

TEST REPORT

KOTITI No. | 8219-1401-100221

Applicant | DAE CHANG CO., LTD.

Date In | 2019. 01. 15.

Date Out | 2019. 01. 24.

Sample Description	COPPER ANODE
Sample Quantity	One (1) Sample(s)
Buyer	N/S
Item Number	19-02-00479-1
Material	C12220
Testing Period	2019. 01. 15. ~ 2019. 01. 24.
Test Result	For further details, please refer to the following page(s).

* N/S : Not Submitted, N.A. : Not Applicable, N.D. : Not Detected [< RL(Report Limit)]

* Negative : Not Detected, Positive : Detected

Affirmation	Prepared by	Technical Manager
	Name : Hyun min Lee 	Name : Ki young Moon 

KOTITI Testing & Research Institute



Contact Information for technical questions and general inquiries.

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- The test results contained in this report are limited to results on the sample(s) that is provided by client and are not necessarily indicative or representative of the qualities of the lot from which the sample(s) was taken or of all products.
- Further use of the results of this report is prohibited unless allowed under a separate agreement set forth in an official document that is established between the client identified on this letter and the KOTITI Testing & Research Institute.
- The test result in this report is not related to accreditation of KOLAS.
- You can verify the authenticity by the QR code at the bottom right side of the issued report, or access <http://cs.kotiti-global.com> and enter the test report number.

OPF-23-06(rev.02)



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Tested Sample List			
Sample No.	Sample Description	Item No.	Material
1	COPPER ANODE	19-02-00479-1	C12220

RoHS, Unit: mg/kg
(EU Directive 2011/65/EU)

Test Conducted	Test Method	RL	Test Results
1			
Lead (Pb)	IEC 62321-5:2013 (Acid digestion and determined by ICP-OES)	5	N.D.
Cadmium (Cd)		2	N.D.
Mercury (Hg)	IEC 62321-4:2013 (Acid digestion and determined by ICP-OES)	1	N.D.
Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-1:2015 (Boiling water extraction and determined by UV-VIS)	-	Negative

*** Polybrominated Biphenyls(PBBs)**

Bromobiphenyl	IEC 62321-6:2015 (Solvent extraction and determined by GC-MS)	5	N.D.
Dibromobiphenyl		5	N.D.
Tribromobiphenyl		5	N.D.
Tetrabromobiphenyl		5	N.D.
Pentabromobiphenyl		5	N.D.
Hexabromobiphenyl		5	N.D.
Heptabromobiphenyl		5	N.D.
Octabromobiphenyl		5	N.D.
Nonabromobiphenyl		5	N.D.
Decabromobiphenyl		5	N.D.
Sum of PBBs		-	N.D.
* Polybrominated Diphenyl Ethers(PBDEs)			
Bromodiphenyl ethers	IEC 62321-6:2015 (Solvent extraction and determined by GC-MS)	5	N.D.
Dibromodiphenyl ethers		5	N.D.
Tribromodiphenyl ethers		5	N.D.
Tetrabromodiphenyl ethers		5	N.D.
Pentabromodiphenyl ethers		5	N.D.
Hexabromodiphenyl ethers		5	N.D.
Heptabromodiphenyl ethers		5	N.D.
Octabromodiphenyl ethers		5	N.D.
Nonabromodiphenyl ethers		5	N.D.
Decabromodiphenyl ether		5	N.D.
Sum of PBDEs		-	N.D.

Halogen, Unit: mg/kg

Test Conducted	Test Method	RL	Test Results
1			
Chlorine (Cl)	EN 14582:2007 & IEC 62321-3-2 Annex A determined by IC	30	N.D.
Bromine (Br)		30	N.D.

Heavy metal, Unit: mg/kg

Test Conducted	Test Method	RL	Test Results
1			
Antimony (Sb)	Reference to EPA 3052:1996 determined by ICP-OES	5	N.D.
Beryllium (Be)		5	N.D.

Phthalates, Unit: mg/kg

Test Conducted	Test Method	RL	Test Results
1			
butyl benzyl phthalate (BBP)	IEC 62321-8:2017 (Solvent extraction and determined by GC-MS)	50	N.D.
di-n-butyl phthalate (DBP)		50	N.D.
di(ethylhexyl) phthalate (DEHP)		50	N.D.
diisobutyl phthalate (DIBP)		50	N.D.

Photo of the submitted sample(s)

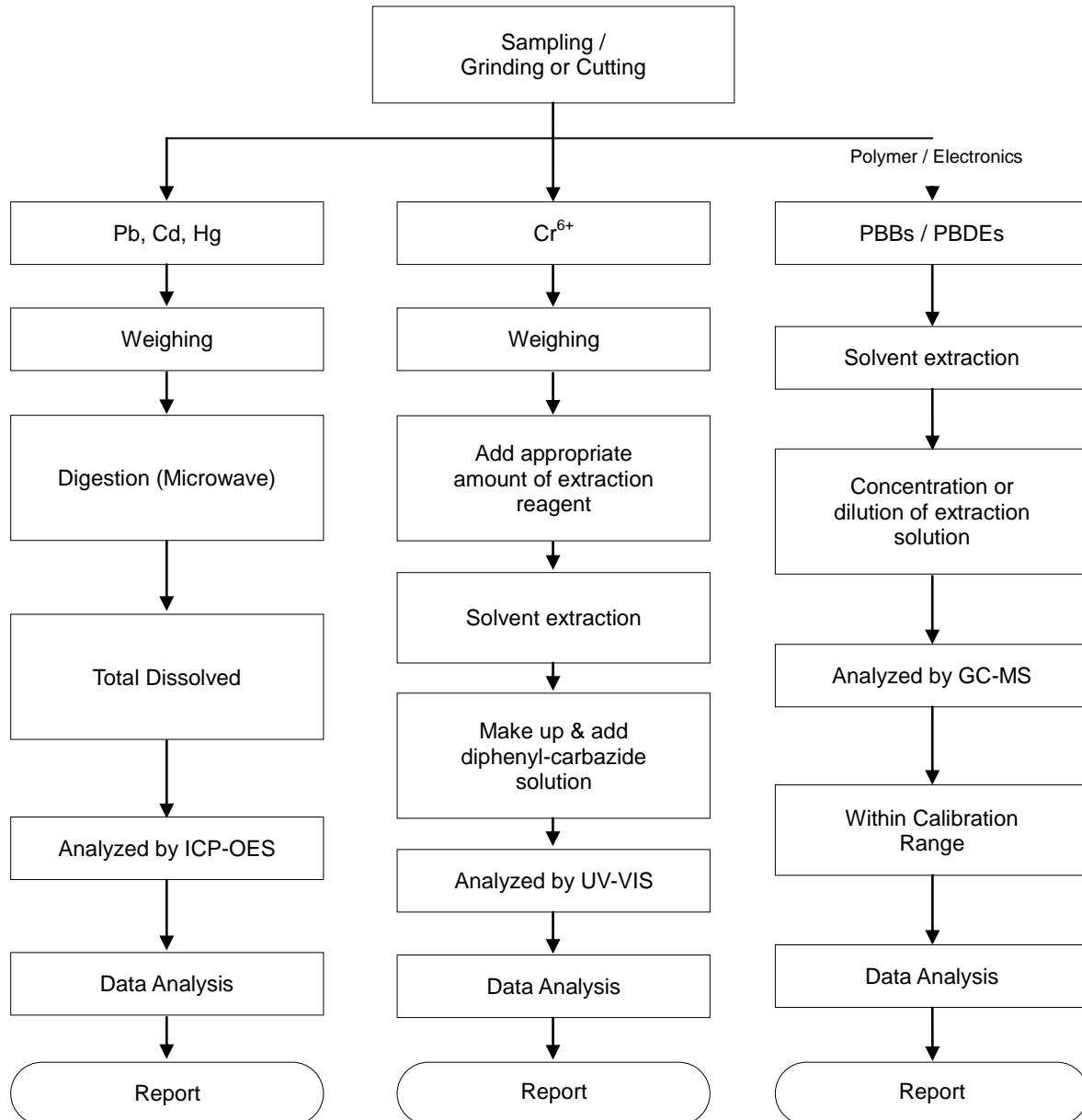
Sample No.1



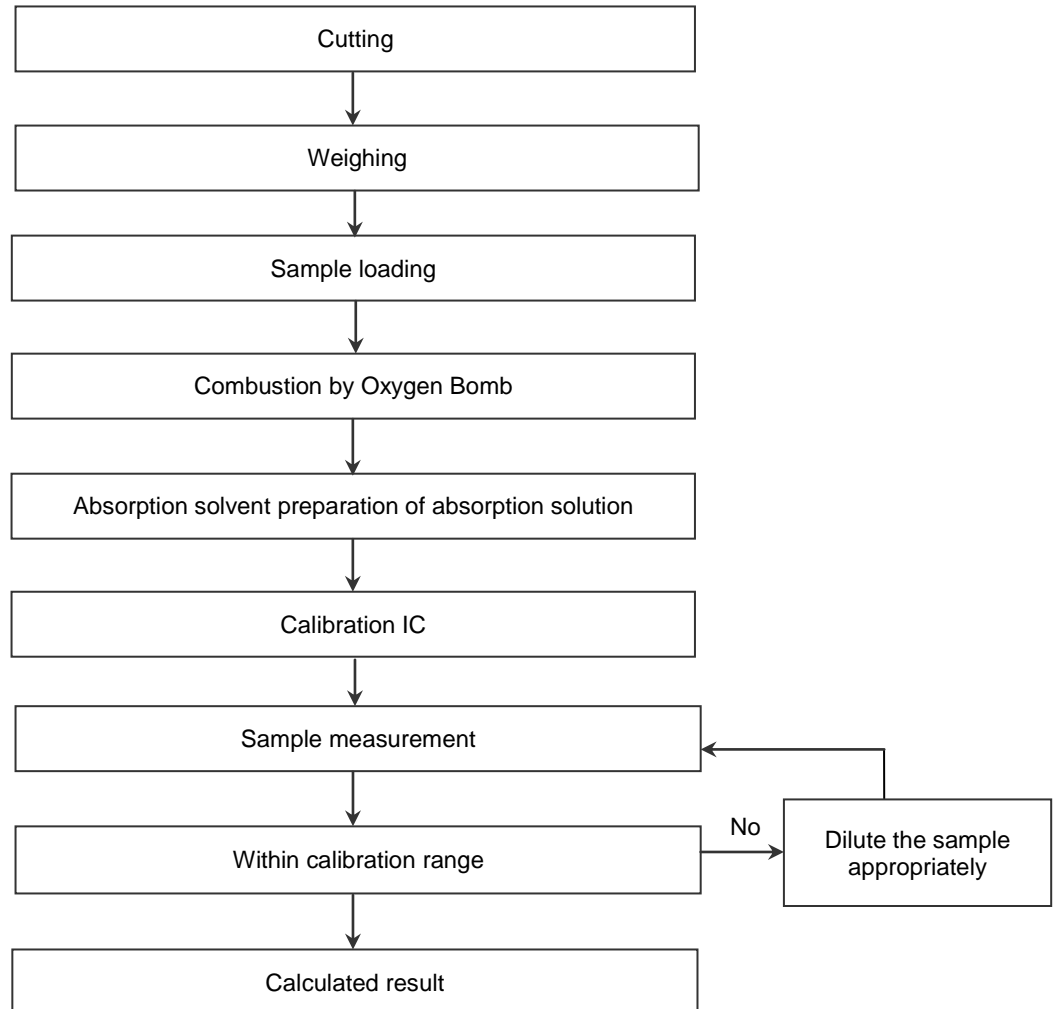
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Flow Chart

RoHS

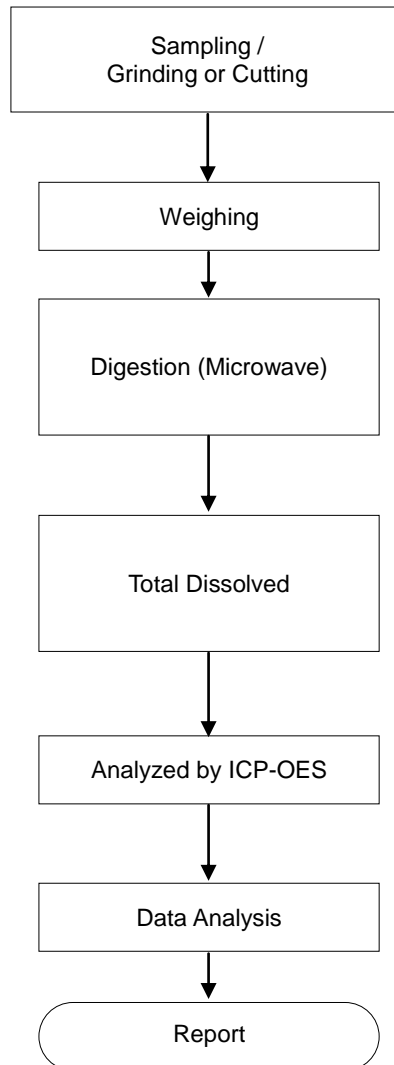


Material	Digestion Acid
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₂ SO ₄ , etc.
Metals	HNO ₃ , HCl
Electronics	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₂ SO ₄ , etc.

Flow Chart**Halogen**

Flow Chart

Heavy metal



Material	Digestion Acid
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₂ SO ₄ , etc.
Metals	HNO ₃ , HCl
Electronics	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₂ SO ₄ , etc.

Flow Chart**Phthalates**