

TEST REPORT

(시험 성적서)

신청기관 (인) : (주)엘지화학
Applicant : LG Chem. Ltd.

주소 (한글) : 충청북도 청주시 흥덕구 남촌리 1114-1 우)361-911
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발행면수 (Page) : 1 of 10
발행일자 (Date) : 2017. 01. 09.

시험성적서 번호 (Report No.) : RT17R-U0014-005-K

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

제품명/형식 : Film
(Name/Type of Product) (Film)

시료고유번호 : RT17R-U0014-005
(Sample ID No.) (RT17R-U0014-005)

품번 : HC
(Item No.) (HC)

제품 생산자/공급자 : (주)엘지화학
(Manufacturer/Vendor) (LG Chem. Ltd.)

시료접수일자 : 2017. 01. 04.
(Sample received) (Jan. 04, 2017)

시험일자 : 2017. 01. 04. ~ 2017. 01. 09.
(Testing Date) (Jan. 04, 2017 ~ Jan. 09, 2017)

시험유형 : RoHS 화학분석
(Test Type) (RoHS wet chemical analysis)

시험방법 : 이 시험성적서의 다음 페이지 첨부
(Test Method) (Please see the following page)

시험결과 : 이 시험성적서의 다음페이지에 첨부
(Test Result) (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 relate only to the object tested.)
 2. 이 시험성적서는 승인없이 복사 사용을 금함.
(This report shall not be reproduced except in full without the written approval of the testing laboratory.)
 3. 이 시험성적서의 품번은 고객의 요청 및 보증서에 의거하여 명기함.
(The item no. is assigned by client and indicated according to their requirement and guarantee letter.)

승인자 (Approved by)



이응용/기술책임자
(E.Y.Lee/ Lab. Technical Manager)

권한자 (Authorized by)



유환우/소장
(H.W.Yoo / Lab. General Manager)



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시험성적서 번호 (Report No.) : RT17R-U0014-005-K

시료고유번호 (Sample ID No.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

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⁺) (For non-metal)	mg/kg	With reference to IEC 62321 Edition 1.0 : 2008, by alkaline digestion and determined by UV-VIS Spectrophotometer	1	N.D.
폴리브로뮴화비페닐 (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.
폴리브로뮴화디페닐에테르 (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 : MB Song, SH Kim, JH Jin

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.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

시험항목 (Test Item)	CAS번호 (CAS No.)	단위 (Unit)	분석방법 (Test Method)	검출한계 (MDL)	시험결과 (Result)
프탈레이트 (Phthalates)					
Dibutyl phthalate (DBP)	84-74-2	mg/kg	With reference to IEC 62321-8 (111/321/CD), by solvent extraction and determined by GC/MS	50	N.D.
Di(2-ethylhexyl) phthalate (DEHP)	117-81-7	mg/kg		50	N.D.
Benzyl butyl phthalate (BBP)	85-68-7	mg/kg		50	N.D.
Diisobutyl phthalate (DIBP)	84-69-5	mg/kg		50	N.D.

Tested by : MB Song

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.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

시험항목 (Test Item)	단위 (Unit)	분석방법 (Test Method)	검출한계 (MDL)	시험결과 (Result)
안티몬 (Antimony, Sb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
주석 (Tin, Sn)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	45
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	51
폴리염화비닐 (Polyvinyl chloride, PVC)	-	With reference to KS K 0210-1, and determined by FT-IR	N.A.	Negative

Tested by : MB Song, SH Kim

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)

N.A. = Not applicable (해당없음)

Negative = Undetectable (동종물질 불검출)

Positive = Detectable (동종물질 검출)

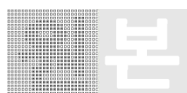
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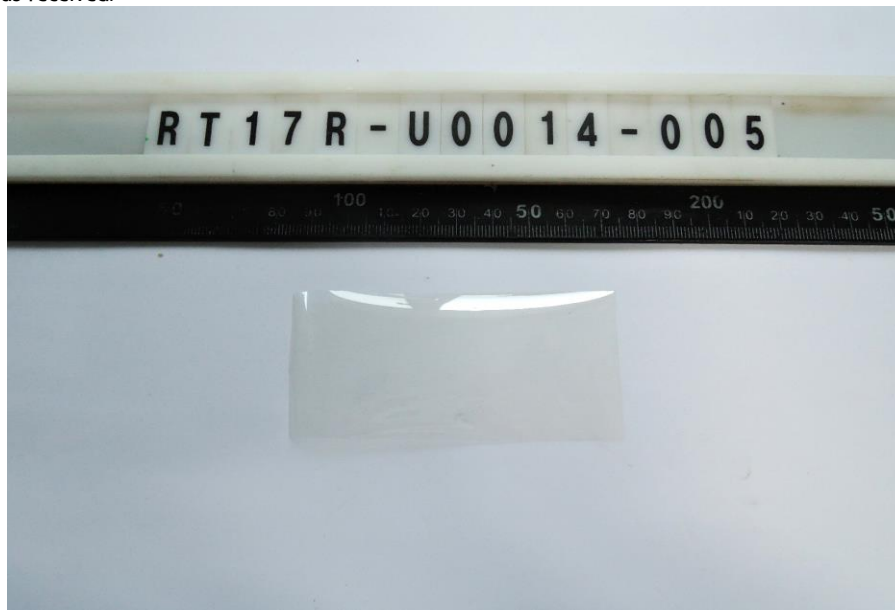
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시료고유번호 (Sample ID No.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

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



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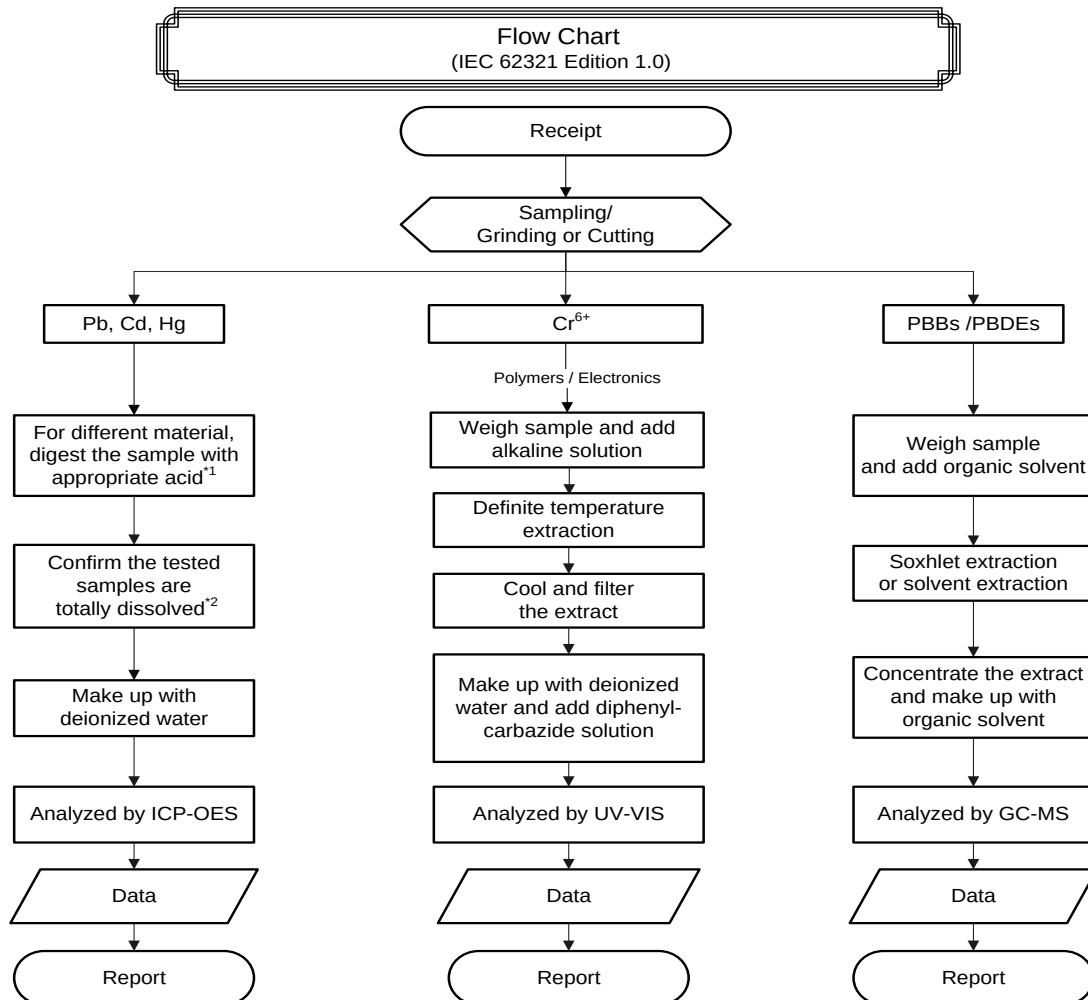
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시험성적서 번호 (Report No.) : RT17R-U0014-005-K

시료고유번호 (Sample ID No.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

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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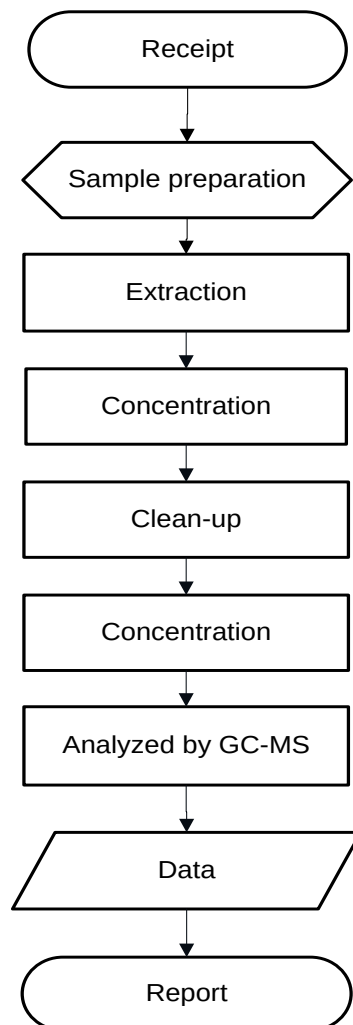
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시료고유번호 (Sample ID No.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

Flow Chart (Phthalates)



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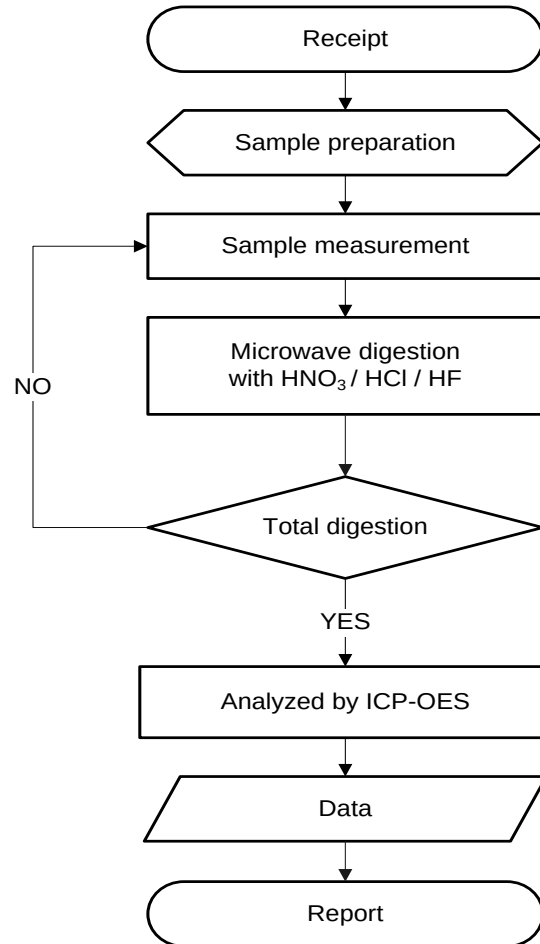
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시료명 (Sample Description) : Film
(Film)

Flow Chart (Metal Testing)



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

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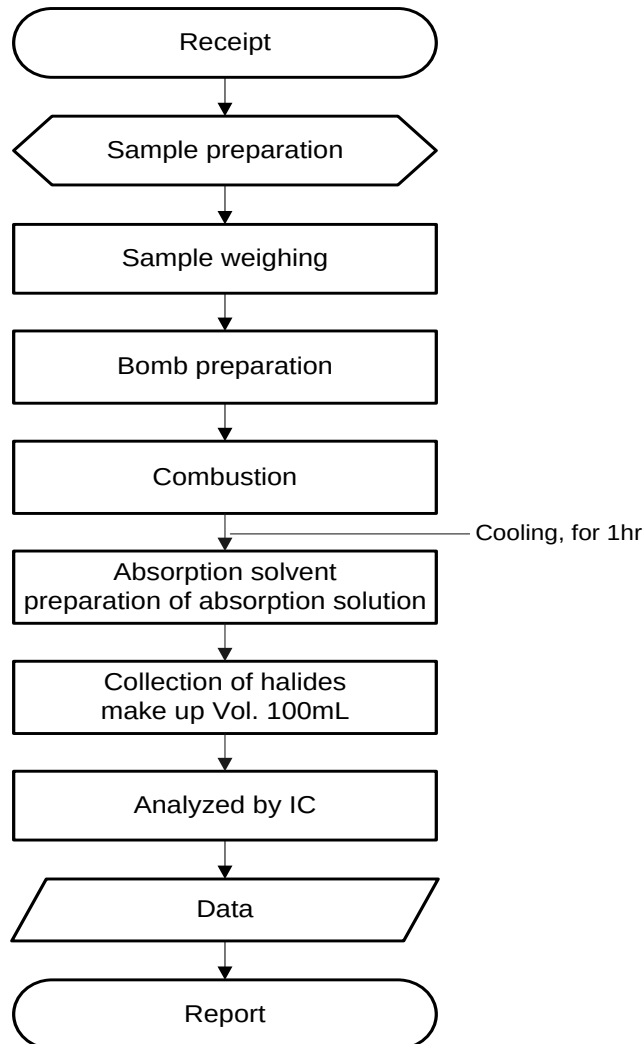
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시료명 (Sample Description) : Film
(Film)

Flow Chart (Halogen)



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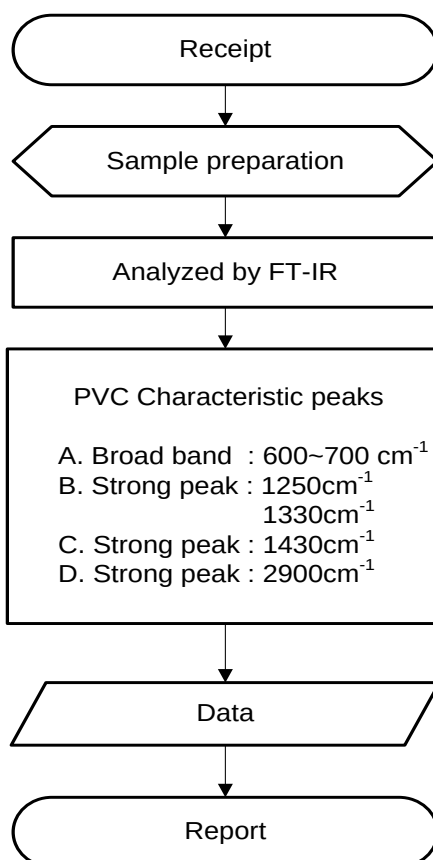
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시료고유번호 (Sample ID No.) : RT17R-U0014-005

시료명 (Sample Description) : Film
(Film)

Flow Chart (PVC)



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

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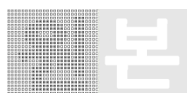
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