

TEST REPORT
(시험성적서)

신청기관 (인) : 씨앤씨테크㈜
APPLICANT : CNCTECH
주소 (한글) : 인천시 남동구 고잔로 41번길 23-1 (고잔동 390-1)
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Incheon, Korea

발행면수 (PAGE) : 1 of 9
발행일자 (DATE) : 2020. 01. 22.

시험성적서 번호 (REPORT NO.) : RT20R-S0259-K

시료 명세 (SAMPLE DESCRIPTION) : 시료에 대한 상세한 정보는 아래와 같음
(The following submitted sample(s) said to be)

제품명/형식 (NAME/TYPE OF PRODUCT) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))

재질 (NAME OF MATERIAL) : Cu Plating Solution (VMS), Microfab Cu300 Starter, Microfab Cu300 SP, Microfab Cu300 LE,
Microfab Cu300 BR, Cu Concentration)
(Cu Plating Solution (VMS), Microfab Cu300 Starter, Microfab Cu300 SP, Microfab Cu300 LE,
Microfab Cu300 BR, Cu Concentration))

시료고유번호 (SAMPLE ID NO.) : RT20R-S0259
(RT20R-S0259)

제품 생산자/공급자 (MANUFACTURER/VENDOR) : 씨앤씨테크㈜
(CNCTECH)

시료접수일자 (SAMPLE RECEIVED) : 2020. 01. 16.
(Jan. 16, 2020)

시험일자 (TESTING DATE) : 2020. 01. 16. ~ 2020. 01. 22.
(Jan. 16, 2020 ~ Jan. 22, 2020)

시험방법 (TEST METHOD) : 이 시험성적서의 다음 페이지 첨부
(Please see the following page)

시험결과 (TEST RESULT) : 이 시험성적서의 다음 페이지 첨부
(Please see the following page)

비고 (Notes) : 1. 이 시험성적서는 제시된 시료 및 시료명으로 시험한 결과로서 유사 대상시료에 적용할 수 없음.
(The test results presented in this report refer only to the object tested.)
2. 이 시험성적서는 승인없이 복사 사용을 금함.
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승인자 (Approved by)



장준용/기술책임자
(Jade Jang / Lab. Technical Manager)

권한자 (Authorized by)



박병욱/소장
(Bo Park / Lab. General Manager)



Authenticity check



TEST REPORT
(시험 성적서)

발행면수 (PAGE) : 2 of 9

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시험성적서 번호 (REPORT NO.) : RT20R-S0259-K

시료고유번호 (SAMPLE ID NO.) : RT20R-S0259

시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))

시험항목 (TEST ITEM)	단위 (UNIT)	분석방법 (TEST METHOD)	검출한계 (MDL)	시험결과 (RESULT)
카드뮴 (Cadmium, Cd)	mg/kg	With reference to IEC 62321-5 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES	0.5	N.D.
납 (Lead, Pb)	mg/kg		5	N.D.
수은 (Mercury, Hg)	mg/kg	With reference to IEC 62321-4 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES	2	N.D.
6가 크롬 (Hexavalent Chromium, Cr ⁶⁺)	mg/kg	With reference to IEC 62321-7-2 Edition 1.0 : 2017, by alkaline/toluene digestion and determined by UV-VIS Spectrophotometer	8	N.D.
폴리브롬화비페닐 (Polybrominated Biphenyls, PBBs)				
모노브로모비페닐 (MonoBB)	mg/kg	With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS	5	N.D.
다이브로모비페닐 (DiBB)	mg/kg		5	N.D.
트라이브로모비페닐 (TriBB)	mg/kg		5	N.D.
테트라브로모비페닐 (TertaBB)	mg/kg		5	N.D.
펜타브로모비페닐 (PentaBB)	mg/kg		5	N.D.
헥사브로모비페닐 (HexaBB)	mg/kg		5	N.D.
헵타브로모비페닐 (HeptaBB)	mg/kg		5	N.D.
옥타브로모비페닐 (OctaBB)	mg/kg		5	N.D.
노나브로모비페닐 (NonaBB)	mg/kg		5	N.D.
데카브로모비페닐 (DecaBB)	mg/kg		5	N.D.
폴리브롬화디페닐에테르 (Polybrominated Diphenyl Ethers, PBDEs)				
모노브로모디페닐에테르 (MonoBDE)	mg/kg	With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS	5	N.D.
다이브로모디페닐에테르 (DiBDE)	mg/kg		5	N.D.
트라이브로모디페닐에테르 (TriBDE)	mg/kg		5	N.D.
테트라브로모디페닐에테르 (TetraBDE)	mg/kg		5	N.D.
펜타브로모디페닐에테르 (PentaBDE)	mg/kg		5	N.D.
헥사브로모디페닐에테르 (HexaBDE)	mg/kg		5	N.D.
헵타브로모디페닐에테르 (HeptaBDE)	mg/kg		5	N.D.
옥타브로모디페닐에테르 (OctaBDE)	mg/kg		5	N.D.
노나브로모디페닐에테르 (NonaBDE)	mg/kg		5	N.D.
데카브로모디페닐에테르 (DecaBDE)	mg/kg		5	N.D.

Tested by : Jooyeon Lee, Seulgi Park, Miseon Lee

Notes : mg/kg = ppm = parts per million (함량 표시 : 백만분의 일)
 < = Less than (결과 값 이하)
 N.D. = Not detected (< MDL, 미검출 - 검출한계 이하)
 MDL = Method detection limit (검출한계)

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TEST REPORT
(시험 성적서)

발행면수 (PAGE) : 3 of 9

발행일자 (DATE) : 2020. 01. 22.

시험성적서 번호 (REPORT NO.) : RT20R-S0259-K

시료고유번호 (SAMPLE ID NO.) : RT20R-S0259

시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))

시험항목 (TEST ITEM)	단위 (UNIT)	분석방법 (TEST METHOD)	검출한계 (MDL)	시험결과 (RESULT)
브롬 (Bromine, Br)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
염소 (Chlorine, Cl)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
베릴륨 (Beryllium, Be)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
안티몬 (Antimony, Sb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
퍼플루오로옥타노익에시드 (Perfluorooctanoic acid, PFOA)	mg/kg	With reference to US EPA 3550C/8321B, by ultrasonic extraction and determined by LC/MS or LC/MS/MS	0.1	N.D.
퍼플루오로옥탄설포네이트 (Perfluorooctane sulfonate, PFOS)	mg/kg	With reference to US EPA 3550C/8321B, by ultrasonic extraction and determined by LC/MS or LC/MS/MS	0.1	N.D.

Tested by : Hyojoo Kim, Miseon Lee, Jooyeon Lee

Notes : mg/kg = ppm = parts per million (함량 표시 : 백만분의 일)
 < = Less than (결과 값 이하)
 N.D. = Not detected (< MDL, 미검출 - 검출한계 이하)
 MDL = Method detection limit (검출한계)

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시료고유번호 (SAMPLE ID NO.) : RT20R-S0259

시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))

시험항목 (TEST ITEM)	CAS번호 (CAS NO.)	단위 (UNIT)	분석방법 (TEST METHOD)	검출한계 (MDL)	시험결과 (RESULT)
디부틸프탈레이트 (Dibutyl phthalate, DBP)	84-74-2	mg/kg	With reference to IEC 62321-8 Edition 1.0 : 2017, by solvent extraction and determined by GC/MS	50	N.D.
디에틸헥실프탈레이트 (Di-(2-ethylhexyl) phthalate, DEHP)	117-81-7	mg/kg		50	N.D.
벤질부틸프탈레이트 (Benzyl butyl phthalate, BBP)	85-68-7	mg/kg		50	N.D.
디이소부틸프탈레이트 (Diisobutyl phthalate, DIBP)	84-69-5	mg/kg		50	N.D.

Tested by : Miseon Lee

Notes : mg/kg = ppm = parts per million (함량 표시 : 백만분의 일)
<= Less than (결과 값 이하)
N.D. = Not detected (< MDL, 미검출 - 검출한계 이하)
MDL = Method detection limit (검출한계)

* 시료 접수 시 시료 상태 :
(View of sample as received)



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TEST REPORT

(시험성적서)

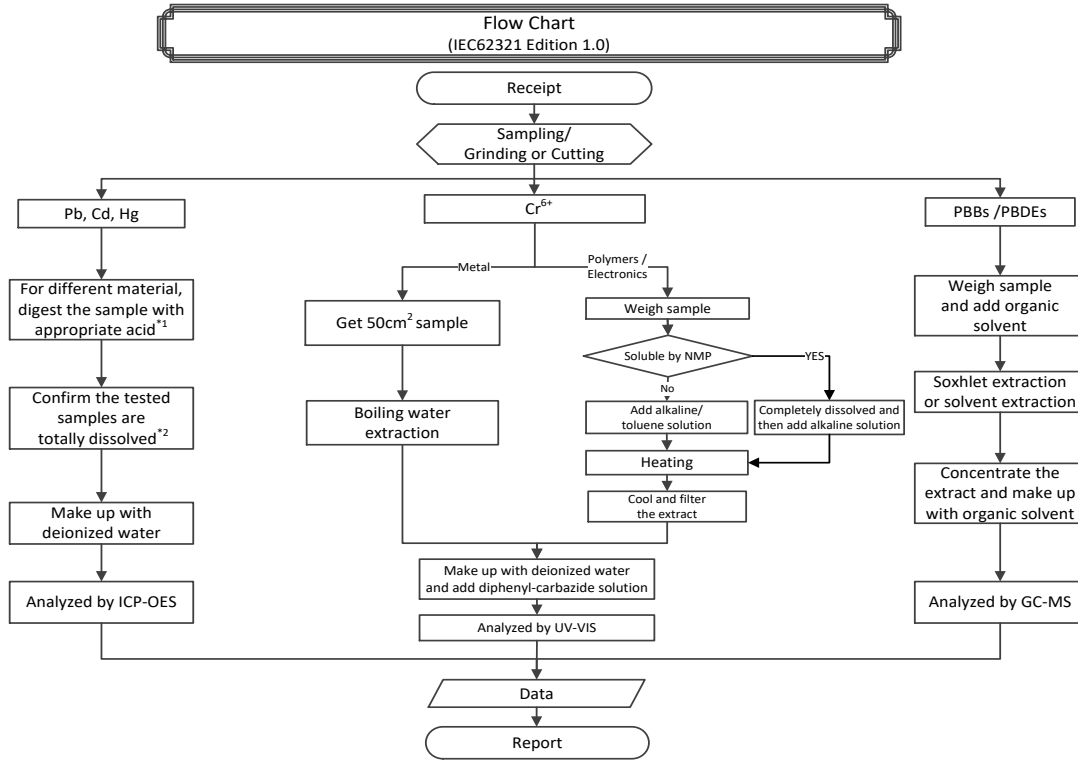
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시료고유번호 (SAMPLE ID NO.) : RT20R-S0259

시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))



Remarks :

*1 : List of appropriate acid :

Material	Acid added for digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

*2 : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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TEST REPORT (시험 성적서)

발행면수 (PAGE) : 6 of 9

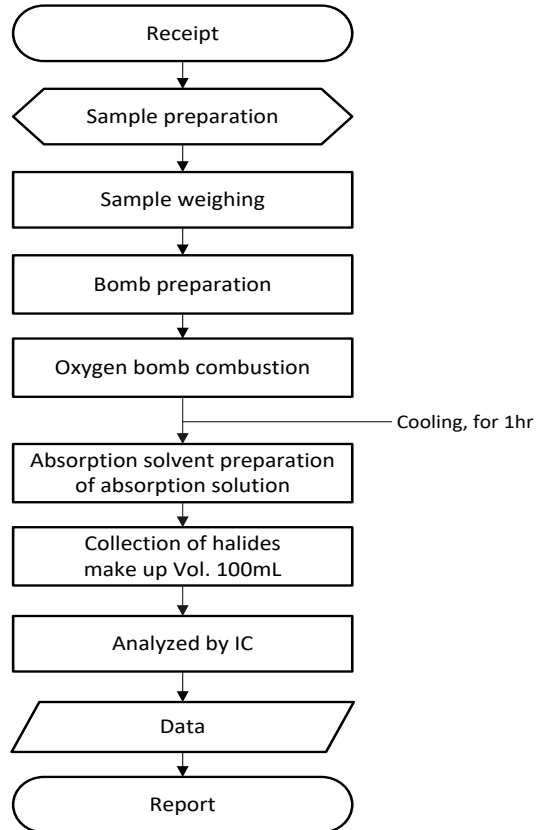
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시험성적서 번호 (REPORT NO.) : RT20R-S0259-K

시료고유번호 (SAMPLE ID NO.) : RT20R-S0259

시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))

Flow Chart (EN14582)



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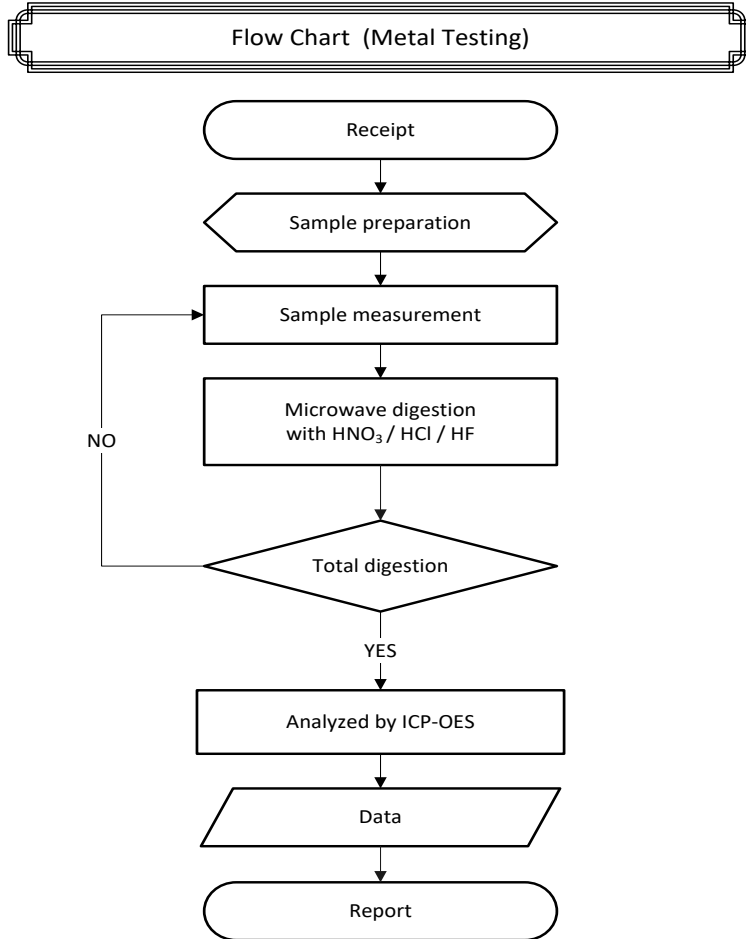
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시료고유번호 (SAMPLE ID NO.) : RT20R-S0259

시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
(Cu Plating Solution (Additive M.F. Cu300))



** 비고 : 이 샘플은 위의 흐름도에 따른 전처리 방법에 의해 완전용해 되었음.
(The samples were dissolved totally by pre-conditioning method according to above flow chart.)

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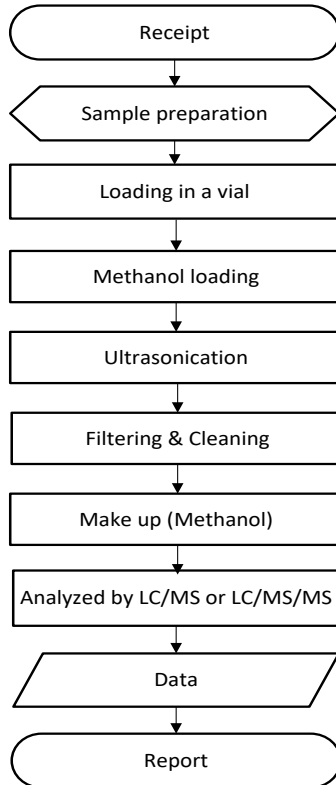
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Flow Chart (PFOS, PFOA)



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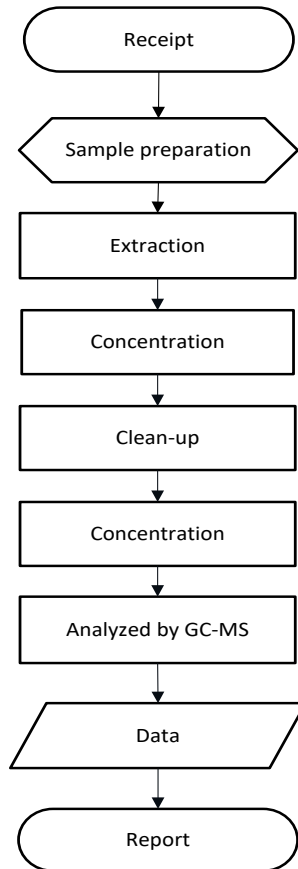
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시료명 (SAMPLE DESCRIPTION) : Cu Plating Solution (Additive M.F. Cu300)
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Flow Chart (Phthalates)



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

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