

HONGDUK INDUSTRIAL CO., LTD.
 51 Jangheung-ro 39beon-gil, Nam-gu
 Pohang-si, Gyeongbuk
 Korea



The following sample(s) was/were submitted and identified by/on behalf of the client as:-

SGS File No. : AYGU24-06054

Product Name : Hard Drawn Steel Wire

Item No./Part No. : N/A

Client Reference Data : SW-A,B,C / EN 10270-1 SL,SM,SH / HSW3 / SWRH62A

Received Date : 2024. 07. 01

Test Period : 2024. 07. 01 to 2024. 07. 08

Report Comments : By the applicant's request, item No.s/part No.s & client reference information are stated/added on report.

Test Results : For further details, please refer to following page(s)

SGS Korea Co., Ltd.
 / Busan Branch



Taehee Kang / Technical Manager

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Sample No. : AYGU24-06054.001
Sample Description : Hard Drawn Steel Wire
Item No./Part No. : N/A
Materials : Steel

Heavy Metals

| Test Items | Unit | Test Method | MDL | Results |
|-------------------------------|--------------------|--|-----|---------|
| Cadmium (Cd) | mg/kg | With reference to IEC 62321-5 : 2013, by ICP-OES | 0.5 | N.D. |
| Lead (Pb) | mg/kg | With reference to IEC 62321-5 : 2013, by ICP-OES | 5 | N.D. |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4 : 2013+A1 : 2017, by ICP-OES | 2 | N.D. |
| Hexavalent Chromium (Cr VI) * | µg/cm ² | With reference to IEC 62321-7-1 : 2015, by UV-Vis | 0.1 | N.D. |

Total Metals

| Test Items | Unit | Test Method | MDL | Results |
|----------------|-------|---|-----|---------|
| Beryllium (Be) | mg/kg | With reference to EPA 3052 : 1996, EPA 6010D : 2018, by ICP-OES | 5 | N.D. |

Flame Retardants-PBBs/PBDEs

| Test Items | Unit | Test Method | MDL | Results |
|--------------------------|-------|--|-----|---------|
| Monobromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Dibromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tribromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tetrabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Pentabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Hexabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Heptabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Octabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Nonabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Decabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Monobromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Dibromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tribromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tetrabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Pentabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Hexabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Heptabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Octabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |

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Sample No. : AYGU24-06054.001
Sample Description : Hard Drawn Steel Wire
Item No./Part No. : N/A
Materials : Steel

Flame Retardants-PBBs/PBDEs

| Test Items | Unit | Test Method | MDL | Results |
|-------------------------|-------|--|-----|---------|
| Nonabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Decabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |

Phthalates

| Test Items | Unit | Test Method | MDL | Results |
|------------------------------------|-------|--|-----|---------|
| Di-(2-ethylhexyl) phthalate (DEHP) | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50 | N.D. |
| Di-butyl phthalate (DBP) | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50 | N.D. |
| Benzyl butyl phthalate (BBP) | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50 | N.D. |
| Di-isobutyl phthalate (DIBP) | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50 | N.D. |

Halogen Contents

| Test Items | Unit | Test Method | MDL | Results |
|--------------|-------|--|-----|---------|
| Bromine(Br) | mg/kg | With reference to EN 14582 : 2016, by IC | 30 | N.D. |
| Chlorine(Cl) | mg/kg | With reference to EN 14582 : 2016, by IC | 30 | N.D. |
| Fluorine(F) | mg/kg | With reference to EN 14582 : 2016, by IC | 30 | N.D. |
| Iodine(I) | mg/kg | With reference to EN 14582 : 2016, by IC | 50 | N.D. |

Flame Retardants

| Test Items | Unit | Test Method | MDL | Results |
|--------------------------------------|-------|---|-----|---------|
| Hexabromocyclododecane (HBCDD, HBCD) | mg/kg | With reference to EPA 3540C : 1996, EPA 3550C : 2007 by GC-MS | 5 | N.D. |

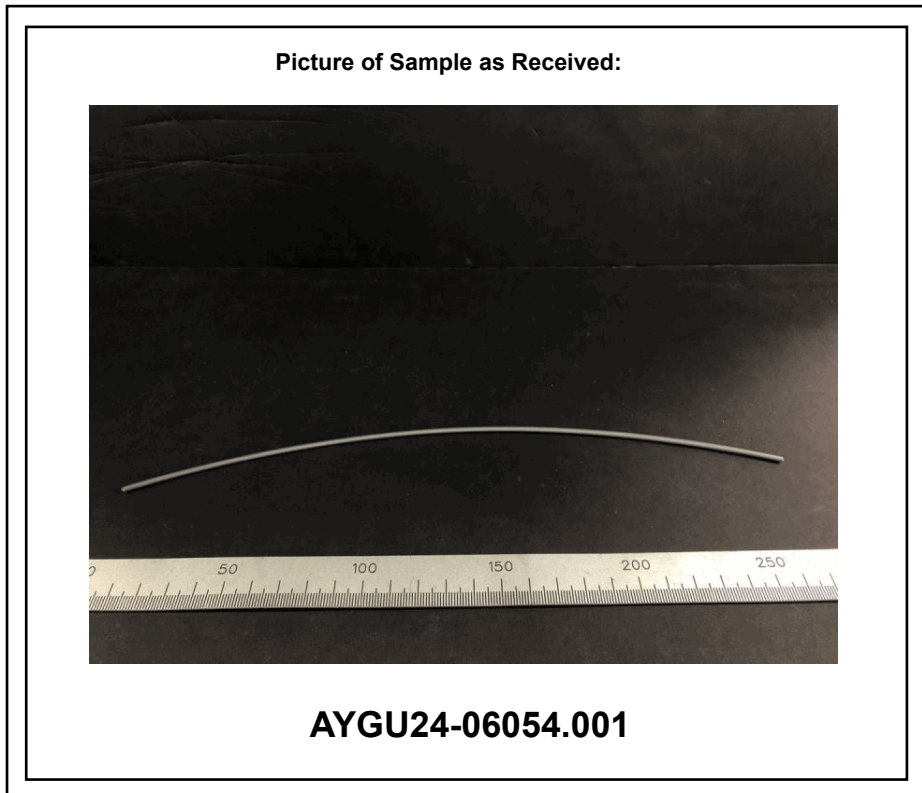
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- NOTE: (1) N.D. = Not detected.(<MDL)
 (2) mg/kg = ppm
 (3) µg/kg = ppb
 (4) MDL = Method Detection Limit
 (5) - = No regulation
 (6) Negative = Undetectable / Positive = Detectable
 (7) ** = Qualitative analysis (No Unit)
 (8) * = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 ug/cm2. The sample coating is considered to contain CrVI.
 b. The sample is negative for CrVI if CrVI is n.d. (concentration less than 0.10 ug/cm2). The coating is considered a non-CrVI based coating.
 c. The result between 0.10 ug/cm2 and 0.13 ug/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination.

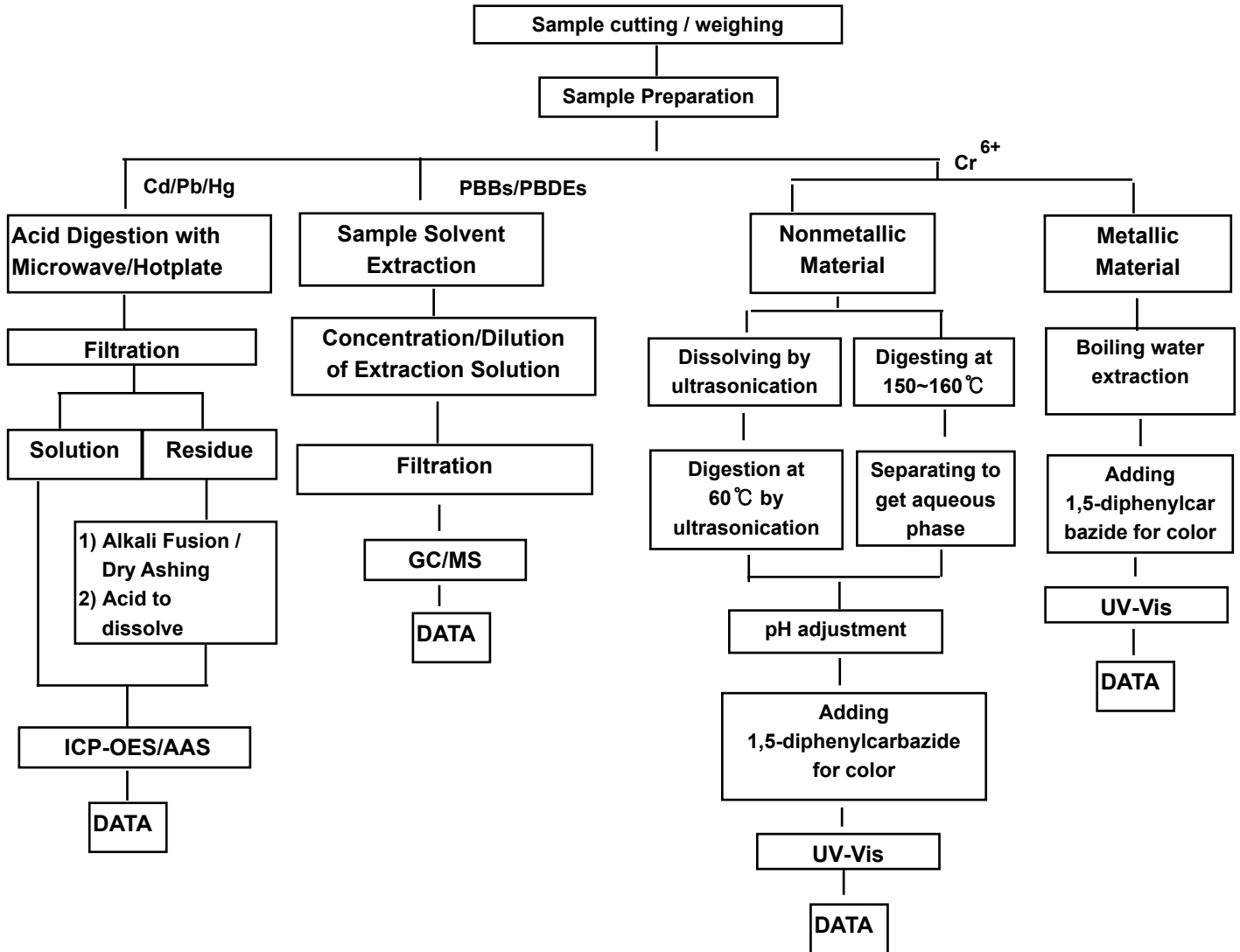


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Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr⁶⁺ /PBBs&PBDEs Testing

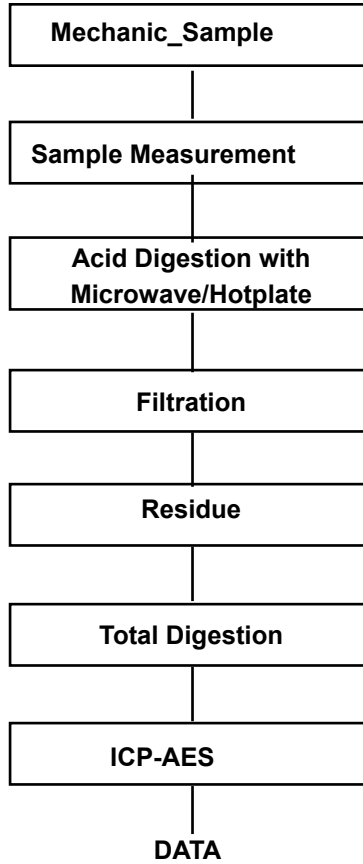


The samples were dissolved totally at the acid digestion step of the above flow chart for Cd,Pb,Hg
 Section Chief : Taehee Kang

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Flow Chart for Inorganic Elements Testing

Inorganic Elements



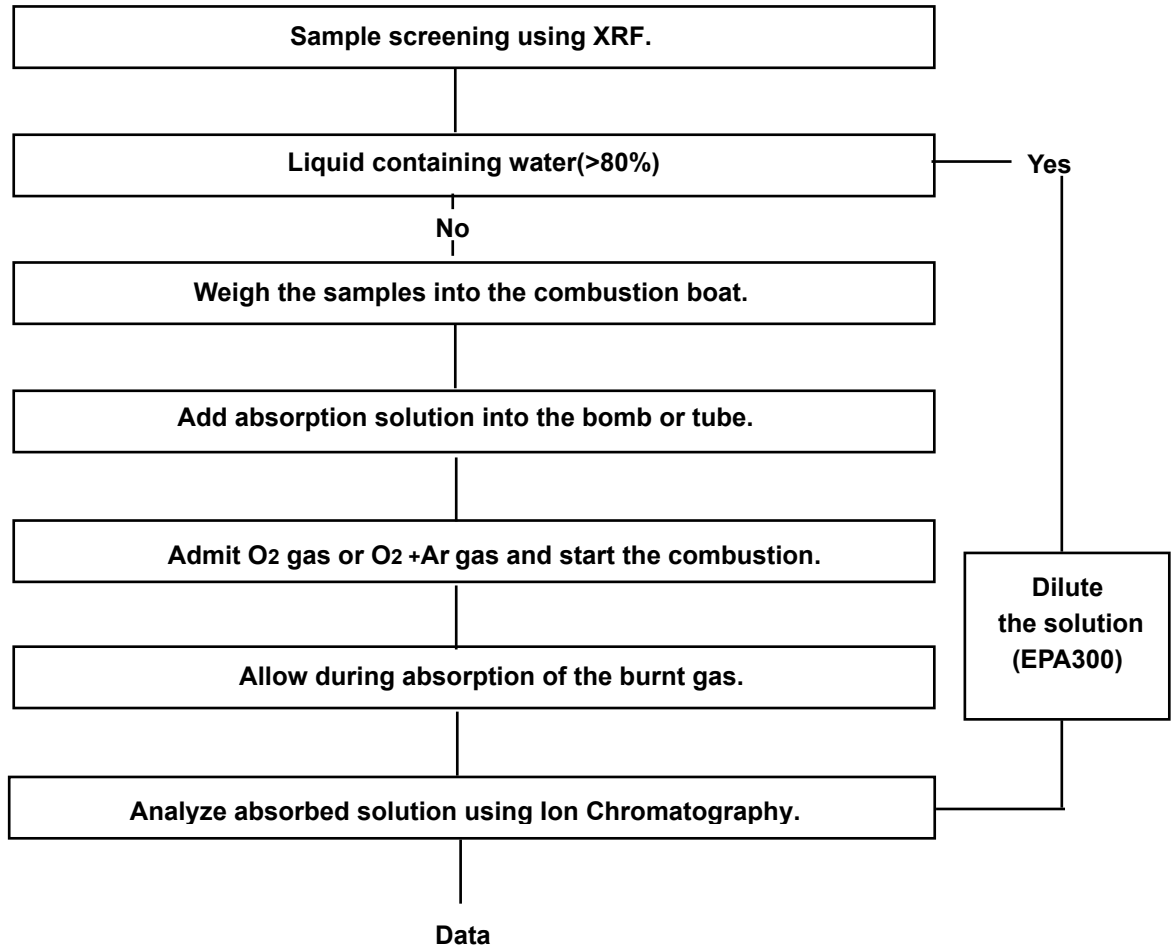
| | |
|------------------------------|---|
| Major Inorganic Heavy Metals | Antimony(Sb) , Beryllium(Be) , Phosphorus(P) , Arsenic(As) etc. |
|------------------------------|---|

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Flow Chart for Halogen Test



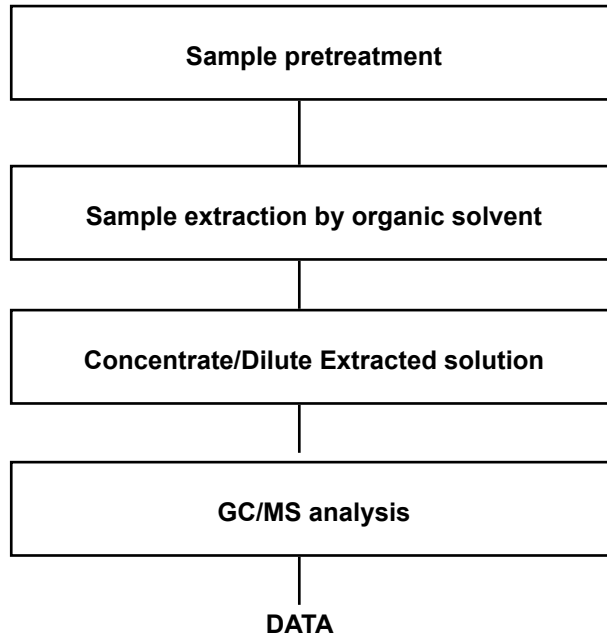
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Testing Flow Chart for HBCD



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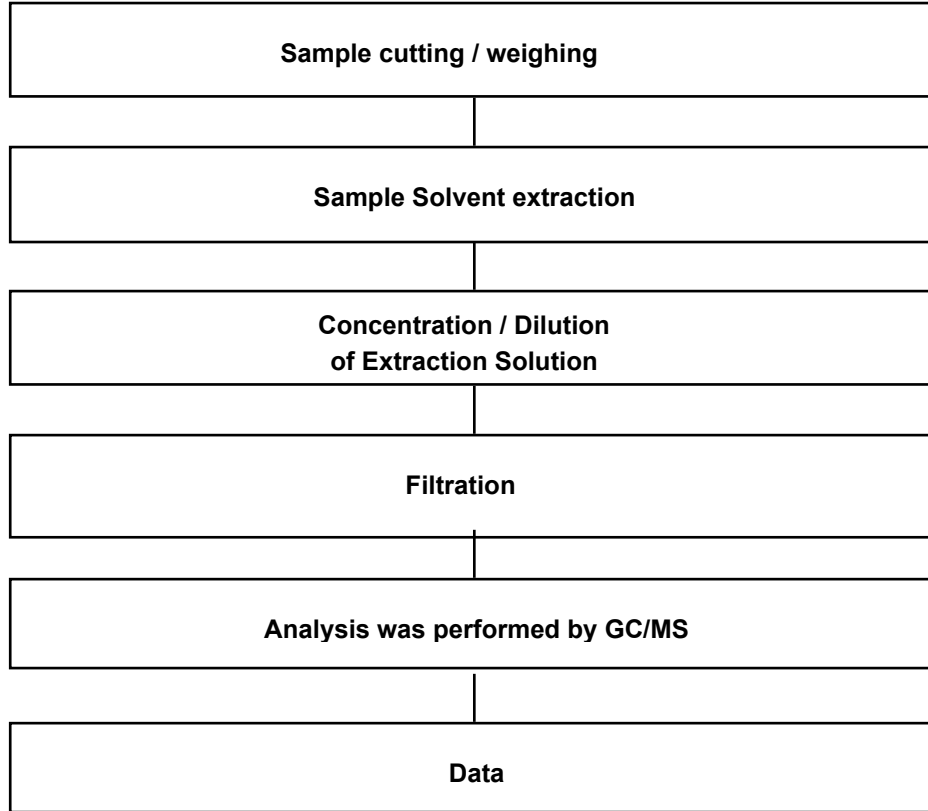
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Flow Chart for Phthalate Test



*** End of Report ***

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