

## Test Report

No. 5948045-10

Date: 03/JAN/2022

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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                              |
|------------|---|--|
| 211365552  | JOD32, JOE32, JOH32<br>Testing as mixed sample; acc to customer<br>declaration: identical materials used. | electronic component /<br>Crystal Oscillator |

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 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 62321-6:2015-06  
*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\\_10008399/2021/5948045/5948045-10\\_ROHS+4-WM\\_Eng\\_5552.Doc](https://Sgs.Sharepoint.Com/Sites/De-Cp-Hamfiles/J/Jauch%20Quartz%20GmbH_10008399/2021/5948045/5948045-10_ROHS+4-WM_Eng_5552.Doc)

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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.

Signed for and on behalf of

**SGS INSTITUT FRESENIUS GmbH**

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

| Sample No.                                    |                   | 211365552 |      |  |
|---|-------------------|-----------|------|--|
| 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   |
| <b>Sum of PBDEs</b>                           | (6)               | -         | -    | 1000<br>(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   |  |
| <b>Sum of PBBs</b>                            |                   | (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   |  |
| <b>Phthalates</b>                             | (7)               |           |      |  |
| Bis(2-ethylhexyl) phthalate (DEHP) (117-81-7) |                   | n.a.      | 100  | 1000 <sup>#</sup>                              |
| Butyl benzyl phthalate (BBP) (85-68-7)        |                   | n.a.      | 100  | 1000 <sup>#</sup>                              |
| Dibutyl phthalate (DBP) (84-74-2)             |                   | n.a.      | 100  | 1000 <sup>#</sup>                              |
| Diisobutyl phthalate (DIBP) (84-69-5)         |                   | n.a.      | 100  | 1000 <sup>#</sup>                              |

**Note:** mg/kg = ppm      n.d.= not detected      RL = Report Limit      n.a.= not analyzed

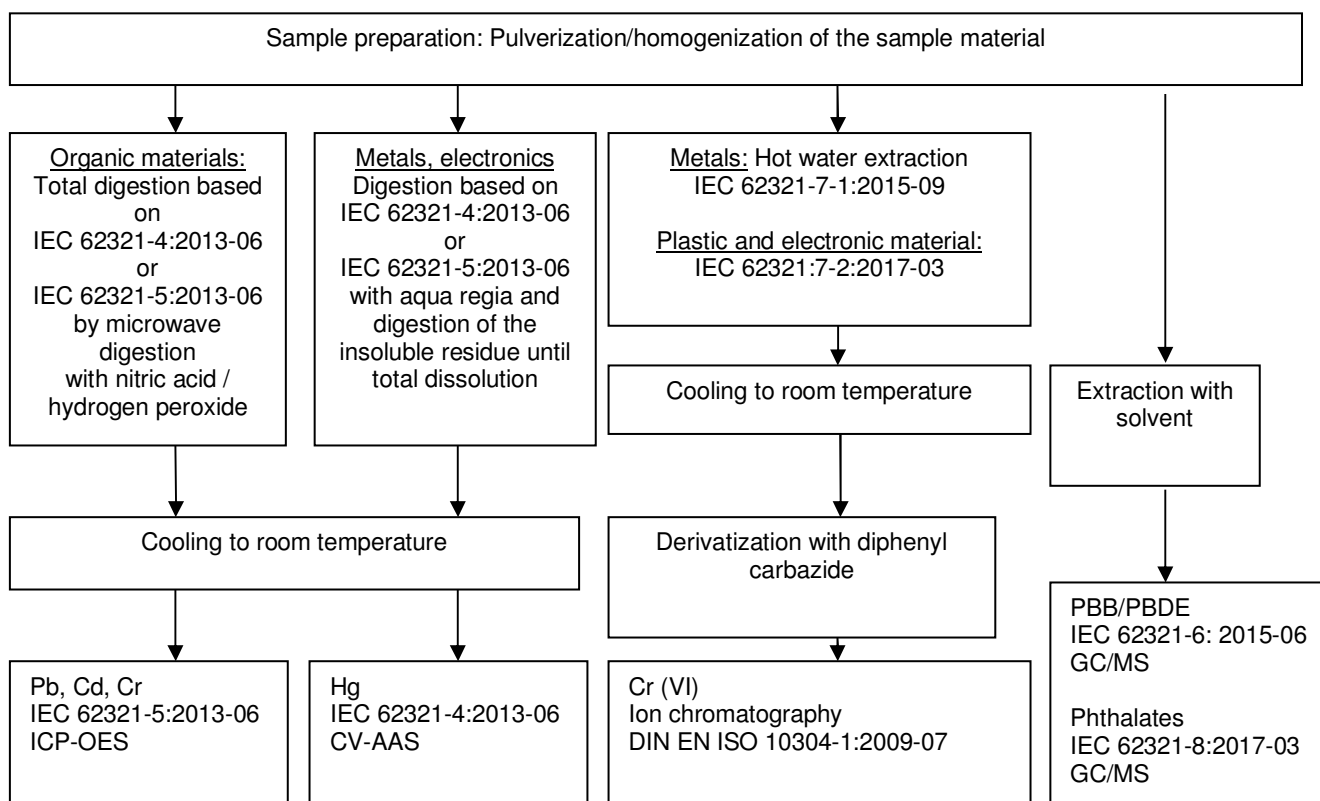
\*\*= elevated reporting limit due to matrix interferences

<sup>#</sup> = 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 3 test points

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



## Test Report

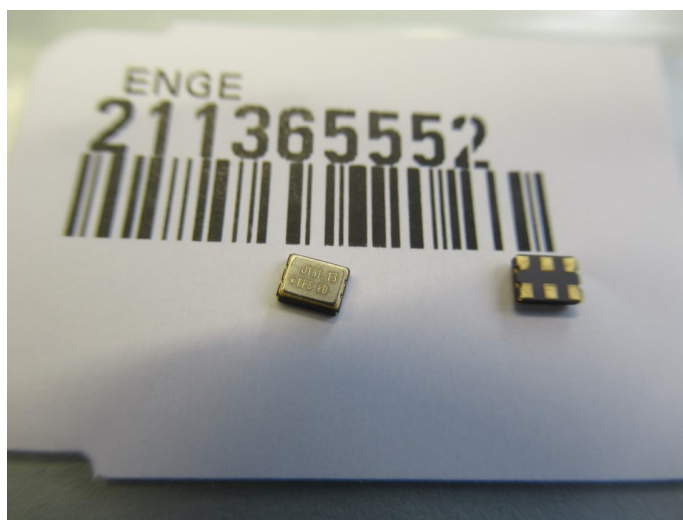
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## Sample Photo(s)



\*\*\*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.

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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.