

 APPLICANT : PILKOR Electronics Division. (of COWELL Fashion Co., Ltd.)
ADDRESS : 270, Sinwon-ro(Woncheon-dong), Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea

PAGE: 1 of 8 REPORT NO. RT19R-S3134-002-E DATE: Jul. 19, 2019

SAMPLE DESCRIPTION	: The following submitted sample(s) said to be:-
NAME/TYPE OF PRODUCT SAMPLE ID NO.	: Resistor : RT19R-S3134-002
ITEM NO.	: PNFR
MANUFACTURER/VENDOR NAME OF BUYER	: PILKOR Electronics Division. (of COWELL Fashion Co., Ltd.) : Sony, Samsung, LG
SAMPLE RECEIVED	: Jul. 08, 2019
TESTING DATE	: Jul. 08, 2019 ~ Jul. 19, 2019
TEST METHOD(S)	: Please see the following page(s).
TEST RESULT(S)	: Please see the following page(s).

\* Note 1 : The test results presented in this report refer only to the object tested.

\* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.

\* Note 3 : This report is not related to the scope of Korea laboratory accreditation scheme.

\* Note 4 : The item no. is assigned by client and indicated according to their requirement and guarantee letter.

Approved by,

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Jade Jang / Lab. Technical Manager

Authorized by,

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Authenticity check

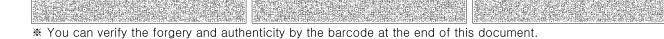
Bo Park / Lab. General Manager

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REPORT NO. RT19R-S3134-002-E

PAGE: 2 of 8 DATE: Jul. 19, 2019

SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor

TEST ITEM	UNIT	TEST METHOD	MDL	RESULT
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5 Edition 1.0 : 2013,	0.5	N.D.
Lead (Pb)	mg/kg	by acid digestion and determined by ICP-OES	5	78
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.
Hexavalent Chromium (Cr <sup>6+</sup> )	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.
Polybrominated Biphenyl (PBBs)	1			
Monobromobiphenyl	mg/kg		5	N.D.
Dibromobiphenyl	mg/kg		5	N.D.
Tribromobiphenyl	mg/kg		5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to	5	N.D.
Pentabromobiphenyl	mg/kg	IEC 62321-6 Edition 1.0 : 2015,	5	N.D.
Hexabromobiphenyl	mg/kg	by solvent extraction and	5	N.D.
Heptabromobiphenyl	mg/kg	determined by GC/MS	5	N.D.
Octabromobiphenyl	mg/kg		5	N.D.
Nonabromobiphenyl	mg/kg		5	N.D.
Decabromobiphenyl	mg/kg		5	N.D.
Polybrominated Diphenyl Ether (P	BDEs)			
Monobromodiphenyl ether	mg/kg		5	N.D.
Dibromodiphenyl ether	mg/kg		5	N.D.
Tribromodiphenyl ether	mg/kg		5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to	5	N.D.
Pentabromodiphenyl ether	mg/kg	IEC 62321-6 Edition 1.0 : 2015,	5	N.D.
Hexabromodiphenyl ether	mg/kg	by solvent extraction and	5	N.D.
Heptabromodiphenyl ether	mg/kg	determined by GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg		5	N.D.
Nonabromodiphenyl ether	mg/kg	5		N.D.
Decabromodiphenyl ether	mg/kg		5	N.D.

Tested by : Jooyeon Lee, Seulgi Park, Miseon Lee

Notes : mg/kg = ppm = parts per million < = Less than N.D. = Not detected ( <MDL )

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MDL = Method detection limit

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REPORT NO. RT19R-S3134-002-E

PAGE: 3 of 8 DATE: Jul. 19, 2019

SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor

TEST ITEM	UNIT	TEST METHOD	MDL	RESULT
Bromine (Br)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Chlorine (Cl)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Antimony (Sb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.

Tested by : Hyojoo kim, Jooyeon Lee

Notes : mg/kg = ppm = parts per million < = Less than N.D. = Not detected ( <MDL ) MDL = Method detection limit

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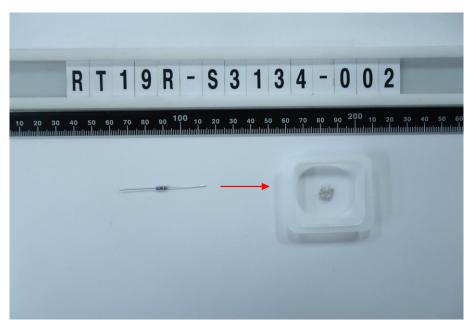
SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor

TEST ITEM	CAS NO.	UNIT	TEST METHOD	MDL	RESULT
Dibutyl phthalate (DBP)	84-74-2	mg/kg	With reference to IEC 62321-8 Edition 1.0 : 2017,	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	by solvent extraction and determined by GC/MS	50	N.D.
Diisobutyl phthalate (DIBP)	84-69-5	mg/kg		50	N.D.

Tested by : Miseon Lee

Notes : mg/kg = ppm = parts per million < = Less than N.D. = Not detected ( <MDL ) MDL = Method detection limit

\* View of sample as received;-



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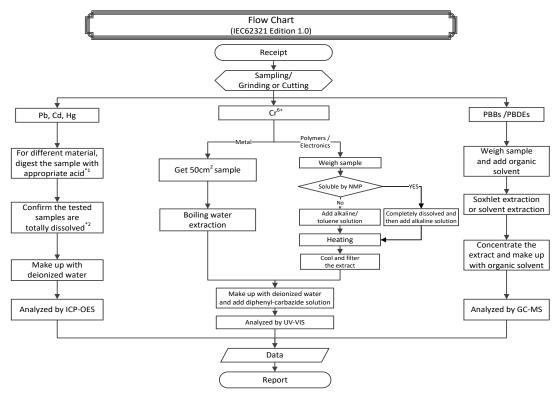
Total Quality. Assured.

## **TEST REPORT**

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SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor



Remarks : \*1 : List of appropriate acid :

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	Material	Acid added for digestion		
	Polymers	HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H3BO <sub>3</sub>		
	Metals	HNO₃, HCI, HF		
	Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>		

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

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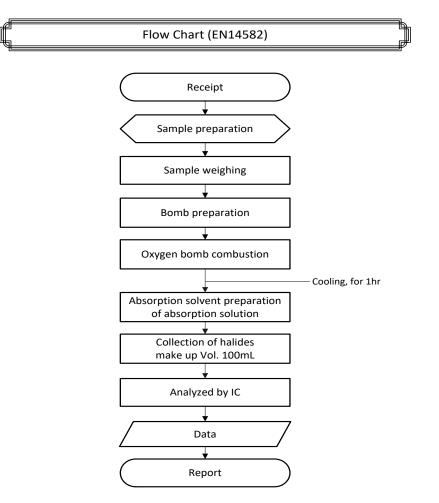
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SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor



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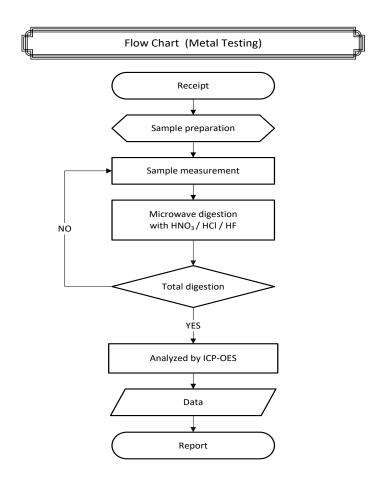
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REPORT NO. RT19R-S3134-002-E

PAGE: 7 of 8 DATE: Jul. 19, 2019

SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor



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

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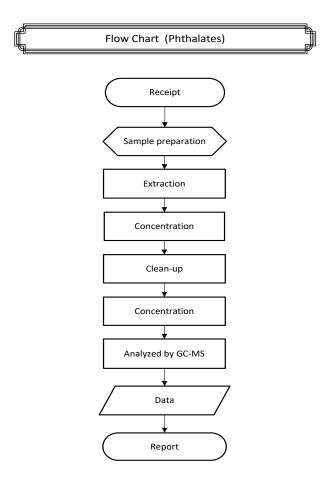
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REPORT NO. RT19R-S3134-002-E

PAGE: 8 of 8 DATE: Jul. 19, 2019

SAMPLE ID NO. : RT19R-S3134-002 SAMPLE DESCRIPTION : Resistor



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

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