



Case Narrative

Client: GlobalFoundries U.S. Inc.
Project: Global Foundries FAB 9 Product Ecology Low Levels

Date: 01/18/2021

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.



Client Sample Results

Client: GlobalFoundries U.S. Inc.
Project: Global Foundries FAB 9 Product Ecology Low Levels

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

Report Date: 01/18/2021

Collection Date: 12/08/2020 00:00

SDG:

Matrix: Composite

Lab ID: 20L0361-01

Analyses	Result	EMT Reporting Limit	Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
Metals by ICP-AES										
Method: IEC 62321-5:2013										
Cadmium	ND	2.00		mg/Kg	100	0.199	01/04/21 20:25	B1A0032	KJ1	0.01 mg
Lead	ND	5.00		mg/Kg	1000	1.99	01/04/21 20:25	B1A0032	KJ1	0.11 mg
Mercury by CVAA										
Method: IEC 62321-4:2013										
Mercury	ND	2.00		mg/Kg	1000	2.56	01/11/21 12:34	B1A0196	TB2	0.14 mg
Wet Chemistry										
Method: IEC 62321-7-2:2017										
Chromium, Hexavalent	ND	1.2		mg/Kg			01/08/21 11:15	B1A0013	JE1	0.00 mg
Semivolatile Organic Compounds by GC/MS										
Method: IEC 62321-6:2015										
Monobromobiphenyls	ND	5.00		mg/Kg			01/05/21 14:10	B0L0772	LP	0.00 mg
Dibromobiphenyls	ND	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			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			01/05/21 14:10	B0L0772	LP	0.00 mg
Decabromobiphenyl	ND	5.00		mg/Kg			01/05/21 14:10	B0L0772	LP	0.00 mg
Total PBB's	ND	5.00		mg/Kg	1000		01/05/21 14:10	B0L0772	LP	0.00 mg
Monobromodiphenyl ether	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Dibromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Tribromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Tetrabromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Pentabromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Hexabromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Heptabromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Octabromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Nonabromodiphenyl ethers	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Decabromodiphenyl ether	ND	5.00		mg/Kg			01/06/21 18:44	B0L0772	LP	0.00 mg
Total PBDE's	ND	5.00		mg/Kg	1000		01/06/21 18:44	B0L0772	LP	0.00 mg
Method: IEC 62321-8:2017										
BBP (Benzyl butyl phthalate)	ND	50.0		mg/Kg	1000		12/29/20 18:22	B0L0726	LP	0.00 mg
DBP (Dibutyl phthalate)	ND	50.0		mg/Kg	1000		12/29/20 18:22	B0L0726	LP	0.00 mg
DEHP (di-(2-ethylhexyl) phthalate)	ND	50.0		mg/Kg	1000		12/29/20 18:22	B0L0726	LP	0.00 mg
DIBP (Diisobutyl phthalate)	ND	50.0		mg/Kg	1000		12/29/20 18:22	B0L0726	LP	0.00 mg



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Sample Weight as Received: 53.80 g
Total Weight of Compounds Analyzed: < 1.00 mg



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

Certified Analyses included in this Report (Continued)

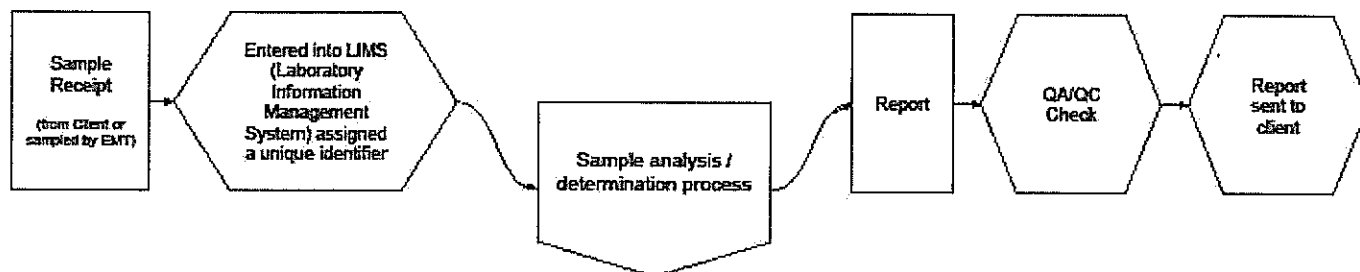
Analyte	CAS #	Certifications
<i>IEC 62321-8:2017 in Solid (Continued)</i>		
DBP (Dibutyl phthalate)	84-72-2	ISO
DEHP (di-(2-ethylhexyl) phthalate)	117-81-7	ISO
DIBP (Diisobutyl phthalate)	84-69-5	ISO

List of Certifications

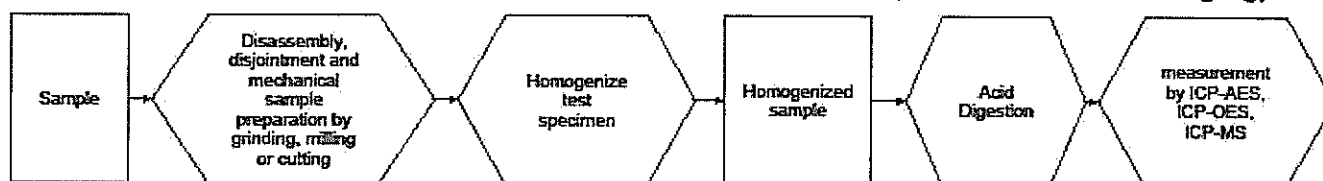
Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	05/31/2022
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2021
ILEPA	State of Illinois, NELAP 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



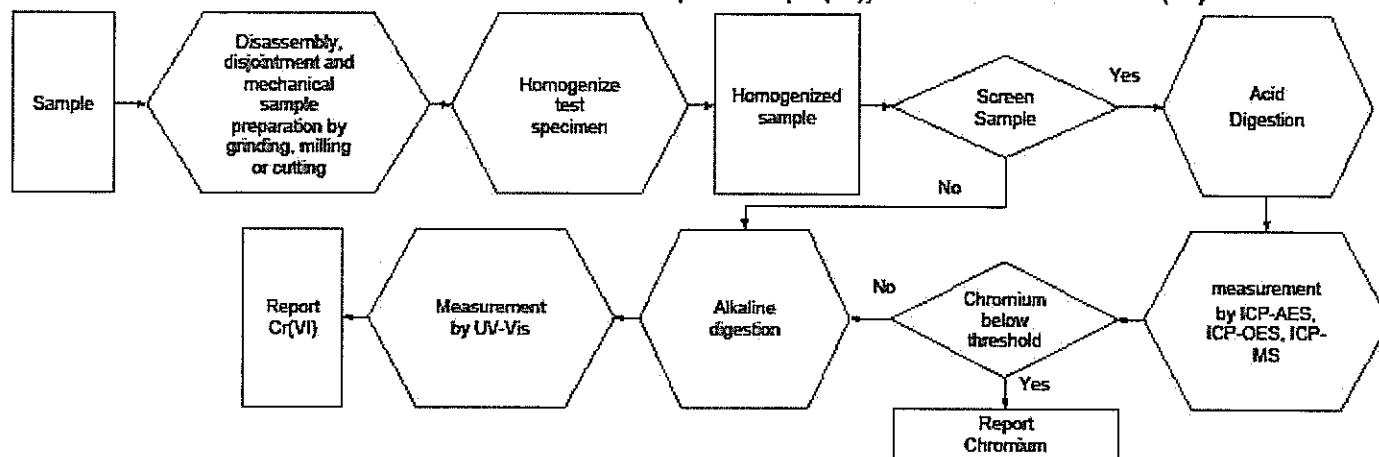
Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



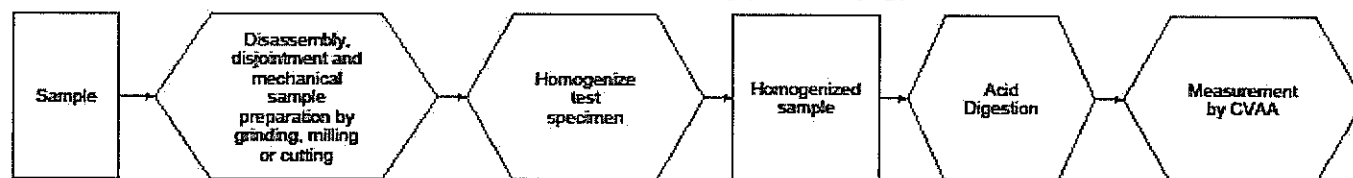
Determination of cadmium, lead, chromium or other metal(s) process (Cd, Pb, Cr, etc. excluding Hg)



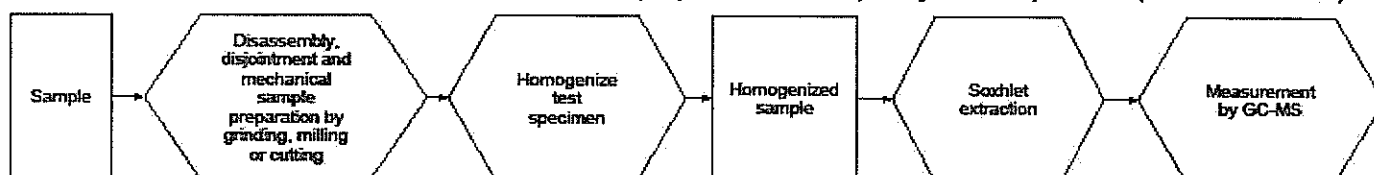
Determination of hexavalent chromium process (Cr(VI)) with chromium screen (Cr)



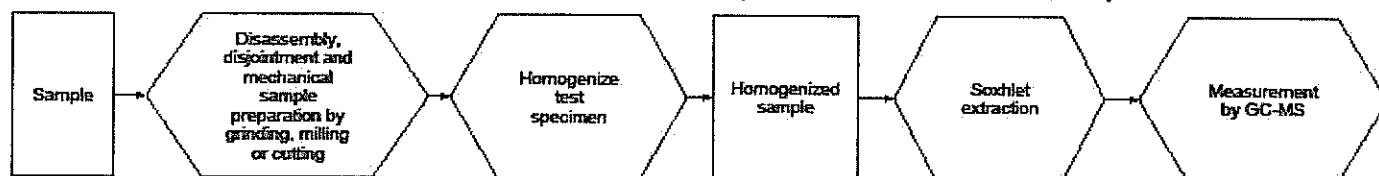
Determination of mercury process (Hg)



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



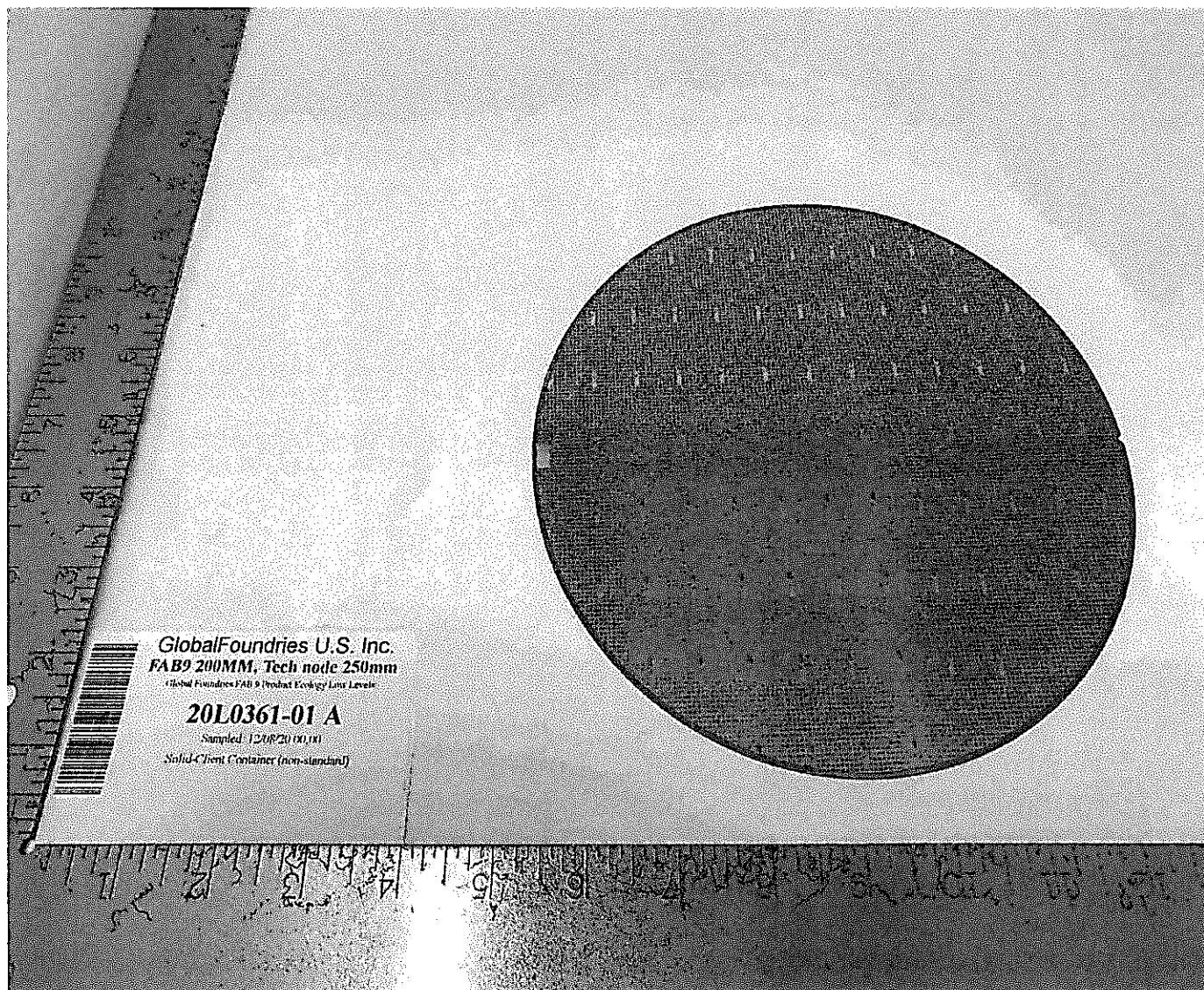
Determination of phthalates process (DEHP, BBP, DBP, DIBP, etc.)





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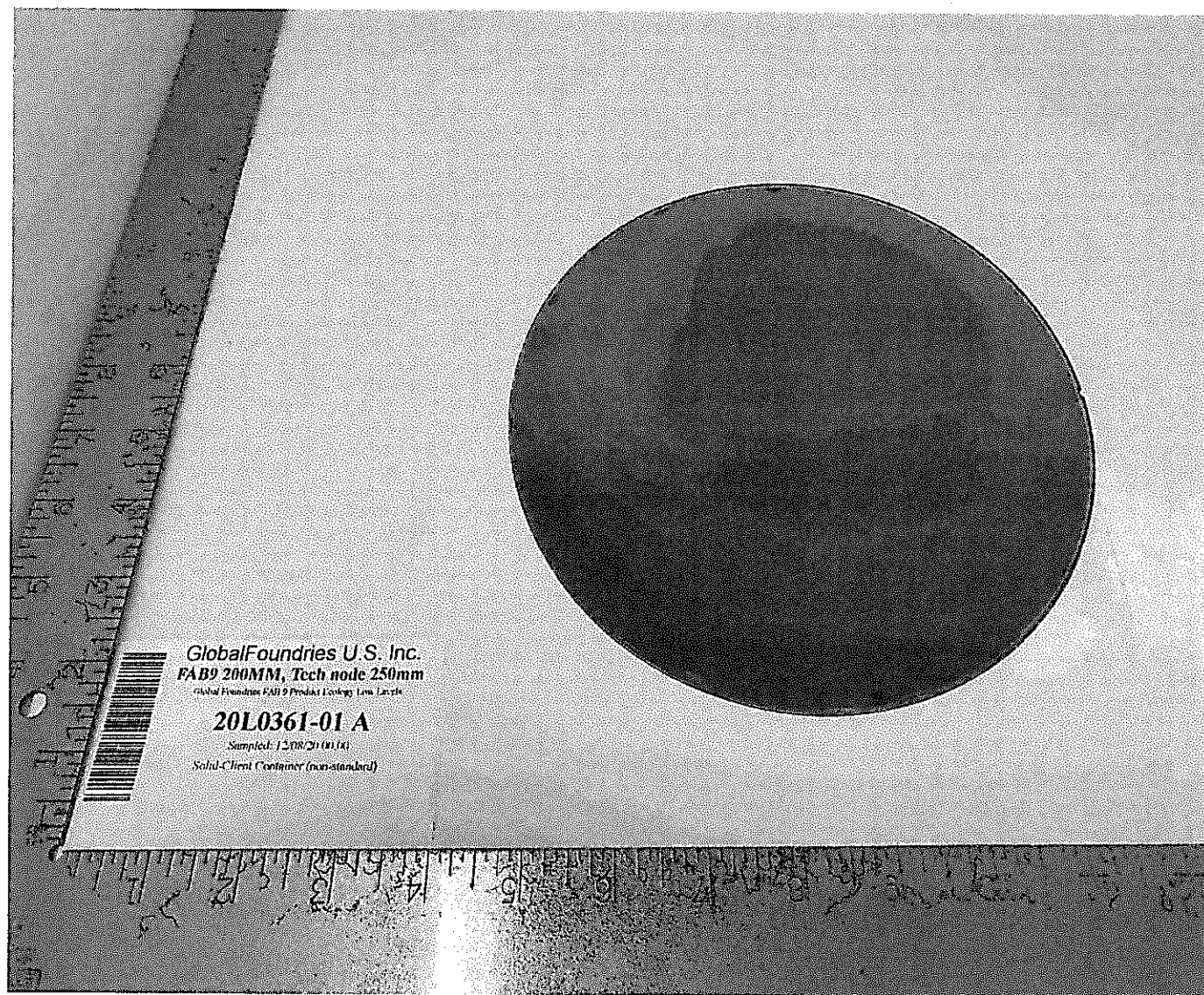


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Case Narrative

Client: GlobalFoundries U.S. Inc.
Project: Global Foundries FAB 9 Product Ecology Low Levels

Date: 01/18/2021

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.



Client Sample Results

Client: GlobalFoundries U.S. Inc.
Project: Global Foundries FAB 9 Product Ecology Low Levels

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

Report Date: 01/18/2021

Collection Date: 12/08/2020 00:00

SDG:

Matrix: Composite

Lab ID: 20L0361-01

Analyses	Result	EMT		Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
		Reporting	Limit								
Wet Chemistry											
Method: EN 14582:2016, SW9056 / SW5050											
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
Iodine	ND	50.0			mg/Kg			12/16/20 18:10	B0L0549	MM7	0.00 mg

Sample Weight as Received: 53.80 g
Total Weight of Compounds Analyzed: < 1.00 mg

Qualifiers and Definitions

Item	Description
%Rec	Percent Recovery

Certified Analyses included in this Report

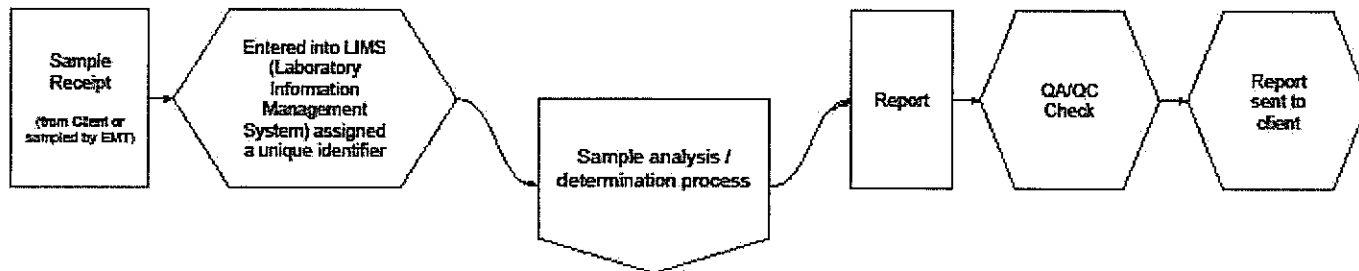
Analyte	CAS #	Certifications
EN 14582:2016, SW9056 in Solid		
Bromine	7726-95-6	ISO
Chlorine	7782-50-5	ISO

List of Certifications

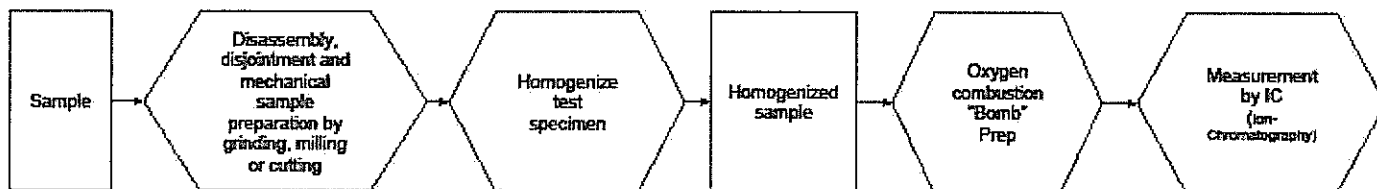
Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	05/31/2022
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2021
ILEPA	State of Illinois, NELAP 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

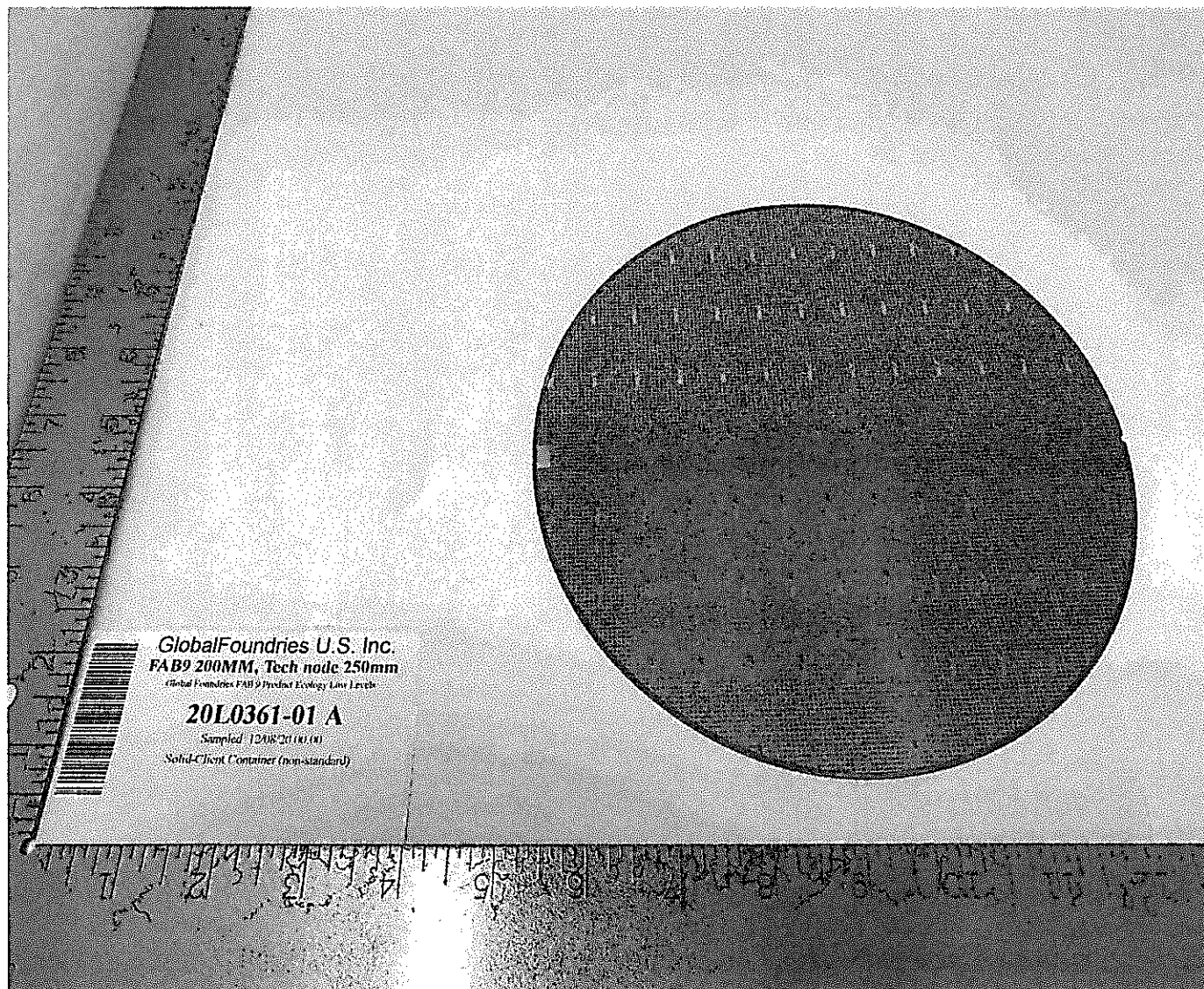


Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



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

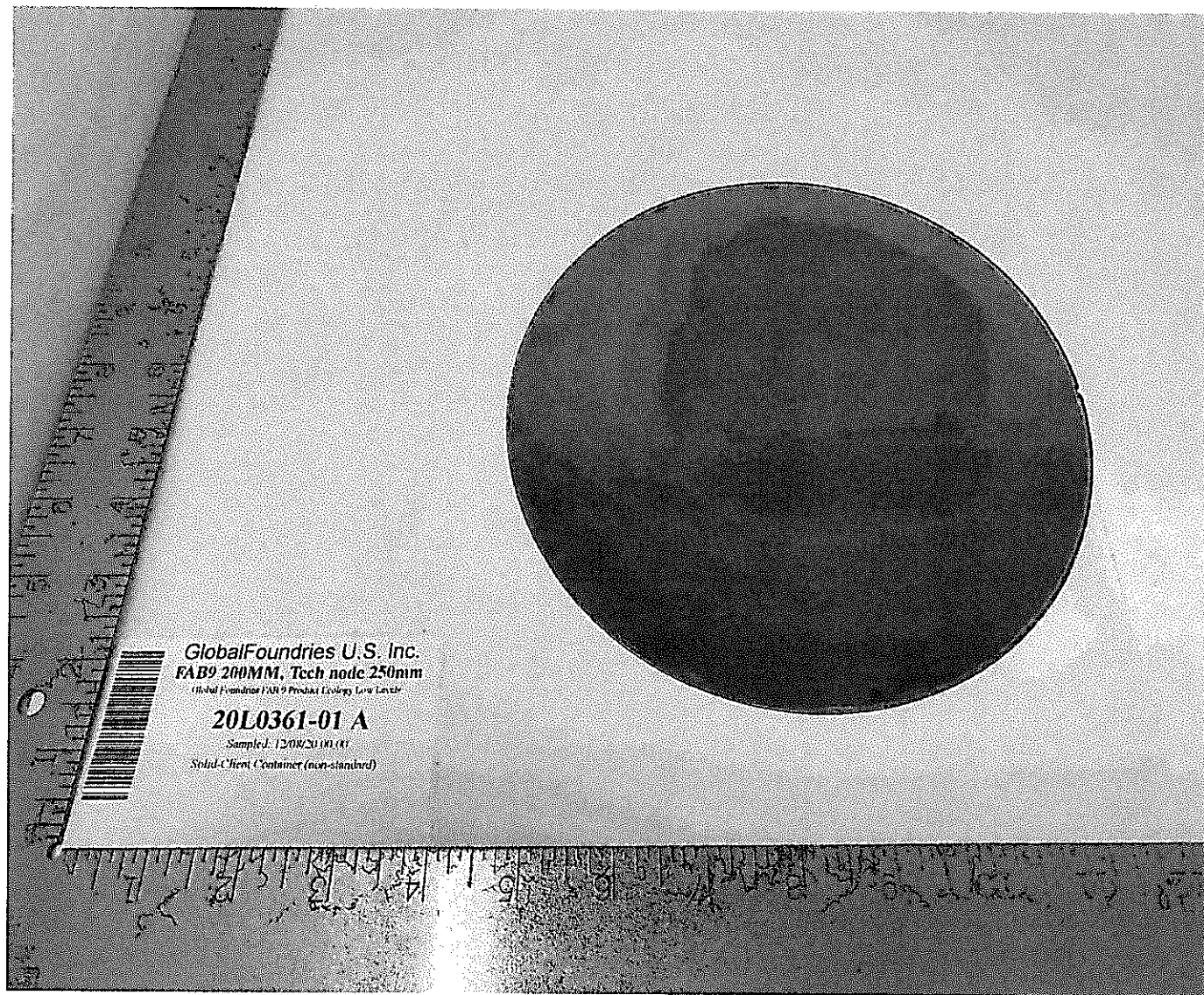






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Client: GlobalFoundries U.S. Inc.
Project: Global Foundries FAB 9 Product Ecology Low Levels

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

Report Date: 01/18/2021

Collection Date: 12/08/2020 00:00

SDG:

Matrix: Composite

Lab ID: 20L0361-01

Analyses	Result	EMT Reporting		Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
		Limit									

Metals by ICP-AES

Method: SW6010C / SW3050

Antimony	ND	2.49		mg/Kg		1.99		01/04/21 19:44	B1A0030	KJ1	0.11 mg
Beryllium	ND	0.249		mg/Kg		0.0995		01/04/21 19:44	B1A0030	KJ1	0.01 mg

Sample Weight as Received: 53.80 g
Total Weight of Compounds Analyzed: < 1.00 mg



Qualifiers and Definitions

Item	Description
%Rec	Percent Recovery

Certified Analyses included in this Report

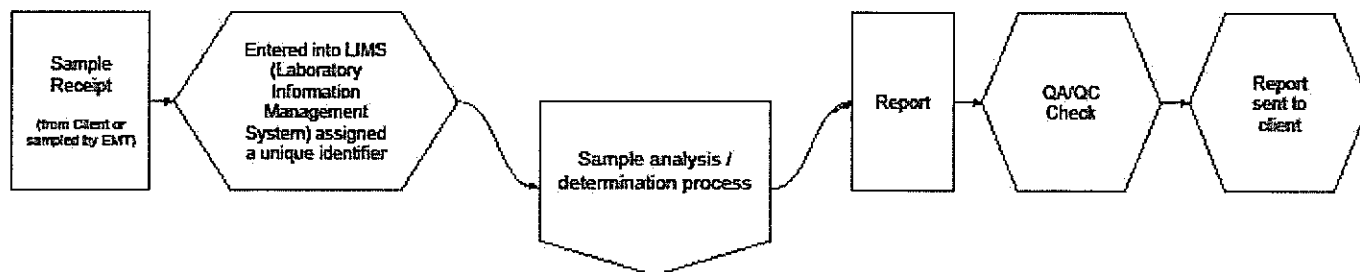
Analyte	CAS #	Certifications
<i>SW6010C in Solid</i>		
Antimony	7440-36-0	DoD,ISO,WDNR,ILEPA
Beryllium	7440-41-7	DoD,ISO,WDNR,ILEPA

List of Certifications

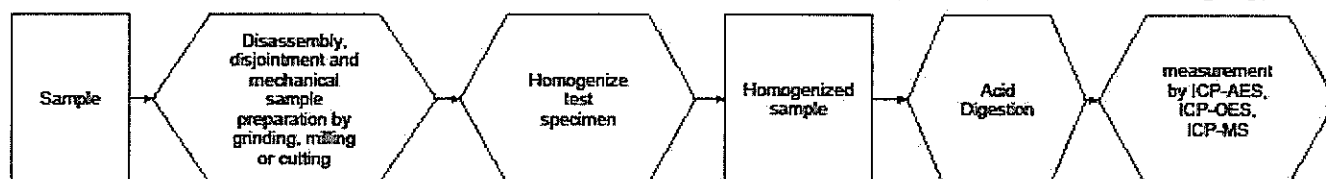
Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	17-011	05/31/2022
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2021
ILEPA	State of Illinois, NELAP 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
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WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2021



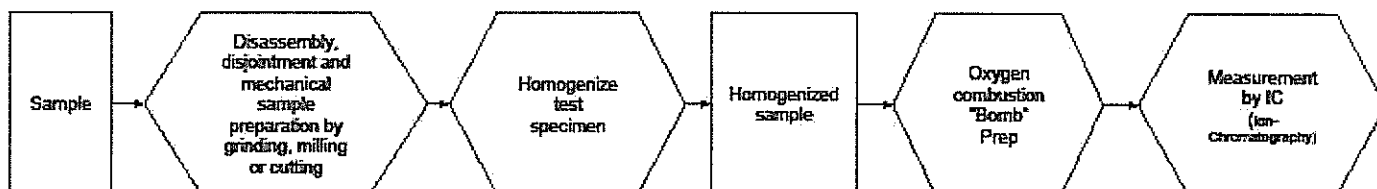
Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



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



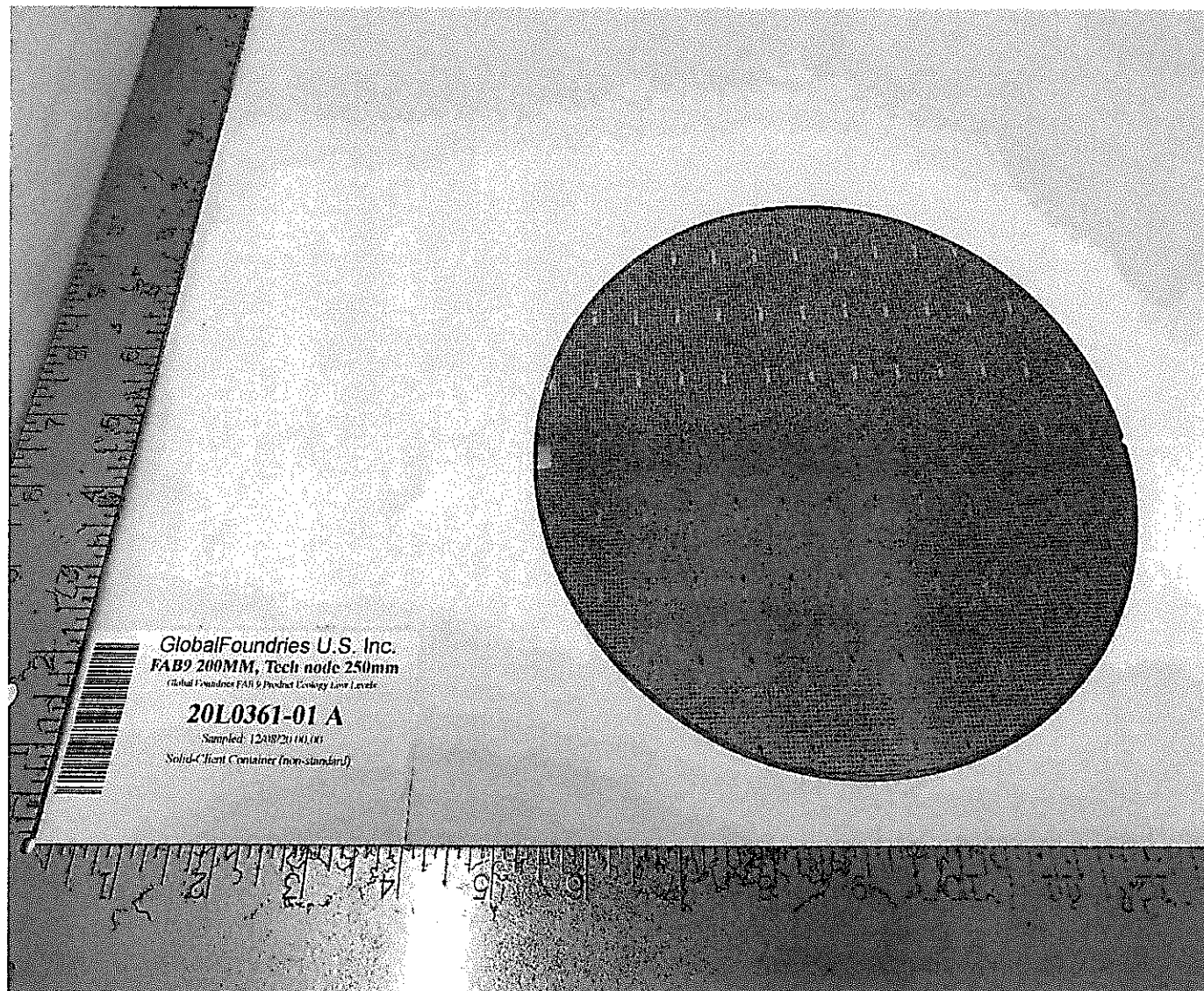
Determination of total bromine, chlorine and other ions process (Br & Cl)





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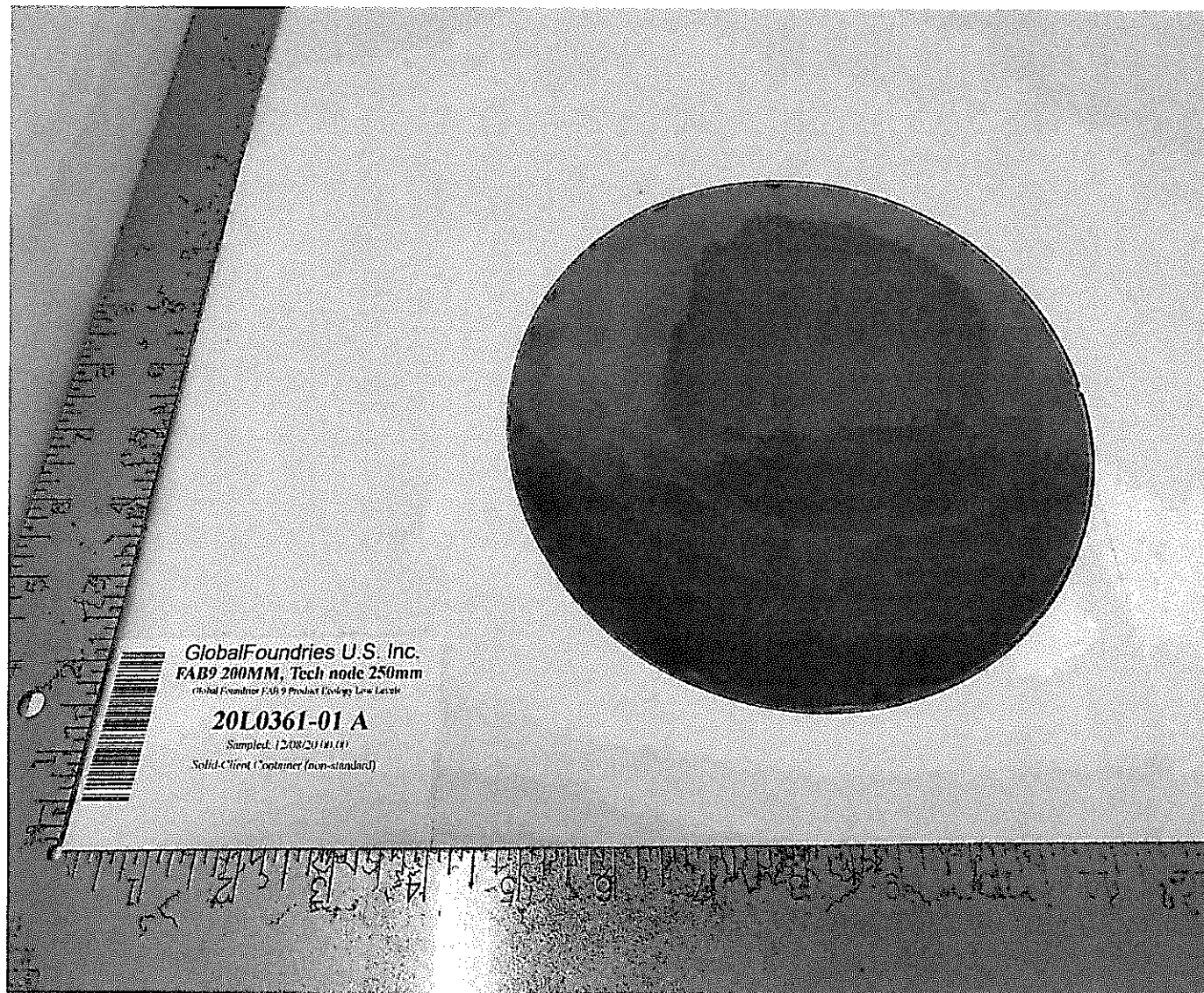


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November 5, 2020

**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