H/F

Attn: SOLUM ELECTROS CO.,LTD

S P E C I F I C A T I O N

O F

HALOGEN FREE SOLDER CREAM NP303-LHGQ-7KR

제품납입사양서

NP303-LHGQ-7KR

자재코드 : 0202-001762

2. MAR. 2017

2017 년 03 월 2 일

符合 RoHS&HF 及其他環保要求；金屬電鍍層不含六價鉻

RoHS &HF& Requirements of Environmental; prohibit containing Cr*6 in the plating with metal

Accepted Name of company _____ Name of division _____
_____
_____
_____

A H K O R E A CO., LTD.

에 이 에 치 코 리 아 주 식 회 사

Sales Div. 영업부	Q.C.Div. 품질관리부
Approved 승인	Prepared 작성

목 차

1. Scope
적용범위

This specification defines the HALOGEN FREE SOLDER CREAM to be used in the user's plant.
본 사양서는 귀사의 공장에서 사용되는 할로겐 프리 솔더크림에 대해서 규정한다.

2. Name of product
품 명

HALOGEN FREE SOLDER CREAM NP303-LHGQ-7KR
할로겐 프리 솔더크림 NP303-LHGQ-7KR

3. Quality
품 질

3. 1 Chemical composition
솔더조성

The solder used in the SOLDER CREAM contains the chemical composition shown in Table 1.
본 솔더크림에 사용하는 솔더는 표 1 에 표시한 조성이다.

Table 1 / 표 1 Chemical composition / 화학성분 (%)

Sn	Pb	Sb	Bi	Cu	Au	In	Ag	Al	As	Cd	Fe	Ni	Zn
Rest 잔부	0.05 max 이하	0.10 max 이하	0.10 max 이하	0.5 ± 0.05	0.05 max 이하	0.10 max 이하	3.0 ± 0.2	0.001 max 이하	0.03 max 이하	0.002 max 이하	0.02 max 이하	0.01 max 이하	0.001 max 이하

※ Note. The standard value sometimes changes according to the establishment of official management value of RoHS, JIS of lead free solder and so on.

※ 유럽 RoSH 규제의 공식관리치나 무연솔더의 JIS 규격치 등의 움직임에 맞추어 규격값을 변경 할 수 있습니다.

3. 2 Characteristics
특 성

Table 2 shows the characteristics of the SOLDER CREAM.
본 솔더크림의 특성을 표 2 에 표시한다.

Table 2 Characteristics
표 2 특성

Kind of test 항 목	Characteristics 특 성	Testing method 시험방법
Flux content % 플럭스함유량 %	11.0 ± 0.3	JIS Z 3197 (1986) 6.1
Halide content PPM 할로겐함유량 PPM	1500 이하	JIS Z 3197 (1986) 6.5(1) ※1
Copper plate corrosion 동판부식	No corrosion 부식이 없을 것.	JIS Z 3197 (1986) 6.6.1

Water solution resistance иcm 수용액저항 иm		5 × 1 0 ^{2} min 이상	QQ-S-571-E
Insulation resistance и 절연저항 и	40℃、90%	1 × 1 0 ^{11} min 이상	JIS Z 3284 Annex 3 부속서 3
	85℃、85%	5 × 1 0 ^{8} min 이상	
Migration 마이그레이션시험		발생 없음 No migration	JIS Z 3284 Annex 1 4 부속서 1 4
Spreading % 확산율 %		7 5 min 이상	JIS Z 3197 (1986) 6.10
Grain size μm 분말입도 μm		38～22	
Viscosity Pa･s 점도 Pa･s		180 ± 20	※2
Thixotropy index 칙소지수		0.60±0.05	
Tackiness (N) 점착성		24hr	JIS Z 3284 (9)
Tackiness of residue 잔사의 점착성		No tackiness 점착성 없음	JIS Z 3284 (12)
Solder ball 솔더볼	Initial 초기	Class1～3	JIS Z 3284 (11)
	After 24h 24H 후	Class1～3	
Melting point (℃) 융점 (℃)		217～221	

※1 할로겐함유량은 염소(cl):900ppm 이하, 브롬(br) :900ppm 이하, 합계:1500ppm 이하로 관리한다.

※2 Viscometer : Malcom ＰＣＵ－２０３、－２０５
점 도 계 : 말콤 ＰＣＵ－２０３、－２０５
Measuring temperature : ２５℃ ± 0.3℃
측 정 온 도 : ２５℃ ± 0.3℃
Measuring time : 3 minutes after rotation
측 정 시 간 : 회전 3 분 후의 값.
Rotation speed : １０rpm
회 전 수 : １０rpm

4. Test result
시험성적서의 첨부
This SOLDER CREAM shall be tested on the following items. The data sheet of test result is issued based on user's request.
본 솔더크림은 표 1,2 의 항목 중에서 다음 항목에 대하여 시험하고, 고객의 요구에 따라 시험 성적서를 제조 LOT 마다 첨부한다.

(1)Chemical composition
솔더성분 분석치
(2)Chlorine content
염소 함유량
(3)Flux content
플럭스 함유량
(4)Grain size
분말의 입도
(5)Viscosity
점도

5. Container and labeling
용기 및 표시

5. 1 Container
용 기
The SOLDER CREAM shall be packaging in a wide opening polyethylene vessel in unit of 0.5Kg.
용기는 광구의 폴리용기로 하고, 1 제품 단위는 0.5Kg 으로 한다.

5. 2 Labeling
표 시
The following items shall be indicated on a label attached to each container.
본 솔더크림은 용기에 다음의 사항을 표시한다.

Product name
품 명
LOT NO
LOT 번호
Net mass
실중량
Produced date
제조 년 월 일
Expiry date
품질보증기간
Manufacturer's name
제조회사명

6. Guarantee period and storage condition
품질보증기간 및 보관조건

6. 1 Guarantee period
품질보증기간
The guarantee period of this product is expired 6 months after production date.
제조일로부터 6 개월

6. 2 Storing condition
보관조건
1 0℃ Max.
1 0℃ 이하

7. Effectuation、modification and abolition
실시 및 개폐

This specification shall be enforced after approval.
본 사양서는 승인을 득한후에 실시하는 것으로 한다.
This specification can be modified or abolished, if necessary, by mutual consent.
본 사양서의 개폐는 필요에 따라, 쌍방 협의하는 것으로 한다.

(제품사진)

Warning before using
사용상의 주의사항

1. Do not use this SOLDER CREAM for other purpose except soldering.
   본 제품은 납땜 이외에 사용하지 마십시오.

2. Do not touch this SOLDER CREAM with bare hand. If SOLDER CREAM is in contact with skin, wash with alcohol and soap.
   본 제품을 직접 손으로 접촉하지 않도록 해주십시오. 만약, 부착한 경우에는 알코올 등의 적당한 용제로 제거 후 비누로 닦아 주십시오.

3. Ventilate the room sufficiently when using. Take care not to inhale the vapor from this SOLDER CREAM.
   본 제품을 사용할 때에는 환기를 충분히 하고, 증기를 흡입하지 않도록 해 주십시오.

4. Do not heat up the SOLDER CREAM. The SOLDER CREAM should not be opened until the temperature increases to room temperature.
   본 제품을 실온으로 되돌리는 경우는 급격한 온도상승을 피하고, 밀폐상태로 실온에 방치해 주십시오.

5. This SOLDER CREAM contains flammable substance, so be careful and avoid exposure to exc-essive heat or fire when using in the workshop or during storage.
   본 제품은 소방법 비위험물입니다만, 제 4 류 제 3 석유류에 해당하는 용제를 사용하고 있으므로 작업장소, 보관장소에 화기에 충분히 주의해 주십시오.

Revision

개 정 이 력 서

Name of product : HALOGEN FREE SOLDER CREAM NP303-LHGQ-7KR 품명:할로겐 프리 솔더크림 NP303-LHGQ-7KR			Specification No. : SP170302-1 사양서번호 : SP170302-1	
Revision date 개정 년 월 일	Revision point 변 경 부 분	Reason of revision 변 경 내 용	Confirm 승인	
			USER	AHKOREA
2017.3.2. 2023.4.28	최초제정 포장사양서	 바코드라벨 추가		서 재 인 서 재 인

DATA SHEET OF TEST REST

NAME OF PRODUCT	HALOGEN FREE SOLDER PASTE NP303-LHGQ-7KR (0202-001762)
DELIVERY DATE	2023. 04. 03
QUANTITY	600.0 KG

SOLUM VINA CO., LTD

	Sn	Pb	Sb	Bi	Cu	Au	In	Ag	Al	As	Cd	Fe	Ni	Zn	Co	Quantity (Kg)	LOT NO
STANDARD VALUE	REST	0.050 MAX	0.100 MAX	0.100 MAX	0.500 ±0.05	0.005 MAX	0.020 MAX	3.000 ±0.2	0.001 MAX	0.030 MAX	0.002 MAX	0.020 MAX	0.010 MAX	0.001 MAX	-		
TEST RESULT	REST	0.012	0.013	0.005	0.520	0.000	0.006	3.020	0.000	0.000	0.000	0.001	0.003	0.000		10.0	230223-M2
	REST	0.012	0.013	0.005	0.520	0.000	0.006	3.020	0.000	0.000	0.000	0.001	0.003	0.000		120.5	230231-M1
	REST	0.012	0.013	0.005	0.520	0.000	0.006	3.020	0.000	0.000	0.000	0.001	0.003	0.000		135.0	230240-M1
	REST	0.013	0.015	0.005	0.530	0.001	0.006	3.010	0.000	0.000	0.000	0.006	0.005	0.000		135.0	230241-M1
	REST	0.013	0.015	0.005	0.530	0.001	0.006	3.010	0.000	0.000	0.000	0.006	0.005	0.000		56.0	230242-M2
	REST	0.013	0.015	0.005	0.530	0.001	0.006	3.010	0.000	0.000	0.000	0.006	0.005	0.000		56.0	230243-M2
	REST	0.013	0.015	0.005	0.530	0.001	0.006	3.010	0.000	0.000	0.000	0.006	0.005	0.000		87.5	230244-M1

	FLUX CONTENT (%)	CHLORINE CONTENT (%)	GRAIN SIZE (㎛)	VISCOSITY (Pa.s)	THIXOTROPY INDEX	R (%)		LOT NO
STANDARD VALUE	11.0 ± 0.5	0.01 MAX	38 ~ 22	180 ± 20	-	10% MAX		
TEST RESULT	11.2	0.000	38 ~ 22	167.2	0.56	0.30		230223-M2
	11.2	0.000	38 ~ 22	168.2	0.56	0.71		230231-M1
	11.2	0.000	38 ~ 22	166.3	0.56	0.48		230240-M1
	11.2	0.000	38 ~ 22	174.1	0.56	0.06		230241-M1
	11.2	0.000	38 ~ 22	169.9	0.57	0.77		230242-M2
	11.2	0.000	38 ~ 22	167.6	0.57	0.72		230243-M2
	11.2	0.000	38 ~ 22	167.9	0.57	0.66		230244-M1

※ Viscometer : Malcom (PCU-203, PCU-205) - Storage conditions: 1 ~ 10 ℃ cold storage.
Working conditions: After neglect for 1 ~ 2 hours at room temperature of stirring working conditions ,20-60 seconds by stirring 1000rpm fiducial .
One other conditions or approved reference requests Knowledge Base.

Preparation	Recognition

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SGS

Test Report No. F690101/LF-CTSAYAA22-21293

Issued Date : 2022. 05. 20

AH KOREA CO., LTD.
125-10 Bochon 4-gil, Miyang-myeon
Anseong-si, Gyeonggi-do
Korea

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

SGS File No.	: AYAA22-21293
Product Name	: NP303
Item No./Part No.	: NP303
Buyer(s)	: SAMSUNG ELECTRONICS CO., LTD.
Received Date	: 2022. 05. 17
Test Period	: 2022. 05. 17 to 2022. 05. 20
Test Results	: For further details, please refer to following page(s)

SGS Korea Co., Ltd.

Tommy

Tommy Oh / Chemical Lab Mgr

SGS Korea Co.,Ltd. 322, The O valley, 16, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 14117
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Test Report No. F690101/LF-CTSAYAA22-21293

Issued Date : 2022. 05. 20

Sample No. : AYAA22-21293.001
Sample Description : NP303
Item No./Part No. : NP303
Materials : SOLDER

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	359
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 : 2013+AMD1:2017CVS, by ICP-OES	2	N.D.
Hexavalent Chromium (Cr VI)*	mg/kg	With reference to IEC 62321-7-2 : 2017, by UV-Vis and/or with reference to IEC 62321-5 : 2013, by ICP-OES	8	N.D.

Total Metals

Test Items	Unit	Test Method	MDL	Results
Antimony (Sb)	mg/kg	With reference to EPA 3052 : 1996, EPA 6010D : 2018, by ICP-OES	10	57.0

NOTE:
(1) N.D. = Not detected. (<MDL)
(2) mg/kg = ppm, ug/kg = ppb, mg/L = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable
(7) * = a. The result of Hexavalent Chromium (Cr(VI)) is "ND" as the result of Chromium (Cr) is "ND", and confirmation test of Hexavalent Chromium (Cr(VI)) is not required.
b. If the content of Total Chromium (Cr) is greater than the MDL of Hexavalent Chromium (Cr(VI)), it is the result of hexavalent Chromium by UV-VIS.
(8) The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to Korea Laboratory Accreditation Scheme.

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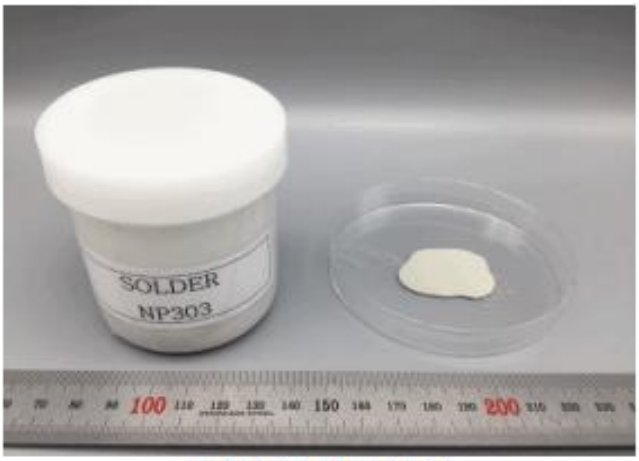
Test Report No. F690101/LF-CTSAYAA22-21293 Issued Date : 2022. 05. 20 Page 3 of 5

Picture of Sample as Received:



AYAA22-21293.001

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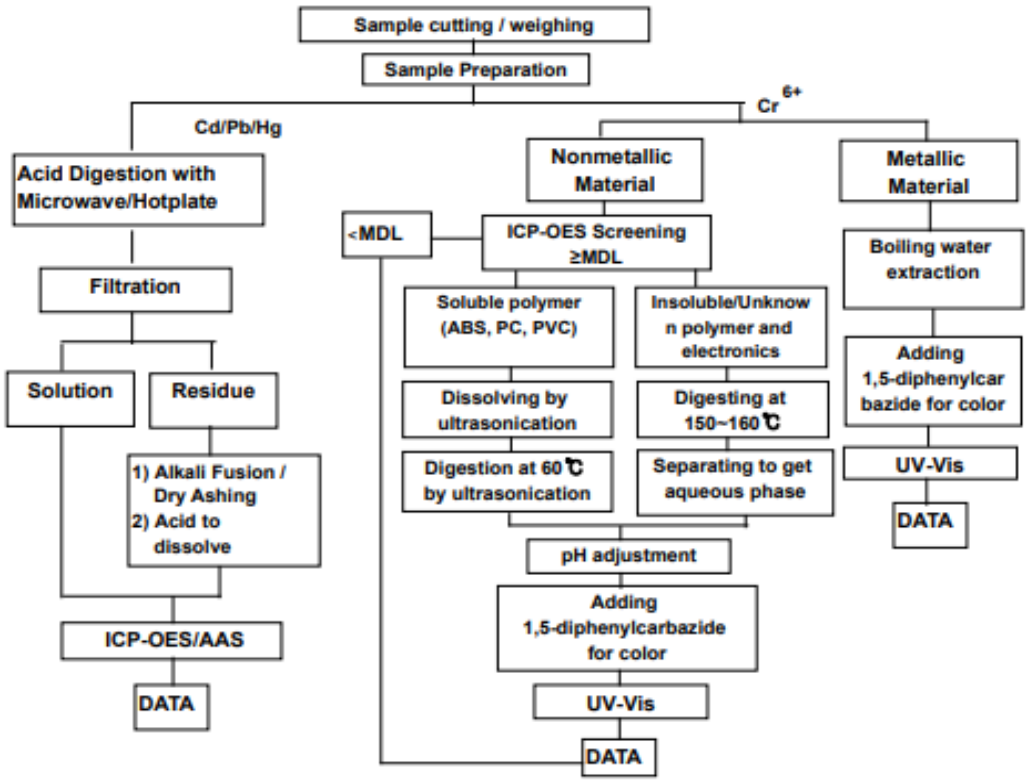
Test Report No. F690101/LF-CTSAYAA22-21293 Issued Date : 2022. 05. 20 Page 4 of 5

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{6+} Testing



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

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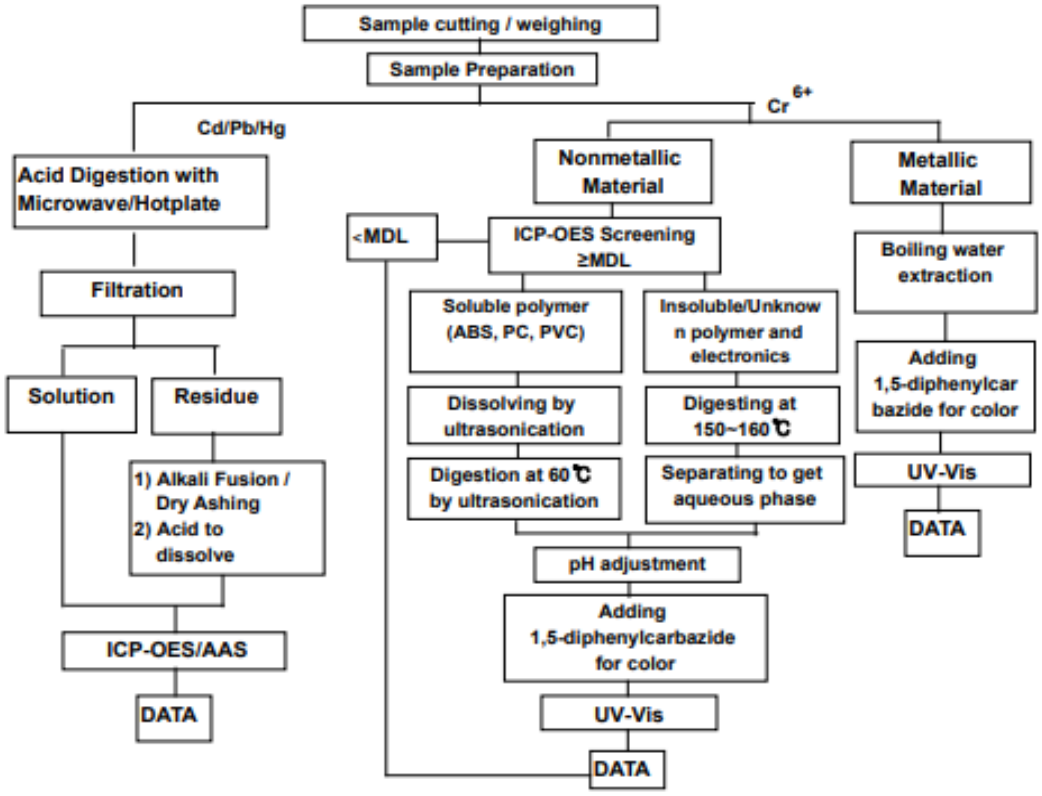
Test Report No. F690101/LF-CTSAYAA22-21293 Issued Date : 2022. 05. 20 Page 4 of 5

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{6+} Testing



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

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Test Report No. F690101/LF-CTSAYAA23-11793

Issued Date : 2023. 03. 07 Page 1 of 7

AH KOREA CO., LTD.
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Anseong-si, Gyeonggi-do
Korea

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

SGS File No.	: AYAA23-11793
Product Name	: LHGQ-7KR
Item No./Part No.	: LHGQ-7KR
Buyer(s)	: SAMSUNG ELECTRONICS
Received Date	: 2023. 03. 03
Test Period	: 2023. 03. 03 to 2023. 03. 07
Test Results	: For further details, please refer to following page(s)

SGS Korea Co., Ltd.

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Test Report No. F690101/LF-CTSAYAA23-11793

Issued Date : 2023. 03. 07 Page 2 of 7

Sample No. : AYAA23-11793.001
Sample Description : LHGQ-7KR
Item No./Part No. : LHGQ-7KR
Materials : PASTE FLUX

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+AMD1:2017CVS, by ICP-OES	2	N.D.
Hexavalent Chromium (Cr VI)*	mg/kg	With reference to IEC 62321-7-2 : 2017, by UV-Vis and/or with reference to IEC 62321-5 : 2013, by ICP-OES	8	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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Test Report No. F690101/LF-CTSAYAA23-11793

Issued Date : 2023. 03. 07 Page 3 of 7

Sample No. : AYAA23-11793.001
Sample Description : LHGQ-7KR
Item No./Part No. : LHGQ-7KR
Materials : PASTE FLUX

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 Content

Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	With reference to BS EN 14582 : 2016, by IC	30	N.D.
Chlorine(Cl)	mg/kg	With reference to BS EN 14582 : 2016, by IC	30	441

NOTE: (1) N.D. = Not detected. (<MDL)
(2) mg/kg = ppm, ug/kg = ppb, mg/L = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable
(7) * = a. The result of Hexavalent Chromium (Cr(VI)) is "ND" as the result of Chromium (Cr) is "ND", and confirmation test of Hexavalent Chromium (Cr(VI)) is not required.
b. If the content of Total Chromium (Cr) is greater than the MDL of Hexavalent Chromium (Cr(VI)), it is the result of hexavalent Chromium by UV-VIS.
(8) The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to Korea Laboratory Accreditation Scheme.

SGS Korea Co.,Ltd. 322, The O valley, 76, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 14117
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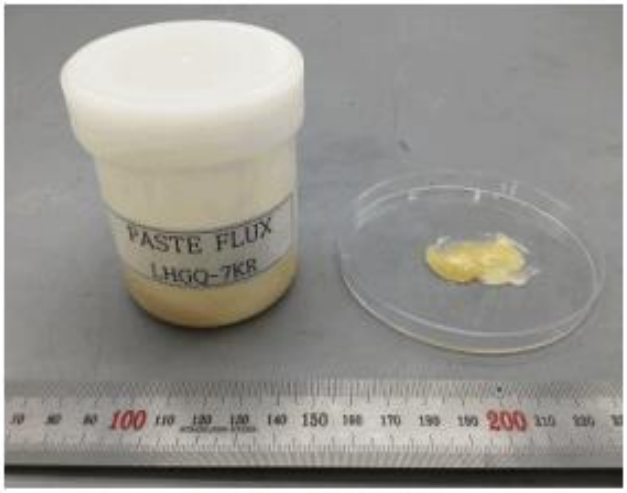
SGS

Test Report No. F690101/LF-CTSAYAA23-11793 Issued Date : 2023. 03. 07 Page 4 of 7

Picture of Sample as Received:



AYAA23-11793.001

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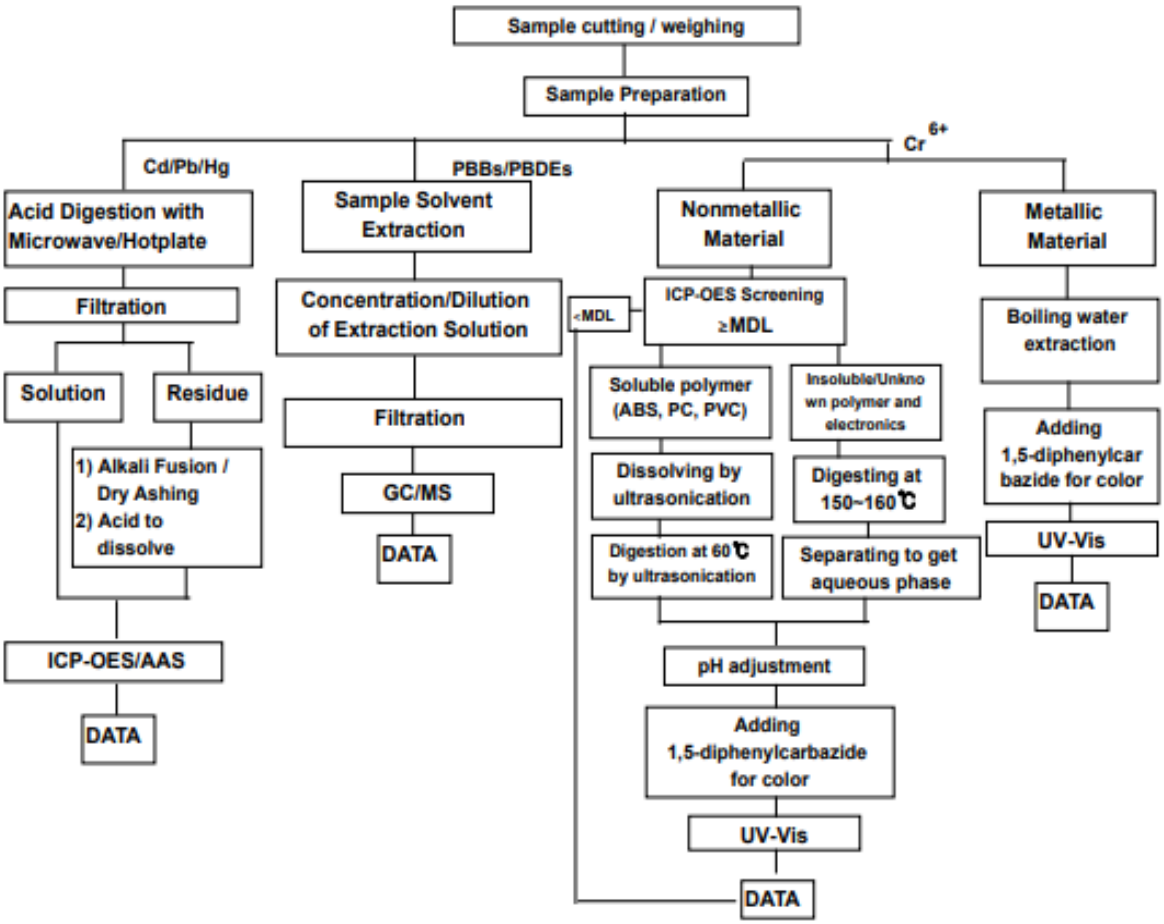
Test Report No. F690101/LF-CTSAYAA23-11793 Issued Date : 2023. 03. 07 Page 5 of 7

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{6+} /PBBs&PBDEs Testing



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

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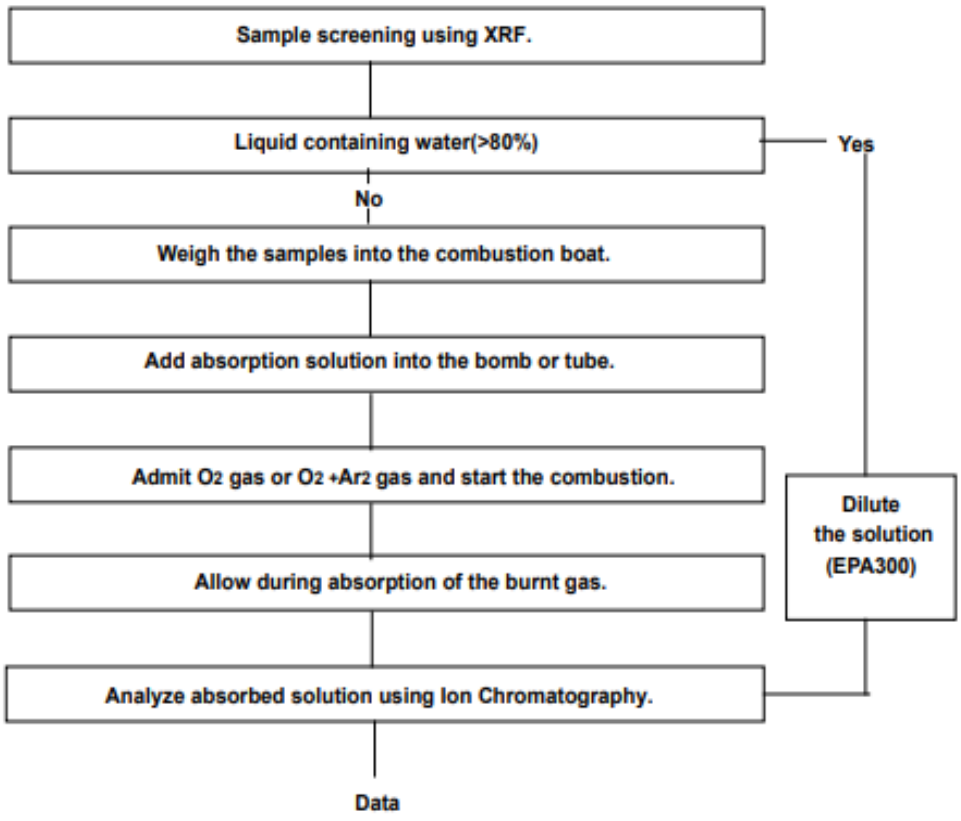
Flow Chart for Halogen Test



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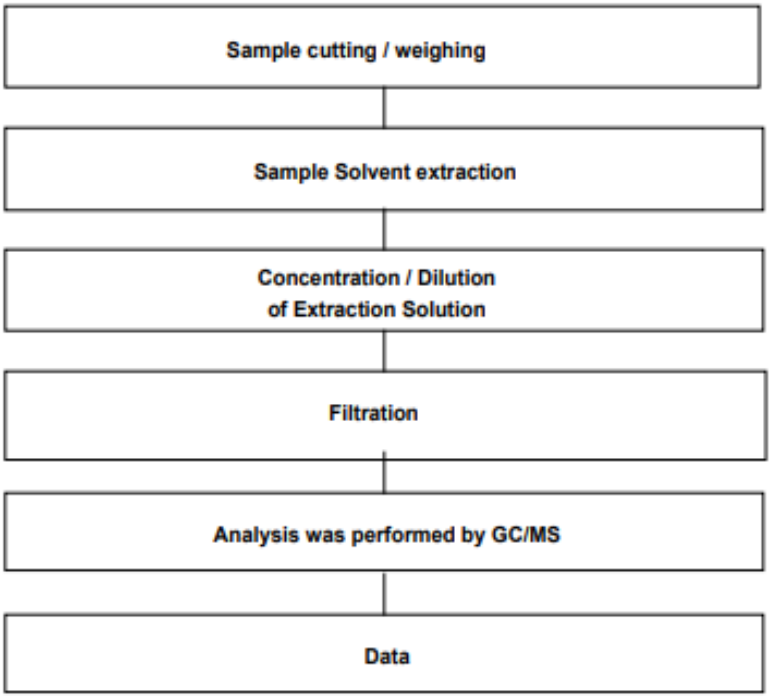
Flow Chart for PhthalateTest



*** End of Report ***

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No. T090507A

2009. 5. 7

특성 자료

SOLDER PASTE NP303-LHGQ-7KR

株式会社 ニホンゲンマ
技術部

エレクトロニクス時代を支える
株式会社 ニホンゲンマ

No. T090507A

1. 특징

• 대기 REFLOW 가능한 저할로겐(HALOGEN FREE)의 SOLDER PASTE 입니다.

2. 특성

표 1 에 SOLDER PASTE 조성을 표시합니다.

표 1 SOLDER 조성

Sn	Pb	Sb	Bi	Cu	Au	In	Ag	Al	As	Cd	Fe	Ni	Zn
잔량	0.0500 以下	0.10 以下	0.10 以下	0.5 ± 0.05	0.05 以下	0.10 以下	3.0 ± 0.5	0.001 以下	0.03 以下	0.0020 以下	0.02 以下	0.01 以下	0.001 以下

※유럽 RoHS 규제의 공식관리 값이나, Pb Free 의 JIS 규격값등의 움직임에 맞춰서 규격값을 변경할 수 있습니다.

표 2 에 본 SOLDER PASTE 의 특성치를 표시합니다.

표 2 특성치

항목		특성치	시험방법
FLUX 함유량 (wt%)		11.0±0.3	JIS Z 3197 8.1.2
할로겐 함유량 (ppm)		1000 以下	플라스크 연소법 +이온크로마트그래프※1
퍼짐성 (%)		75 以上	JIS Z 3197 8.3.1.1
절연저항 (Ω)	40℃、90%	1×10^{11} 以上	JIS Z 3284 (3)
	85℃、85%	5×10^{8} 以上	
부식성		부식없음	JIS Z 3284 (4)
동경부식		합격	JIS Z 3197 8.4.2
인쇄성		M3	JIS Z 3284 (5)
인쇄 SLUMP		0.2mm	JIS Z 3284 (7)
가열 SLUMP		0.3mm	JIS Z 3284 (8)
점착성		24hr	JIS Z 3284 (9)
젖음력 및 Dewetting		CLASS1-3 (銅板)	JIS Z 3284 (10)
SOLDER BALL	초기	CLASS 1~3	JIS Z 3284 (11)
	24 시간후	CLASS 1~3	
잔사의 점착성		점착성 없음	JIS Z 3284 (12)
마이그레이션		발생없음	JIS Z 3284 (14)
POWDER 입도 (μm)		구형 38~22	
점도 (Pa. s)		180±20	※2
Ti		0.60±0.05	
SOLDER 융점 (℃)		217~221	

※1 할로겐 함유량의 값은, Cl(염소):700ppm 이하, Br(브롬):700ppm 이하, 합계가 1000ppm 이하. 단, 값은 잠정값으로 변경할 될 수 있습니다.

※2 점도계:말콤 PCU-2, -5, -205
측정 온도:25 도 측정 시간:회전 3 분후의 값

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No. T090507A

회전수 :10rpm

3. 사용상 주의사항

①본제품은, 납땜 부이외의 용도에 사용 하지 말아 주십시오.

②본제품을 직접 손으로 접촉하지 않도록 해 주십시오. 만약 부착되었을 경우는, 알코올 등의 적당한 용매로 닦아낸 후, 비누로 충분히 세정해 주십시오.

③본제품의 사용시에는, 환기를 충분히 하고, 증기를 흡입하지 않도록 해 주십시오.

④본제품은, 냉장고(10 도이하)에 보관해 주십시오.

보증 기간은, 제조일보다, 6 개월로 한다 (잠정).

⑤본제품을 실온에 돌려줄 경우는, 급격한 온도상승을 피해서 밀폐 상태인채로 실온에 방치해 가 주십시오.

⑥염소계 용매, 불소계 용매, 그 밖의 용매가 제품에 혼입되면 인쇄성 열화, SOLDER BALL 발생의 원인이 되므로, METAL MASK 의 세정은 충분히 주의해 가 주십시오.

⑦본제품은 소방법 비위험물입니다만 제 4 류 제 3 석유류에 해당하는 용매를 사용하고 있으므로 작업장소·보관 장소에서는 화기에 충분히 주의해 주십시오.

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No. T090507A

4. 추천 REFLOW PROFILE

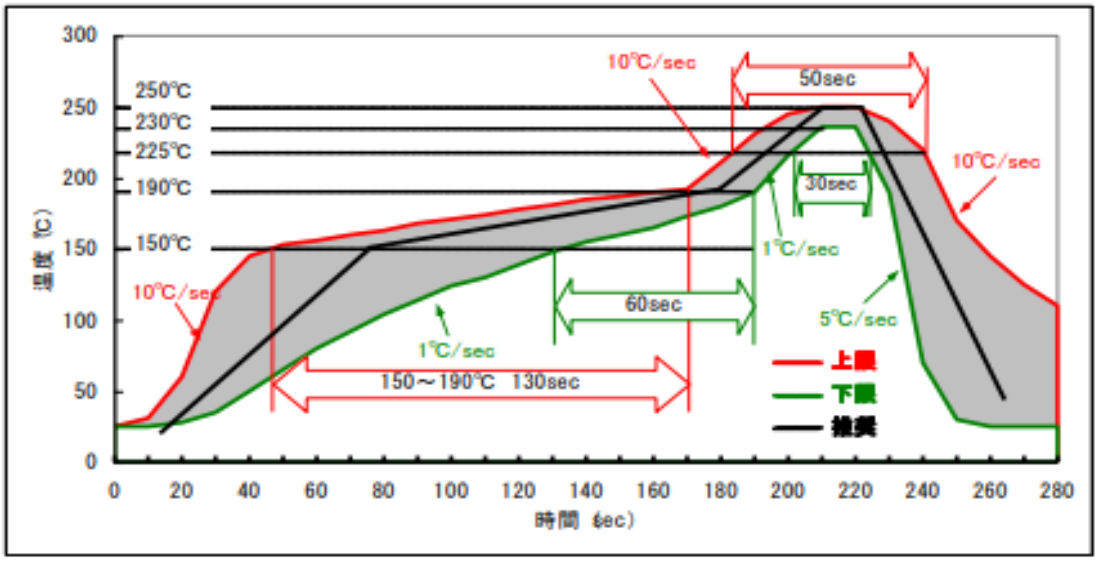

図 1 추천 REFLOW PROFILE

· PRE-HEAT

PRE-HEAT 온도까지의 온도 상승 속도는 1~10 도/sec 로 사용해 주십시오. 급격한 온도상승은 SOLDER PASTE 의 젖음성을 악화되게 할 경우가 있습니다. 또, 기판상의 온도편차를 적게 하기 위해서, 예열온도를 150 도로부터 190 도 부근에서, 예열 시간을 60~130sec 로 사용해 주십시오. 예열 온도가 낮게, 시간이 짧으면 기판상의 온도 편차가 커지고, 미용융이 발생할 경우가 있습니다. 또 예열 온도가 높고, 시간이 길면 예열중에 SOLDER PASTE 의 활성력이 상실되고, 미용융이 발생할 경우가 있습니다.

· 본 가열

피크 온도는 부품의 내열성을 고려하고, 낮은 온도(230 도)로 오랜 시간 유지해 주십시오. REFLOW 의 성능상, 본 가열을 유지하는 것이 곤란할 경우, 통상보다 높은 온도(250 도)로 부품의 내열보증 온도를 확인한 다음 사용해 주십시오. 용융 시간은 225 도이상의 시간이 30sec 이상이 되게 설정해 주십시오.

· 냉각

냉각을 완만하게 하면 부품의 접합 강도의 저하를 초래할 가능성이 있습니다. 반대로 지나치게 빠르면, 열 쇼크에 의해, 부품이 파손할 가능성이 있습니다. 5~10 도/sec 로 냉각해 주십시오.

※REFLOW 프로파일은, 부품이나 기판의 상태나 REFLOW 장비의 사양에 의해 변하므로, 미리 충분한 시험을 해 주십시오

以上

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株式会社 ニホンゲンマ

T130625B

NP303-LHGQ-7KR
신뢰성시험 DATA

2013.6.25

株式会社ニホンゲンマ

1. 마이그레이션시험

시험방법

JIS Z 3284 3에 따라 평가.

시험결과

・그림1에 절연저항값을 표시.

・다음 페이지에 그림2에 시험 후의 사진에 표시한다.
마이그레이션의 발생은 확인되지 않았다.

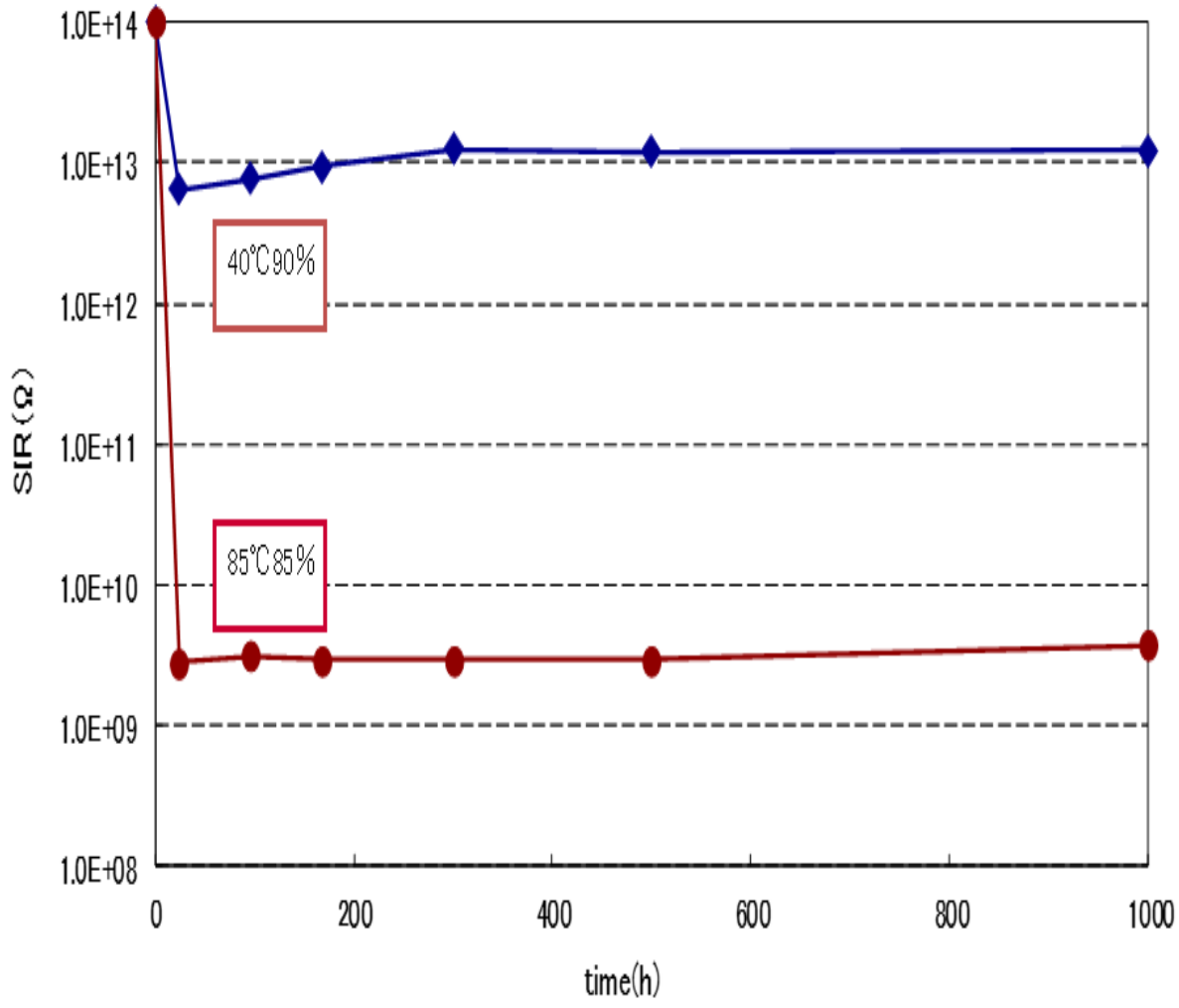


図1 절연저항치

투과광에 의한 관찰

40℃ / 90%RH

85℃ / 85%RH

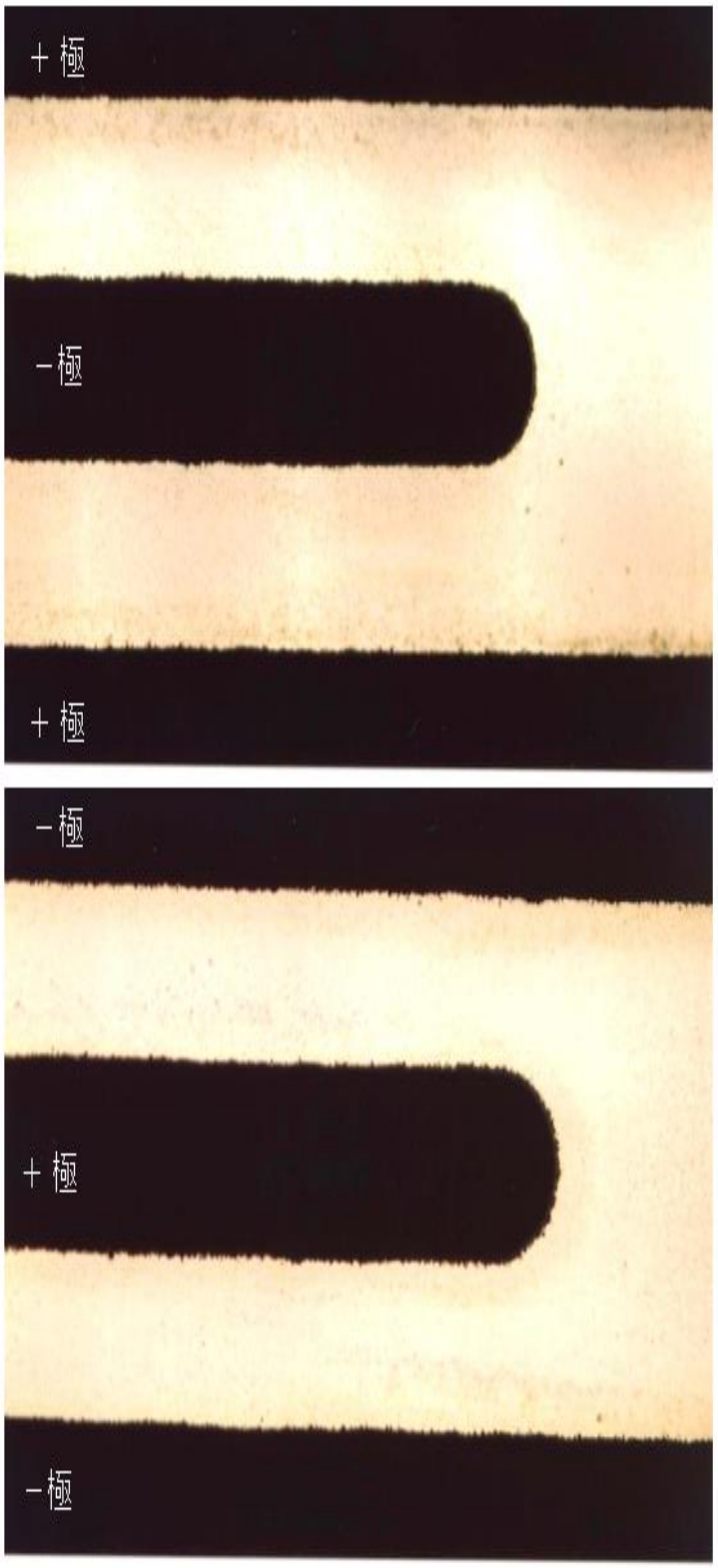


図2 시험후의 사진

2. 휘스커시험

시험방법

폐사 제작 시험기판에 NP303-LHGQ-7KR을 인쇄 후, 0.5mm피치의 QFP를 탑재한다.
이것을 그림3의 조건에 리플로한 것을 시험편으로 한다.
QFP의 리드 도금은 Sn도금.
시험편을 25℃/50%, 60℃/95%, 85℃/85%의 환경에서 1000시간방치한 후, 납땜부분에 휘스커 발생의 유무를 관찰한다.

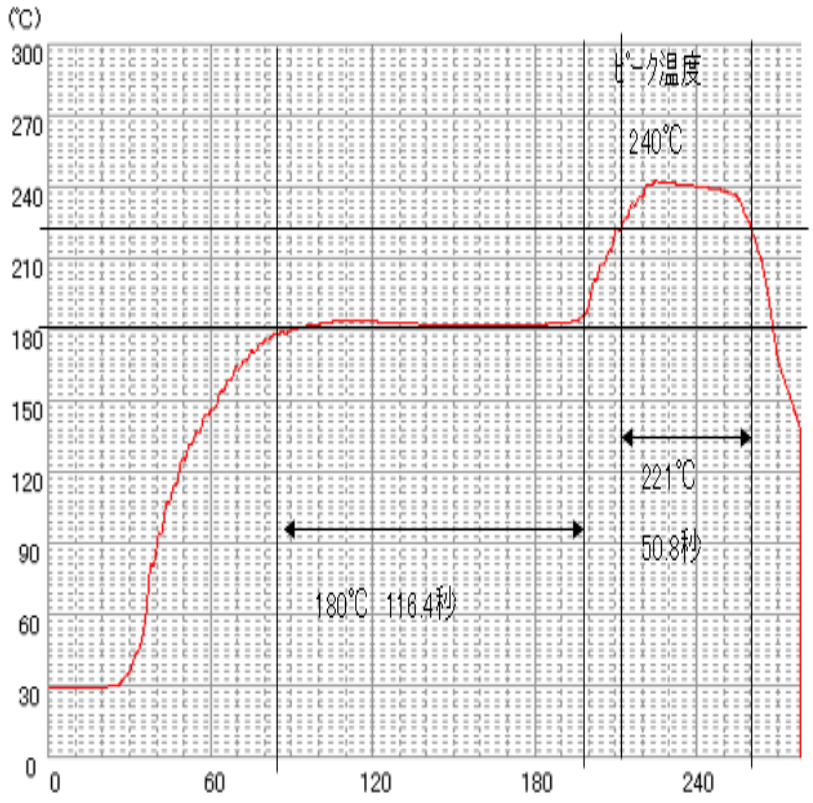


図3 リフロープロファイル

시험결과

그림4에 시험결과를 표시한다.
어느 조건에서도 휘스커 발생은 확인되지 않았습니다.

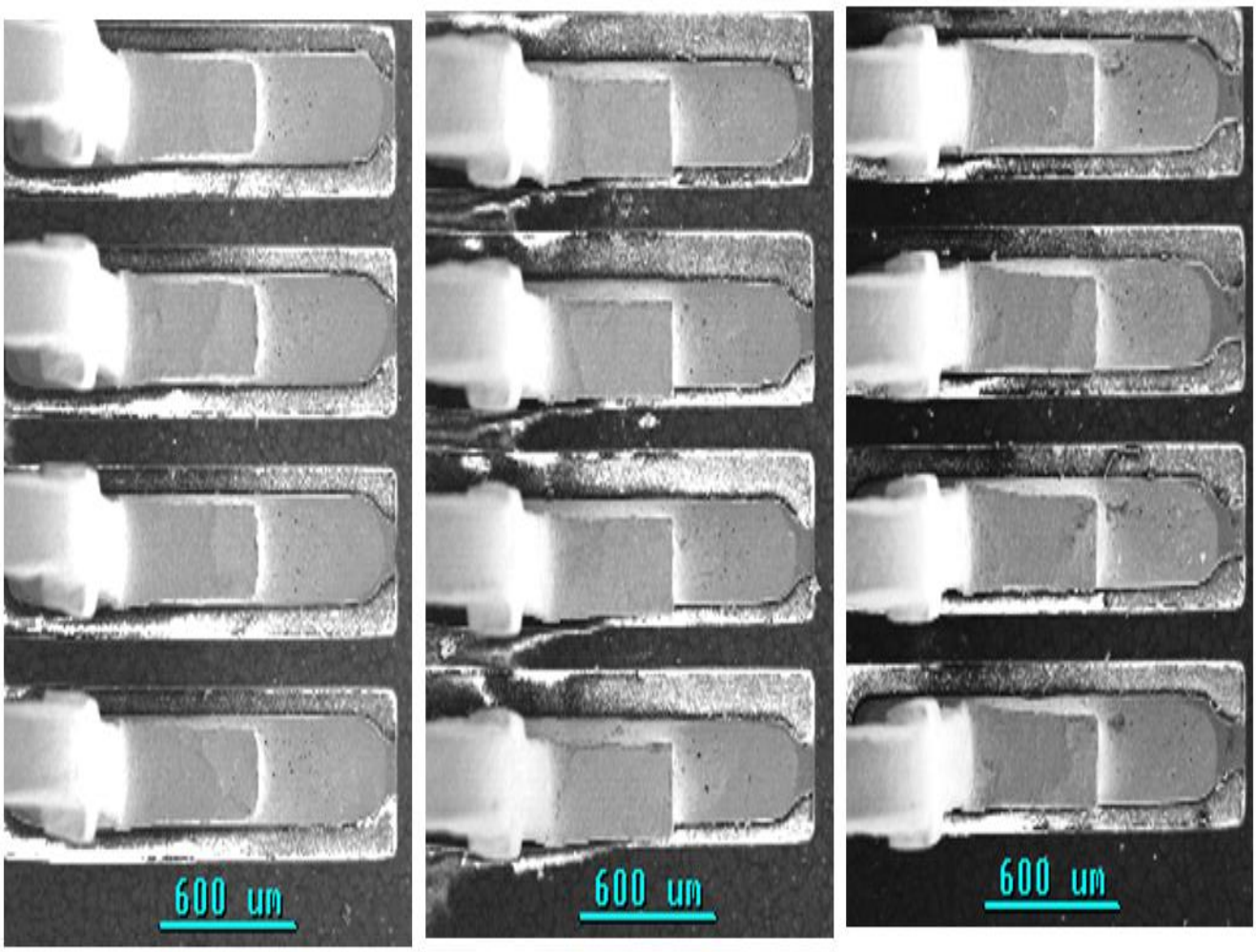
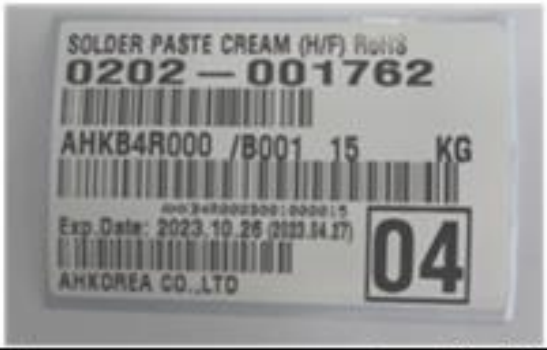


図4 휘스커 시험결과

以上

관리번호	납입포장 사양서	페이지
AHK-SP-170302-1		
제정.개정일자	NP303-LHGQ-7KR	1
2023. 04 . 28.		

1. 포장 방법

포장방법 (User 요청에 따라 변경 가능)	
용기 외관 및 규격	제품 라벨
1)용기 Size: 바디외경(중간)60mm±0.5mm, 바디높이:78mm±1.0mm 2)실충진량 : 500g±8g (용기무게 :약 40g) 3)구성 : 바디, 속뚜껑, 겉뚜껑	1) Label표기 : Label(120mm×46mm) 품명, LOT NO, 제조일, 유효기간, 실중량, 합금조성, 주의사항 등
	

솔더크림15kg(1.25Kg×12ea)를 Styrofoam Box(Size : 400W × 330L × 275H)에 충진

공급용 Box 내부 및 외부 (해외, 국내 동일)



2. 보냉제 : 운송과정에서 오는 온도 상승으로 인한 제품의 변질을 최소화하기 위하여
Styrofoam Box내에 Ice Pack 2개 이상을 투입한다.
3. 완충재 : 제품의 유동과 충격을 방지하기 위하여 Styrofoam 또는 비닐류를 투입할 수 있다.
4. 기타 포장 방법 및 규격은 User 요청에 의해 변경 할 수 있다.

AH KOREA CO., LTD

MSDS- E140818-2
SOLDER CREAM NP303-LHGQ-7KR

CHEMICAL SAFETY DATA SHEET

Date of issue Aug 18, 2014
Date of revison Feb 02, 2023

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name SOLDER CREAM NP303-LHGQ-7KR

Company Identification

Name of Supplier	AHKOREA. CO., LTD.
Address of Supplier	125-10, BOCHON4-GIL, MIYANG-MYUN, ANSUNG-CITY, KYUNGGI-DO, KOREA
Department in charge	Technical department
Person in charge	SEO, JAE IN
Emergency Telephone	031-673-0019
Fax No.	031-671-0875
Mail address	ahkorea@naver.com
CSDS No.	MSDS- E1408182-2
Recommended and restrictions of use of the products	Soldering process

2. HAZARD IDENTIFICATION

GHS Classification

<Physical Hazards>

Explosives	Not Applicable
Flammable gases	Not Applicable
Flammable aerosols	Not Applicable
Oxidizing gases	Not Applicable
Gases under pressure	Not Applicable
Flammable liquids	Not Applicable
Flammable solids	Classification Not Possible
Self-reactive substances and liquids	Not Applicable
Pyrophoric liquids	Not Applicable
Pyrophoric solids	Not Applicable
Self-heating substances and mixtures	Not Applicable
Substances and mixtures which, in contact with water, emit flammable	Classification Not Possible
Oxidizing liquids	Not Applicable
Oxidizing solids	Not Applicable
Organic peroxides	Not Applicable
Substance and mixtures corrosive to metals	Classification Not Possible

<Health Hazards>

Acute toxicity, oral	Not Classified
Acute toxicity, dermal	Not Classified
Acute toxicity [inhalation:gas]	Not Classified
Acute toxicity [inhalation:vapor]	Not Classified
Acute toxicity [inhalation:dust and mist]	Not Classified
Skin corrosion/irritation	Not Classified
Eye damage/irritation	Category 1
Respiratory sensitization	Classification Not Possible
Skin seneitization	Not Classified
Germ cell mutagenicity	Not Classified
Carcinogenicity	Not Classified
Reproductive toxicity	Not Classified
Specific target organ toxicity (single exposure)	Not Classified
Specific target organ toxicity (repeated exposure)	Category 1
Aspiration hazard	Classification Not Possible

<Environmental Hazards>

Hazardous to the aquatic environment-Acute hazard	Not Classified
Hazardous to the aquatic environment-Chronic hazard	Not Classified

MSDS- E140818-2
SOLDER CREAM NP303-LHGQ-7KR

Label Elements
Symbols/Pictograms 
Signal Word Danger

Hazardous Information
H318 Causes serious eye damage
H372 Cause damage to organs through prolonged or repeated exposure

Instructions
Precaution Do not breathe dust/fume/gas/mist/vapours/spray. (P260)
Wash ···thoroughly after handling. (P264)
Do not eat, drink or smoke when using this product. (P270)
Wear protective gloves/protective clothing/eye protection/face protection. (P280)
Response IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)
Immediately call a POISON CENTER or doctor/physician. (P310)
Get medical advice/attention if you feel unwell. (P314)
Disposal Dispose of contents/container to in accordance with local/regional/national/international regulations. (P501)

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Single Substance or Mixture Mixture
Chemical name or General name Solder paste
Composition

Material name	Chemical formula	CAS No	Official file number	Content wt%
Tin	Sn	7440-31-5	-	85.88
Silver	Ag	7440-22-4	-	2.67
Copper	Cu	7440-50-8	-	0.45
Modified rosin	-	144413-22-9		2.20
Modified rosin	-	65997-06-0		1.32
Solvent (glycol type)	-	112-59-4		3.52
Solvent (glycol type)	-	112-73-2		1.65
Castor oil	-	61789-44-4	-	1.76
Adipic acid		124-04-9		0.55

4. FIRST-AID MEASURES

Eye contact Flush eye well with plenty running water for 15 minutes, including under eyelids. See physician.
Skin contact Wash with plenty of soap and water.
Inhalation Remove to fresh air and call physician.
Ingestion Spit out promptly and receive treatment by doctor in case neccessary afterwards.

5. FIRE-FIGHTING MEASURES

Extinguishant Dry chemical, airfoam, carbon dioxide.
Specific fire fighting Fire fighting perform from the windward and remove in flammables.
Prohibited extinguisher "Water" For melted metal to pour water is strictly prohibited.
Protection for fire fighters Stand in the windward, wear tools for protection for breathing and do not inhale outbreak gas.

6. ACCIDENTAL RELEASE MEASURES

Attention for the human body The collection work sholud be carried out from windward with protection glasses, gloves, mask.
Attention for the environment Pay attention not to flow out into the public waters.
Removal method Scoop up excess material and wash affected area with soap and water.
Handling of repossession: refer to "13. Attention of disposal".
In case of small amount, wipe off with organic solvent.

MSDS- E140818-2
SOLDER CREAM NP303-LHGQ-7KR

7. HANDLING AND STORAGE

Handling	Do not touch this product with bare hand. If this product is in contact with skin, Ware protection glass and mask in operation.
Instructions	Ventilate the room sufficiently in operation. Take care not to inhale the vapor.
Storage	Keep in the cool and dark space.(below 10℃)
Condition to avoid	Keep Away from heat source, ignition, strong oxidizers, alkaline and acid.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Protective equipment local exhaust in operation

Exposure limit

Unit mg/m^3

	OSHA PEL 2009	ACGIH TWA 2009
Tin	2	2
Silver	0.01	0.1
Copper	0.1	0.2
Rosin	–	–

Personal protective equipment

Respiratory apparatus	Protective mask
Hand	Protective gloves
Eye	Protective glass

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Gray paste with metallic luster and glycol odor		
Melting Point(METAL)	217-221 ℃	Percent Volatile	0.01mmHg/20℃
Combustibility	Include inflammables	Specific gravity	4.2
Solubility to water	No	Ignition point (main solvent)	126℃
Flash point	305℃		
Flash (spontaneous combustion, reaction with water)	No	Oxidization	No information
		Boiling point	No information

10. STABILITY AND REACTIVITY

Stability	This product considered stable under normal condition.
Reactivity	May react with strong acid and oxidizer, alkaline and acids.
Condition to avoid	Keep Away from heat source, ignition, strong oxidizers, alkaline and acid.
Hazardous decomposition	By combustion carbon oxide, carbon dioxide and hume are generated.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	No information
Skin corrosion/irritatior	No information
Eye damage/irritation	No information
Respiratory sensitizatio	No information
Skin seneitization	No information
Germ cell mutagenicity	No information
Carcinogenicity	No information
Reproductive toxicity	No information
Specific target organ toxicity(single	No information
Specific target organ toxicity(repeated exposure)	(Sn) fear of the obstacle to the lungs No information
Aspiration hazard	No information
Hazardous to the aquatic environment-Acute hazard	No information
Hazardous to the aquatic environment-Chronic hazard	No information

12. ECOLOGICAL INFORMATION

Mobility	No information
Biodegradation	No information
Bioaccumulation	No information
Fish Toxicity	No information

13. DISPOSAL CONSIDERATIONS

In accordance with state and local regulations
Metal ingredints are recyclable.

14. TRANSPORT INFORMATION

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

UN No.	Not Applicable
Marine pollutant	Not Applicable

Specific transport measures and condition
To avoid sunshine, high temperature and humidity, keep away from heat.
Check before transport load not breakage of container, turnover and fall during transport.

15. Regulatory Information

Industrial safety and health law	Enforcement order Article 18-2 322 Tin and its compounds Enforcement order Article 18-2 137 Silver and its water soluble compounds Enforcement order Article 18-2 379 Copper and its compounds Enforcement order Article 18-2 632 Rosin
PRTR Law	Class I Designated Chemical Substance Cabinet Order No 82 Silver and its water soluble compounds 0.27%
Other Regulations	Sewerage Act Enforcement Act Article 9-4 Copper and its compounds

16. OTHER INFORMATION

This CSDS is created based on the information we can get at issued date. We expect accuracy, but it is not a thing of guarantee. Please perform reasonable attention for individual use and safe handling.
Because the contents of this information correspond to a normal use / condition, in case of not normal use/condition, we will assume that the responsibility is of the user.

CERTIFICATE

Registration no.	KE 10839	IAF Code	12
First issue date	2010-09-08	Issue date	2022-09-08
Expiry date	2025-09-07	Reissue date	2022-09-05

Environmental Management System Certificate

KS I ISO 14001:2015/ISO 14001:2015

We certify that the Environmental Management System of the Organization:

에이에치코리아㈜

Is in compliance with the standard KS I ISO 14001:2015/ISO 14001:2015
for the following products/services:

Solder paste 및 flux의 설계, 개발 및 제조

General Manager
Seung-Chan Lee

본 인증은 키와 코리아의 인증자격유지기준의 준수 및 지속적인 사후심사를 통하여 유지 됩니다.

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인증 사업장
경기도 안성시 미양면 보촌4길 125-10

KAB-EC-21

CERTIFICATE

Registration no.	KE 10839	IAF Code	12
First issue date	2010-09-08	Issue date	2022-09-08
Expiry date	2025-09-07	Reissue date	2022-09-05

Environmental Management System Certificate

KS I ISO 14001:2015/ISO 14001:2015

We certify that the Environmental Management System of the Organization:

AH Korea Co., Ltd.

Is in compliance with the standard KS I ISO 14001:2015/ISO 14001:2015
for the following products/services:

Design, development and manufacture of solder paste and flux

General Manager
Seung-Chan Lee

Maintenance of the certification is subject to continual surveillance audit and dependent upon the observance of Kiwa Korea's certification criteria.

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Certified Sites
125-10, Bochon 4-gil, Miyang-myeon, Anseong-si, Gyeonggi-do, Korea

KAB-EC-21

CERTIFICATE OF REGISTRATION

AH KOREA Co., Ltd.

125-10, Bochon 4-gil, Miyang-myeon, Anseong-si, Gyeonggi-do, Korea.

SBC Registrar certifies that the Quality Management System of
the above organization has been assessed and found to be in accordance with
the requirements of the scope of certification detailed below

Certificate No. : QMS-0506

Standards : KS Q ISO 9001:2015 / ISO 9001:2015

Valid : 2020.09.13 ~ 2023.09.12 (Initial Registration Date : 2002.09.13)

Scope of Supply : The Design·Development and Manufacture of
Solder Paste and Flux

4 September 2020

This certificate has been re-issuance due to the renewal

KAB-QC-09

SBCR Small & medium Business Corporation Registrar

Kim Gwang Jae
CEO & President

SBC Certification Institute was recognized by the KAB as a quality management system certification institution (Recognized number: KAB-QC-09)
Accredited by Member of the International Accreditation Forum Multilateral Recognition Arrangement for Quality Management System