Jauch Quartz GmbH
Mr. Christian Büchler
In der Lache24
78056 Villingen-Schwenningen
GERMANY

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-00

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

SGS Job file	:	5948045
Order date	:	23/NOV/2021
Order number	:	-
Sample receiving date	:	26/NOV/2021
Sampling	:	by Client or by a third party acting at the Client's direction
Condition of the samples		appropriate for testing
Testing period	:	26/NOV/2021 – 18/JAN/2022
Analytical scope	:	according to Client's requirements

Sample No.	Sample designation	Sample material
211365498	SMQ32SL	electronic component / Quartz Crystal

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)

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

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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.

Sample contains lead (Pb).
According to customer's declaration, the sample contains a high melting temperature type solder. The use of lead-based alloys containing 85 % by weight or more lead is explicitly allowed acc. Directive 2011/65/EU, Annex 3 no. 7a and an elevated content non objectionable for application as follows:

	Dir. 2018/742 (EU)	
7a.	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)	Applies to categories 1-7 and 10 (except applications covered by point 24 of this Annex) and expires on 21 July 2021. For categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 in vitro diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.

Signed for and on behalf of

SGS INSTITUT FRESENIUS GmbH

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

Sample No.		211365498		
Test Item(s):	Method (refer to)		RL	RoHS Limit
Cadmium(Cd)	(1)	n.d.***	1	100
Lead (Pb)	(2)	**9700***	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 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
*** = additional verification of result via XRF acc. IEC 62321-3-1: 2013 and house method, measurement on 11 test points

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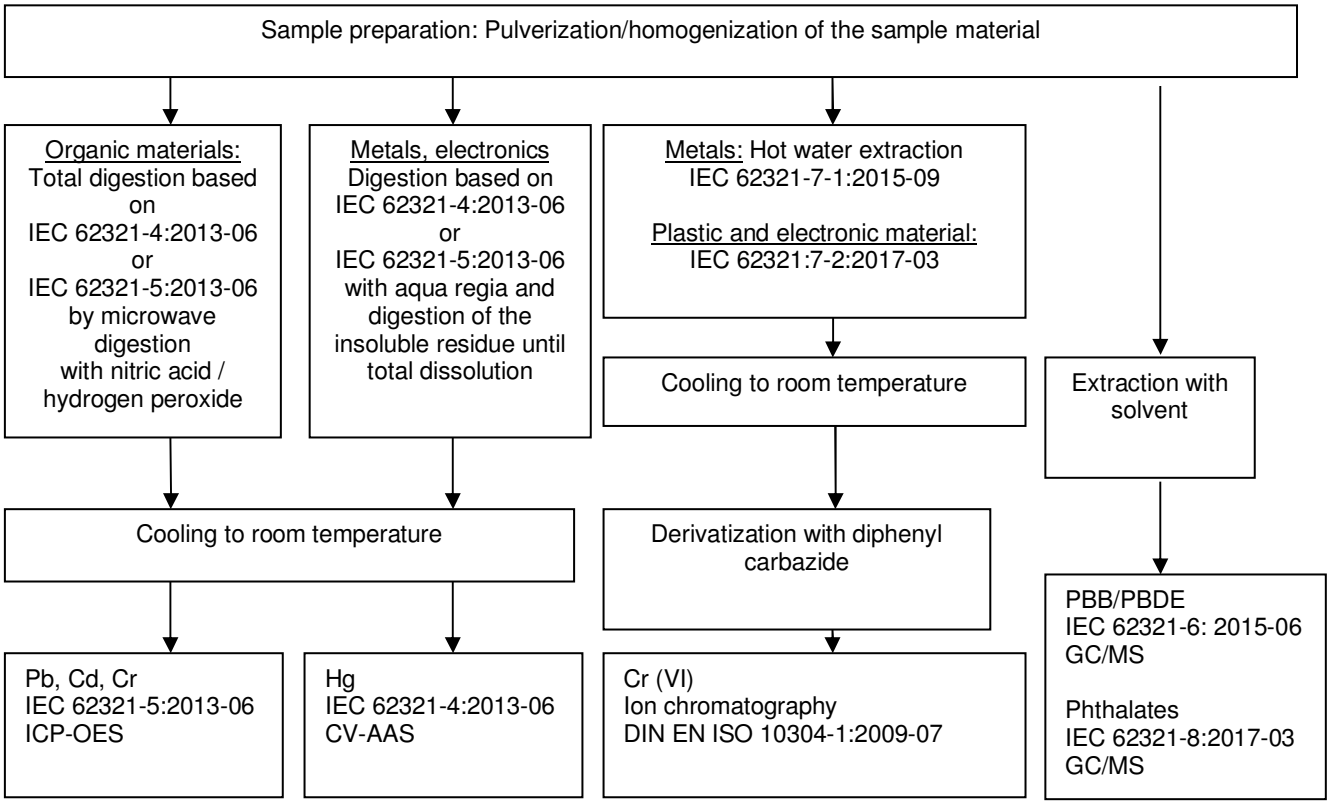
Flow chart for the working flow of the performed analysis



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Sample Photo(s)

End of Report