

#### **POONGSAN CORPORATION**

94 Sanam-ro,Onsan-eup Ulju-gun,Ulsan Korea Page 1 of 11

Issued Date: 2025. 01. 23



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

SGS File No. : AYGU25-01039

Product Name : C1020

Item No./Part No. : Oxygen Free Copper

**Received Date** : 2025. 01. 06

**Test Period** : 2025. 01. 06 to 2025. 01. 23

Conclusion : Based on the performed tests on selected part of submitted samples, the results of Cadmium,

Lead, Mercury, 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) comply with the limits as set by RoHS

Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

SGS Korea Co., Ltd. / Busan Branch

Taehee Kang / Technical Manager

The test results of this test report are only limited to samples and sample names provided by the client and do not guarantee the quality of all products of the client. This test report shall not be used for public relation, advertisement, lawsuit and shall not be used by excerpts from it. This test report can be checked through the <a href="http://rohs.kr.sgs.com/checkreport/main">http://rohs.kr.sgs.com/checkreport/main</a>. This test report is not related to KS Q ISO/IEC 17025 and Korea Laboratory Accreditation Scheme.

This the Company subject to its General Conditions of Service printed overleaf, available request accessible electronic format documents, subject to ons/terms-e-document. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Cli defined therein. Any holder within the limits of Client's instructions, if any. The Compa its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction roduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or approved to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s). of the content or appearance of



**Sample No.** : AYGU25-01039.001

Sample Description : C1020

Item No./Part No. : Oxygen Free Copper

Materials : N/A

### **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/cm²	With reference to IEC 62321-7-1 : 2015, by UV-Vis	0.1	N.D.

Issued Date: 2025. 01. 23

Page 2 of 11

### **Total Metals**

Test Items	Unit	Test Method	MDL	Results
Arsenic (As)	mg/kg	With reference to EPA 3052 : 1996, EPA 6010D : 2018, by ICP-OES	10	N.D.
Antimony (Sb)	mg/kg	With reference to EPA 3052 : 1996, EPA 6010D : 2018, by ICP-OES	10	N.D.
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.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/en/Terms-and-Conditions.aspx">https://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>, Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).

MQP-708-001-F12 (01)

50, Sinsan-ro 29beon-gil, Saha-gu, Busan, Korea 49432 t +82 (0)51 795 7300 f +82 (0)51 795 7310 http://www.sgsgroup.kr



**Sample No.** : AYGU25-01039.001

Sample Description : C1020

Item No./Part No. : Oxygen Free Copper

Materials : N/A

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
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.
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.

Issued Date: 2025. 01. 23

Page 3 of 11

### **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.
[di(C6-C8 alkyl)phthalate] branched (DIHP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
[di(C7-C11 alkyl)phthalate] linear and branched (DHNUP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Bis(2-methoxyethyl) phthalate (BMP, BMEP, DMEP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-isononyl phthalate (DINP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-isodecyl phthalate (DIDP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-n-octyl phthalate (DNOP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-n-hexyl phthalate (DNHP)	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.
lodine(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.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/en/Terms-and-Conditions.aspx">https://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).

MQP-708-001-F12 (01)

50, Sinsan-ro 29beon-gil, Saha-gu, Busan, Korea 49432 t +82 (0)51 795 7300 f +82 (0)51 795 7310 http://www.sgsgroup.kr



: AYGU25-01039.001 Sample No.

**Sample Description** : C1020

Item No./Part No. : Oxygen Free Copper

**Materials** : N/A

#### Other(s)

Test Items	Unit	Test Method	MDL	Results
Perfluorooctanoic acid (PFOA) and its salts *	μg/kg	With reference to EN 17681-1 : 2022, by LC/MS/MS	10	N.D.
Perfluorooctane sulfonate (PFOS) and its salts ^	μg/kg	With reference to EN 17681-1 : 2022, by LC/MS/MS	10	N.D.

^ PFOS refer to its salts / derivative including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH4 (CAS No.: 29081-56-9), PFOS-NH(OH)2 (CAS No.: 70225-14-8), PFOS-N(C2H5)4 (CAS No.: 56773-42-3), PFOS-N(C10H21)2(CH3)2 (CAS No. 251099-16-8) and POSF (CAS No.: 307-35-7).

\* PFOA refer to its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1).

(1) N.D. = Not detected.(<MDL)

- (2) mg/kg = ppm
- (3)  $\mu$ g/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.

This document is issued by the Company subject to its General Conditions of Service p <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to printed overleaf, available request Terms https://www.sgs.com/en/terms-and-conditions/terms-e-document.

Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).

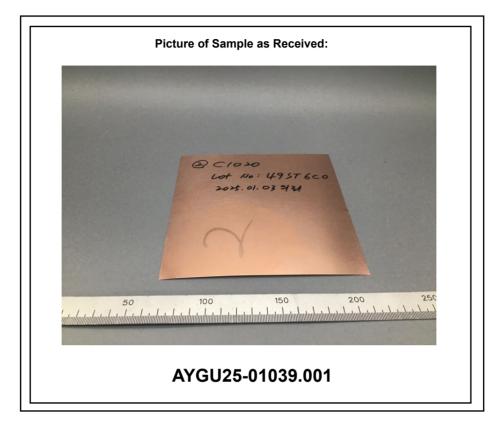
Page 4 of 11

Issued Date: 2025. 01. 23



Page 5 of 11

Issued Date: 2025. 01. 23



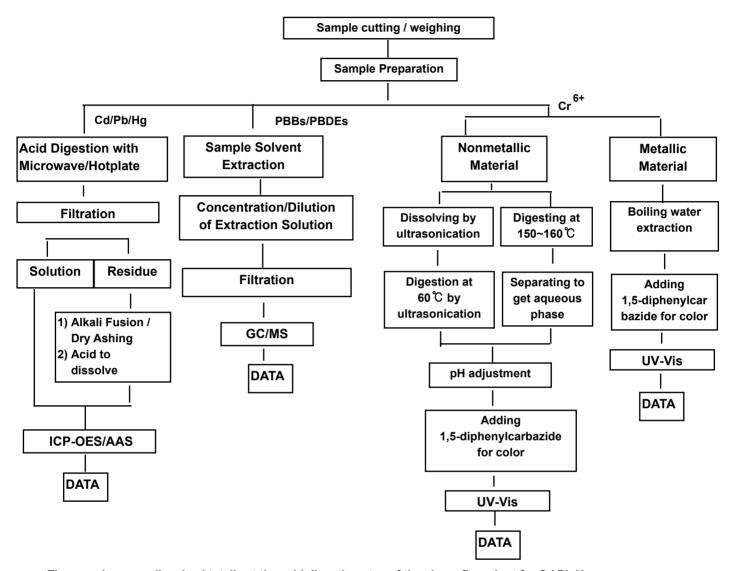
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's company is document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).



### Page 6 of 11

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

Issued Date: 2025. 01. 23



The samples were dissolved totally at the acid digestion step of the above flow chart for Cd,Pb,Hg

- Technician : Gihwan Kim / Choah Jeong / Junkwon Park / Sudong Jo

- Supervisor : Taehee Kang

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-conditions.aspx">http://www.sgs.com/en/Terms-and-conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/ferms-e-document">https://www.sgs.com/en/terms-and-conditions/ferms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).

MQP-708-001-F12 (01)

50, Sinsan-ro 29beon-gil, Saha-gu, Busan, Korea 49432 t +82 (0)51 795 7300 f +82 (0)51 795 7310 http://www.sqsgroup.kr

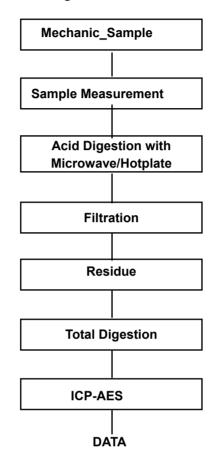


Page 7 of 11

### Flow Chart for Inorganic Elements Testing

Issued Date: 2025. 01. 23

### **Inorganic Elements**



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

- Technician: Gihwan Kim / Sudong Jo

- Supervisor : Taehee Kang

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's company is document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).

MQP-708-001-F12 (01)

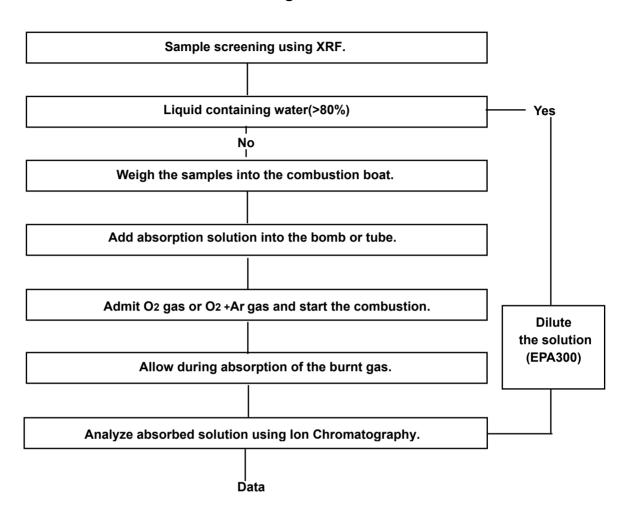
50, Sinsan-ro 29beon-gil, Saha-gu, Busan, Korea 49432 t +82 (0)51 795 7300 f +82 (0)51 795 7310 http://www.sgsgroup.kr

SGS Korea Co.,Ltd.



### Page 8 of 11

### Flow Chart for Halogen Test



Issued Date: 2025. 01. 23

- Technician: Juhwan Yoon - Supervisor : Taehee Kang

This document is issued by the Company subject to its General Conditions of Service p <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to printed overleaf, available request Terms https://www.sgs.com/en/terms-and-conditions/terms-e-document.

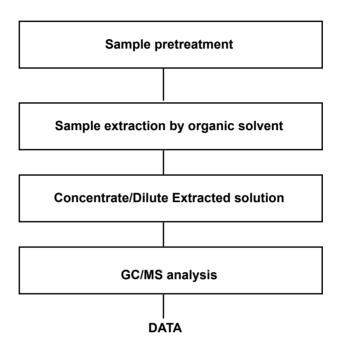
Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).



Page 9 of 11

### **Testing Flow Chart for HBCD**

Issued Date: 2025. 01. 23



- Technician : Junkwon Park / Choah Jeong

- Supervisor : Taehee Kang

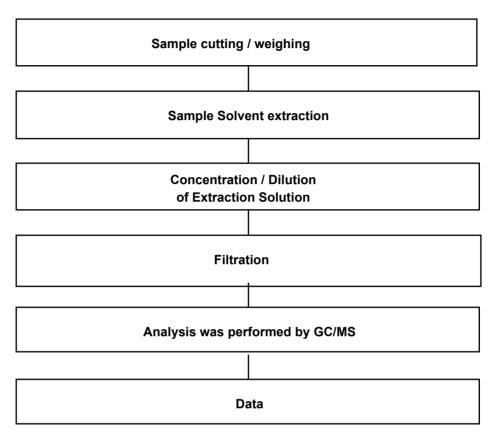
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/en/Terms-and-Conditions.aspx">https://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).



### Page 10 of 11

### Flow Chart for PhthalateTest

Issued Date: 2025. 01. 23



- Technician : Yukyung Park - Supervisor : Taehee Kang

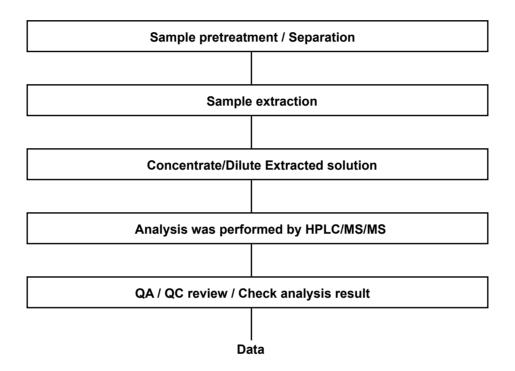
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's company is document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).



Page 11 of 11

### Flow Chart for PFOS/PFOA Test

Issued Date: 2025. 01. 23



- Technician : Juhwan Yoon - Supervisor : Taehee Kang

\*\*\* End of Report \*\*\*

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/en/Terms-and-Conditions.aspx">https://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/en/terms-and-conditions/terms-e-document">https://www.sgs.com/en/terms-and-conditions/terms-e-document</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s).

MQP-708-001-F12 (01)

50, Sinsan-ro 29beon-gil, Saha-gu, Busan, Korea 49432 t +82 (0)51 795 7300 f +82 (0)51 795 7310 http://www.sgsgroup.kr

SGS Korea Co.,Ltd.