

Des Plaines, Illinois 60016

P 847,967.6666

800.246.0663

F 847.967.6735

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Case Narrative

Client:

GlobalFoundries U.S. Inc.

Date: 01/18/2021

Project:

Global Foundries FAB 9 Product Ecology Low Levels

Work Order:

20L0361

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
FAB9 200MM, Tech node 250mm	20L0361-01	Composite	12/08/20 00:00	12/07/20 15:30

Narrative

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

Work Order: 20L0361

The samples were received on 12/7/2020. The samples arrived in good condition.

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Client Sample Results

Client:

GlobalFoundries U.S. Inc.

Client Sample ID: FAB9 200MM, Tech node 250mm

Project:

Global Foundries FAB 9 Product Ecology Low Levels

Report Date: 01/18/2021 Collection Date: 12/08/2020 00:00

Matrix: Composite Lab ID: 20L0361-01

SDG:

Analyses	Result	EMT Reporting Limit	Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
Metals by ICP-AES							· · · · · · · · · · · · · · · · · · ·			110.911
Method: IEC	62321-5:201	3								
Cadmium	ND	2.00		mg/Kg	100	0.400	D4 (D4)(D4 GD G5	D		
Lead	ND	5.00		mg/Kg	100 1000	0.199	01/04/21 20:25	B1A0032	KJ1	0.01 mg
		3,00	V-1-10	myny	1000	1.99	01/04/21 20:25	B1A0032	KJ1	0.11 mg
Mercury by CVAA										And the second second second second second
Method: IEC	62321-4:201	3								
Mercury	ND	2.00		mg/Kg	1000	2,56	01/11/21 12:34	B1A0196	TB2	0,14 mg
Wet Chemistry			Phila accessible to appropriate or the reserve		Printer and the first and the first and another group group group	The Control of the Co	The Control of Control of the Control of Con		PROPERTY AND ADMINISTRATION OF THE PROPERTY AND ADM	el I del como res e la esca companha instituta de la companya y escapa de la companya de la companya de la com
Method: IEC	62321-7-2:20)17								
Chromium, Hexavalent	ND	1,2		mg/Kg			01/08/21 11:15	B1A0013	JE1	0,00 mg
Semivolatile Organic Comp	oounds by (GC/MS	PRIS Saffe Freed Military again property as we		Promoter Commenced and Administration of the Section of the Sectio	TO THE PERSON OF		***		William Mary promise transcention and the
Method: IEC										
Monobromobiphenyls	ND	5.00						_:		7.4
Dibromobiphenyls	ND	5.00 5.00		mg/Kg			01/05/21 14:10	B0L0772	LP	0,00 mg
Tribromobiphenyls	ND	5.00		mg/Kg			01/05/21 14:10	B0L0772	LP	0.00 mg
Tetrabromobiphenyls	ND.	5.00		mg/Kg			01/05/21 14:10	B0L0772	LP	0,00 mg
Pentabromobiphenyls	ND	5.00		mg/Kg			01/05/21 14:10	B0L0772	LP.	0.00 mg
Hexabromobiphenyls	ND	5,00		mg/Kg			01/05/21 14:10	B0L0772	LP	0.00 mg
Heptabromobiphenyls	ND	5.00		mg/Kg ma/Ka			01/05/21 14:10	B0L0772	LP	0,00 mg
Octabromobiphenyls	ND	5.00		mg/Kg			01/05/21 14:10	B0L0772	LP	0,00 mg
Nonabromobiphenyls	ND	5.00		mg/Kg ma/Ka			01/05/21 14:10	B0L0772	LP	0.00 mg
Decabromobiphenyl	ND	5,00		mg/Kg ma/Ka			01/05/21 14:10	B0L0772	LP	0.00 mg
Total PBB's	ND	5.00		mg/Kg ma/Ka	1000		01/05/21 14:10	B0L0772	LP	0.00 mg
Monobromodiphenyl ether	ND	5.00		mg/Kg mg/Kg	1000		01/05/21 14:10	B0L0772	LP	0.00 mg
Dibromodiphenyl ethers	ND	5.00					01/06/21 18:44	B0L0772	LP	0.00 mg
Tribromodiphenyl ethers	ND	5,00		mg/Kg mg/Kg			01/06/21 18:44	B0L0772	LP	0,00 mg
Tetrabromodiphenyl ethers	ND	5.00		ng/Kg			01/06/21 18:44	B0L0772	ĽΡ	0.00 mg
Pentabromodiphenyl ethers	ND	5:00		ng/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Hexabromodiphenyl ethers	ND	5.00		ng/Kg			01/06/21 18:44 01/06/21 18:44	B0L0772	LP	0.00 mg
Heptabromodiphenyl ethers	ND	5,00		ng/Kg				B0L0772	LP	0.00 mg
Octabromodiphenyl ethers	ND	5.00		ng/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Nonabromodiphenyl ethers	ND	5:00		ng/Kg ng/Kg			01/06/21 18:44	B0L0772	LP	0,00 mg
Decabromodiphenyl ether	ND	5.00					01/06/21 18:44	B0L0772	LP	0,00 mg
Total PBDE's	ND	5.00		ng/Kg ng/Kg	1000		01/06/21 18:44 01/06/21 18:44	B0L0772 B0L0772	LP LP	0.00 mg 0.00 mg
Method: IEC	62321-8:2017	The state of the s				and the second s	And the second s			
BBP (Benzyl butyl phthalate)	ND	50.0	r	ng/Kg	1000		12/29/20 18:22	B0L0726	l D	0,00 mg
DBP (Dibutyl phthalate)	ND	50.0		ng/Kg	1000		12/29/20 18:22	B0L0726	LP LD	0.00 mg
DEHP (di-(2-ethylhexyl) phthalate)	ND	50.0		ng/Kg	1000		12/29/20 18:22	B0L0726	LP.	0,00 mg
DIBP (Diisobutyl phthalate)	ND	50.0		ng/Kg	1000		12/29/20 18:22	B0L0726	LP LP	0,00 mg



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Sample Weight as Received:

Total Weight of Compounds Analyzed:

53.80 g < 1,00 mg



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Qualifiers and Definitions

Item	Description
P	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	
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	



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Certified Analyses included in this Report (Continued)

Analyte	CAS#	Certifications	
IEC 62321-8:2017 in Solid (Continued)	• • •		
DBP (Dibutyl phthalate)	84-72-2	ISO	
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	03/31/2021
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2021
TX	Texas Commission of Environmental Quality	T104704554-20-5	10/31/2021
WA	Washington State Department of Ecology	C1057	01/05/2021
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021



Disassembly, disjointment and mechanical

sanste

preparation by

gränding, milling or cutting

Sample

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 (tion Clent or System) assigned a unique identifier **client** sampled by EMT) Sample analysis ! determination process Determination of cadmium, lead, chromium or other metal(s) process (Cd, Pb, Cr, etc. excluding Hg) Disassembly, disjoinbnent and measurement mechanical Homogenize by ICP-AES, ICP-OES. Homogenized Artist Sample sample test sample Digestion preparation by specimen ICP-MS grinding, maing or culting Determination of hexavalent chromium process (Cr(VI)) with chromium screen (Cr) Disassembly, disjointment and Yes mechanical Homogenize Homogenized Acid Screen Sample sample sample Sample Digestion preparation by specimen grinding, milling or cutting No No measurement Chromium Report Measurement Alkaline by ICP-AES. below Cr(VI) by UV-Vis digestion ICP-OES, ICPthreshold MS Yes Report Cherenson Determination of mercury process (Hg) Disassembly, disjoinment and mechanical Homogenize Homogenized sample Measurement by CVAA Arid Sample samole Digestion preparation by specimen gränding, milling or cutting Determination of polybrominated biphenyls and polybrominated diphenyl ethers process (PBBs & PBDEs)

experts at providing environmental testing solutions water * soil * waste * product * sampling

Homogenized

Soothlet

Measurement by GC-MS

Homogenize

test

specimen



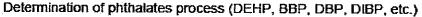
Des Plaines, Illinois 60016

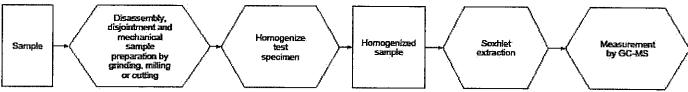
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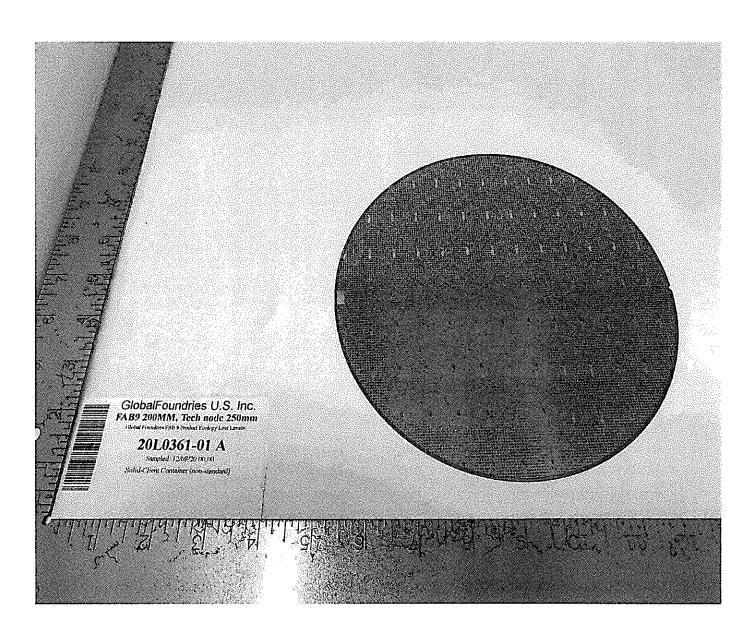
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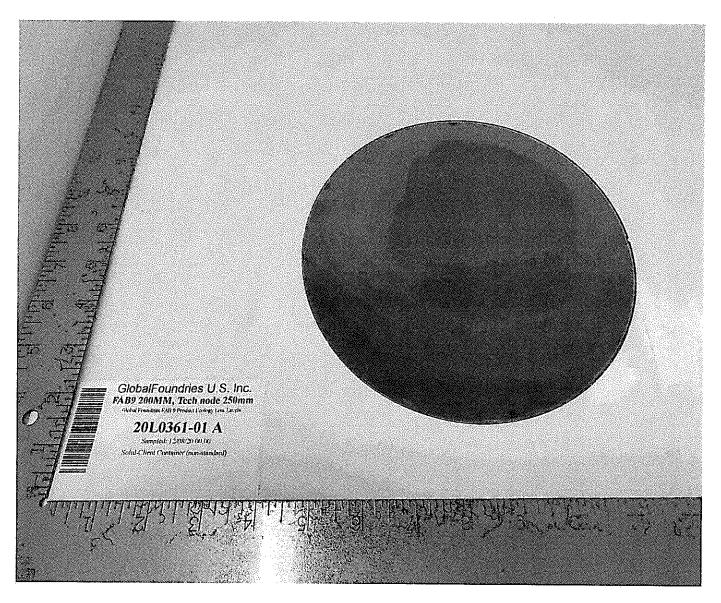


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Client:

GlobalFoundries U.S. Inc.

Date: 01/18/2021

Project:

Global Foundries FAB 9 Product Ecology Low Levels

Work Order:

20L0361

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
FAB9 200MM, Tech node 250mm	20L0361-01	Composite	12/08/20 00:00	12/07/20 15:30

Narrative

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

Work Order: 20L0361

The samples were received on 12/7/2020. The samples arrived in good condition.

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Client Sample Results

Client:

GlobalFoundries U.S. Inc.

Client Sample ID: FAB9 200MM, Tech node 250mm

Project:

SDG:

Global Foundries FAB 9 Product Ecology Low Levels

Report Date: 01/18/2021

Collection Date: 12/08/2020 00:00

Matrix: Composite

Lab ID: 20L0361-01

		EMT Reporting	ī		Reg		Date/Time			
Analyses	Result	Limit	Qual	Units	Limit	LOD	Analyzed	Batch	Analyst	Weight
Wet Chemistry										
Method	: EN 14582:2016, S	W9056 / S	W5050							
Bromine	ND	50,0		mg/Kg			12/15/20 21:48	B0L0484	MM7	0.00 mg
Chlorine	ND	50.0		mg/Kg			12/15/20 21:48	B0L0484	MM7	0.00 mg
Fluorine	ND	50,0		mg/Kg			12/15/20 21:48	B0L0484	MM7	0.00 mg
lodine	ND	50.0		mg/Kg			12/16/20 18:10	B0L0549	MM7	0.00 mg

Sample Weight as Received: 53.80 g < 1.00 mg

Total Weight of Compounds Analyzed:



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Qualifiers and Definitions

Item	Description		
%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	03/31/2021
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2021
TX.	Texas Commission of Environmental Quality	T104704554-20-5	10/31/2021
WA	Washington State Department of Ecology	C1057	01/05/2021
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021



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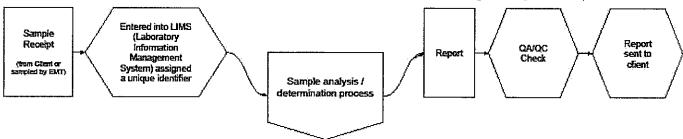
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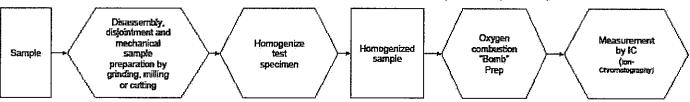
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Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)

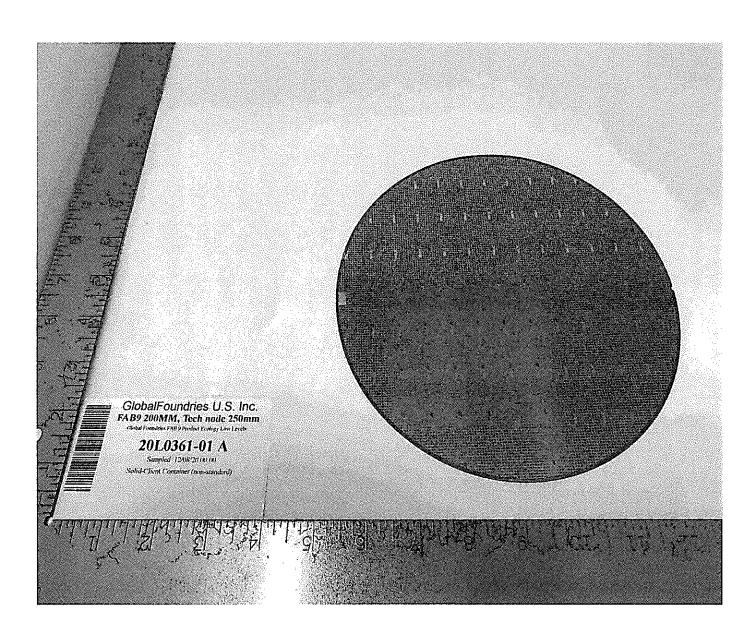


Determination of total bromine, chlorine and other ions process (Br & CI)





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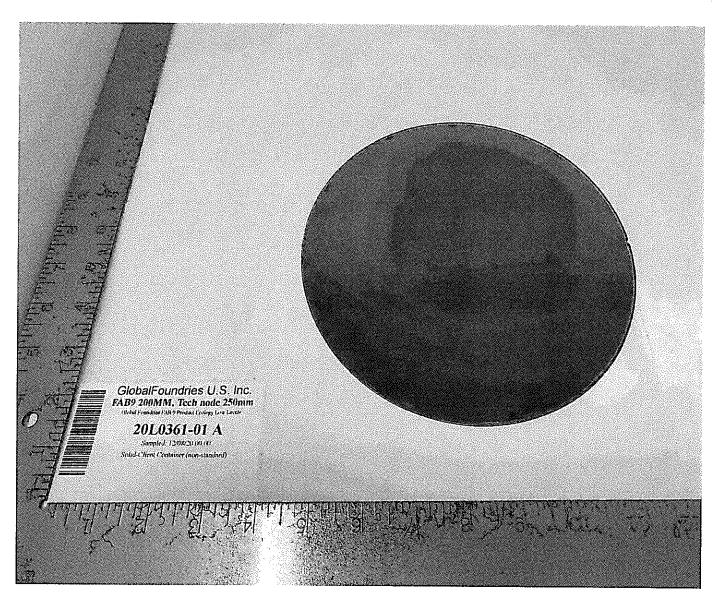
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Case Narrative

Client:

GlobalFoundries U.S. Inc.

Date: 01/18/2021

Project:

Global Foundries FAB 9 Product Ecology Low Levels

Work Order:

20L0361

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FAB9 200MM, Tech node 250mm	20L0361-01	Composite	12/08/20 00:00	12/07/20 15:30

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Work Order: 20L0361

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Client Sample Results

Client:

GlobalFoundries U.S. Inc.

LOD

Client Sample ID: FAB9 200MM, Tech node 250mm

Project:

Analyses

Global Foundries FAB 9 Product Ecology Low Levels

EMT Reporting

Limit

Report Date: 01/18/2021

Collection Date: 12/08/2020 00:00

Matrix: Composite Lab ID: 20L0361-01

SDG:

Reg

Limit

Date/Time

Analyzed

Analyst Weight

Metals by ICP-AES

Method: SW6010C / SW3050

Result

Antimony ND 2,49 ND Beryllium 0.249 mg/Kg mg/Kg

Qual Units

1.99 01/04/21 19:44 0,0995 01/04/21 19:44

B1A0030 KJ1 B1A0030 KJ1

0.11 mg 0.01 mg

Sample Weight as Received:

53.80 g < 1.00 mg

Total Weight of Compounds Analyzed:

Batch



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Qualifiers and Definitions

Item	Description	
%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	03/31/2021
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2021
TX	Texas Commission of Environmental Quality	T104704554-20-5	10/31/2021
WA.	Washington State Department of Ecology	C1057	01/05/2021
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021

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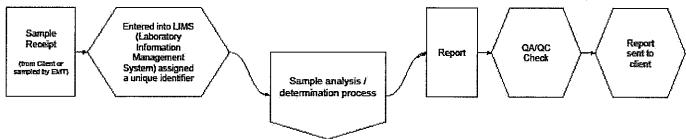
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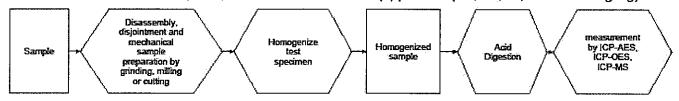
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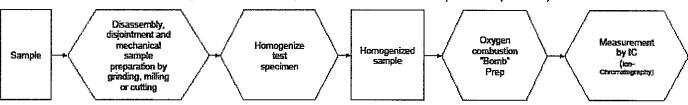
Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



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)





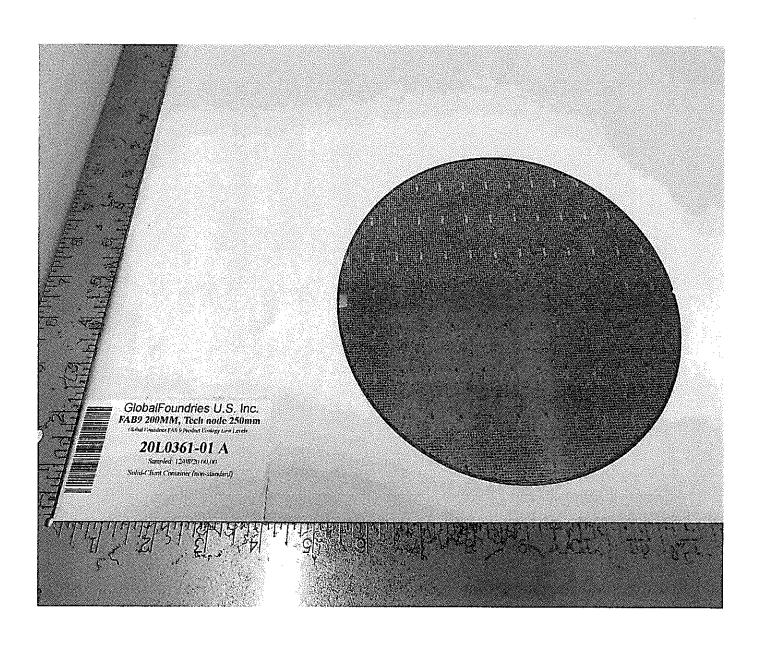
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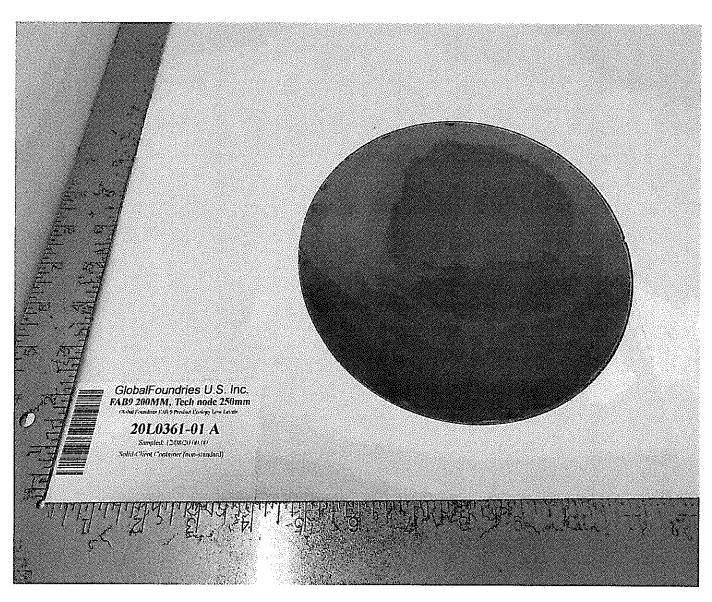
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GLOBALFOUNDRIES U.S. Inc. 2600 Great America Way Santa Clara, CA-95054 USA Tel: (408) 462-4890 www.globalfoundries.com

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 Perfluorooctanoic 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