm)</u>
Perfluorooctane Sulfonates	ND
Perfluorooctanoic Acid	ND

Remark : ND=Not Detected

ppm = Parts Per Million = mg/kg

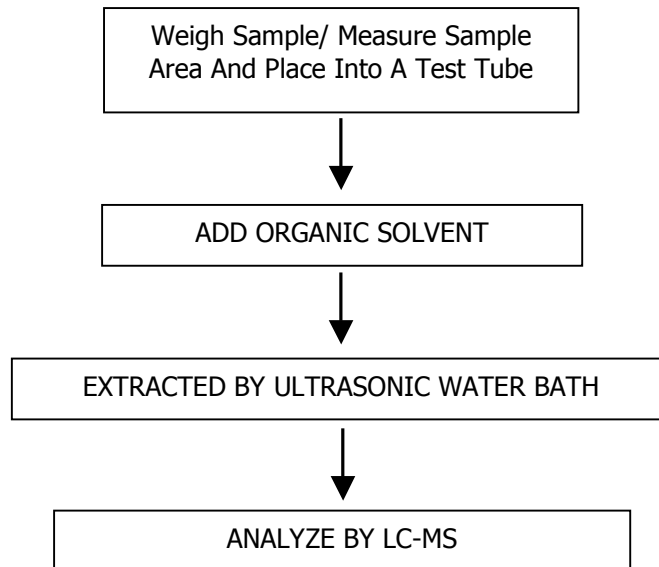
Detection Limit = 1.0 ppm

Date Sample Received: Aug 18, 2021

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Measurement Flowchart:

Test For **Perfluorooctane Sulfonates(PFOS)Andperfluorooctanoic Acid (PFOA)** Content:



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Photo



End of Report

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