



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

Case Narrative

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

Date: 06/02/2021

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 on 05/12/21 10:28. The samples arrived in good condition.



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Client Sample Results

Client: GlobalFoundries Inc.
 Project: Global Foundries FAB 9 Product Ecology Low Levels
 Work Order: 21E0412

Client Sample ID: FAB 9 200MM, Tech node 600nm
 Report Date: 06/02/2021
 Collection Date: 05/12/2021 00:00
 Matrix: Composite
 Lab ID: 21E0412-01

Analyses	Result	EMT Reporting		Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
		Limit									
Metals by ICP-AES											
Method: IEC 62321-5:2013											
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											
Method: IEC 62321-4:2013											
Mercury	ND	2.00			mg/Kg	1000	0.567	05/17/21 14:08	B1E0542	GSB	0.03 mg
Wet Chemistry											
Method: IEC 62321-7-2:2017											
Chromium, Hexavalent	ND	5.0			mg/Kg	1000		05/21/21 11:25	B1E0614	JE1	0.00 mg
Semivolatile Organic Compounds by GC/MS											
Method: IEC 62321-6:2015											
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			05/26/21 00:09	B1E0779	LP	0.00 mg
Dibromodiphenyl ethers	ND	5.00			mg/Kg			05/26/21 00:09	B1E0779	LP	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 62321-8:2017											
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	LP	0.00 mg



**Environmental
Monitoring and
Technologies, Inc.**

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Sample Weight as Received: 53.48 g
Total Weight of Compounds Analyzed: < 1.00 mg

Qualifiers and Definitions

Item	Description
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
DBP (Dibutyl phthalate)	84-72-2	ISO

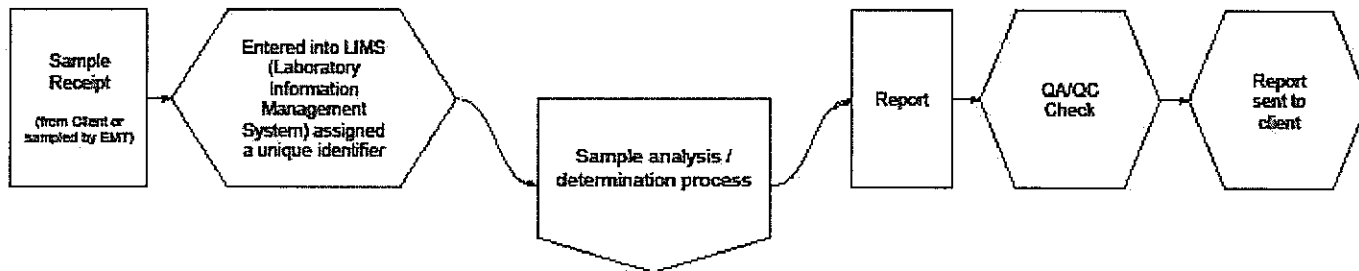

Certified Analyses included in this Report (Continued)

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

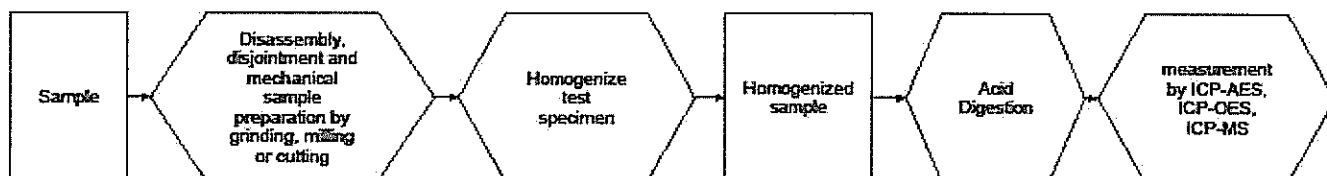
List of Certifications

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

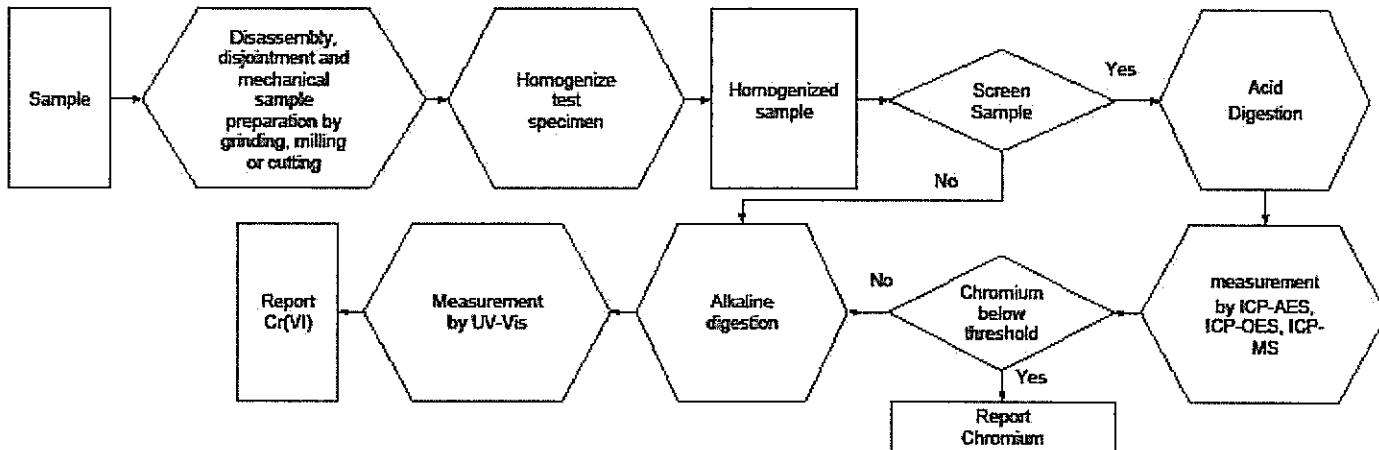
Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



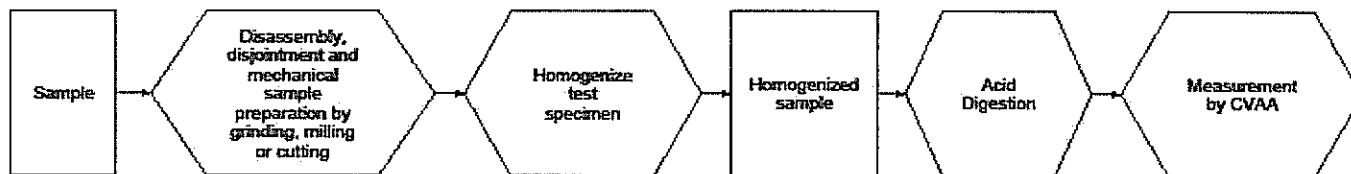
Determination of cadmium, lead, chromium or other metal(s) process (Cd, Pb, Cr, etc. excluding Hg)



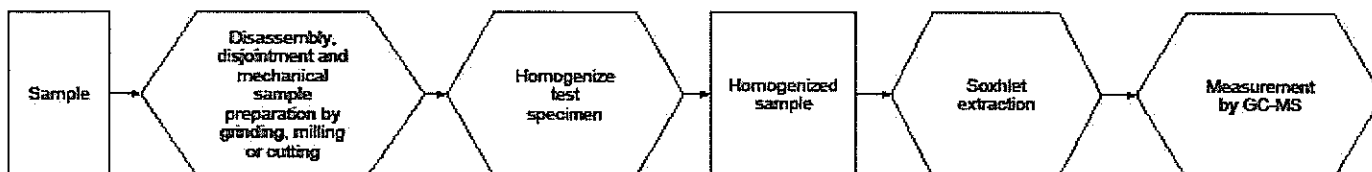
Determination of hexavalent chromium process (Cr(VI)) with chromium screen (Cr)



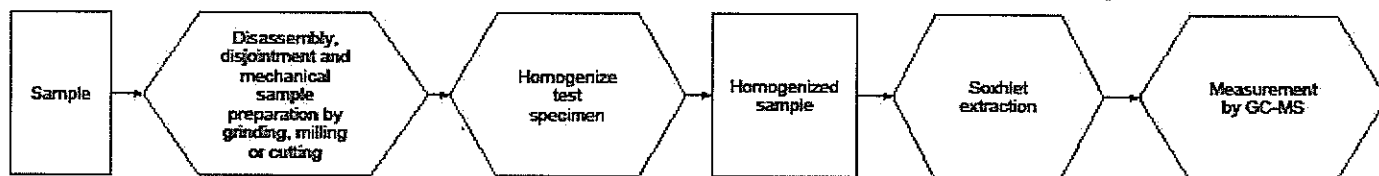
Determination of mercury process (Hg)

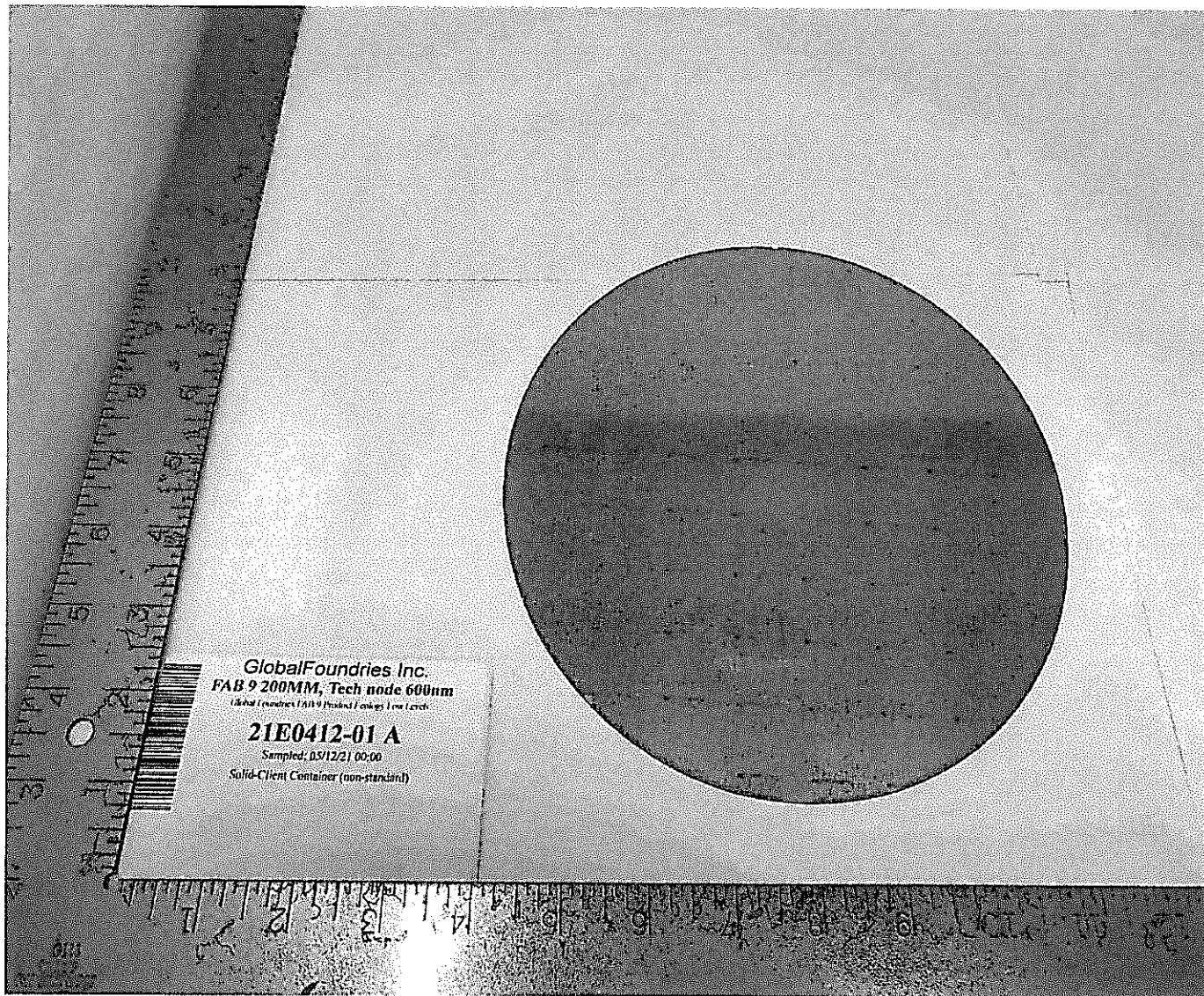


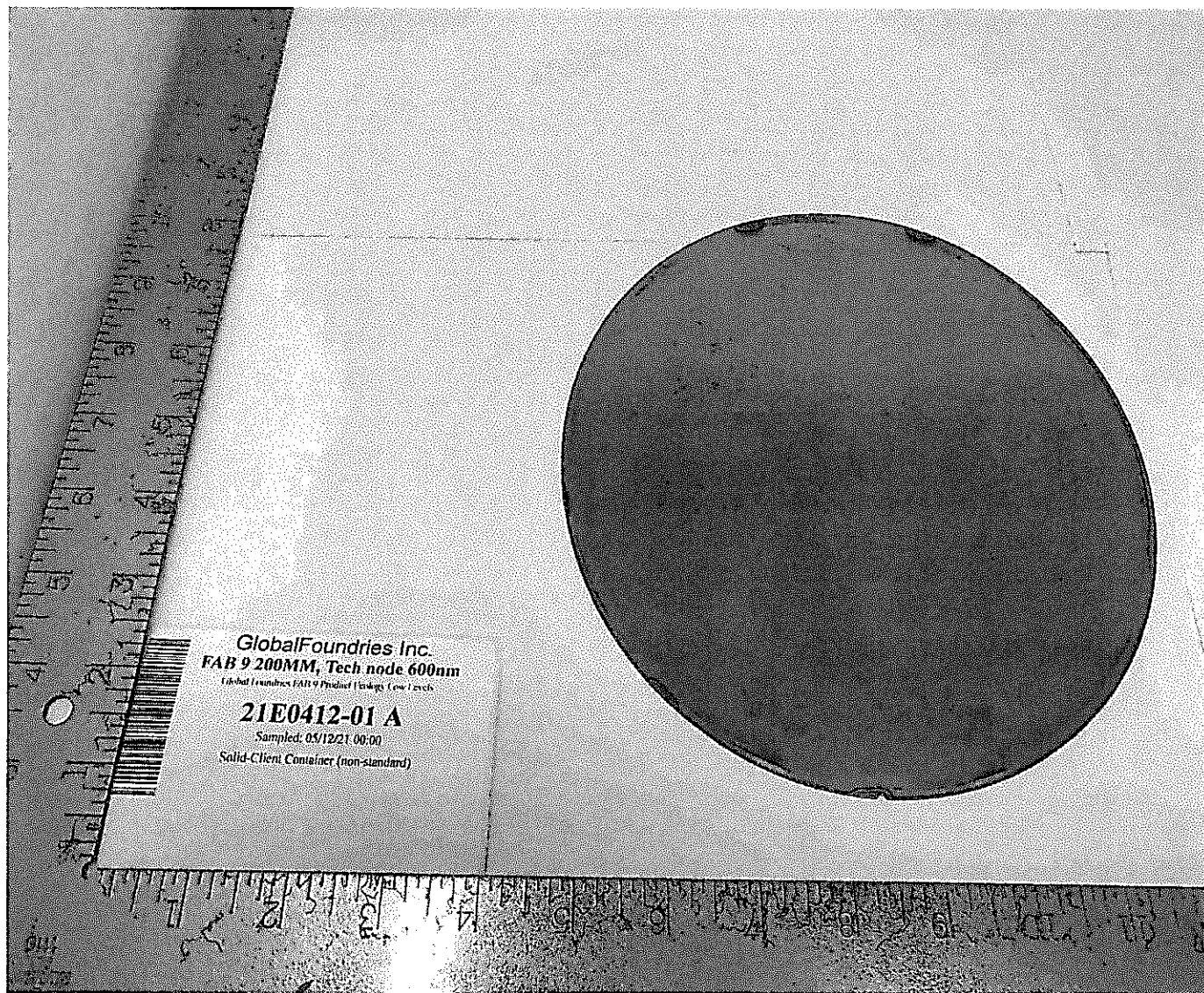
Determination of polybrominated biphenyls and polybrominated diphenyl ethers process (PBBs & PBDEs)



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









Case Narrative

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

Date: 06/02/2021

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 on 05/12/21 10:28. The samples arrived in good condition.



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Client Sample Results

Client: GlobalFoundries Inc.
 Project: Global Foundries FAB 9 Product Ecology Low Levels
 Work Order: 21E0412

Client Sample ID: FAB 9 200MM, Tech node 600nm
 Report Date: 06/02/2021
 Collection Date: 05/12/2021 00:00
 Matrix: Composite
 Lab ID: 21E0412-01

Analyses	Result	EMT Reporting		Qual	Units	Reg Limit	LOD	Date/Time Analyzed	Batch	Analyst	Weight
		Limit									
Wet Chemistry											
Method: EN 14582:2016, SW9056 / SW5050											
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
Iodine	ND	50.0			mg/Kg			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

Qualifiers and Definitions

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

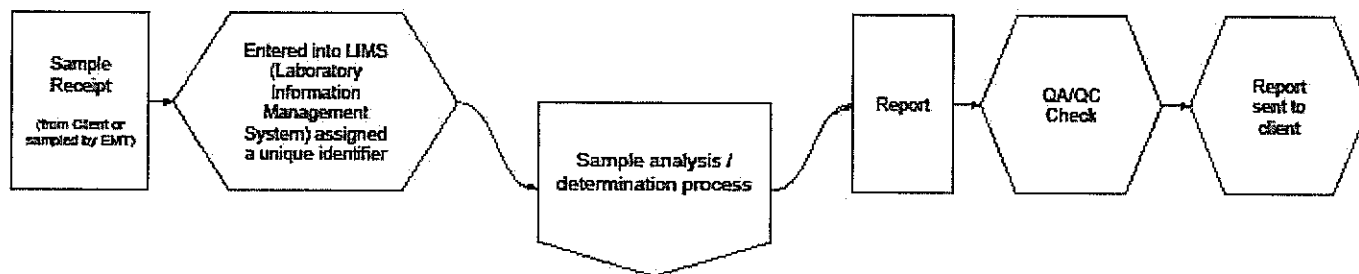
Certified Analyses included in this Report

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

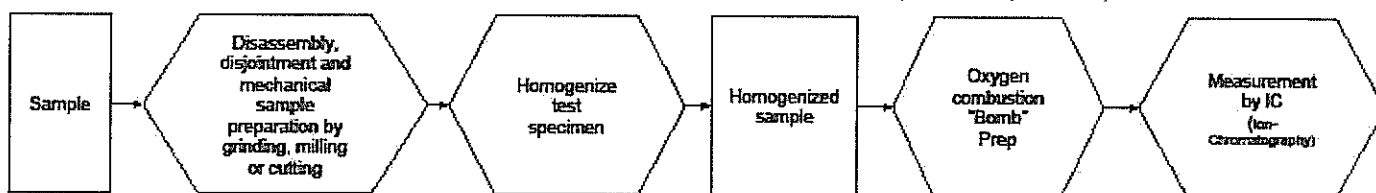
List of Certifications

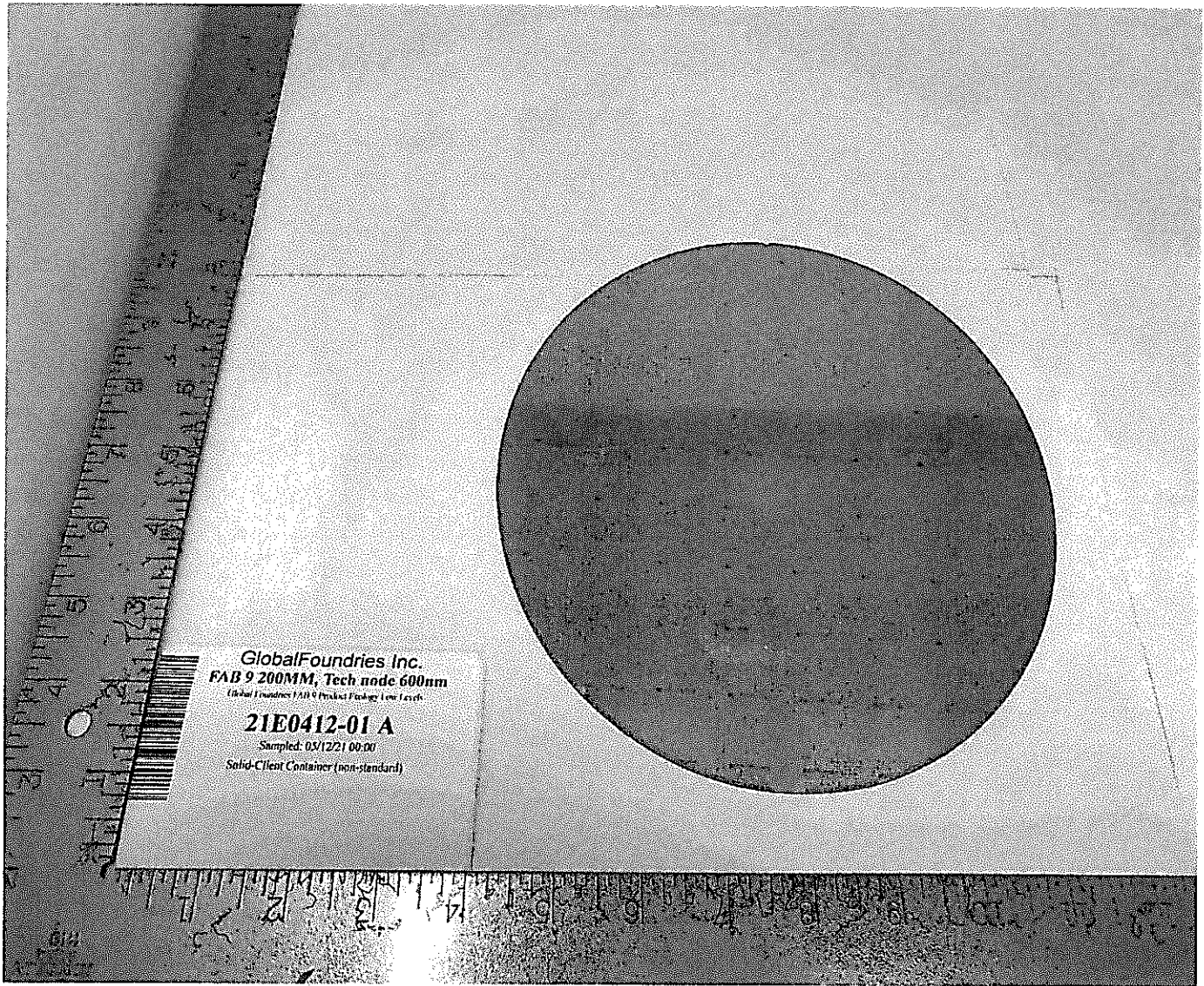
Code	Description	Number	Expires
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CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L18-184-R1	03/31/2021
DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2022
ILEPA	State of Illinois, NELAP Accredited Lab No.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

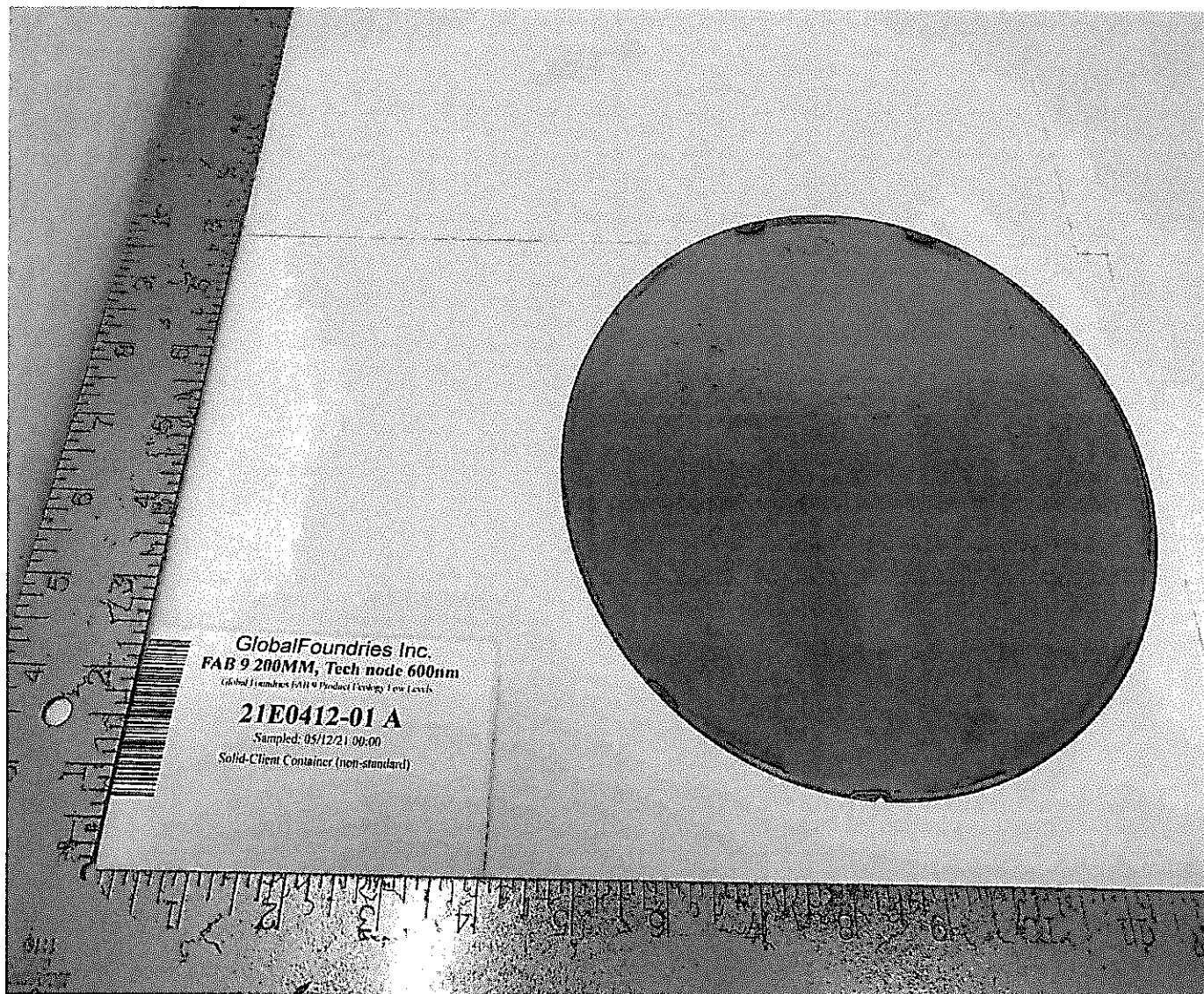
Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)



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









Case Narrative

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

Date: 06/02/2021

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Client Sample Results

Client: GlobalFoundries Inc.
 Project: Global Foundries FAB 9 Product Ecology Low Levels
 Work Order: 21E0412

Client Sample ID: FAB 9 200MM, Tech node 600nm
 Report Date: 06/02/2021
 Collection Date: 05/12/2021 00:00
 Matrix: Composite
 Lab ID: 21E0412-01

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	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

Sample Weight as Received: 53.48 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

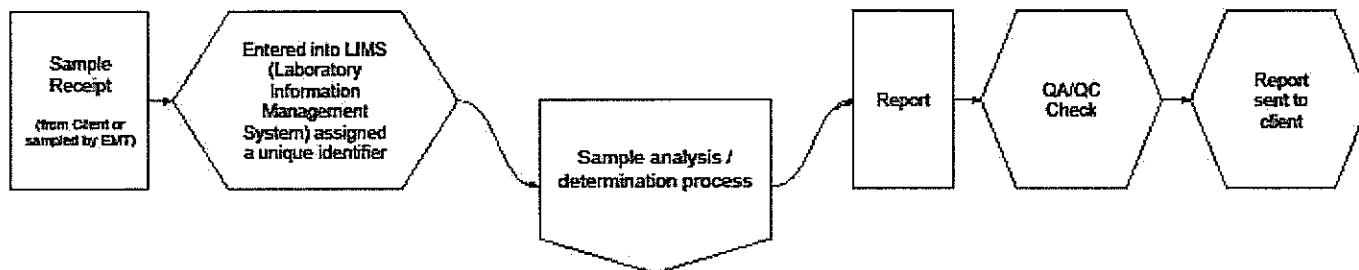
Certified Analyses included in this Report

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

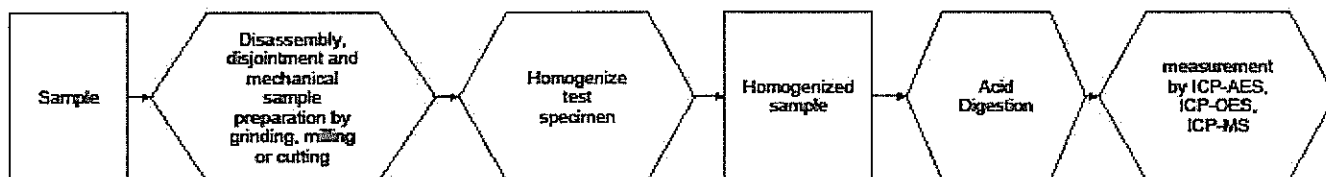
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DoD	Department of Defense, Accredited by PJLA	L18-183-R3	03/31/2022
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	1002562020-3	07/27/2021
ISO	ISO/IEC 17025, Accredited by PJLA	L18-184-R1	03/31/2022
TX	Texas Commission of Environmental Quality	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

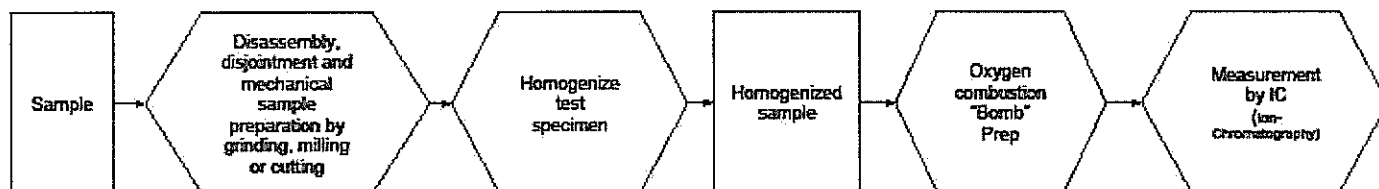
Sample flow through Environmental Monitoring and Technologies inc(EMT Inc.)

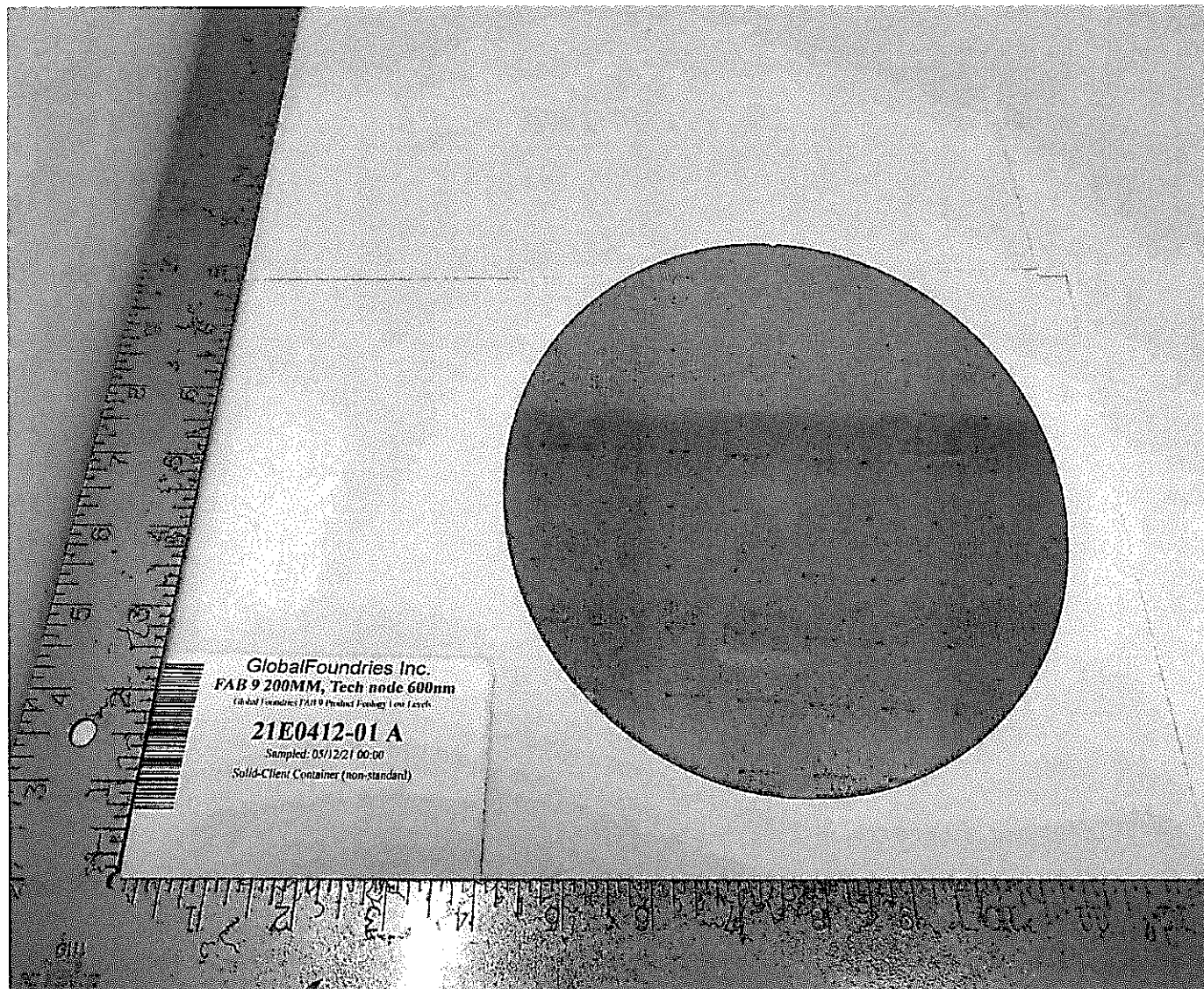


Determination of cadmium, lead, chromium or other metal(s) process (Cd, Pb, Cr, etc. excluding Hg)



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

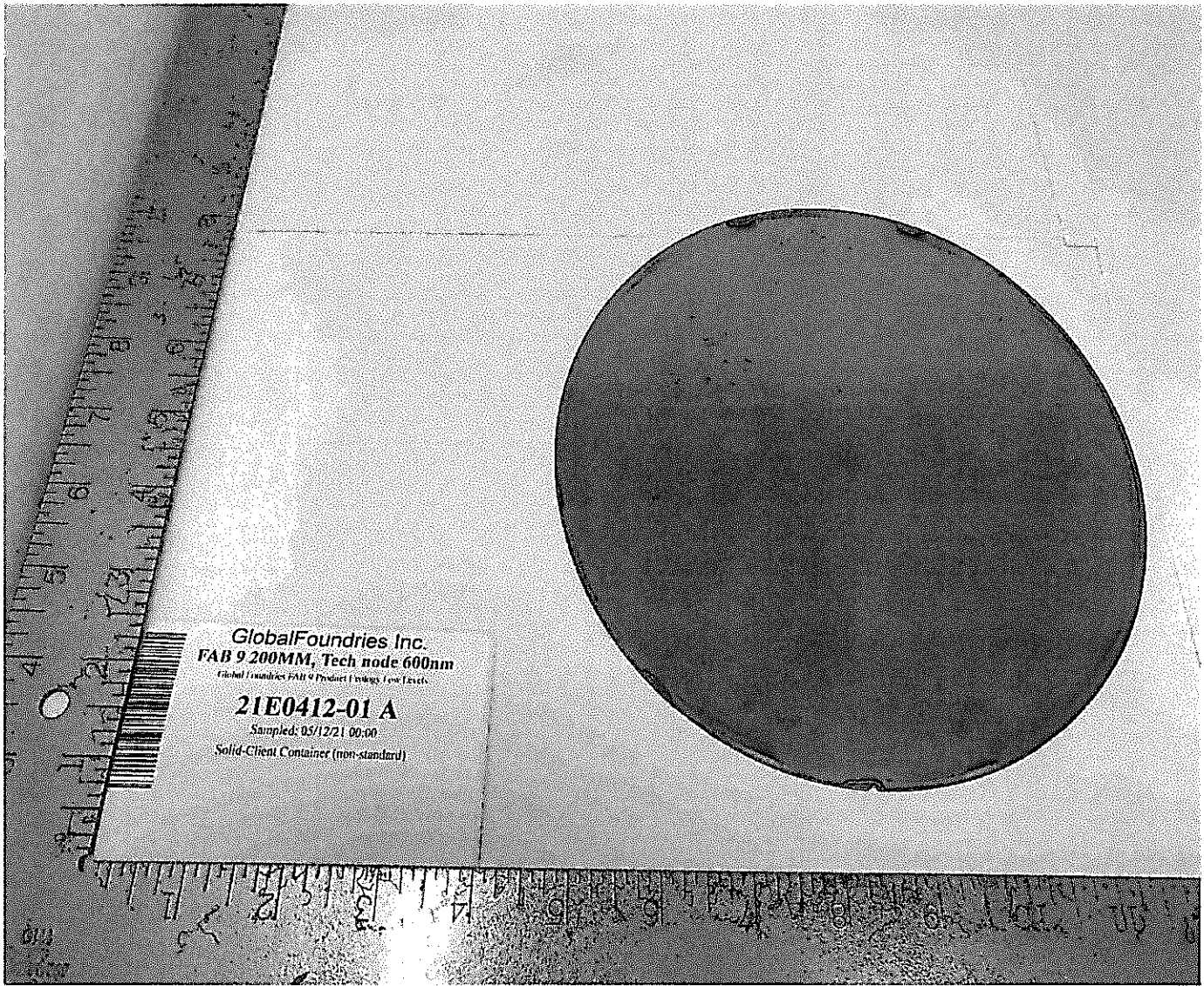






Environmental
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GlobalFoundries Inc.
FAB 9 200MM, Tech node 600nm
Global Foundries FAB 9 Product (vintage) Low Level
21E0412-01 A
Sampled: 05/12/21 00:00
Solid-Chemt Container (non-standard)



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

A handwritten signature in black ink, appearing to read "B. Raley".

Director, Global EHS and CSR