

## Test Report

No: 10494288(1)

Date: 20-May-2020

Page 1 of 7

Heraeus Deutschland GmbH & Co. KG  
Heraeusstrasse 12-14, 63450 Hanau, Germany

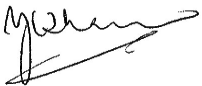
The following sample(s) was/were submitted and identified by/on behalf of the client as:

Sample Name : Copper Metal Substrate with Silver  
Style/Item no. : MOB6, MOA4, MOB4-2 and MOA8  
Sample Receiving Date : 08-May-2020  
Testing Period : 08-May-2020 to 20-May-2020  
Test Requested : In accordance with the RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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 Report

No: 10494288(1)

Date: 20-May-2020

Page 2 of 7

## Test Result(s):

Sample Description : Silver colour strip

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	6	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	-	

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

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# Test Report

No: 10494288(1)

Date: 20-May-2020

Page 3 of 7

## Test Result(s):

Sample Description : Silver colour strip

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, YY and SJ

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

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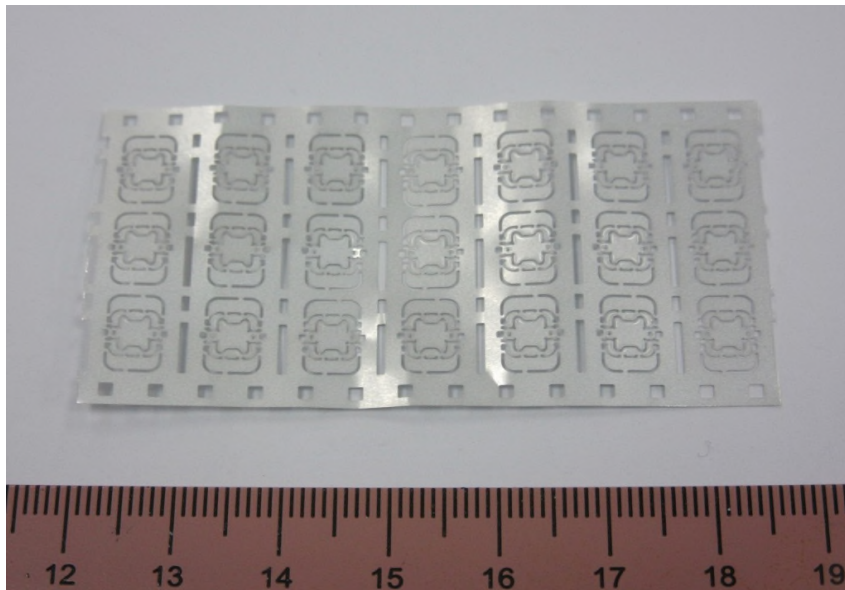
3 Toh Tuck Link, #01-02/03, Singapore 596228 t +65 6379 0111 f+65 6777 2914 [www.sgs.com](http://www.sgs.com)

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**Sample photo:**

Sample Description : Silver colour strip

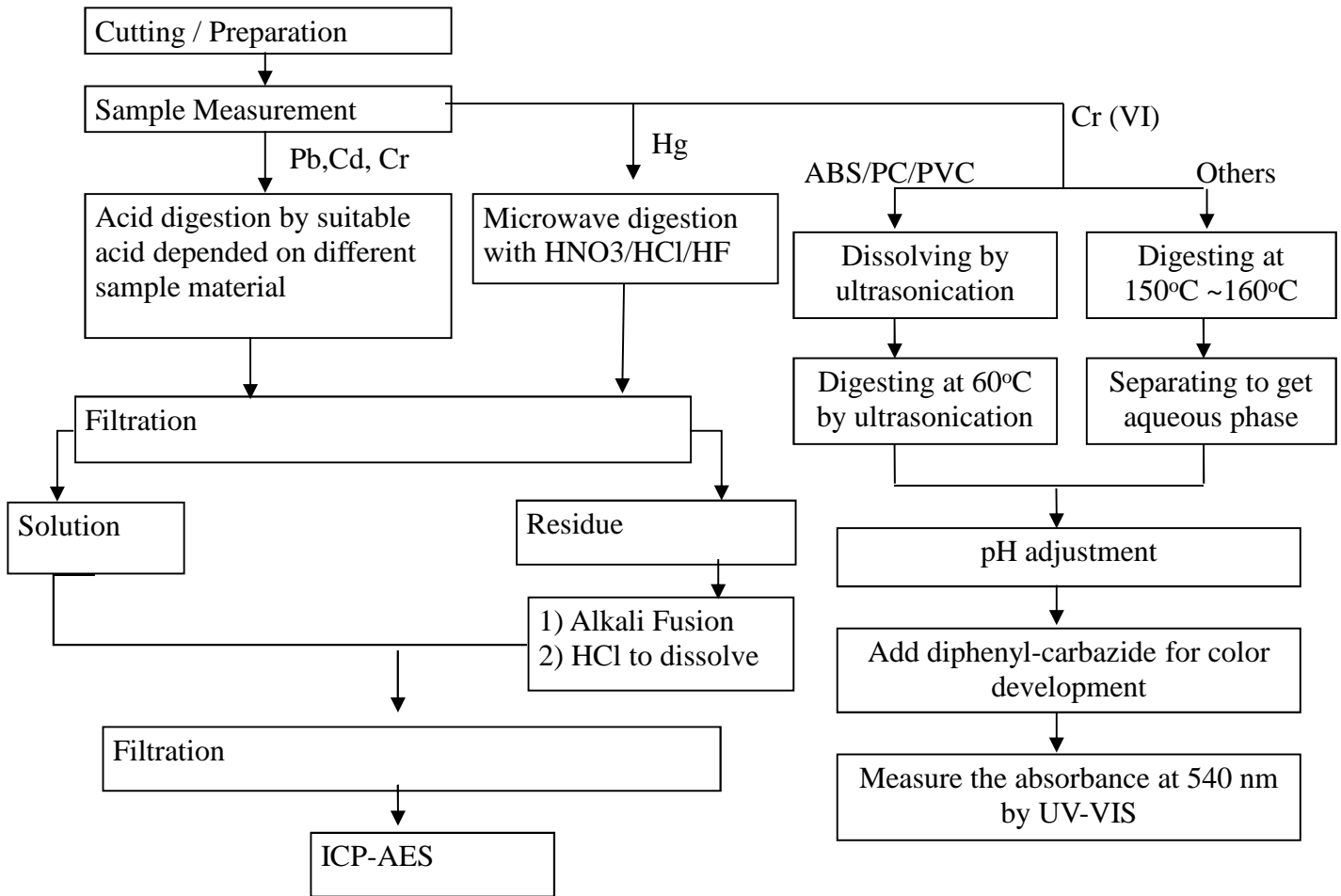
SGS authenticate the photo on original report only



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



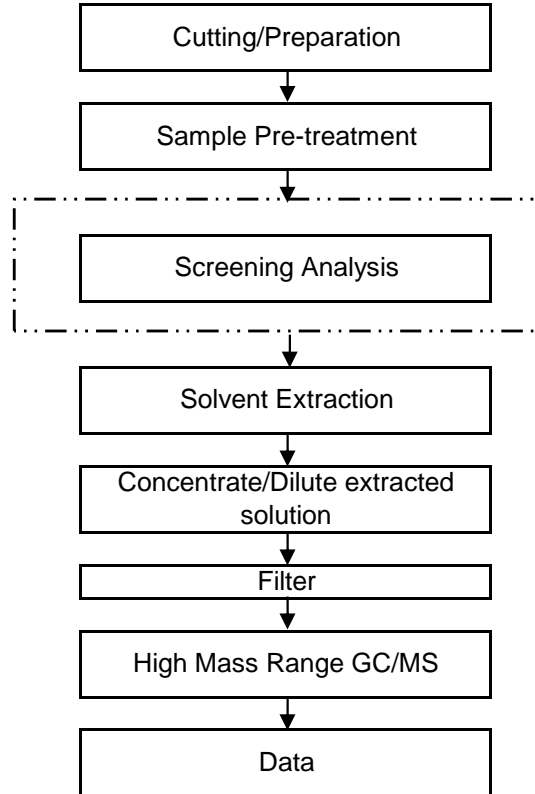
Remarks: Sample received was totally dissolved by preconditioning method. (CrVI method excluded)

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

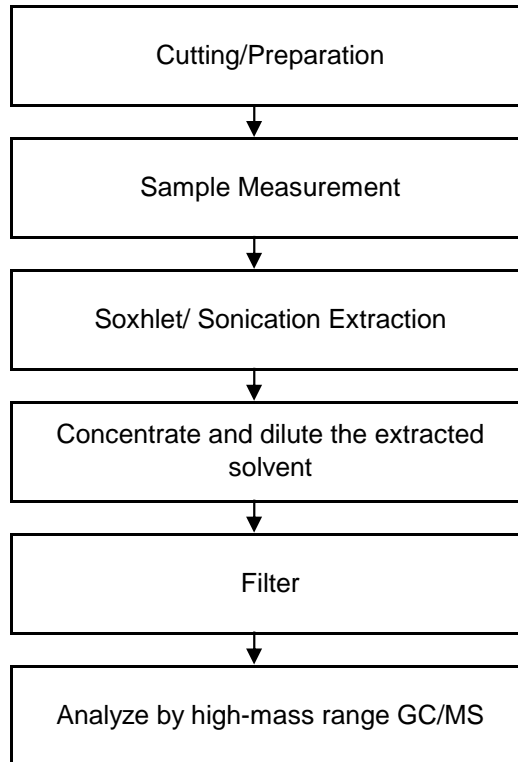
First Testing Process → Optional screen process ..... Confirmation process ...→



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### Process Flow of Phthalate by GC/MS (IEC 62321)



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

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