

# TEST REPORT

**KOTITI No.** | 8221-1401-102003

**Applicant** | DUKSAN Hi-Metal

**Address** | 66, Muryong 1-ro, Buk-gu, Ulsan, Korea

**Date In** | 2021. 04. 13.

**Date Out** | 2021. 04. 28.

<b>Sample Description</b>	Sn/3.5Ag
<b>Sample Quantity</b>	One (1) Sample(s)
<b>Buyer</b>	N/S
<b>Item Number</b>	N/S
<b>Material</b>	Metal
<b>Testing Period</b>	2021. 04. 13. ~ 2021. 04. 28.
<b>Test Result</b>	<b>For further details, please refer to the following page(s).</b>

\* N/S : Not Submitted, N.A. : Not Applicable, N.D. : Not Detected [< MDL(Method Detection Limit)]

\* Negative : Not Detected, Positive : Detected

\* 이 성적서는 연구기반활용사업 이용 결과물입니다.

Affirmation	Prepared by	Technical Manager
	Name : Ki woong Oh 	Name : Hae sung Kim 

**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.



QPF-16-06(rev.00)

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<b>Tested Sample List</b>			
<b>Sample No.</b>	<b>Sample Description</b>	<b>Item No.</b>	<b>Material</b>
1	Sn/3.5Ag	N/S	Metal

RoHS, Unit: mg/kg  
(EU Directive 2011/65/EU, 2015/863/EU)

Test Conducted	Test Method	MDL	Test Results
1			
Lead (Pb)	IEC 62321-5:2013 (Acid digestion and determined by ICP-OES)	2	188
Cadmium (Cd)		2	N.D.
Mercury (Hg)	IEC 62321-4:2013 (Acid digestion and determined by ICP-OES)	1	N.D.
<b>* Polybrominated Biphenyls(PBBs)</b>			
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.
<b>* Polybrominated Diphenyl Ethers(PBDEs)</b>			
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.

\* Tested by : Young Hyun Eom, Seung Yoon Chol

RoHS, Unit:  $\mu\text{g}/\text{cm}^2$   
(EU Directive 2011/65/EU, 2015/863/EU)

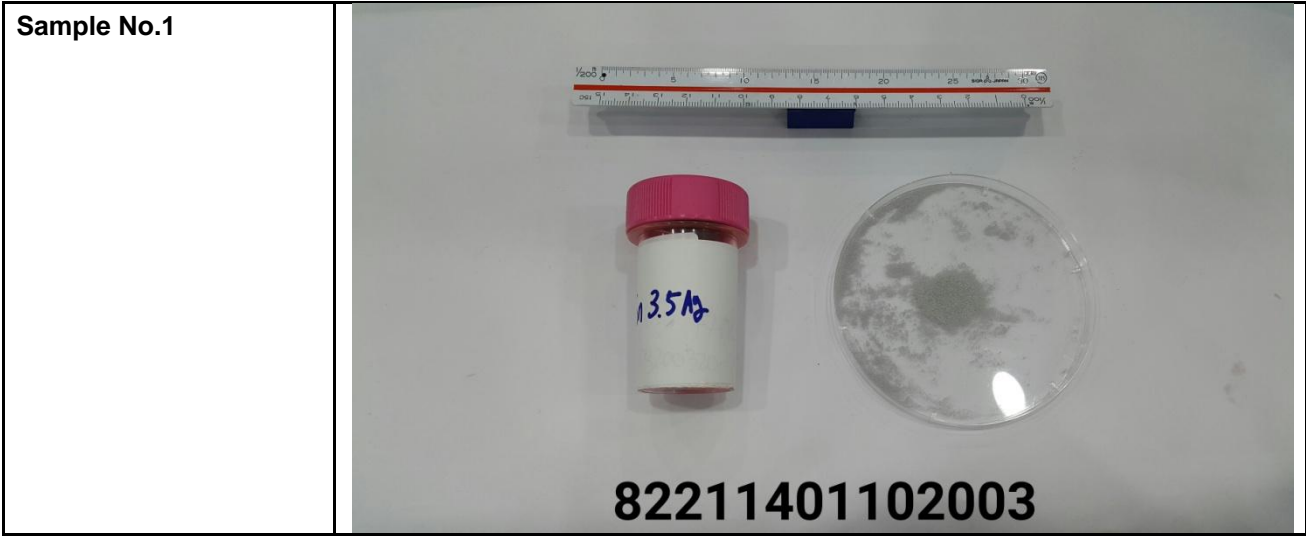
Test Conducted	Test Method	MDL	Test Results
1			
Hexavalent Chromium ( $\text{Cr}^{6+}$ )	IEC 62321-7-1:2015 (Boiling water extraction and determined by UV-VIS)	-	Negative

※ Remark

1.  $< 0.10 \mu\text{g}/\text{cm}^2$  : Negative
2.  $0.1 \mu\text{g}/\text{cm}^2 \sim 0.13 \mu\text{g}/\text{cm}^2$  : Inconclusive
3.  $> 0.13 \mu\text{g}/\text{cm}^2$  : Positive

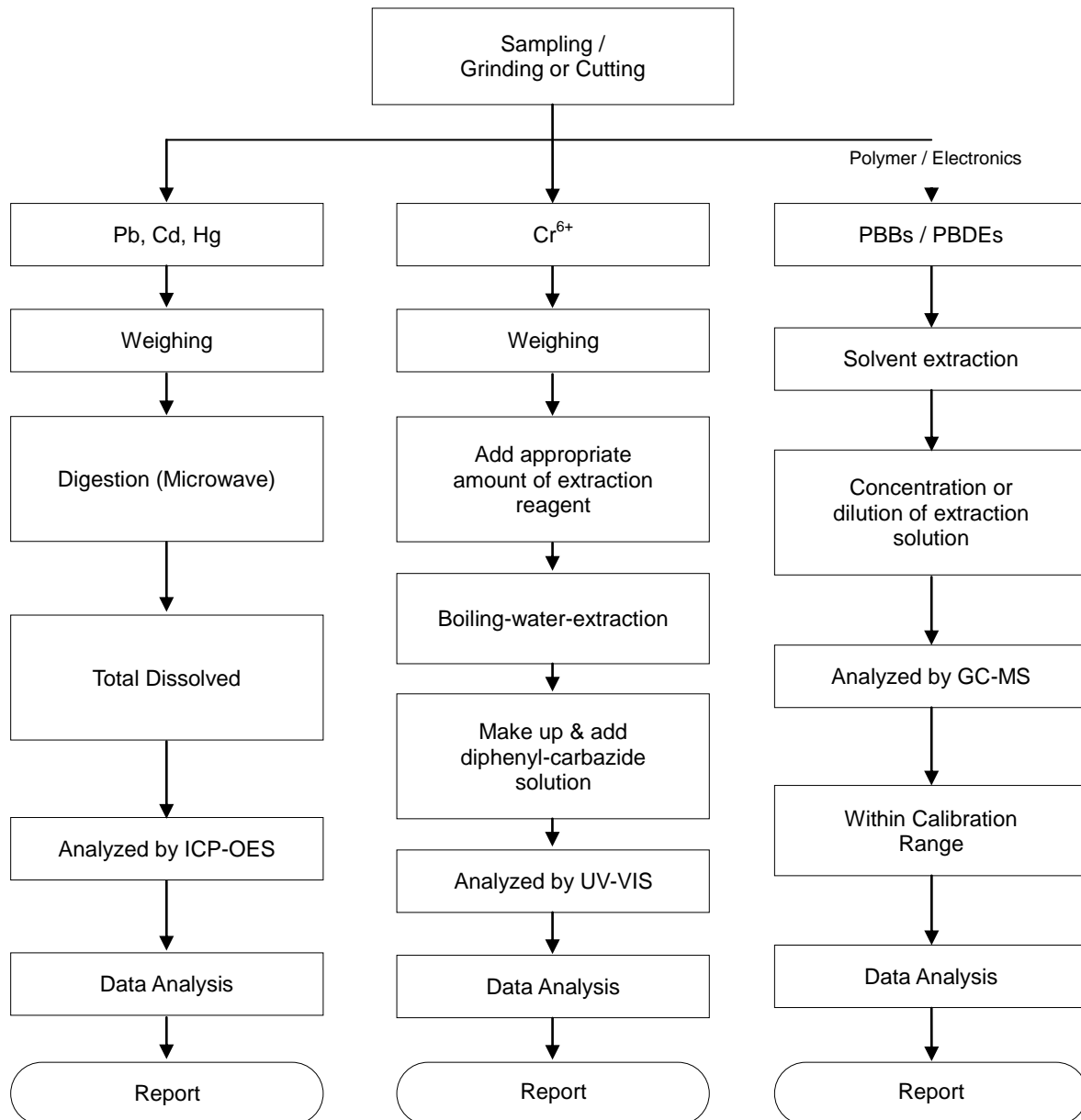
\* Tested by : Jeong taek Kim

Photo of the submitted sample(s)



## Flow Chart

### RoHS



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

\* The sample is totally digested.