

## Test Report

No. 5244635-09

Date: 18/MAR/2020

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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 : 5244635  
Order date : 16/JAN/2020  
Order number : -  
Sample receiving Date : 20/JAN/2020  
Sampling : by Client or by a third party acting at the Client's direction  
condition of the samples : appropriate for testing  
Testing period : 20/JAN/2020 – 04/MAR/2020  
Analytical scope : According to client's requirements

Sample No	Sample designation	Sample material
200069512	S (HC49/U)	Electronic component

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 derivatisation 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)  
Method not under accreditation

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 **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.	Method (refer to)	200069512	RL	RoHS Limit
Cadmium(Cd)	(1)	n.d.***	1	100
Lead (Pb)	(2)	n.d.***	30**	1000
Mercury (Hg)	(3)	n.d.***	1**	1000
Chromium, hexavalent (Cr(VI))	(5 A)	negative <sup>1</sup> ***	0,1 µg/cm <sup>2</sup>	1000
<b>Sum of PBDEs</b>	(6)	-	-	1000 (Sum of polybrominated diphenylethers)
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	
<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

# = 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

<sup>1</sup> The sample is negative for Cr(VI) if Cr(VI) is not detectable (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-Cr(VI) based coating. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain Cr(VI). Results between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> are considered to be inconclusive - unavoidable coating variations may influence the determination

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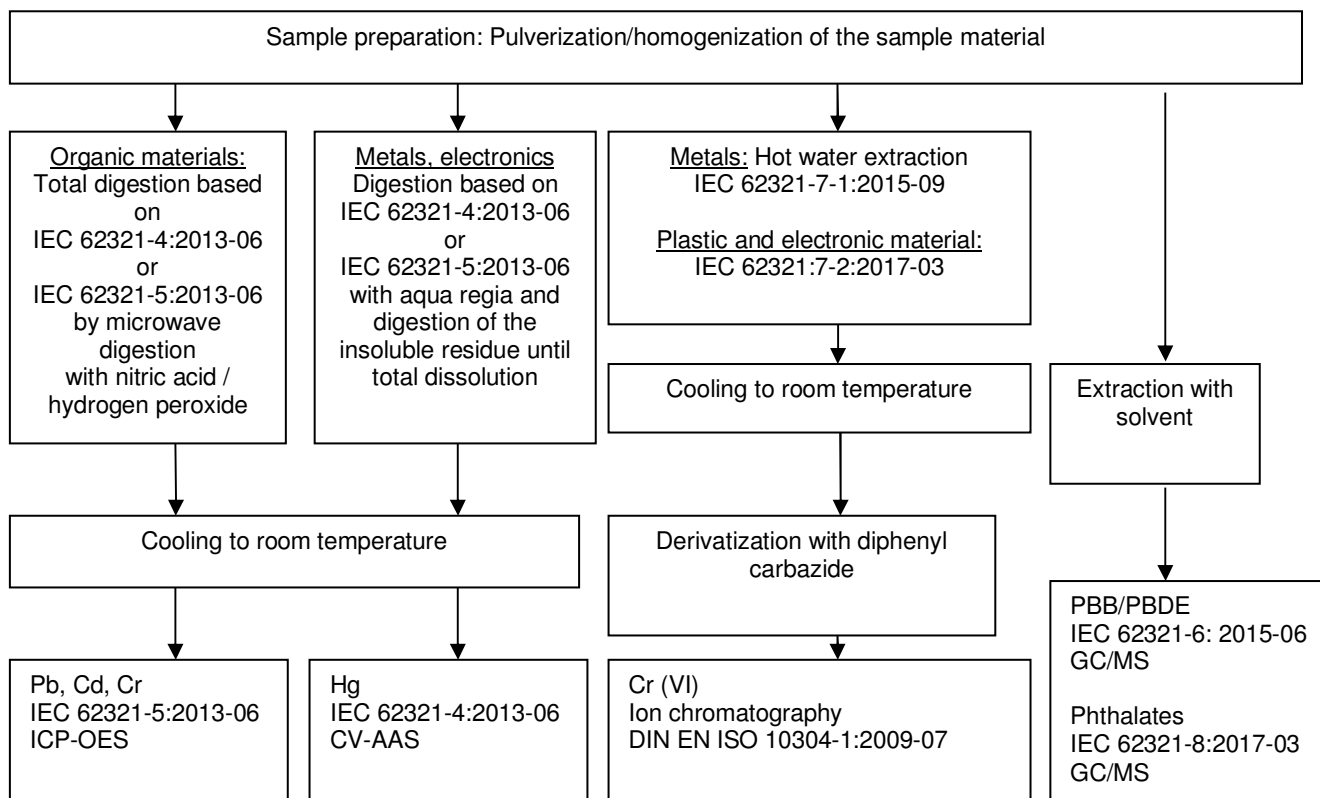
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### Flow Chart for the working flow of the performed analysis



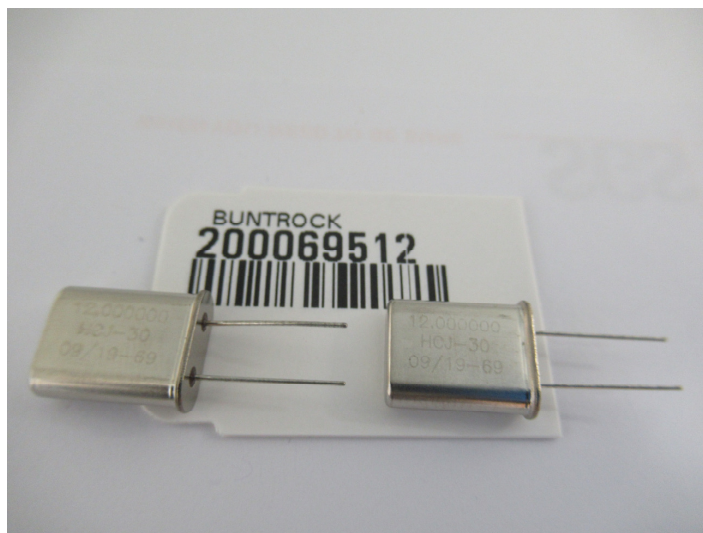
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**Sample Photo(s)****\*\*\*End of Report\*\***

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.