

Test Report No.: SHAEC24005822841 **Date**: Apr 11, 2024 Page 1 of 14

Client Name: HERAEUS (ZHAOYUAN) PRECIOUS METAL MATERIALS CO.,LTD.

Client Address: NO.9 ANKANG SOUTH ROAD, ZHAOYUAN CITY, SHANDONG PROVINCE, CHINA

Sample Name: Aluminium wire

Model No.: AL

Lot No.: 9015759884

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

SGS Job No.: TIC1020240329170702TMGV

Sample Receiving Date: Apr 02, 2024

Testing Period: Apr 02, 2024 ~ Apr 09, 2024

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass
Element(s)	See Results
Halogen	See Results
Hexabromocyclododecane (HBCDD)	See Results
Perfluorooctane sulfonates (PFOS) and its derivatives and Perfluorooctanoic acid (PFOA) and its salts	See Results

Signed for and on behalf of

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.



Approved Signatory





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Test Report No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 2 of 14

Test Result(s):

Test Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A13	SHA24-0058228-0001.C013	Silvery metal wire

Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015,

IEC 62321-6:2015 and IEC62321-8:2017, analysis was performed by ICP-OES/AAS, UV-

Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A13
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Cadmium (Cd)	100	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	μg/cm²	0.10	ND
Polybromobiphenyl (PBB)	1000	mg/kg	-	ND
Monobrominated biphenyl (MonoBB)	-	mg/kg	5	ND
Dibrominated biphenyl (DiBB)	-	mg/kg	5	ND
Tribrominated biphenyl (TriBB)	-	mg/kg	5	ND
Tetrabrominated biphenyl (TetraBB)	-	mg/kg	5	ND
Pentabrominated biphenyl (PentaBB)	-	mg/kg	5	ND
Hexabrominated biphenyl (HexaBB)	-	mg/kg	5	ND
Heptabrominated biphenyl (HeptaBB)	-	mg/kg	5	ND
Octabrominated biphenyl (OctaBB)	-	mg/kg	5	ND
Nonabrominated biphenyl (NonaBB)	-	mg/kg	5	ND
Decabrominated biphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDE)	1000	mg/kg	-	ND
Monobrominated diphenyl ether (MonoBDE)	-	mg/kg	5	ND
Dibrominated diphenyl ether (DiBDE)	-	mg/kg	5	ND
Tribrominated diphenyl ether (TriBDE)	-	mg/kg	5	ND
Tetrabrominated diphenyl ether (TetraBDE)	-	mg/kg	5	ND
Pentabrominated diphenyl ether (PentaBDE)	-	mg/kg	5	ND
Hexabrominated diphenyl ether (HexaBDE)	-	mg/kg	5	ND
Heptabrominated diphenyl ether (HeptaBDE)	-	mg/kg	5	ND



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Test Report No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 3 of 14

Test Item(s)	Limit	Unit(s)	MDL	A13
Octabrominated diphenyl ether (OctaBDE)	-	mg/kg	5	ND
Nonabrominated diphenyl ether (NonaBDE)	-	mg/kg	5	ND
Decabrominated diphenyl ether (DecaBDE)	-	mg/kg	5	ND
Bis(2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Diisobutyl phthalate (DIBP)	1000	mg/kg	50	ND

Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- a. The sample is positive for Cr(VI) if the Cr(VI)concentration is greater than 0.13 µg/cm². 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/cm²). The coating is considered a non-Cr(VI) based coating.
 - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive-unavoidable coating variations may influence the determination.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

Element(s)

Test Method: With reference to US EPA 3050B:1996, analysis was performed by ICP-OES/AAS.

Test Item(s)	Unit(s)	MDL	A13
Antimony(Sb)	mg/kg	10	ND
Beryllium(Be)	mg/kg	5	ND
Arsenic(As)	mg/kg	10	ND
Diarsenic Trioxide(As ₂ O ₃) ◆	mg/kg	10	ND

Notes:

◆As₂O₃: Calculated from Arsenic content

Halogen

Test Method: With reference to EN 14582:2016, analysis was performed by IC.

Test Item(s)	Unit(s)	MDL	A13
Fluorine(F)	mg/kg	20	ND
Chlorine(CI)	mg/kg	50	ND
Bromine(Br)	mg/kg	50	ND
lodine(I)	mg/kg	50	ND

Hexabromocyclododecane (HBCDD)



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Test Report Page 4 of 14 No.: SHAEC24005822841 **Date:** Apr 11, 2024

Test Method: With reference to IEC 62321-9:2021, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A13
	134237-50-6			
	/134237-51-7			
Hexabromocyclododecane (HBCDD)	/134237-52-8	mg/kg	20	ND
, , ,	/25637-99-4			
	/3194-55-6			

Perfluorooctane sulfonates (PFOS) and its derivatives and Perfluorooctanoic acid (PFOA) and its salts

Test Method: Modified CEN/TS 15968:2010, analysis was performed by HPLC-MS or LC-MS/MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A13
PFOS and its derivatives	-	mg/kg	-	ND
Perfluorooctane sulfonates (PFOS), its salts^	1763-23-1	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	4151-50-2	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	31506-32-8	mg/kg	0.010	ND
2-(N-ethylperfluoro-1- octanesulfonamido) -ethanol (N- EtFOSE)	1691-99-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1- octanesulfonamido) -ethanol (N- MeFOSE)	24448-09-7	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA), its salts^	754-91-6	mg/kg	0.010	ND
Perfluorooctanoic acid (PFOA), its salts^	335-67-1	mg/kg	0.010	ND

Notes:

1. ^=Substances refer to its salts/derivative listed in below table.

Substance Name	CAS No.
PFOS, its salts & derivatives	
Perfluorooctane sulfonates (PFOS)	1763-23-1
Potassium Perfluorooctanesulfonate (PFOS-K)	2795-39-3
Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	29457-72-5
Sodium perfluorooctanesulfonate (PFOS-Na)	4021-47-0
Ammonium perfluorooctanesulfonate (PFOS-NH ₄)	29081-56-9
Perfluorooctane sulfonate diethanolamine salt (PFOS-NH ₂ (C ₂ H ₄ OH) ₂)	70225-14-8
Perfluorooctanesulfonic acid,tetraethylammonium salt (PFOS-N(C ₂ H ₅) ₄)	56773-42-3
N-decyl-N,N-dimethyldecan-1-aminium 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctane-1-sulfonate (PFOS-N(C ₁₀ H ₂₁) ₂ (CH ₃) ₂)	251099-16-8
Perfluorooctane Sulfonyl fluoride (PFOS-F)	307-35-7



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Test Report No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 5 of 14

Magnesium bis(heptadecafluorooctanesulphonate) (PFOS-Mg)	91036-71-4
Piperidine 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctanesulfonate	71463-74-6
PFOSA, its salts	•
Perfluorooctane Sulfonamide (PFOSA)	754-91-6
Perfluorooctanesulfonamide lithium salt (1:1) (PFOSA-Li)	76752-79-9
PFOA, its salts	
Perfluorooctanoic acid (PFOA)	335-67-1
Sodium perfluorooctanoate (PFOA-Na)	335-95-5
Potassium perfluorooctanoate (PFOA-K)	2395-00-8
Silver perfluorooctanoate (PFOA-Ag)	335-93-3
Perfluorooctanoyl fluoride (PFOA-F)	335-66-0
Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
Lithium perfluorooctanoate(PFOA-Li)	17125-58-5

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.



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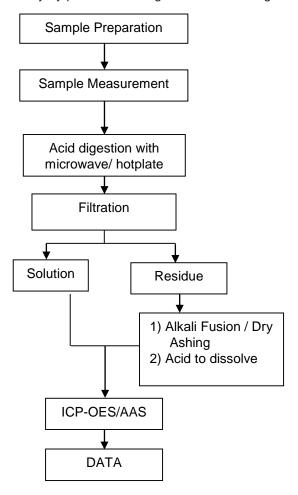
Test Report Page 6 of 14 No.: SHAEC24005822841 **Date:** Apr 11, 2024

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Elements Testing Flow Chart

Name of the person who made testing: Meria Jin/Sielina Song Name of the person in charge of testing: John Cheng

These samples were dissolved totally by pre-conditioning method according to below flow chart.





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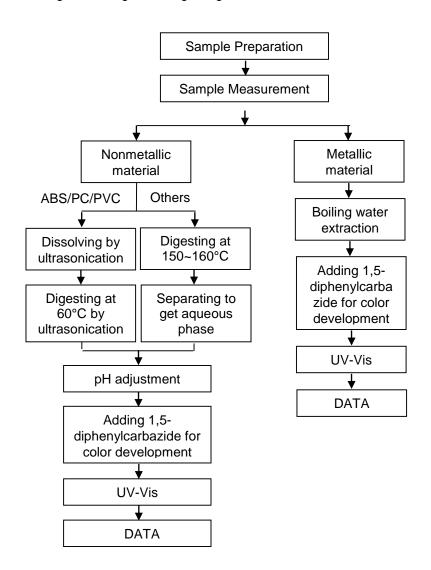
No.: SHAEC24005822841

Date: Apr 11, 2024

Page 7 of 14

Hexavalent Chromium (Cr(VI)) Testing Flow Chart

Name of the person who made testing: Alex Wang Name of the person in charge of testing: Xiaolong Yang





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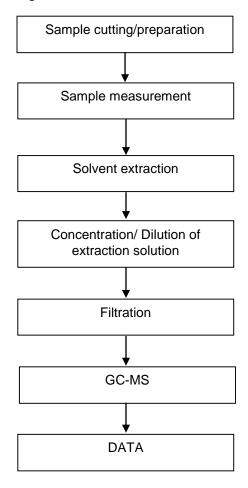


Test Report No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 8 of 14

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PBB/PBDE Testing Flow Chart

Name of the person who made testing: Gary Xu Name of the person in charge of testing: Carol Cui





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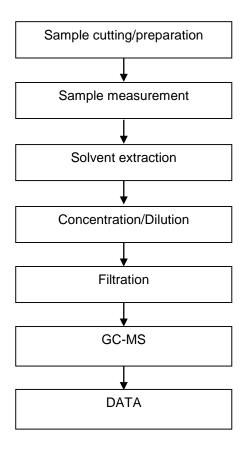


Test Report No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 9 of 14

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Phthalates Testing Flow Chart

Name of the person who made testing: Sherry Shi Name of the person in charge of testing: Carol Cui





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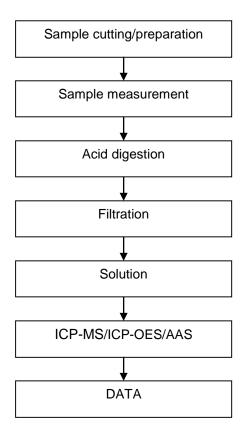


Test Report No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 10 of 14

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Elements Testing Flow Chart

Name of the person who made testing: Meria Jin/Sielina Song Name of the person in charge of testing: Carey Shan





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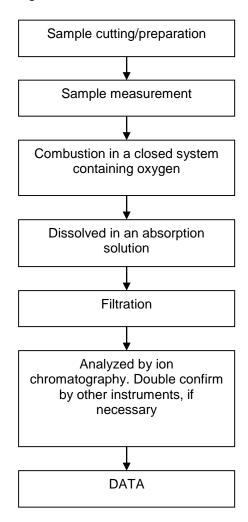


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Halogen Testing Flow Chart

Name of the person who made testing: Andy Zhang Name of the person in charge of testing: Gordon Mu





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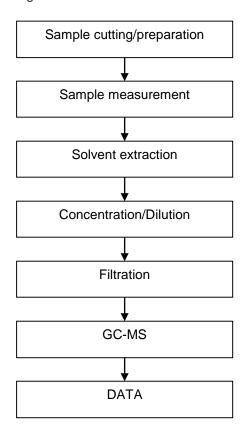


Test Report No.: SHAEC24005822841 Date: Apr 11, 2024 Page 12 of 14

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HBCDD Testing Flow Chart

Name of the person who made testing: Gary Xu Name of the person in charge of testing: Carol Cui





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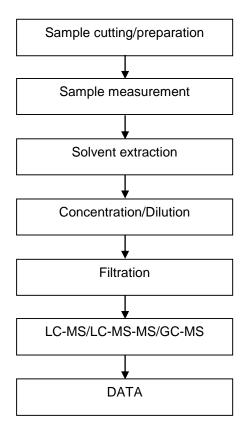


Test Report ATTACHMENTS

No.: SHAEC24005822841 **Date:** Apr 11, 2024 Page 13 of 14

PFASs/ PFOS/PFOA Testing Flow Chart

Name of the person who made testing: Ance Chen Name of the person in charge of testing: Liyas Wang





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Sample Photo:



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