Verification Report

Client name: RUBADUE WIRE CO., INC.
Client address: 5610 BOEING DR. LOVELAND, CO. 80538 USA

Sample name:	TCA
Country of Origin:	USA

The above sample(s) and information were provided by client.

SGS Job No.:	5485256 - HK
Date of sample received:	23 Oct 2024
Verification Period:	23 Oct 2024 – 11 Nov 2024
Verification Requested:	: With reference to GB/T 26572-2011 Requirement of concentration limits for certain restricted substances in electrical and electronic products.
Verification Method(s):	: Please refer to next page(s).
Verification Result(s):	: Please refer to next page(s).

Test Result Summary

Test Items	Conclusion
GB/T 26572-2011 Requirement of concentration limits for certain restricted substances in electrical and electronic products- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)	PASS

Signed for and on behalf of
SGS Hong Kong Limited

Lam Ka Yung, Allen
Senior Chemist

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Verification Methods:

1. Disassembly and disjointment were performed for the submitted samples.
2. Tests were performed for the samples indicated by the photos in this report
   (1) With reference to GB/T 39560.301-2020, Screening by EDXRF spectroscopy. (Decision Rule: please refer to appendix 1: Category 6)
   (2) Wet chemical test method: With reference to GB/T 39560.5-2021, GB/T 39560.4-2021, GB/T 39560.702-2021, GB/T 39560.701-2020 and GB/T 39560.6-2020, analysis was performed by ICP-OES/AAS, UV-Vis. (Decision Rule: please refer to appendix 1: Category 6)

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Verification Part Description:

SN ID	SGS Sample ID	Description
SN1	HKT24-050937.025	Translucent plastic - Pellet
SN2	HKT24-050937.026	Blue plastic - Pellet
SN3	HKT24-050937.027	White plastic - Pellet
SN4	HKT24-050937.028	Orange plastic - Pellet
SN5	HKT24-050937.029	Grey plastic - Pellet
SN6	HKT24-050937.030	Coppery metal w/ silvery plating – Wire (Silvery-Plated Copper)
SN7	HKT24-050937.031	Coppery metal - Wire (Silvery-Plated Copper)
SN8	HKT24-050937.032	Coppery metal w/ silvery plating - Wire (Tin-Plated Copper Wire)
SN9	HKT24-050937.033	Coppery metal - Wire (Tin-Plated Copper Wire)
SN10	HKT24-050937.034	Coppery metal – Wire (BCCS)
SN11	HKT24-050937.035	Coppery metal w/ red plating – Wire (MW80)
SN12	HKT24-050937.036	Coppery metal - Wire (MW80)
SN13	HKT24-050937.037	Coppery metal - Wire (MW79)

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Verification Results：

In accordance with the result of material risk assessment, the following disjointed parts in the submitted sample have been verified. (Unless otherwise specified, the unit is mg/kg).

Test Item(s)	25	26	27	28	29	30	31	32
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI) ▼	BL	BL	BL	BL	BL	BL	BL	BL
PBBs	BL	BL	BL	BL	BL	---	---	---
PBDEs	BL	BL	BL	BL	BL	---	---	---
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	33	34	35	36	37
Pb	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL
Cr(VI) ▼	BL	BL	BL	BL	BL
PBBs	---	---	---	---	---
PBDEs	---	---	---	---	---
Conclusion	PASS	PASS	PASS	PASS	PASS

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Notes：

(1) Interpretation of screening results by X-ray fluorescence spectrometry (XRF):

(a) Screening limits in mg/kg for regulated elements in various matrices according to GB/T 39560.301-2020 Table A.2.

Element	Polymer	Metal	Composite Materials
Cd	BL ≤(70-3σ)< X <(130+3σ)≤OL	BL ≤(70-3σ)< X <(130+3σ)≤OL	LOD < X <(150+3σ)≤ OL
Pb	BL ≤(700-3σ)< X<(1300+3σ)≤ OL	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(500-3σ)< X<(1500+3σ)≤ OL
Hg	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(500-3σ)< X <(1500+3σ)≤ OL
Br	BL ≤ (300-3σ)< X	Not applicable	BL ≤ (250-3σ)< X
Cr	BL ≤ (700-3σ)< X	BL ≤ (700-3σ)< X	BL ≤ (500-3σ)< X

(b) If the maximum allowed level restricts PBB/PBDE and Cr(VI) rather than Br and Cr, the exceptions are the XRF determinations of Br and Cr. If the quantitative results for the elements Br and/or Cr are higher than the limit (for Br calculated based on the stoichiometry of Br in the most common congeners of PBB/PBDE), the sample is “inconclusive”.

(c) Results are obtained by EDXRF for primary screening, LOD = Limit of Detection, BL = Below Limit, OL = Over Limit, IN (The symbol X marks the region)= Inconclusive, where further investigation is necessary, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBB/PBDE) are recommended to be performed.

(d) The EDXRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

(2) Interpretation of results by chemical tests:

(a) mg/kg = 0.0001%, MDL=Method detection Limit, ND = Not Detected (<MDL), --- = Not Applicable.

(b) Unit and MDL in wet chemical test

Test Items	Pb	Cd	Hg
Unit	mg/kg	mg/kg	mg/kg
MDL	10	10	10

The MDL for single compound of PBB and PBDE is 100 mg/kg.
MDL of Cr(VI) for polymer, composite and leather sample is 10 mg/kg.

(c) ▼ =Metal sample

a. The sample is positive for Cr(VI) if the Cr(VI)concentration is greater than 0.13 μg/cm^2. The sample coating is considered to contain Cr(VI).

b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 μg/cm^2). The coating is considered a non-Cr(VI) based coating.

c. The result between 0.10 μg/cm^2 and 0.13 μg/cm^2 is considered to be inconclusive-unavoidable coating variations may influence the determination.

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(3) GB/T 26572-2011 Requirement of concentration limits for certain restricted substances in electrical and electronic products sets the maximum concentration values tolerated by weight in homogeneous materials as Cd: 0.01%, Pb/Hg/Cr(VI)/PBB/PBDE: 0.1%.

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Appendix 1

Category	Decision Rule Statement
1	The decision rule for conformity reporting is based on the non-binary statement with guard band (is equal to the expanded measurement uncertainty with a 95% coverage probability, w = U95) in ILAC-G8:09/2019 Clause 4.2.3. A. "Pass - the measured value is within (or below / above) the acceptance limit, where the acceptance limit is below / above to the guard band." or "Pass - The measured values were observed in tolerance at the points tested. The specific false accept risk is up to 2.5%.". B. "Conditional Pass - The measured values were observed in tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values exceeded / out of tolerance. When the measured result is close to the tolerance, the specific false accept risk is up to 50%.". C. "Conditional Fail - One or more measured values were observed out of tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values were in tolerance. When the measured result is close to the tolerance, the specific false reject risk is up to 50%.". D. "Fail - the measured value is out of (or below / above) the tolerance limit added / subtracted to the guard band." or "Fail - One or more measured values were observed out of tolerance at the points tested". The specific false reject risk is up to 2.5%.
2	The decision rule for conformity reporting is based on EN 1811:2023: Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin in Section 9.2 interpretation of results.
3	The decision rule for conformity reporting is based on the general consideration of simple acceptance as stated in ISO/IEC Guide 98-3: "Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM 1995)", and more specifically for analytical measurements to the EURACHEM/CITAC Guide 2012 "Quantifying Uncertainty in Analytical Measurement ".
4	The decision rule for conformity reporting is according to the IEC 62321-7-1 Edition 1.0 2015-09 Section 7: Table 1 - (comparison to standard solutions and interpretation of result)
5	The decision rule for conformity reporting is according to the IEC 62321-3-1 Edition 1.0 2013-06 Annex A.3 interpretation of result.
6	The decision rule for conformity reporting is according to the GB/T 39560.701-2020 Section 7: Table 1 - (comparison to standard solutions and interpretation of result)
7	The decision rule for conformity reporting is according to the requested specification or standard (ASTM F963-23 section 4.3.5)
8	The decision rule for conformity reporting is according to the requested specification or standard (AS/NZS ISO 8124 Part 3 section 4.2)
9	The decision rule for conformity reporting is according to the GB/T 39560.301-2020 Annex A.3 interpretation of result
Remark	If the decision rule is not feasible to be used and the uncertainty of the result is able to be provided, the uncertainty range of the result will be shown in the report. Otherwise, only result will be shown in the report.

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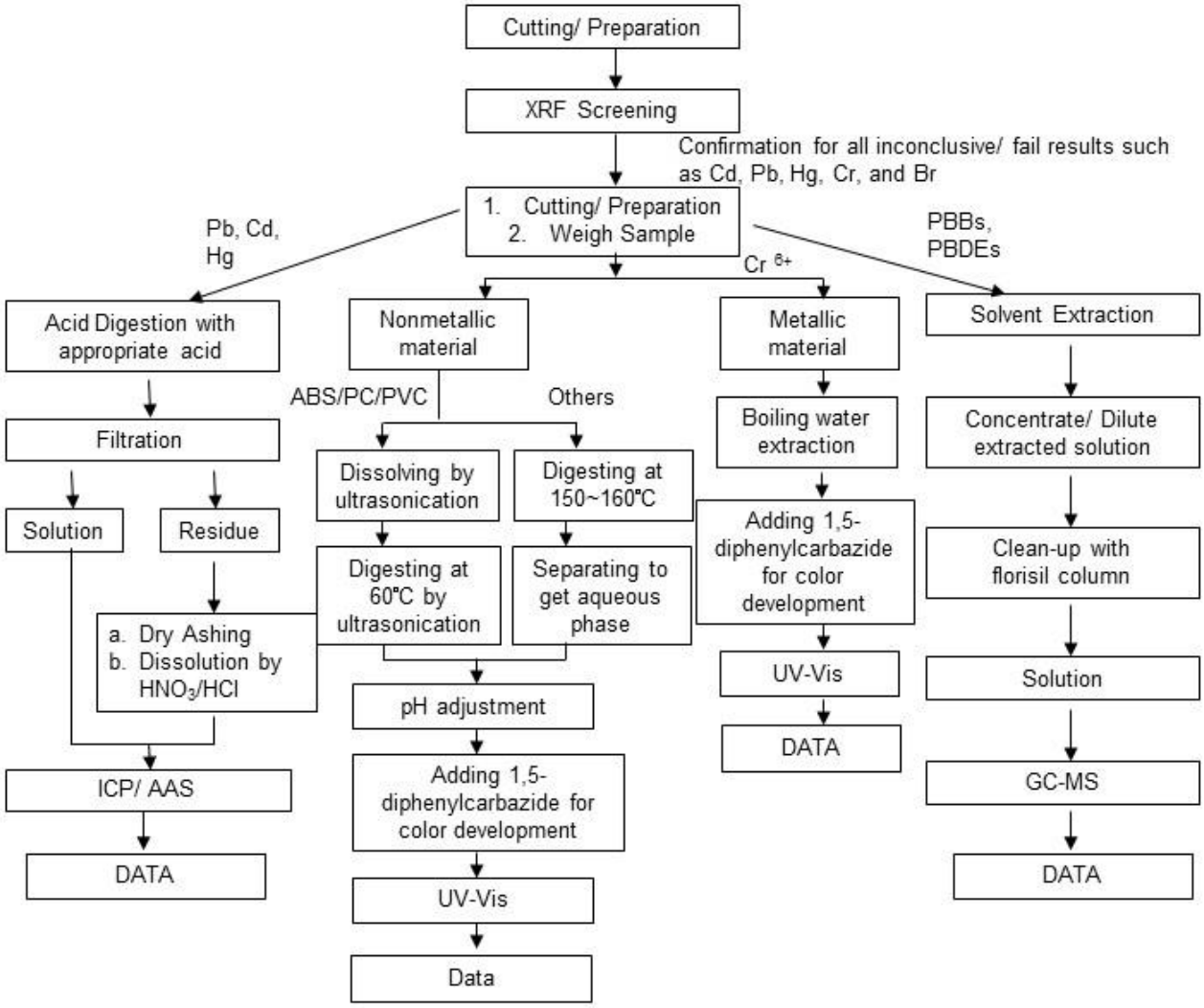
RoHS Verification Testing Flow Chart



Note : 1) Boiling water test method was also performed for Cr (VI) analysis in metal sample.

2) The polymeric samples were dissolved totally by pre-conditioning method according to above flow chat for Cd, Pb and Hg contents analysis.

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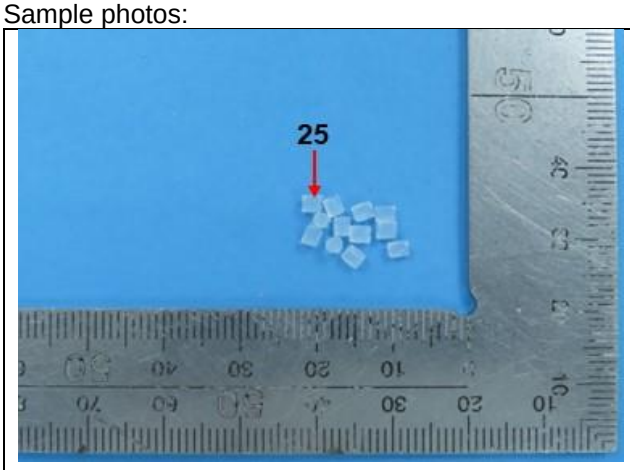
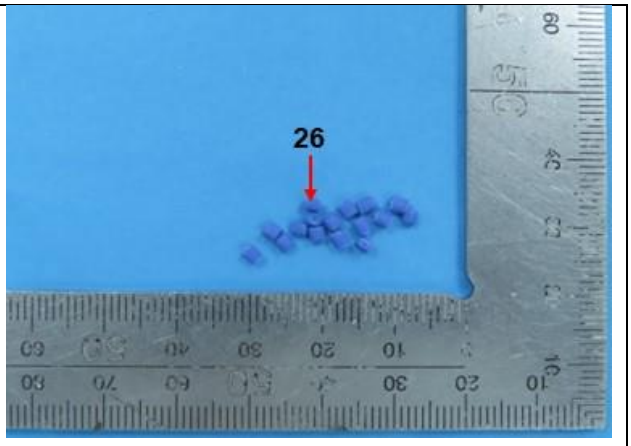
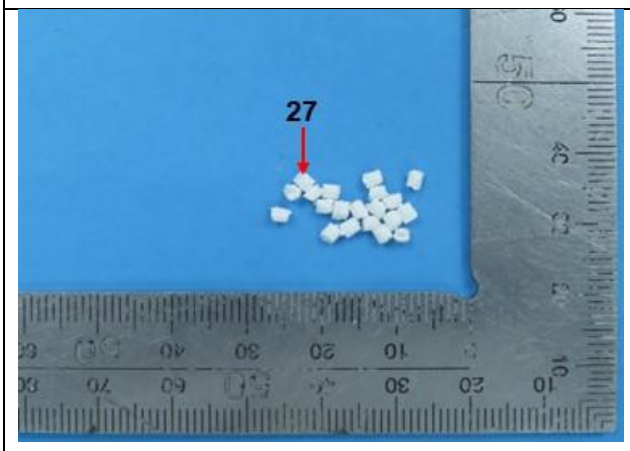
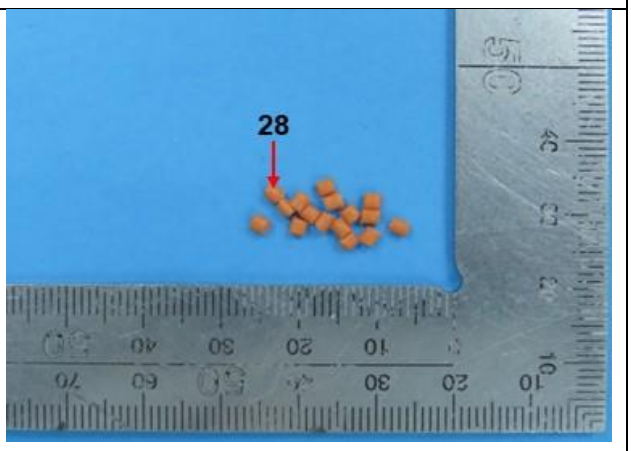
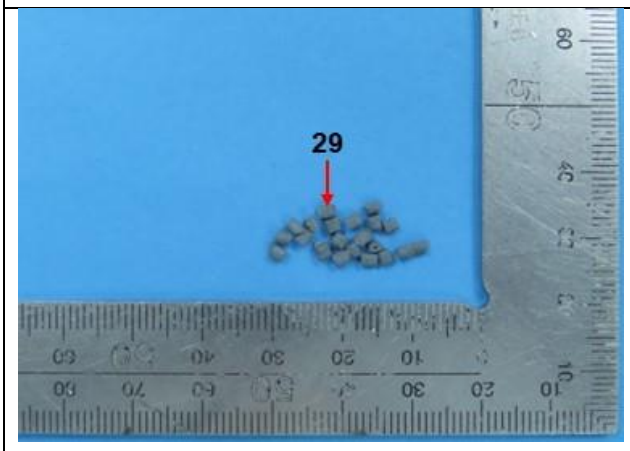
Sample photos:

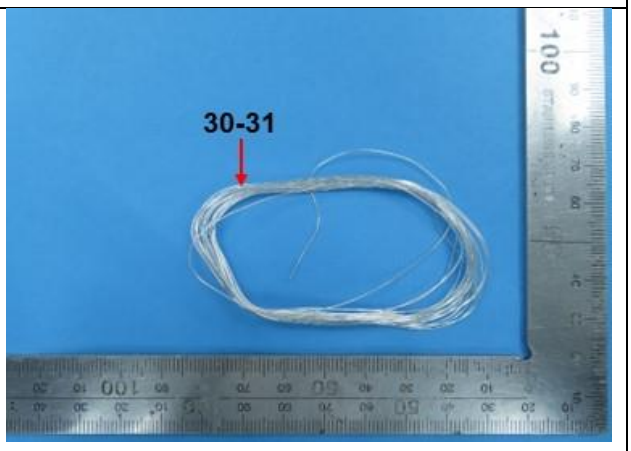












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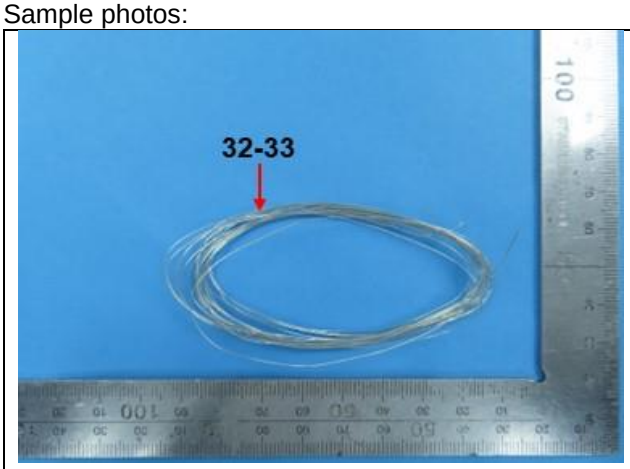

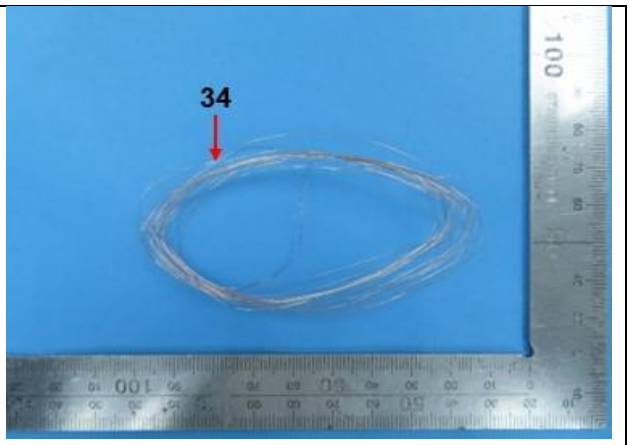

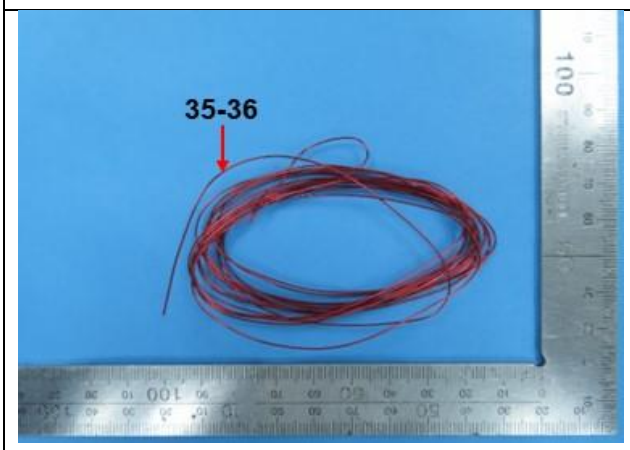

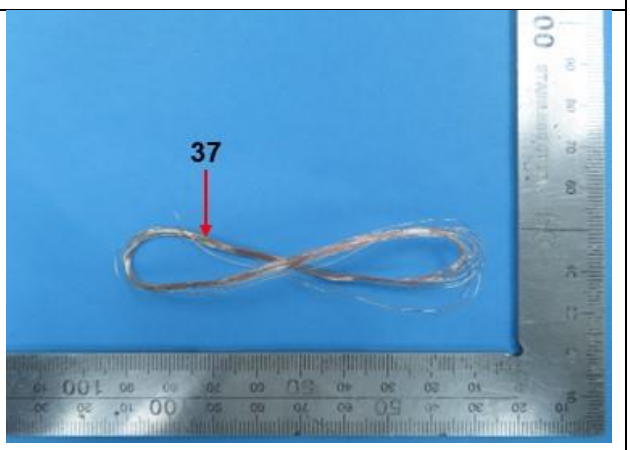

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