

**Test Report**

No. 4360229-03\_rev01

Date : 19/JAN/2018

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Jauch Quartz GmbH  
 Mr. Stefan Durczok  
 In der Lache 24  
 78056 Villingen-Schwenningen  
 GERMANY



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

SGS Job file : 4360229  
 Order date : 14/NOV/2017  
 Order number : -  
 Sample receiving date : 17/NOV/2017  
 Testing period : 17/NOV/2017 – 07/DEC/2017

Sample No	Sample designation
171231721	SMQ32SN

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  
 (2) Determination of Lead by ICP-OES, acc. IEC 62321-5:2013  
 (3) Determination of Mercury by CV-AAS, acc. IEC 62321-4:2013  
 (4) Determination of Chromium by ICP-OES, acc. IEC 62321-5:2013  
 (5) Determination of Chromium (VI) acc. IEC 62321:  
 A) (metal samples) Determination after extraction with hot water and derivatisation with 1,5-diphenyl-carbazide based on IEC 62321-7-1:2015 (metal samples), ion chromatography  
 B) (non-metallic samples) Determination after alkaline extraction and derivatisation with 1,5-diphenyl-carbazide based on IEC 62321, Ed1, 2008, C5 (polymer and electronic samples), ion chromatography  
*Remark: Due to its highly reactive nature the concentration of Cr(VI) 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  
*Remark: Please note that acc. to IEC the testing of metals for PBB/PBDE is gratuitous*  
 (7) Determination of Phthalates by GC/MS  
 In-house method, GC-MS after extraction with toluene

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

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Member of the SGS Group (Société Générale de Surveillance)

Die Prüfergebnisse beziehen sich auf die untersuchten Proben. Die Veröffentlichung und Vervielfältigung unserer Prüfberichte und Gutachten zu Werbezwecken sowie deren auszugsweise Verwendung in sonstigen Fällen bedürfen unserer schriftlichen Genehmigung. Alle Dienstleistungen werden auf Grundlage der anwendbaren Allgemeinen Geschäftsbedingungen der SGS, die auf Anfrage zur Verfügung gestellt werden, erbracht.

Geschäftsführer: Stefan Steinhardt, Aufsichtsratsvorsitzender: Dirk Helleman, Sitz der Gesellschaft: Taunusstein, HRB 21543 Amtsgericht Wiesbaden

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

Note: Sample contains Lead (Pb).

The sample consists of an electronic compound for which a high melting temperature type solders containing  $\geq 85$  % lead was used acc. to client's declaration. The use of lead is explicitly allowed acc. Directive 2011/65/EU, Annex 3 no. 7a and an elevated content non objectionable for application as follows: Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).

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 RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

This report cancels and supersedes the report no. 4360229-03 dated 07/DEC/2017 issued by SGS INSTITUT FRESENIUS GmbH. Conclusion has been modified, regarding additional sample information according to customer declaration of 21/DEC/2017.

Signed for and on behalf of

**SGS INSTITUT FRESENIUS GmbH**

i.V.

Wera Leonhard / hi  
Projektleiterin / Project Manager

i.A.

Annkatriin Kuhl  
Projektleiterin / Project Manager

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

Sample No.		171231721		
Test Item(s):	Method (refer to)		RL	RoHS Limit
Cadmium(Cd)	(1)	n.d.	5**	100
Lead (Pb)	(2)	<b>11900</b>	50**	1000
Mercury (Hg)	(3)	n.d.	0,5	1000
Chromium, hexavalent (Cr(VI))	(5 B)	n.d.	1	1000
<b>Sum of PBDEs</b>	(6)	-	-	1000 (Sum of polybrominated diphenyl ether)
Monobromodiphenyl ether		n.a.	50	
Dibromodiphenyl ether		n.a.	50	
Tribromodiphenyl ether		n.a.	50	
Tetrabromodiphenyl ether		n.a.	50	
Pentabromodiphenyl ether		n.a.	50	
Hexabromodiphenyl ether		n.a.	50	
Heptabromodiphenyl ether		n.a.	50	
Octabromodiphenyl ether		n.a.	50	
Nonabromodiphenyl ether		n.a.	50	
Decabromodiphenyl ether		n.a.	50	
<b>Sum of PBBs</b>		-	-	
Monobromobiphenyl		n.a.	50	
Dibromobiphenyl		n.a.	50	
Tribromobiphenyl		n.a.	50	
Tetrabromobiphenyl		n.a.	50	
Hexabromobiphenyl		n.a.	50	
Pentabromobiphenyl		n.a.	50	
Heptabromobiphenyl		n.a.	50	
Octabromobiphenyl		n.a.	50	
Nonabromobiphenyl		n.a.	50	
Decabromobiphenyl		n.a.	50	

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

Sample No.		171231721		
Test Item(s):	Method (refer to)		RL	Limit
<b>Phthalates</b>	(7)			
<b>Dibutylphthalate (DBP) (84-74-2)*</b>		n.d.	100	1000#
<b>Benzylbutylphthalate (BBP) (85-68-7) #</b>		n.d.	100	1000#
<b>Bis-(2-ethylhexyl)phthalate (DEHP); (117-81-7) #</b>		n.d.	100	1000#
Diisononylphthalate (DINP) (28553-12-0)		n.d.	100	1000
Di-n-octylphthalate (DNOP) (117-84-0)		n.d.	100	1000
Diisodecylphthalate (DIDP) (26761-40-0)		n.d.	100	1000
<b>Diisobutylphthalate (DIBP) (84-69-5) #</b>		n.d.	100	1000#
Di(C7-C11 alkyl) Phthalates linear + branched (DHNUP) calculated as DUDP (68648-91-9)		n.d.	100	1000
Di-isoheptylphthalate (DIHP) (90937-19-2)		n.d.	100	1000
Di-n-pentylphthalate (DnPP) (131-18-0)		n.d.	100	1000
n-pentyl-iso-pentylphthalate (nPiPP) ; (776297-69-9)		n.d.	100	1000
Di-iso-Pentylphthalate (DIPP) (605-50-5)		n.d.	100	1000
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear; (84777-06-0)		n.d.	100	1000
Di-2-methoxyethylphthalate (DMEP); (117-82-8)		n.d.	100	1000
Di-n-hexylphthalate (DnHP); (84-75-3)		n.d.	100	1000
Di-iso-Hexylphthalat (1,2-Benzenedicarboxylic acid, dihexylester, branched and linear; (68515-50-4)		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

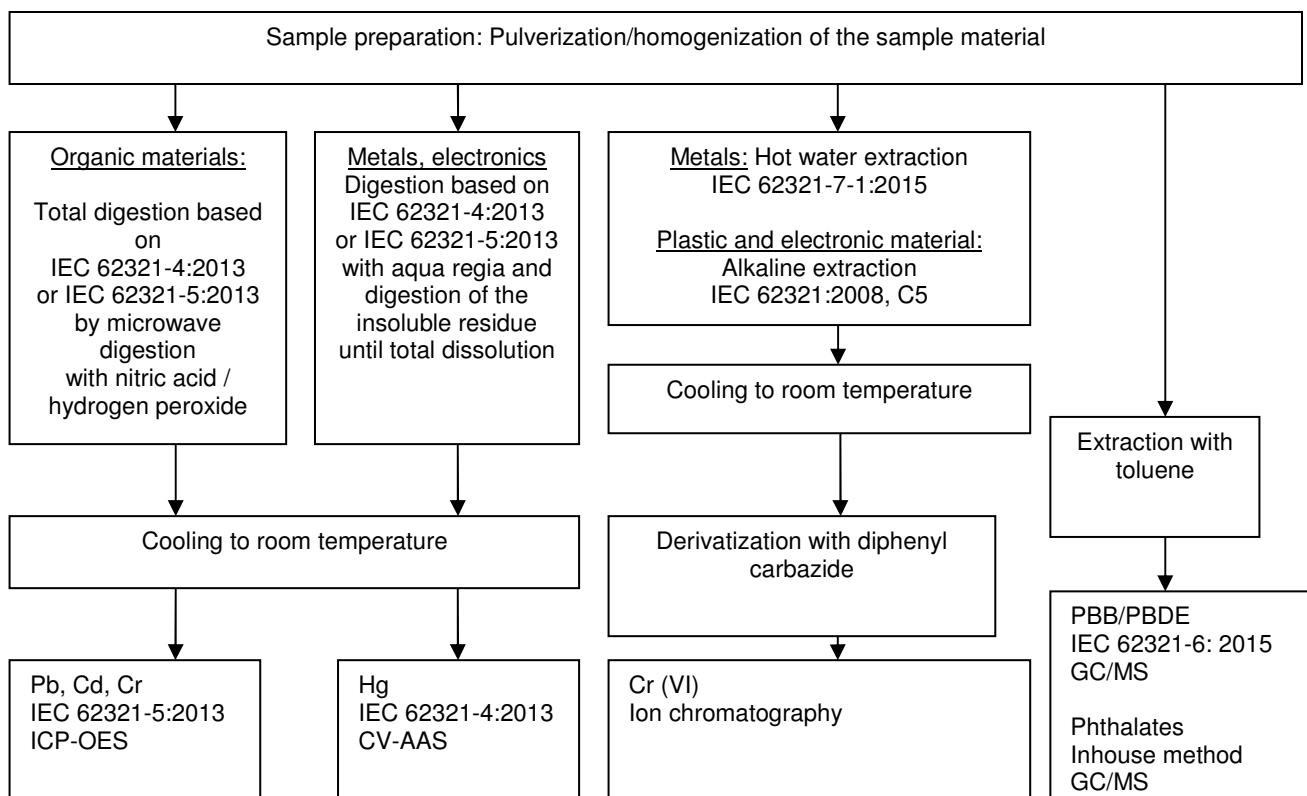
# = Note: Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU as regards the list of restricted substances: addition of four phthalates **BBP**, **DBP**, **DEHP**, **DIBP** (limit 1000 mg/kg, per homogeneous material)  
limit valid from 22/JUL/2019

Under the REACH regulation some of the substances listed above are part of the ECHA candidate list of Substances of Very High Concern (SVHC).

For further information please refer to [http://echa.europa.eu/chem\\_data/candidate\\_list\\_table\\_en.asp](http://echa.europa.eu/chem_data/candidate_list_table_en.asp).

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**Flow Chart for the working flow of the performed analysis**



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### Sample Photo(s)



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