

Test Report No.: SHAEC23004672929 **Date:** May 06, 2023 Page 1 of 13

 $\hbox{\it Client Name:} \quad \hbox{\it HERAEUS} \ (\ \hbox{\it ZHAOYUAN}) \quad \hbox{\it PRECIOUS METAL MATERIALS} \ \ \hbox{\it CO.,LTD.}$

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

Sample Name: Aluminium wire

Model No.: AL

Lot No.: 9010349978

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

SGS Job No.: SP23-009957 Sample Receiving Date: Apr 19, 2023

Testing Period: Apr 19, 2023 ~ Apr 24, 2023

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 (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass
Elements	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 Result(s):

Test Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A10	SHA23-0046729-0001.C010	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 (PBBs), Polybrominated diphenyl ethers (PBDEs), 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)	CAS No.	Limit	Unit(s)	MDL	A10
Cadmium(Cd)	7440-43-9	100	mg/kg	2	ND
Lead(Pb)	7439-92-1	1000	mg/kg	2	ND
Mercury(Hg)	-	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	-	µg/cm²	0.10	ND
Polybromobiphenyl (PBBs)	-	1000	mg/kg	ı	ND
Monobromobiphenyl (MonoBB)	-	-	mg/kg	5	ND
Dibromobiphenyl (DiBB)	-	-	mg/kg	5	ND
Tribromobiphenyl (TriBB)	-	-	mg/kg	5	ND
Tetrabromobiphenyl (TetraBB)	-	-	mg/kg	5	ND
Pentabromobiphenyl (PentaBB)	-	-	mg/kg	5	ND
Hexabromobiphenyl (HexaBB)	-	-	mg/kg	5	ND
Heptabromobiphenyl (HeptaBB)	-	-	mg/kg	5	ND
Octabromobiphenyl (OctaBB)	-	-	mg/kg	5	ND
Nonabromobiphenyl (NonaBB)	-	-	mg/kg	5	ND
Decabromobiphenyl (DecaBB)	-	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDEs)	-	1000	mg/kg	-	ND
Monobromodiphenylether (MonoBDE)	-	-	mg/kg	5	ND
Dibromodiphenylether (DiBDE)	-	-	mg/kg	5	ND
Tribromodiphenylether (TriBDE)	-	-	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	-	-	mg/kg	5	ND
Pentabromodiphenylether (PentaBDE)	-	-	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	-	-	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	-	-	mg/kg	5	ND
Octabromodiphenylether (OctaBDE)	-	-	mg/kg	5	ND
Nonabromodiphenylether (NonaBDE)	-	-	mg/kg	5	ND
Decabromodiphenylether (DecaBDE)	-	-	mg/kg	5	ND
Dibutyl Phthalate(DBP)	-	1000	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	-	1000	mg/kg	50	ND



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Test Item(s)	CAS No.	Limit	Unit(s)	MDL	A10
Bis-(2-ethylhexyl) Phthalate(DEHP)	-	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.
- (3) ▼ = 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 $\mu g/cm^2$). The coating is considered a non-Cr(VI) based coating
 - c. The result between $0.10~\mu g/cm^2$ and $0.13~\mu g/cm^2$ 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.

Elements

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

Test Item(s)	Unit(s)	MDL	A10
Arsenic(As)	mg/kg	10	ND
Beryllium(Be)	mg/kg	5	ND
Antimony(Sb)	mg/kg	10	ND
Antimony Trioxide(Sb ₂ O ₃) ◆	mg/kg	12	ND

Notes:

(1) ◆ Calculated concentration of Sb₂O₃ is based on the identified Sb.

Halogen

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

Test Item(s)	Unit(s)	MDL	A10
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)

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



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Test Item(s)	CAS No.	Unit(s)	MDL	A10
Hexabromocyclododecane (HBCDD)	134237-50-6			
	/134237-51-7			
	/134237-52-8	mg/kg	20	ND
	/25637-99-4			
	/3194-55-6			

Notes:

CAS No 25637-99-4, 3194-55-6

Perfluorooctane Sulfonates (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts

Test Method: With reference to CEN/TS 15968:2010, analysis was performed by HPLC-MS or LC-

MS/MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A10
PFOS and its derivatives	-	mg/kg	-	ND
Perfluorooctane Sulfonates (PFOS) and its salts*	-	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)	754-91-6	mg/kg	0.010	ND
Perfluorooctanoic Acid (PFOA) and its salts*	-	mg/kg	0.010	ND

Notes:

- (1) Perfluorooctanoic acid (PFOA) and its salts* including PFOA (CAS No. 335-67-1), APFO (CAS No. 3825-26-1), PFOA-Na (CAS No. 335-95-5), PFOA-K (CAS No. 2395-00-8), PFOA-Aq (CAS No. 335-93-3) and PFOA-F (CAS No. 335-66-0). The result of PFOA is used to represent PFOA and its salts.
- (2) Perfluorooctane sulfonates (PFOS) and its salts* including PFOS (CAS No. 1763-23-1), POSF(CAS No. 307-35-7), PFOS-K (CAS No. 2795-39-3), PFOS-NH4 (CAS No. 29081-56-9), PFOS-N(C10H21)2(CH3)2 (CAS No. 251099-16-8), PFOS-NH2(C2H4OH)2 (CAS No. 70225-14-8), PFOS-Li (CAS No. 29457-72-5), PFOS-N(C₂H₅)₄ (CAS No. 56773-42-3) and PFOS-Na (CAS No. 4021-47-0). The result of PFOS is used to represent PFOS and its salts.

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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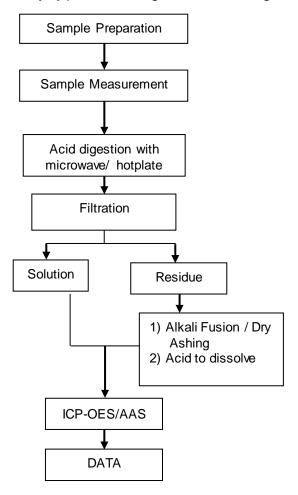
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ATTACHMENTS

Elements Testing Flow Chart

Name of the person who made testing: Meria Jin/Sielina Song Name of the person in charge of testing: Luna Xu/Bob Zhang

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





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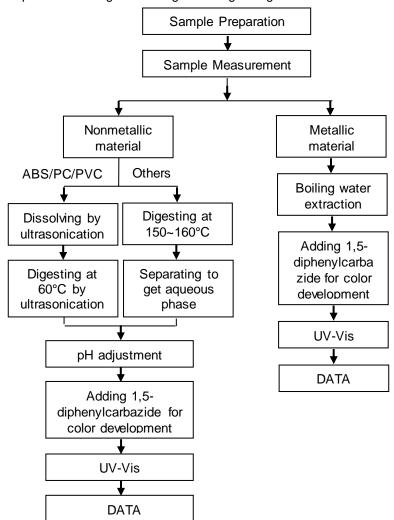
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Test Report ATTACHMENTS

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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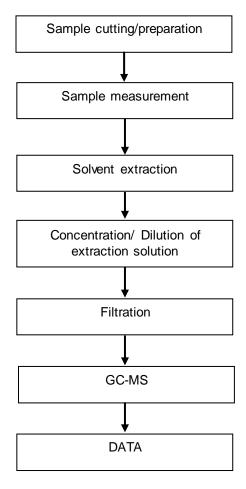


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ATTACHMENTS

PBBs/PBDEs Testing Flow Chart

Name of the person who made testing: Gary Xu Name of the person in charge of testing: Jason Zhang





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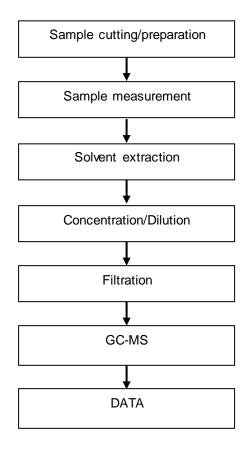


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ATTACHMENTS

Phthalates Testing Flow Chart

Name of the person who made testing: Iris Han Name of the person in charge of testing: Jason Zhang





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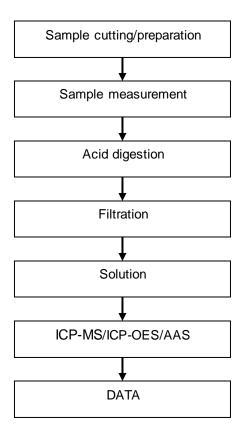


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ATTACHMENTS

Elements Testing Flow Chart

Name of the person who made testing: Meria Jin/Sielina Song Name of the person in charge of testing: Luna Xu/Bob Zhang





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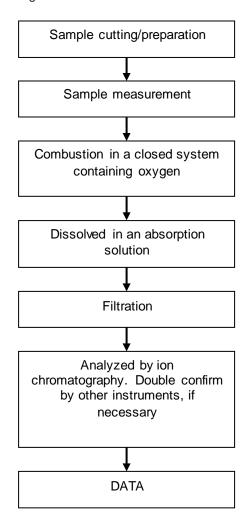


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No.: SHAEC23004672929 **Date:** May 06, 2023

Halogen Testing Flow Chart

Name of the person who made testing: Andy Zhang Name of the person in charge of testing: Allen Chen





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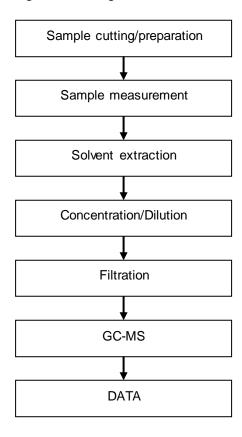


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ATTACHMENTS

HBCDD Testing Flow Chart

Name of the person who made testing: Gary Xu Name of the person in charge of testing: Jason Zhang





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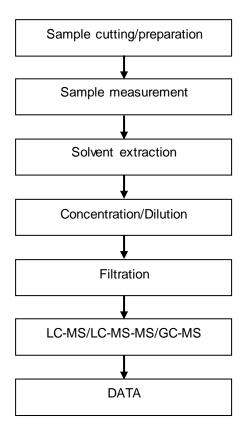


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PFASs/ PFOS/PFOA Testing Flow Chart

Name of the person who made testing: Mia Zeng Name of the person in charge of testing: Richer Yu





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Sample Photo:



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