

Test Report

Applicant: Wolfspeed, Inc
 4600 Silicon Drive,
 Durham NC 27703
 USA

Number : TWNC01373049

Issue Date : Jul 01, 2025

Sample Description:

One (1) Group of Submitted Samples Said To Be :

Sample Description : Wolfspeed Materials GaN Epitaxy Coated Wafers

Style / Item No. : Wolfspeed Materials GaN Epitaxy Coated Wafers

Series No. : Wolfspeed Materials GaN Epitaxy Coated Wafers

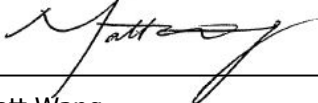
Date Sample Received : Jun 17, 2025

Date Test Started : Jun 17, 2025

Test Conducted:

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

Authorized By:
On behalf of Intertek Testing Services
Taiwan Limited


Matt Wang
General Manager



Signed by:


Thomas Chou
Manager



報告查詢 Report Verification



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Test Conducted :

Test Result Summary:

Test Result Summary:

Test Item	Unit	Test Method	Result	RL
			Submitted samples	
Heavy Metal				
Cadmium (Cd) Content (CAS No. : 7440-43-9)	ppm	As per applicant's request, the submitted samples were cut it into smaller pieces before test. With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Lead (Pb) Content (CAS No. : 7439-92-1)	ppm	As per applicant's request, the submitted samples were cut it into smaller pieces before test. With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Mercury (Hg) Content (CAS No. : 7439-97-6)	ppm	As per applicant's request, the submitted samples were cut it into smaller pieces before test. With reference to IEC 62321-4:2013+AMD1:2017, by microwave or acid digestion and determined by ICP-OES.	ND	2
Beryllium (Be) Content (CAS No. : 7440-41-7)	ppm	As per applicant's request, the submitted samples were cut it into smaller pieces before test. With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content (CAS No. : 7440-36-0)	ppm	As per applicant's request, the submitted samples were cut it into smaller pieces before test. With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr(VI)) Content (CAS No. : 18540-29-9)	ppm	With reference to IEC 62321-7-2: 2017, organic solvent was used to dissolve or swell sample matrix, followed by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	8



Test Conducted :

Test Item	Unit	Test Method	Result	RL
			Submitted samples	
Polybrominated Biphenyls (PBBs)				
Monobrominated Biphenyls (MonoBB) (CAS No. : 26264-10-8)	ppm	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Biphenyls (DiBB) (CAS No. : 27479-65-8)	ppm		ND	5
Tribrominated Biphenyls (TriBB) (CAS No. : 51202-79-0)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB) (CAS No. : 40088-45-7)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB) (CAS No. : 56307-79-0)	ppm		ND	5
Hexabrominated Biphenyls (HexaBB) (CAS No. : 36355-01-8)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB) (CAS No. : 35194-78-6)	ppm		ND	5
Octabrominated Biphenyls (OctaBB) (CAS No. : 27858-07-7)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB) (CAS No. : 27753-52-2)	ppm		ND	5
Decabrominated Biphenyl (DecaBB) (CAS No. : 13654-09-6)	ppm		ND	5



Test Conducted :

Test Item	Unit	Test Method	Result	RL
			Submitted samples	
Polybrominated Diphenyl Ethers (PBDEs)				
Monobrominated Diphenyl Ethers (MonoBDE) (CAS No. : 101-55-3)	ppm	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE) (CAS No. : 2050-47-7)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE) (CAS No. : 49690-94-0)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE) (CAS No. : 40088-47-9)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE) (CAS No. : 32534-81-9)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE) (CAS No. : 36483-60-0)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE) (CAS No. : 68928-80-3)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE) (CAS No. : 32536-52-0)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE) (CAS No. : 63936-56-1)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE) (CAS No. : 1163-19-5)	ppm		ND	5
Phthalates				
Di(2-ethylhexyl) Phthalate (DEHP) (CAS No. : 117-81-7)	ppm	With reference to IEC 62321-8:2017, by solvent extraction and determined by GC-MS.	ND	50
Dibutyl Phthalate (DBP) (CAS No. : 84-74-2)	ppm		ND	50
Benzyl Butyl Phthalate (BBP) (CAS No. : 85-68-7)	ppm		ND	50
Diisobutyl Phthalate (DIBP) (CAS No. : 84-69-5)	ppm		ND	50



Number : TWNC01373049

Test Conducted :

Test Item	Unit	Test Method	Result	RL
			Submitted samples	
Halogen Content				
Fluorine (F) (CAS No. : 7782-41-4)	ppm	With reference to EN 14582:2016 by combustion bomb with oxygen and determined by Ion Chromatography.	ND	50
Chlorine (Cl) (CAS No. : 7782-50-5)	ppm		ND	50
Bromine (Br) (CAS No. : 7726-95-6)	ppm		ND	50
Iodine (I) (CAS No. : 7553-56-2)	ppm		ND	50
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10
Perfluorooctane Sulfonates Including PFOS(CAS No. : 1763-23-1), PFOSA(CAS No. :754-91-6), N-Me-FOSA(CAS No. : 31506-32-8), N-Et-FOSA(CAS No. : 4151-50-2), N-Me-FOSE(CAS No. : 24448-09-7), N-Et-FOSE(CAS No. : 1691-99-2)	ppm	With reference to EN 17681-1:2022, by solvent extraction and determined by LC-MS-MS.	ND	0.01
Perfluorooctanoic Acid (PFOA) (CAS No. : 335-67-1)	ppm	With reference to EN 17681-1:2022, by solvent extraction and determined by LC-MS-MS.	ND	0.01

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: Andy Yu/ Vita Fu

Date Sample Received : Jun 17, 2025
 Test Period : Jun 17, 2025 to Jun 26, 2025

Test Conducted :

RoHS Limit

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) content	0.01% (100ppm)
Lead (Pb) content	0.1% (1000ppm)
Mercury (Hg) content	0.1% (1000ppm)
Chromium VI (Cr(VI)) content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)
Di(2-ethylhexyl) Phthalate (DEHP)	0.1% (1000ppm)
Dibutyl Phthalate (DBP)	0.1% (1000ppm)
Benzyl Butyl Phthalate (BBP)	0.1% (1000ppm)
Diisobutyl Phthalate (DIBP)	0.1% (1000ppm)

The limits were quoted from Annex II of 2011/65/EU and Amendment (EU) 2015/863 for homogeneous material.



Test Conducted :

Measurement Flowchart:

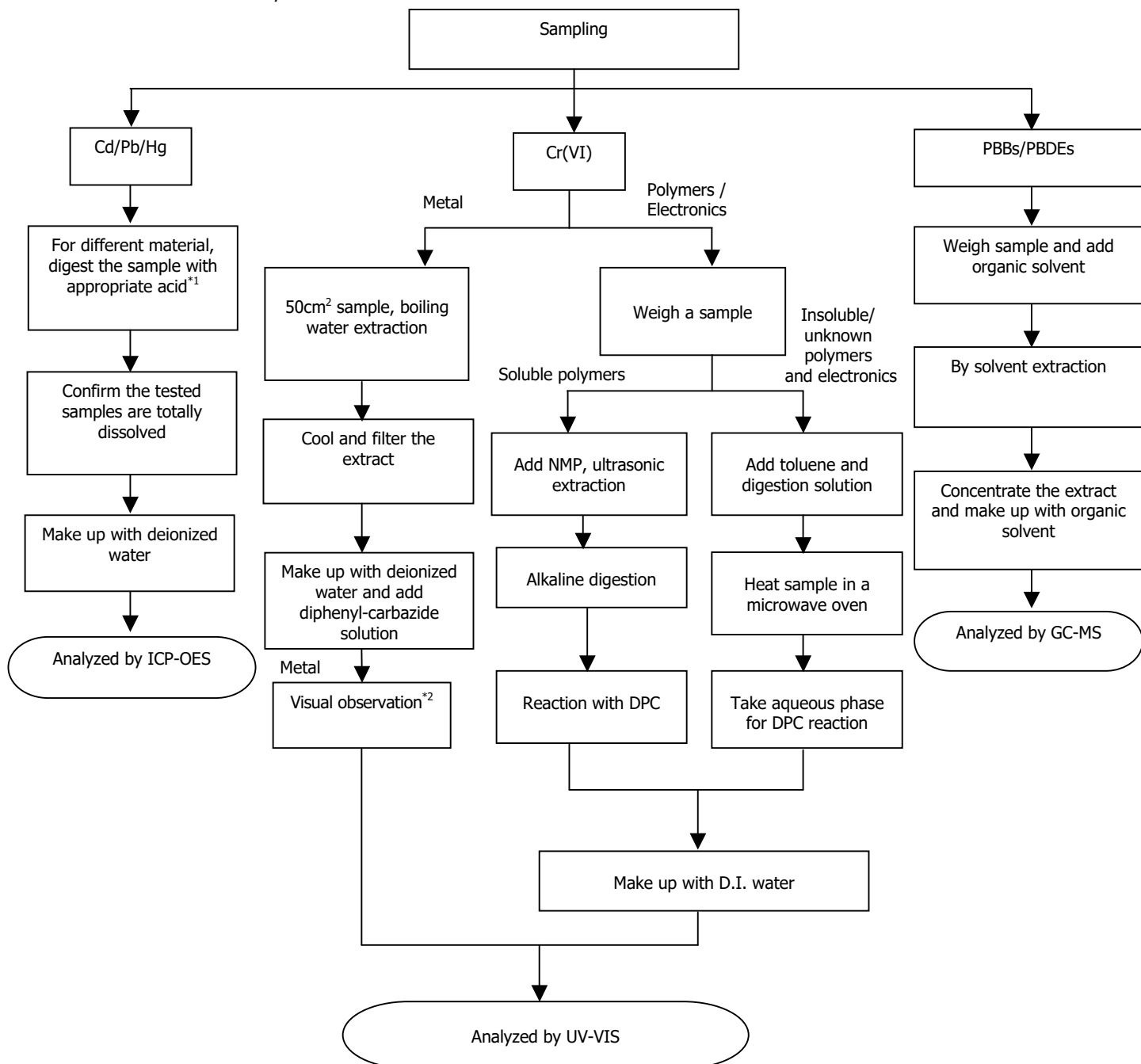
Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Content

Reference Standard : Cd/Pb: IEC 62321-5:2013; Hg: IEC 62321-4:2013+AMD1:2017;

Chromium (VI): IEC 62321-7-1:2015 (boiling water extraction);

Chromium (VI): IEC 62321-7-2:2017 (solvent and alkaline extraction);

PBBs/PBDEs: IEC 62321-6:2015



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

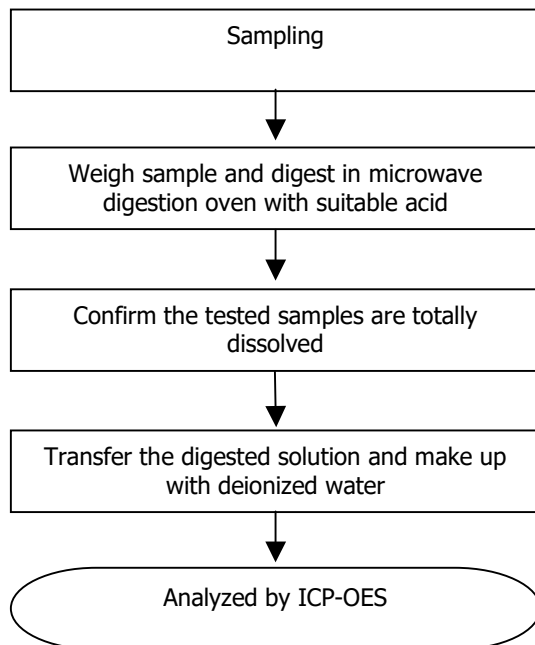
*2: If sample solution is significantly more intense than 0.13 µg/cm² equivalent comparison standard, Chromium VI would be determined as detected, the result of visual observation is positive.



Test Conducted :

Measurement Flowchart:

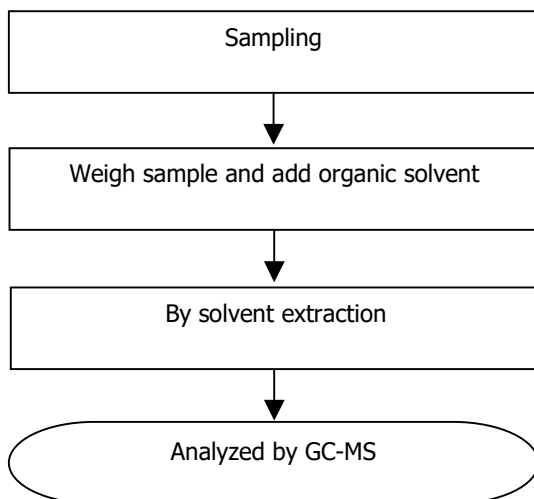
Test for Heavy Metal (Sb,Be) Content
Reference Method : USEPA 3052



Test Conducted :

Measurement Flowchart:

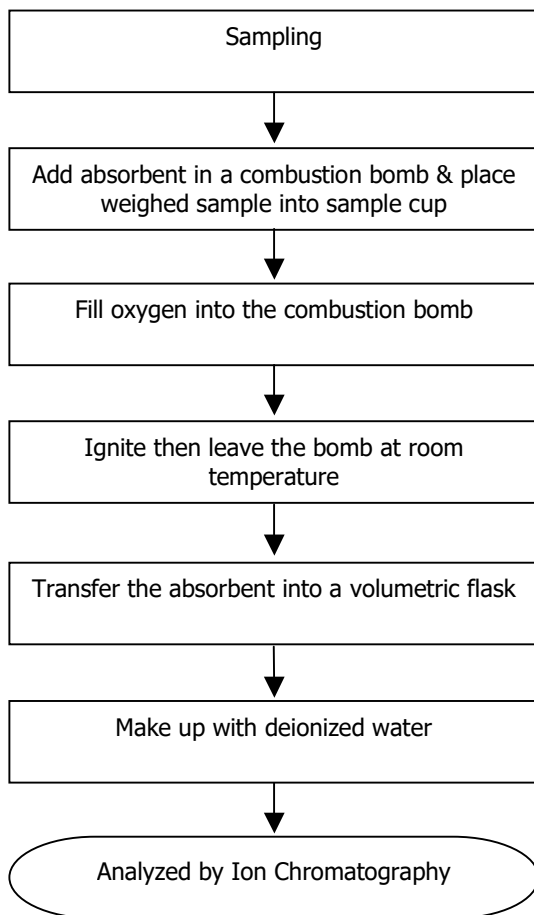
Test for Phthalates Content
Reference Method: IEC 62321-8:2017



Test Conducted :

Measurement Flowchart:

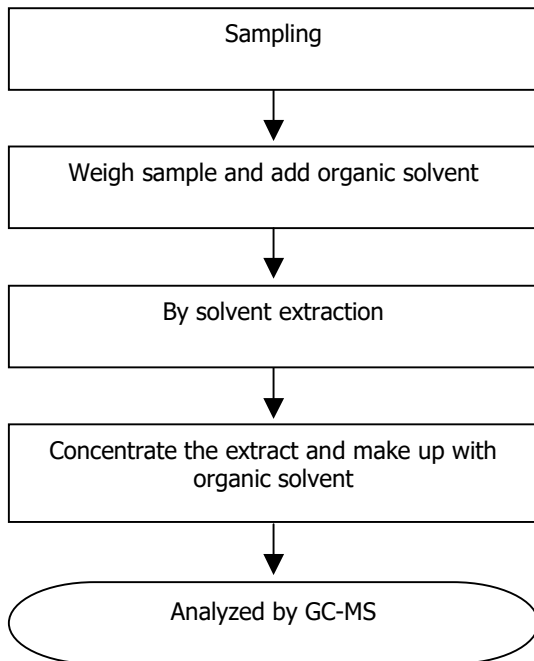
Test for Halogen Content
Reference Standard : EN 14582:2016



Test Conducted :

Measurement Flowchart:

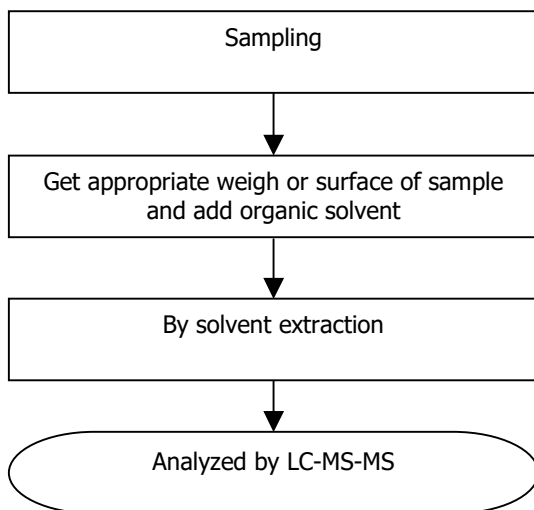
Test for Hexabromocyclododecane (HBCDD)
Reference Method : USEPA 3540C



Test Conducted :

Measurement Flowchart:

Test for Perfluorooctane Sulfonates (PFOS) / Perfluorooctanoic Acid (PFOA) Content
Reference Method : EN 17681-1:2022



Sample photo:



End of Report

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