

## Test Report

No: 10477166(1) A1

Date: 31-Jul-19

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GLOBALFOUNDRIES Singapore Pte Ltd  
60 Woodlands Industrial Park D Street 2 Singapore 738406

The following sample(s) was/were submitted and identified by/on behalf of the client as:

Sample Name : One (1) 300mm die-patterned wafer  
Technode : 40nm  
Fab : 7

Sample Receiving Date : 19-Jul-19  
Testing Period : 19-Jul-19 to 31-Jul-19

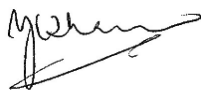
Test Requested : In accordance with the RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Conclusion : Based on the performed tests on submitted sample(s), the results **comply with** the RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of  
SGS Testing & Control Services Singapore Pte Ltd



Y.C. Tham  
Laboratory Manager



Test Location: 3 Toh Tuck Link, #01-02, Singapore 596228

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**Test Result(s):**

Sample Description : Wafer

Test Item(s):	Unit	Method	Results	MDL	RoHS Limit
Cadmium(Cd)	mg/kg	With reference to IEC62321-5 :2013. Analysis was performed by ICP/AES	n.d.	2	100
Lead (Pb)	mg/kg	With reference to IEC62321-5 :2013. Analysis was performed by ICP/AES	n.d.	2	1000
Mercury (Hg)	mg/kg	With reference to IEC62321-4 :2013+A1:2017. Analysis was performed by ICP/AES	n.d.	2	1000
Hexavalent Chromium (Cr(VI))	mg/kg	With reference to IEC62321-7-2 :2017. Analysis was performed by UV/Vis Spectrometry	n.d.	8	1000
<b>Sum of PBBs</b>	mg/kg	With reference to IEC62321-6 :2015. Analysis was performed by GC/MS	<b>n.d.</b>	-	1000
Monobromobiphenyl	mg/kg		n.d.	5	-
Dibromobiphenyl	mg/kg		n.d.	5	-
Tribromobiphenyl	mg/kg		n.d.	5	-
Tetrabromobiphenyl	mg/kg		n.d.	5	-
Hexabromobiphenyl	mg/kg		n.d.	5	-
Pentabromobiphenyl	mg/kg		n.d.	5	-
Heptabromobiphenyl	mg/kg		n.d.	5	-
Octabromobiphenyl	mg/kg		n.d.	5	-
Nonabromobiphenyl	mg/kg		n.d.	5	-
Decabromobiphenyl	mg/kg		n.d.	5	-
<b>Sum of PBDEs</b>	mg/kg		<b>n.d.</b>	-	1000
Monobromodiphenyl ether	mg/kg		n.d.	5	-
Dibromodiphenyl ether	mg/kg		n.d.	5	-
Tribromodiphenyl ether	mg/kg		n.d.	5	-
Tetrabromodiphenyl ether	mg/kg		n.d.	5	-
Pentabromodiphenyl ether	mg/kg		n.d.	5	-
Hexabromodiphenyl ether	mg/kg		n.d.	5	-
Heptabromodiphenyl ether	mg/kg		n.d.	5	-
Octabromodiphenyl ether	mg/kg		n.d.	5	-
Nonabromodiphenyl ether	mg/kg	n.d.	5	-	
Decabromodiphenyl ether	mg/kg	n.d.	5	-	

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**Test Result(s):**

Sample Description : Wafer

Test Item(s):	Unit	Method	Results	MDL	Limit
BBP (Benzyl butyl phthalate)	mg/kg	With reference to IEC 62321-8: 2017. Analysis was performed by GC/MS	n.d.	50	1000
DBP (Di-butyl phthalate)	mg/kg	With reference to IEC 62321-8: 2017. Analysis was performed by GC/MS	n.d.	50	1000
DEHP (Di-(2-ethylhexyl) phthalate)	mg/kg	With reference to IEC 62321-8: 2017. Analysis was performed by GC/MS	n.d.	50	1000
DIBP (Di-isobutyl Phthalate)	mg/kg	With reference to IEC 62321-8: 2017. Analysis was performed by GC/MS	n.d.	50	1000

Note: (1) mg/kg = ppm ; 0.1wt% = 1000ppm  
 (2) n.d.= Not Detected  
 (3) MDL = Method Detection Limit  
 (4) "-" = Not regulated  
 (5) \* : Exceeds limit  
 (6) Reference information: The limits of Benzyl butyl phthalate (BBP), Di-butyl phthalate (DBP), Di-(2-ethylhexyl) phthalate (DEHP), Di-isobutyl phthalate (DIBP) as set by G/TBT/N/EU/256 of WTO/TBT .

Remarks: Sample received was totally dissolved by preconditioning method.  
 Lab Analyst(s): AQ, Pheng and SJ

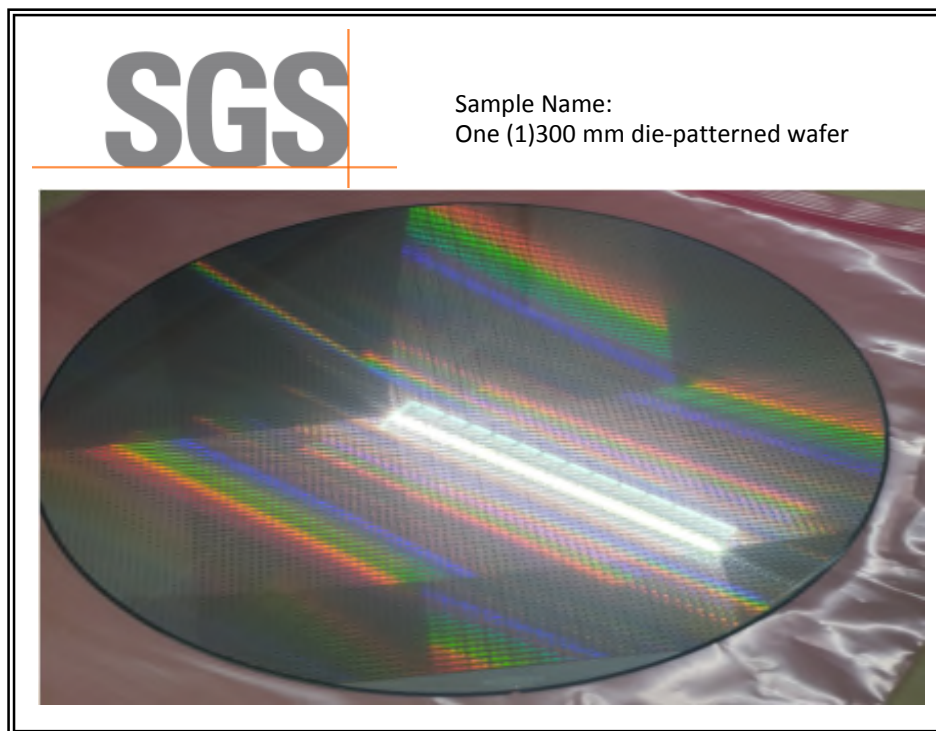
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**Sample photo:**

Sample Description : Wafer

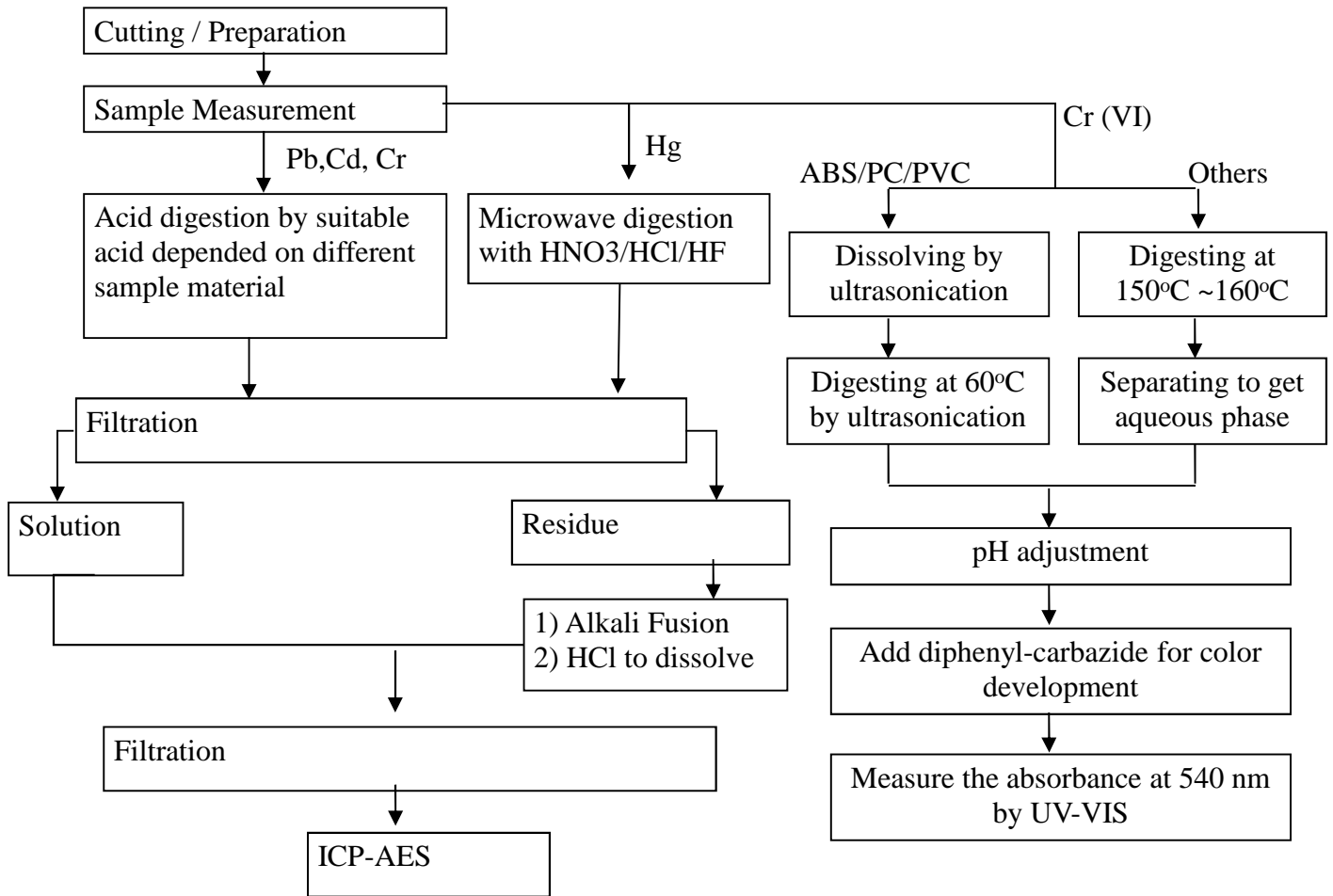
SGS authenticate the photo on original report only



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**Process Flow of IEC 62321 (Pb, Cd, Hg, Cr & Cr(VI))**



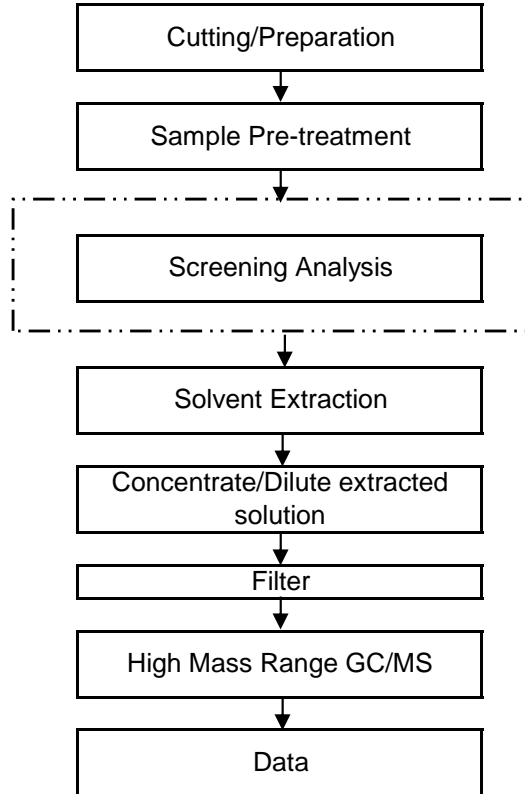
Remarks: Sample received was totally dissolved by preconditioning method. (CrVI method excluded)

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**Process Flow of PBBs and PBDEs by GC/MS (IEC 62321)**

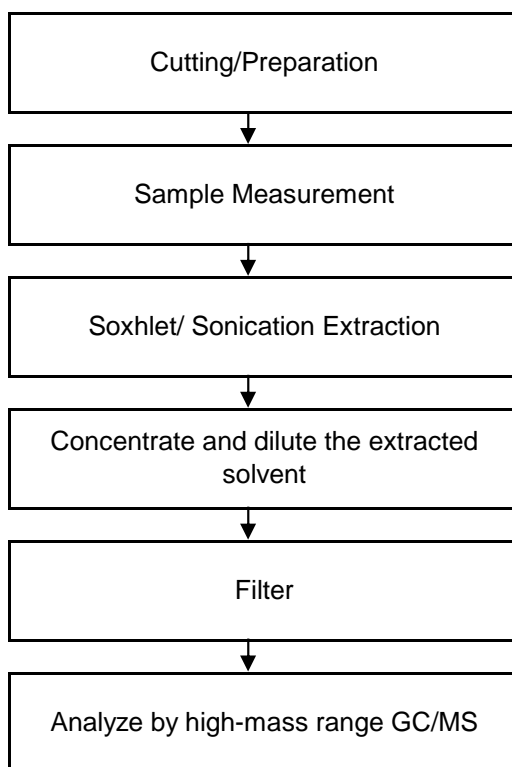
First Testing Process → Optional screen process ..... Confirmation process ...→



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### Process Flow of Phthalate Analysis (IEC62321)



\*\*\*End of Report\*\*\*

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