Globalfoundries Dresden
Module One LLC & Co. KG
Ms. Hermanns
Wilschdorfer Landstrasse 101
01109 Dresden
GERMANY

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-02

The following samples were submitted and identified by/on behalf of the client as

SGS Job file	:	6126125
Order date	:	17/MAR/2022
Order number	:	813003903482
Sample receiving date	:	21/MAR/2022
Sampling	:	by client or by a third party acting at the client's direction
Condition of the samples		appropriate for testing
Testing period	:	21/MAR/2022 – 06/MAY/2022 control analysis: 10/MAY/2022-18/MAY/2022
Analytical scope	:	according to client's requirements

Sample No.	Sample designation	Sample material
220295895	Fab 1 300mm die patterned wafer, Tech Node 40nm	Wafer

Test requested : In accordance with the RoHS Directive 2011/65/EU and subsequent amendments

Test Method(s) :
(1) Determination of Cadmium by ICP-OES, acc. IEC 62321-5:2013-06
(2) Determination of Lead by ICP-OES, acc. IEC 62321-5:2013-06
(3) Determination of Mercury by CV-AAS, acc. IEC 62321-4:2013-06
(4) Determination of Chromium by ICP-OES, acc. IEC 62321-5:2013-06
(5) Determination of Chromium (VI) acc. IEC 62321:
A) (metal samples) Determination after extraction with hot water and derivatization with 1,5-diphenyl-carbazide based on IEC 62321-7-1:2015-09 (metal samples), ion chromatography
B) (non-metallic samples) Testing acc. IEC 62321-7-2:2017-03,
deviation: measurement via ion chromatography acc. DIN EN ISO 10304-1:2009-07
Remark: Due to its highly reactive nature the concentration of CrVI in a corrosion-protection changes drastically with time and storage conditions. The results obtained by IEC 62321-7-1:2015 can therefore only give an indication of the presence/absence of Cr(VI) within the limitations of the method at the time of testing.
(6) Determination of PBB/PBDE by GC/MS, acc. IEC 62321-6:2015-06
Remark: Please note that acc. to IEC the testing of metals for PBB/PBDE is gratuitous
(7) Determination of Phthalates by GC/MS acc. IEC 62321-8:2017-03
GC-MS after extraction with THF (Tetrahydrofurane)
(cooperation with SGS Asia)

Test Result(s) : Please refer to next page(s)

SGS INSTITUT FRESENIUS GmbH | Im Maisel 14 D-65232 Taunusstein t +49 6128 744 - 0 f +49 6128 744 - 130 www.sgs-institut-fresenius.de

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Conclusion : Based on the performed tests on submitted sample(s), the test results of Lead, Mercury, Cadmium, hexavalent Chromium, Polybrominated Biphenyls (PBB) and Polybrominated Diphenyl Ethers (PBDE) **comply with** the limits as set by RoHS Directive 2011/65/EU, Annex 2 and subsequent amendments.

Based on the performed tests on submitted sample(s), the test results of Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), and Diisobutyl phthalate (DIBP) **comply with** the limits as set by Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

This report cancels and supersedes the report no. 6126125-02 dated 06/MAY/2022 issued by SGS INSTITUT FRESENIUS GmbH. We corrected the result of Chromium (Cr) after control analysis.

Signed for and on behalf of

SGS INSTITUT FRESENIUS GmbH

i.V.
Wera Leonhard / sba-tp
Projektleiterin / Project Manager
Connectivity & Products (C&P)
Tel. +49 (0)6128 / 744 - 186

i.A.
Dr. Stefan Graß
Customer Service Consultant
Connectivity & Products (C&P)
Tel. +49 (0)6128 / 744 - 280

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Test results by chemical method
(Unit: mg/kg)

Sample No.		**220295895**		
Test Item(s):	Method (refer to)		RL	RoHS Limit
Cadmium(Cd)	(1)	n.d.	1	100
Lead (Pb)	(2)	n.d.	10	1000
Mercury (Hg)	(3)	n.d.	0,5	1000
Chromium, total (Cr)	(4)	n.d.	10	1000 (Limit for Cr(VI))
Chromium, hexavalent (Cr(VI))	(5 B)	n.d.	1	1000
Sum of PBDEs	(6)	**-**	-	1000 (Sum of polybrominated diphenylethers)
Monobromodiphenyl ether		n.d.	50	
Dibromodiphenyl ether		n.d.	50	
Tribromodiphenyl ether		n.d.	50	
Tetrabromodiphenyl ether		n.d.	50	
Pentabromodiphenyl ether		n.d.	50	
Hexabromodiphenyl ether		n.d.	50	
Heptabromodiphenyl ether		n.d.	50	
Octabromodiphenyl ether		n.d.	50	
Nonabromodiphenyl ether		n.d.	50	
Decabromodiphenyl ether		n.d.	50	
Sum of PBBs		**-**	-	1000 (Sum of polybrominated biphenyls)
Monobromobiphenyl		n.d.	50	
Dibromobiphenyl		n.d.	50	
Tribromobiphenyl		n.d.	50	
Tetrabromobiphenyl		n.d.	50	
Hexabromobiphenyl		n.d.	50	
Pentabromobiphenyl		n.d.	50	
Heptabromobiphenyl		n.d.	50	
Octabromobiphenyl		n.d.	50	
Nonabromobiphenyl		n.d.	50	
Decabromobiphenyl		n.d.	50	
Phthalates	(7)			
Bis(2-ethylhexyl) phthalate (DEHP) (117-81-7)		n.d.	100	1000#
Butyl benzyl phthalate (BBP) (85-68-7)		n.d.	100	1000#
Dibutyl phthalate (DBP) (84-74-2)		n.d.	100	1000#
Diisobutyl phthalate (DIBP) (84-69-5)		n.d.	100	1000#

Note : mg/kg = ppm n.d.= not detected RL = Report Limit n.a.= not analyzed

**= elevated reporting limit due to matrix interferences

= limit acc. dir. 2015/863 (EU), valid from 22/JUL/2019

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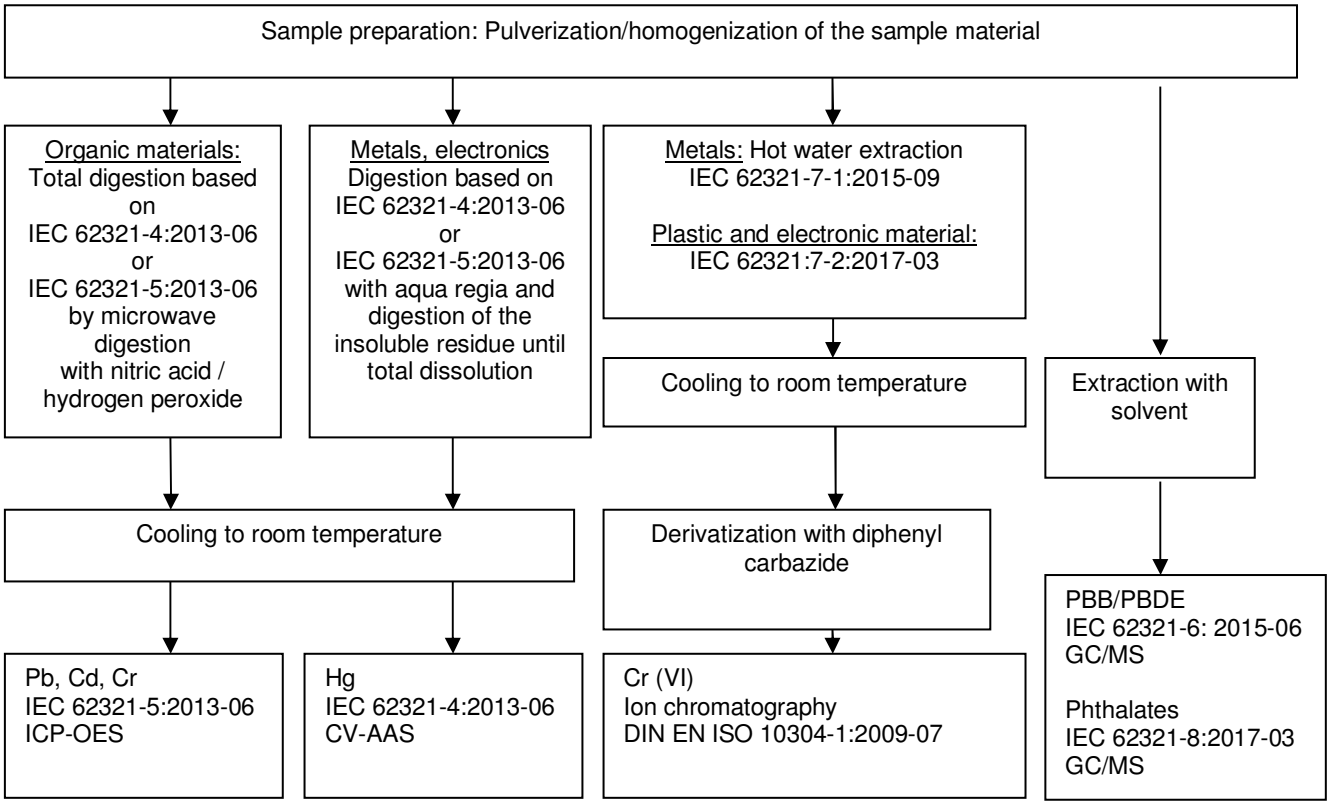
Flow Chart for the working flow of the performed analysis



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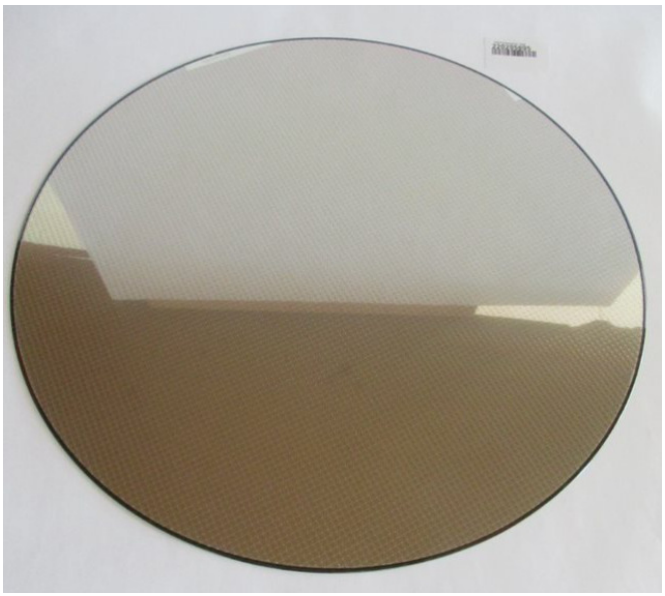
Sample Photo(s)



End of Report