

Test Report

No. 5948045-03

Date: 03/JAN/2022

Page 1 of 5

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



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 – 03/JAN/2022
Analytical scope : according to Client's requirements

Sample No.	Sample designation	Sample material
211365495	SMU2, SMU3, SMU4 Testing as mixed sample; acc to customer declaration: identical materials used.	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)

[https://Sgs.Sharepoint.Com/Sites/De-Cp-Hamfiles/J/Jauch Quartz GmbH_10008399/2021/5948045/5948045-03_ROHS+4-WM_Eng_495.Doc](https://Sgs.Sharepoint.Com/Sites/De-Cp-Hamfiles/J/Jauch%20Quartz%20GmbH_10008399/2021/5948045/5948045-03_ROHS+4-WM_Eng_495.Doc)

Test Report

No. 5948045-03

Date: 03/JAN/2022

Page 2 of 5

Jauch Quartz GmbH
In der Lache24
78056 Villingen-Schwenningen
GERMANY

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.

Signed for and on behalf of

SGS INSTITUT FRESENIUS GmbH

i.V.

Wera Leonhard / tp
Projektleiterin / Project Manager
Connectivity & Products (C&P)
Tel. +49 (0)6128 / 744 - 186

i.A.

Dr. Stefan Graß
Customer Service Consultant
Connectivity & Products (C&P)
Tel. +49 (0)6128 / 744 - 280

Test Report

No. 5948045-03

Date: 03/JAN/2022

Page 3 of 5

Jauch Quartz GmbH
In der Lache24
78056 Villingen-Schwenningen
GERMANY

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

Sample No.		211365495		
Test Item(s):	Method (refer to)		RL	RoHS Limit
Cadmium(Cd)	(1)	n.d.***	1	100
Lead (Pb)	(2)	n.d.***	25**	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		(6)	-	
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 6 test points

Test Report

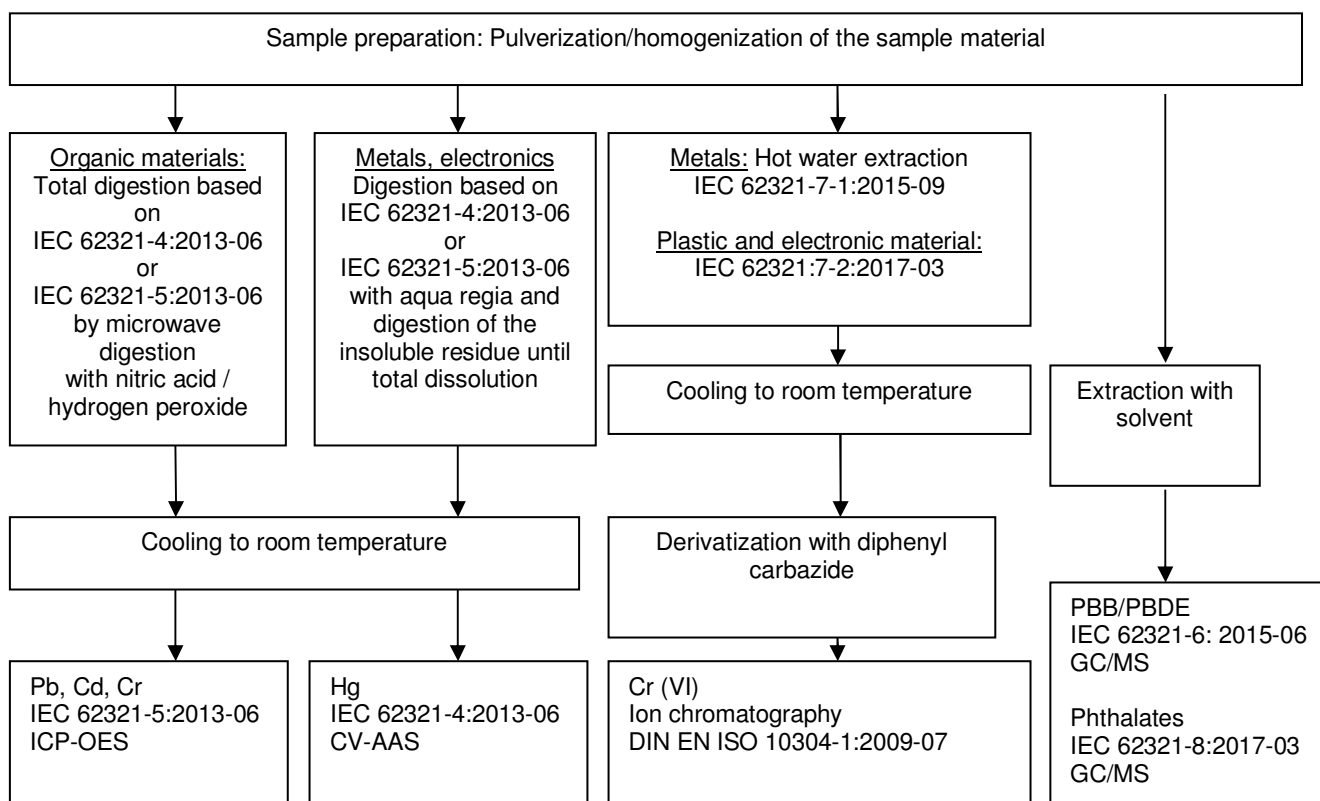
No. 5948045-03

Date: 03/JAN/2022

Page 4 of 5

Jauch Quartz GmbH
 In der Lache24
 78056 Villingen-Schwenningen
 GERMANY

Flow chart for the working flow of the performed analysis



Test Report

No. 5948045-03

Date: 03/JAN/2022

Page 5 of 5

Jauch Quartz GmbH
In der Lache24
78056 Villingen-Schwenningen
GERMANY

Sample Photo(s)



End of Report

The test results refer exclusively to the examined test items and the date of the test under the test specifications. Written acknowledgement for publication and duplication of our analytical reports for promotional purpose, as well as fractional use for other purposes are mandatory. Numbers following „<“ represent limits of quantification. Determination of parameters marked with * was performed with a cooperation partner.

This document is issued by the Company subject to its General Conditions of Service (www.sgsgroup.de/agb). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Note: The sample(s) to which the findings recorded herein (the "findings") relate was (were) probably drawn and / or provided by the client or by a third party acting at the client's direction. In this case the findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

We would like to point out that measurement uncertainties are not taken into account for conclusions. On request, we can provide measurement uncertainties and take them into account for conclusions upon consultation.