Des Plaines, Illinois 60016

P 847.967.6666

800,246.0663

F 847.967.6735

www.emt.com

**Case Narrative** 

Client:

GlobalFoundries Inc.

Date: 06/02/2021

Project:

Global Foundries FAB 9 Product Ecology Low Levels

SDG:

21E0412

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### **Sample Summary**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FAB 9 200MM, Tech node 600nm	21E0412-01	Composite	05/12/21 00:00	05/12/21 10:28

#### **Narrative**

Sample results only relate to the to the sample received at the laboratory and analytes of interest tested.

Work Order: 21E0412

The samples were received on05/12/21 10:28. The samples arrived in good condition.

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## **Client Sample Results**

Client:

GlobalFoundries Inc.

21E0412

Client Sample ID: FAB 9 200MM, Tech node 600nm Report Date: 06/02/2021

Project:

Work Order:

Global Foundries FAB 9 Product Ecology Low Levels

Collection Date: 05/12/2021 00:00

Matrix: Composite

Lab ID: 21E0412-01

	Lab ID. 21E04 [2-01									
Analyses	Result	EMT Reporting Limit	Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
Metals by ICP-AES										
Method: IEC	62321-5:201	3								
Cadmium	ND	2,00		mg/Kg	100	0.0961	05/17/21 21:28	B1E0528	.KJ1	0.01 mg
Lead	ND	5.00		mg/Kg	1000	1.92	05/17/21 21:28	B1E0528	KJ1	0.10 mg
Mercury by CVAA				Perindental and the second	**************************************	THE RESIDENCE OF THE PARTY OF T	· · · · · · · · · · · · · · · · · · ·			***************************************
Method: IEC	62321-4:201	3								
Mercury	ND	2.00		mg/Kg	1000	0.567	05/17/21 14:08	B1E0542	GSB	0.03 mg
Wet Chemistry			THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PE	andrese Additional and Challeng group groups any proper strongs.			nh dhadhan ne olengamo poor gazrom saymanama,ormolaan ar persaanada Malauna	and Mandalahan da San ana) dings on any property payage yer taken be	Martine ( ) has seemed for progressy representatively to the fill an interceding it substitutes to the seemed in t	"T-AARE handle 11 Abbitle bland if a self-blacker blingbyd yn yr syn
Method: IEC	62321-7-2:20	017								
Chromium, Hexavalent	ND	5.0		mg/Kg	1000		05/21/21 11:25	B1E0614	JE1	0,001 mg
Semivolatile Organic Comp	ounds by i	GC/MS		بر بيري بقود (و بالمازات المائية منافقة المنافقة المنافقة المنافقة المنافقة المنافقة المنافقة المنافقة المنافقة	COMMON ACCOUNTS AND AND AND AND AND ADDRESS OF THE ACCOUNTS AND ADDRESS OF THE ACCOUNT	hamilian alpenda de la company de productivo de productivo de la constanta de la constanta de la constanta de l	etistik dik kalaktik di di tirak di di di dika dingga Mjangapanyanganyan yang kalaktik e pinda se	Mile Patricola del data del bila delphy de y cycygy yr gy	**************************************	**************************************
Method: IEC										
Monobromobiphenyls	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP	0,00 mg
Dibromobiphenyls	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP-	0,00 mg
Tribromobiphenyls	ND	5,00		mg/Kg			05/26/21 17:25	B1E0779	LP	0.00 mg
Tetrabromobiphenyls	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP.	0.00 mg
Pentabromobiphenyls	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP	0.00 mg
Hexabromobiphenyls	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP	0.00 mg
Heptabromobiphenyls	ND	5,00		mg/Kg			05/26/21 17:25	B1E0779	LP	0,00 mg
Octabromobiphenyls	ND	5,00		mg/Kg			05/26/21 17:25	B1E0779	LP	0.00 mg
Nonabromobiphenyls	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP	0,00 mg
Decabromobiphenyl	ND	5.00		mg/Kg			05/26/21 17:25	B1E0779	LP	0.00 mg
Total PBB's	ND	5.00		mg/Kg	1000		05/26/21 17:25	B1E0779	LP	0.00 mg
Monobromodiphenyl ether	ND	5.00		mg/Kg	(555)		05/26/21 00:09	B1E0779	LP	.0.00 mg
Dibromodiphenyl ethers	ND	5,00		mg/Kg			05/26/21 00:09	B1E0779	LP L	0.00 mg
Tribromodiphenyl ethers	ND	5.00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Tetrabromodiphenyl ethers	ND	5.00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Pentabromodiphenyl ethers	ND	5,00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Hexabromodiphenyl ethers	ND	5.00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Heptabromodiphenyl ethers	ND	5.00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Octabromodiphenyl ethers	ND	5.00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Nonabromodiphenyl ethers	ND	5,00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Decabromodiphenyl ether	ND	5,00		mg/Kg			05/26/21 00:09	B1E0779	LP	0.00 mg
Total PBDE's	ND	5.00		mg/Kg	1000		05/26/21 00:09	B1E0779	LP	0,00 mg
Method: IEC	62321-8:201	7		The collect of the Children of the collection of	**************************************	***************************************				** FACOURATION F #***********************************
BBP (Benzyl butyl phthalate)	ND	50.0		mg/Kg	1000		05/19/21 17:57	B1E0585	LP	0,00 mg
DBP (Dibutyl phthalate)	ND	50.0		mg/Kg	1000		05/19/21 17:57	B1E0585	LP	0,00 mg
DEHP (di-(2-ethylhexyl) phthalate)	ND	50.0		mg/Kg	1000		05/19/21 17:57	B1E0585	LP	0.00 mg
DIBP (Diisobutyl phthalate)	ND	50.0		mg/Kg	1000		05/19/21 17:57	B1E0585	ĹP	0.00 mg



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Sample Weight as Received:

Total Weight of Compounds Analyzed:

53,48 g < 1.00 mg

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#### **Qualifiers and Definitions**

Item	Description
S %Rec	The quality control sample recovery is outside of the laboratory control limits.  Percent Recovery

## Certified Analyses included in this Report

Analyte	CAS#	Certifications	
IEC 62321-4:2013 in Solid			
Mercury	7439-97-6	ISO	
IEC 62321-5:2013 in Solid			
Cadmium	7440-43-9	ISO	
Lead	7439-92-1	ISO	
IEC 62321-6:2015 in Solid			
Monobromobiphenyls		ISO	
Dibromobiphenyls		ISO	
Tribromobiphenyls		ISO	
Tetrabromobiphenyls		ISO	
Pentabromobiphenyls		ISO	
Hexabromobiphenyls		ISO	
Heptabromobiphenyls		ISO	
Octabromobiphenyls		ISO	
Nonabromobiphenyls		ISO	
Decabromobiphenyl		ISO	
Monobromodiphenyl ether		ISO	
Dibromodiphenyl ethers		ISO	
Tribromodiphenyl ethers		ISO	
Tetrabromodiphenyl ethers		ISO .	
Pentabromodiphenyl ethers		ISO	
Hexabromodiphenyl ethers		ISO	
Heptabromodiphenyl ethers		ISO	
Octabromodiphenyl ethers		ISO	
Nonabromodiphenyl ethers		ISO	
Decabromodiphenyl ether	1163-19-5	ISO	
IEC 62321-7-2:2017 in Solid			
Chromium, Hexavalent	18540-29-9	ISO	
IEC 62321-8:2017 in Solid			
BBP (Benzyl butyl phthalate)	85-68-7	ISO	
DBP (Dibutyl phthalate)	84-72-2	ISO	



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# Certified Analyses included in this Report (Continued)

Analyte	CAS#	Certifications	
IEC 62321-8:2017 in Solid (Continued)			
DEHP (di-(2-ethylhexyl) phthalate)	117-81-7	ISO	
DIBP (Diisobutyl phthalate)	84-69-5	ISO	

#### **List of Certifications**

Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	05/31/2022
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2022
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2022
TX	Texas Commission of Environmental Quality	T104704554-20-5	10/31/2021
WA	Washington State Department of Ecology	C1057	01/05/2022
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021

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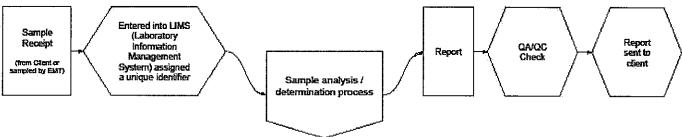
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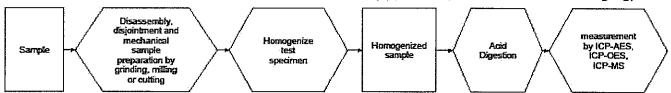
F 847.967.6735

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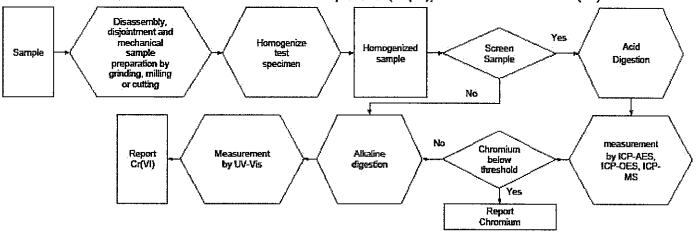
### Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



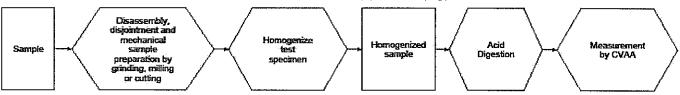
# Determination of cadmium, lead, chromium or other metal(s) process (Cd, Pb, Cr, etc. excluding Hg)



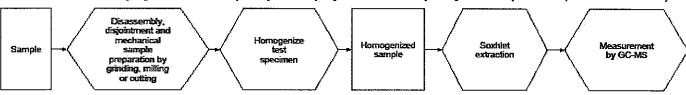
# Determination of hexavalent chromium process (Cr(VI)) with chromium screen (Cr)



#### Determination of mercury process (Hg)



## Determination of polybrominated biphenyls and polybrominated diphenyl ethers process (PBBs & PBDEs)



Des Plaines, Illinois 60016

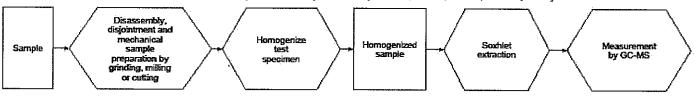
**P** 847.967.6666

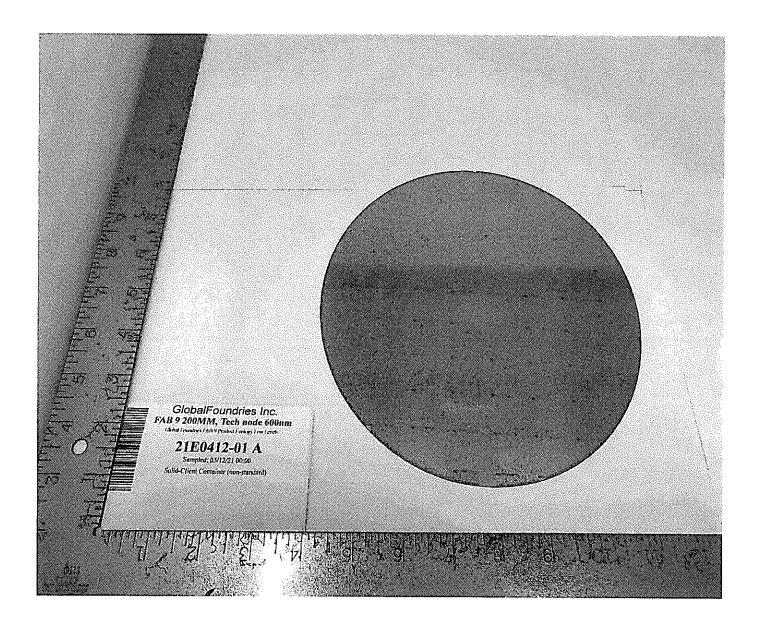
800.246.0663

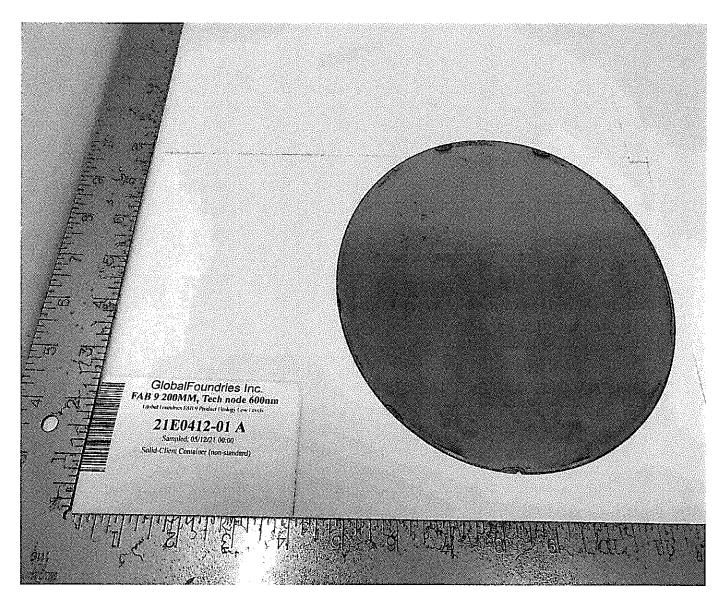
**F** 847.967.6735

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# Determination of phthalates process (DEHP, BBP, DBP, DIBP, etc.)







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**Case Narrative** 

Client:

GlobalFoundries Inc.

Date: 06/02/2021

Project:

Global Foundries FAB 9 Product Ecology Low Levels

SDG:

21E0412

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### **Sample Summary**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FAB 9 200MM, Tech node 600nm	21E0412-01	Composite	05/12/21 00:00	05/12/21 10:28

#### **Narrative**

Sample results only relate to the to the sample received at the laboratory and analytes of interest tested.

Work Order: 21E0412

The samples were received on05/12/21 10:28. The samples arrived in good condition.

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### **Client Sample Results**

Client:

GlobalFoundries Inc.

Client Sample ID: FAB 9 200MM, Tech node 600nm

Project:

Global Foundries FAB 9 Product Ecology Low Levels

Report Date: 06/02/2021

Collection Date: 05/12/2021 00:00

Matrix: Composite

Work Order:

21E0412

Lab ID: 21E0412-01

Analyses	Result	EMT Reporting Limit	g Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
Wet Chemistry										
Metho	d: EN 14582:2016, S	W9056 / S	W5050							
Bromine	ND	50.0		mg/Kg			05/18/21 19:05	B1E0589	MM7	0,00 mg
Chlorine	ND	50.0		mg/Kg			05/18/21 19:05	B1E0589	MM7	0.00 mg
Fluorine	ND	50.0		mg/Kg			05/18/21 19:05	B1E0589	MM7	0,00 mg
fodine.	ND	50,0		mg/Kg		OPEN PLEASE SEARCH	05/19/21 16:26	B1E0641	MM7	0.00 mg

Sample Weight as Received:

53.48 g

Total Weight of Compounds Analyzed:

< 1.00 mg

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#### **Qualifiers and Definitions**

Item	Description
Р	The quality control sample %RPD is above the laboratory control limit.
%Rec	Percent Recovery

## Certified Analyses included in this Report

Analyte	CAS#	Certifications	
EN 14582:2016, SW9056 in Solid			
Bromine	7726-95-6	ISO	
Chlorine	7782-50-5	ISO	

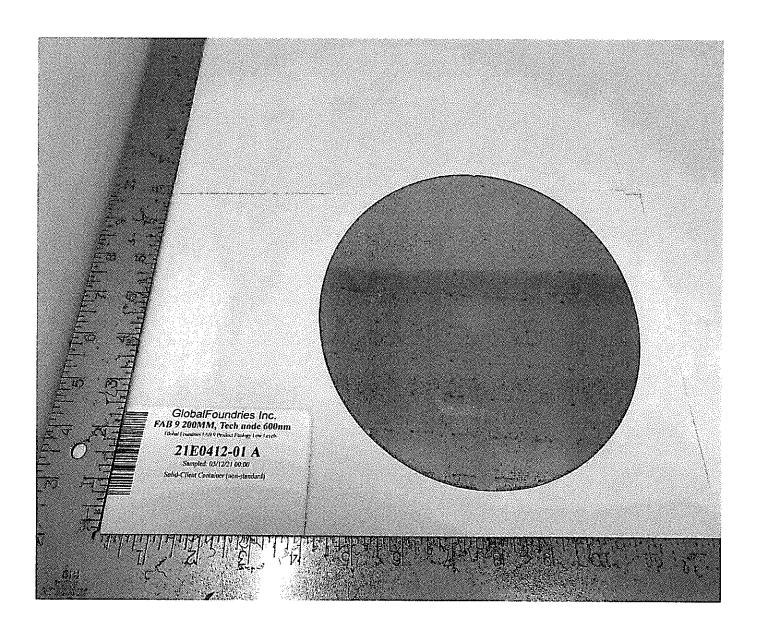
## **List of Certifications**

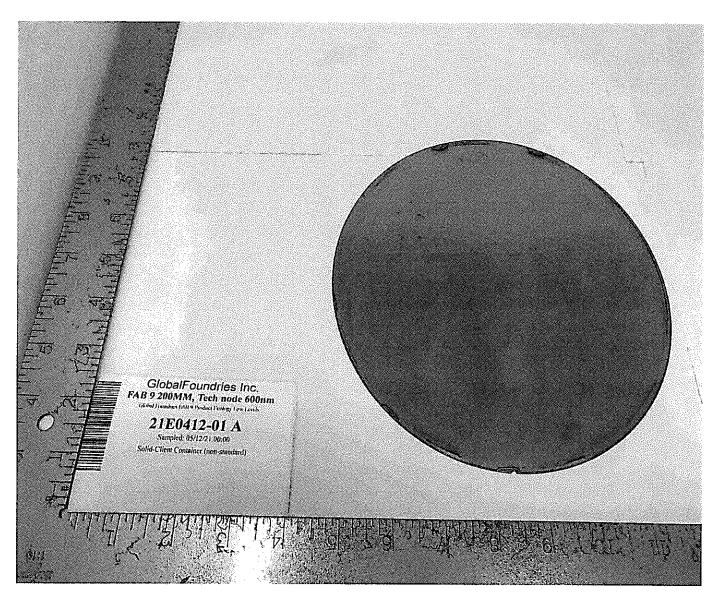
Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	05/31/2022
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2022
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2022
TX	Texas Commission of Environmental Quality	T104704554-20-5	10/31/2021
WA	Washington State Department of Ecology	C1057	01/05/2022
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021

or cutting

509 N. 3rd Avenue Des Plaines, Illinois 60016 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

#### Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.) Entered into LIMS Sample (Laboratory Receipt Report Information QA/QC Report sent to Management Check (Britin Client or sampled by EMT) System) assigned a unique identifier client Sample analysis / determination process Determination of total bromine, chlorine and other ions process (Br & CI) Disassembly, disjointment and Oxygen mechanical Homogenize Measurement Homogenized combustion by IC Sample 29wbj6 "Bomb" sample. (kon-rodograpky) preparation by specimen Prep grading, milling





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**Case Narrative** 

Client:

GlobalFoundries Inc.

Date: 06/02/2021

Project:

Global Foundries FAB 9 Product Ecology Low Levels

SDG:

21E0412

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### **Sample Summary**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FAB 9 200MM, Tech node 600nm	21E0412-01	Composite	05/12/21 00:00	05/12/21 10:28

#### <u>Narrative</u>

Sample results only relate to the to the sample received at the laboratory and analytes of interest tested.

Work Order: 21E0412

The samples were received on05/12/21 10:28. The samples arrived in good condition.

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**Client Sample Results** 

Client:

GlobalFoundries Inc.

Client Sample ID: FAB 9 200MM, Tech node 600nm

Project:

Global Foundries FAB 9 Product Ecology Low Levels

Report Date: 06/02/2021

Collection Date: 05/12/2021 00:00

Matrix: Composite

Work Order:

21E0412

Lab ID: 21E0412-01

	EMT Reporting					Date/Time			
Analyses	Result	Result Limit	Qual Units	Limit	LOD	Analyzed	Batch	Analyst	Weight
Metals by ICP-AES									
Meth	nod: SW6010C/SW30	50							
Antimony	ND	10.0	mg/Kg	10	1.92	05/17/21 19:21	B1E0527	KJ1	0.10 mg
Beryllium	ND	5.00	mg/Kg	5	0.192	05/17/21 19:21	B1E0527	KJ1	0.01 mg
and the state of t	V	Tickness commences commences		a makatikan demokratikan kelebihan kelebihan mengapi pagajipagi nagambali kenedap	The macroscopic macroscopes and an experience.	\$	ample Weig	ht as Received:	53.48 g

Sample Weight as Received: Total Weight of Compounds Analyzed:

< 1.00 mg

Des Plaines, Illinois 60016

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#### **Qualifiers and Definitions**

Item	Description
Р	The quality control sample %RPD is above the laboratory control limit.
S	The quality control sample recovery is outside of the laboratory control limits.
%Rec	Percent Recovery

# Certified Analyses included in this Report

Analyte	CAS#	Certifications
SW6010C in Solid		
Antimony	7440-36-0	DoD,ISO,WDNR,ILEPA
Beryllium	7440-41-7	DoD,ISO,WDNR,ILEPA

#### List of Certifications

Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	05/31/2022
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2022
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2022
TX	Texas Commission of Environmental Quality	T104704554-20-5	10/31/2021
WA	Washington State Department of Ecology	C1057	01/05/2022
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021

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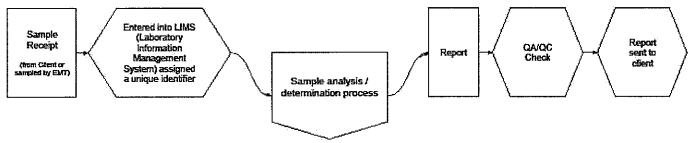
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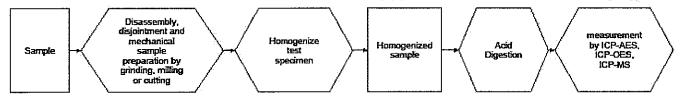
F 847.967.6735

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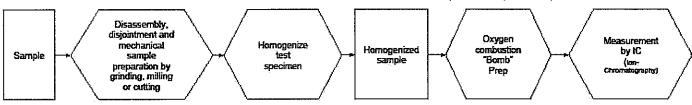
## Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)

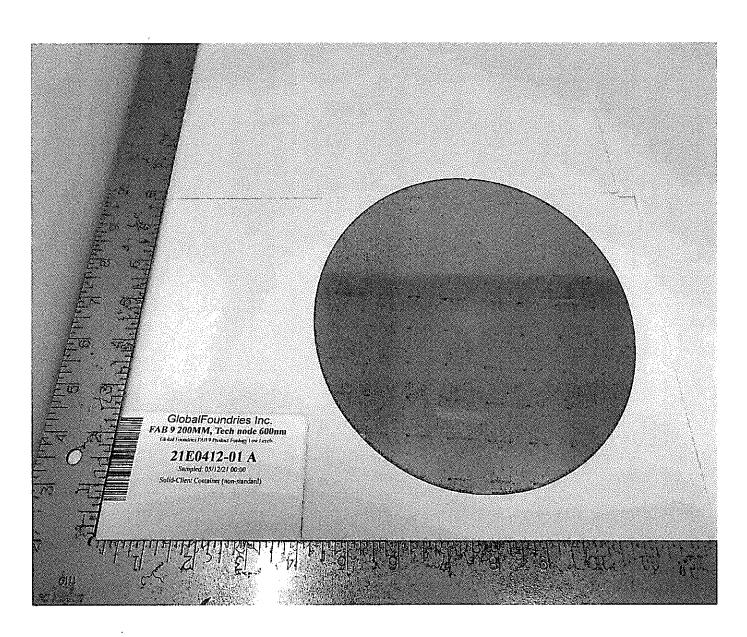


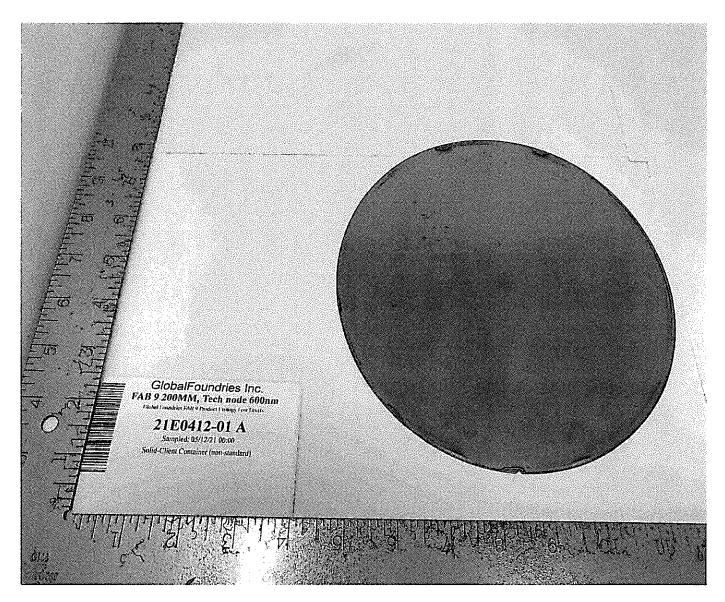
#### Determination of cadmium, lead, chromium or other metal(s) process (Cd, Pb, Cr, etc. excluding Hg)



#### Determination of total bromine, chlorine and other ions process (Br & CI)









GLOBALFOUNDRIES U.S. Inc. 2600 Great America Way Santa Clara, CA 95054 USA Tel: (408) 462-4890 www.globalfoundries.com

November 5, 2020

Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acids (PFOA) Use Statement GLOBALFOUNDRIES Fab 9 (Burlington, VT)

Dear Valued Customer,

GLOBALFOUNDRIES U.S. Inc. and its subsidiaries are committed to achieving excellence in our Environmental, Health and Safety (EHS) programs as established in our Global EHS Policy.

GLOBALFOUNDRIES (GF) declares that PFOS and PFOA, its salts and PFOA-related compounds are not intentionally included in GLOBALFOUNDRIES' finished die patterned wafers manufactured by GF Fab 9 (Burlington, VT).

We have material restriction controls in place for PFOS and PFOA via our banned and restricted substance specification. Uses (any intentional addition) of PFOS and of Perfluorocctanoic Acid (PFOA) and its individual salts and esters are banned in manufacturing processes.

This statement is as of the date of issuance of this declaration and as based on our in-depth understanding of the wafer manufacturing process and the materials used for it.

The information provided is "as is" without any express or implied warranty of any kind. We reserve the right to update or modify this statement if we believe it is appropriate to do so.

Sincerely,

Brian K. Raley

Director, Global EHS and CSR