



No. 4718643-05

Date: 14/NOV/2018

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Steiner GmbH & Co. KG Mr. R.-H. Spies (PhD) Jägersgrund 1 57339 Erndtebrück GERMANY



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

| SGS Job file Order date Order number Sampling condition of the samples Sample receiving Date Testing period Analytical scope | | 4718643 16/OCT/2018 EB-6013962-S-0255 by Client or by a third party acting at the Client's of appropriate for testing 17/OCT/2018 17/OCT/2018 – 14/NOV/2018 According to client's requirements | direction | | | | |
|---|---|--|---|--|--|--|--|
| Sample No | | Sample designation | Sample material | | | | |
| 181026343 | | Sample 5 Al-coated Polyphenylenesulphide (PPS) film | Metallized plastic film | | | | |
| 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.(5) Determination of Chromium (VI) acc. IEC 6232 | Chromium by ICP-OES, acc. IEC 62321-5:2013 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 | | | | | |
| | | | | | | | |
| | | <u>Remark:</u> 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. I <u>Remark</u> : Please note that acc. to IEC the testing of metals for | | | | | |
| 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

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

| Sample No. | | 181026343 | | |
|-------------------------------|----------------------|-----------|-----------|---|
| Test Item(s): | Method (refer to) | | <u>RL</u> | RoHS Limit |
| Cadmium(Cd) | (1) | n.d. | 1 | 100 |
| Lead (Pb) | (2) | n.d. | 10 | 1000 |
| Mercury (Hg) | (3) | n.d. | 0,5 | 1000 |
| Chromium, hexavalent (Cr(VI)) | (5 B) | n.d. | 1 | 1000 |
| Sum of PBDEs | (6) | - | - | |
| Monobromodiphenyl ether | | n.d. | 50 | 1000 (Sum of polybrominated diphenyl ether) |
| 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 | | - | - | |
| Monobromobiphenyl | | n.d. | 50 | |
| Dibromobiphenyl | | n.d. | 50 | 1000 (Sum of polybrominated biphenyls) |
| 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 | 1 |
| Decabromobiphenyl | | n.d. | 50 | 1 |

Note : mg/kg = ppm

n.d.= not Detected

RL = Report Limit

n.a.= not analyzed

**= elevated reporting limit due to matrix interferences





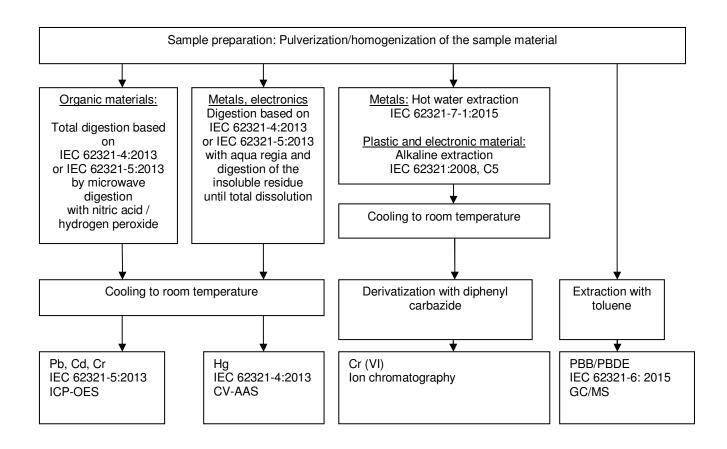
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Flow Chart for the working flow of the performed analysis







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Sample Photo(s)



End of test report

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