

Test Report

No. 4352784-04

Date : 20/DEC/2017

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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 : 4352784
Order date : 09/NOV/2017
Order number : -
Sample receiving Date : 13/NOV/2017
Testing period : 13/NOV/2017 – 28/NOV/2017

Sample No	Sample designation
171204554	JSO22-LC / JSO22-AC

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 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
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 Hellemans, 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 Mercury, Cadmium and hexavalent Chromium **are inconclusive with regard to** the limits as set by RoHS Directive 2011/65/EU, Annex 2 and subsequent amendments: traces of Pb detected and sample is inhomogeneous material, origin of Pb could not be tested.

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.

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.		171204554		
Test Item(s):	Method (refer to)		<u>RL</u>	<u>RoHS Limit</u>
Cadmium(Cd)	(1)	n.d.	5**	100
Lead (Pb)	(2)	20	10	1000
Mercury (Hg)	(3)	n.d.	0,5	1000
Chromium, hexavalent (Cr(VI))	(5 B)	n.d.	1	1000
Sum of PBDEs	(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	
Sum of PBBs		-	-	1000 (Sum of polybrominated biphenyls)
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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The analytical findings are only valid for the sample as analyzed. Written acknowledgement for publication and duplication of our analytical reports for promotional purpose, as well as fractional use for other purposes mandatory. Electronically submitted results are for your information only. For legally binding results refer to the originally signed analytical report. Numbers following „<“ represent limits of quantification. Determination of parameters marked with * was performed with a cooperation partner.

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

Sample No.		171204554		
Test Item(s):	Method (refer to)		RL	Limit
Phthalates	(7)			
Dibutylphthalate (DBP) (84-74-2)*		n.d.	100	1000 [#]
Benzylbutylphthalate (BBP) (85-68-7) *		n.d.	100	1000 [#]
Bis-(2-ethylhexyl)phthalate (DEHP); (117-81-7) *		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
Diisobutylphthalate (DIBP) (84-69-5) *		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

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**= 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.

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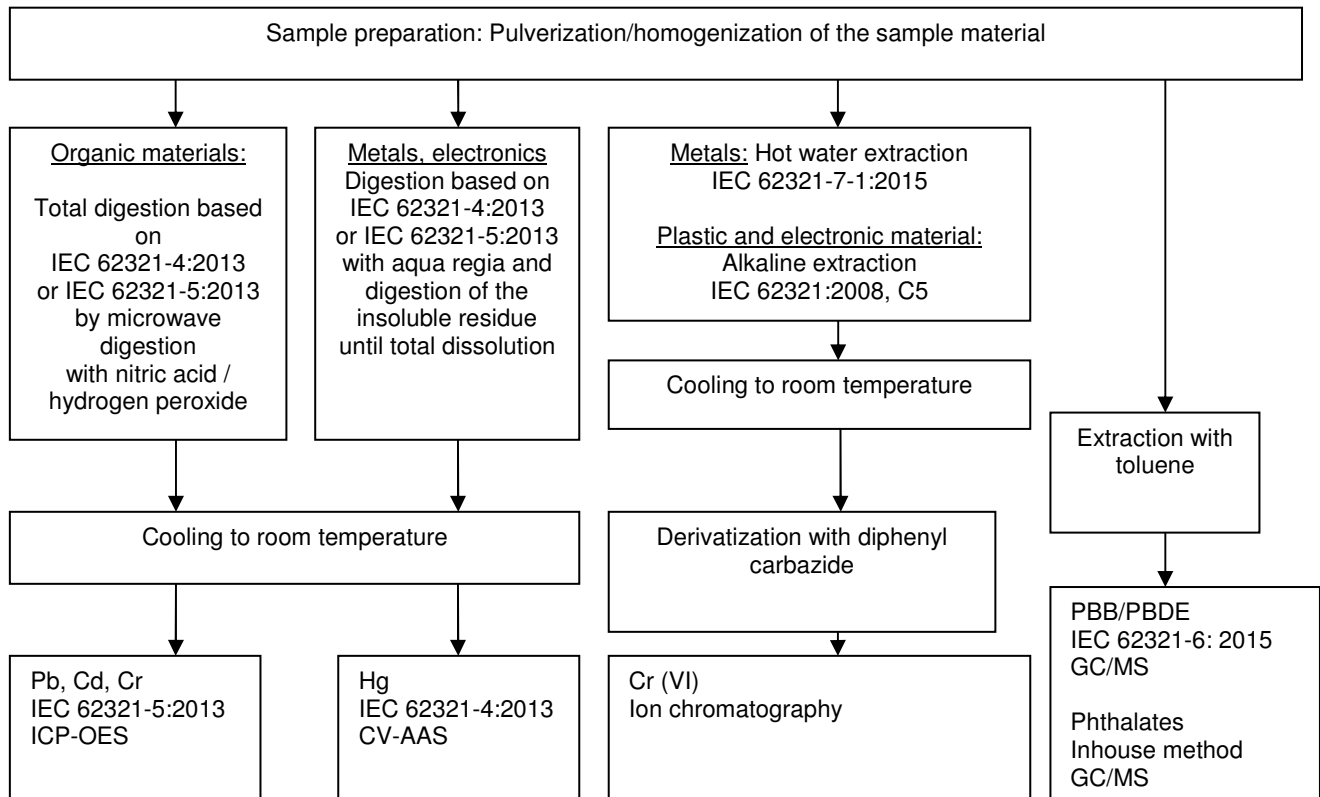
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Flow Chart for the working flow of the performed analysis



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Sample Photo(s)



End of Report