

## Analysis of materials (RoHS)

材料分析結果  
【 2009-10 】

Analysis matter 測定物質	RoHS 6 materials : Cd, Pb, Hg, Cr6+, PBBs, PBDEs		
Analysis Company 測定機関	SGS testing Korea Co.,Ltd		
Products 対象製品	Flat Chip Resistors	角形チップ抵抗器	RK73B1H,1E,1J,2A,2B,2E,W2H,W3A
	Flat Chip Resistors(Precision)	角形チップ抵抗器(精密)	RK73H1H,1E,1J,2A,2B,2E,W2H,W3A
	Flat Chip Jumper Resistors	角形ジャンパーチップ抵抗器	RK73Z1H,1E,1J,2A,2B,2E,W2H,W3A
	Flat Chip Resistors(Ultra Precision)	角形チップ抵抗器(超精密)	RK73G1H,1E,1J,2A,2B
	Flat Chip Resistors(High Quality sound)	角形チップ抵抗器(音質)	RK73A1J,2A,2B

## KOA CORPORATION

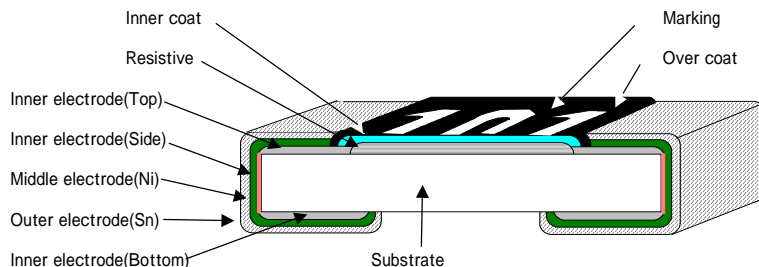
Product Engineering Group Thick Films Center  
SHIMO-INA Business Field  
下伊那ビジネスフィールド  
厚膜センター 製品技術グループ

Approval

Charge

## DATA

## 【Structure 構造】



## 【Results 結果】

No	Material 構成部位		Products 製品	SGS File No	Cd (RoHS 100ppm)	Pb (RoHS 1000ppm)	Hg (RoHS 1000ppm)	Cr <sup>6+</sup> (RoHS 1000ppm)	PBBs (RoHS 1000ppm)	PBDEs (RoHS 1000ppm)
					Result (ppm) 結果	Result (ppm) 結果	Result (ppm) 結果	Result (ppm) 結果	Result (ppm) 結果	Result (ppm) 結果
	Substrate	基体	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28842	N.D.	N.D.	N.D.	N.D.	N.D.
	Inner electrode(Top)	内部電極(表面)	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28843	N.D.	9.060 *	N.D.	N.D.	N.D.
	Inner electrode(Bottom)	内部電極(裏面)	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28851	N.D.	4590 *	N.D.	N.D.	N.D.
	Inner electrode(Side)	内部電極(端面)	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28848	N.D.	110	N.D.	N.D.	N.D.
	Resistive	抵抗体	RK73B,H	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28854	N.D.	13.4% *	N.D.	N.D.	N.D.
			RK73Z	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28855	N.D.	21700 *	N.D.	N.D.	N.D.
			RK73G	1H	AYAA09-28856	N.D.	6.9% *	N.D.	N.D.	N.D.
				1E	AYAA09-28857	N.D.	16.1% *	N.D.	N.D.	N.D.
				1J,2A,2B	AYAA09-28858	N.D.	18.2% *	N.D.	N.D.	N.D.
	Inner coat	内部コート	RK73A	1J,2A,2B	AYAA09-28856	N.D.	6.9% *	N.D.	N.D.	N.D.
			RK73B,H,Z,G	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28863	N.D.	36% *	N.D.	N.D.	N.D.
	Over coat	保護コート	RK73A	1J,2A,2B	AYAA09-28864	N.D.	36.2% *	N.D.	N.D.	N.D.
			RK73B,H,G	1H	AYAA09-28866	N.D.	N.D.	N.D.	N.D.	N.D.
			RK73B	1E,1J,2A,2B	AYAA09-28867	N.D.	N.D.	N.D.	N.D.	N.D.
				2E,W2H,W3A	AYAA09-28881	N.D.	34.5% *	N.D.	1.37	N.D.
			RK73H	1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28868	N.D.	N.D.	N.D.	N.D.	N.D.
			RK73Z	1H,1E	AYAA09-28869	N.D.	N.D.	N.D.	N.D.	N.D.
				1J,2A,2B	AYAA09-28867	N.D.	N.D.	N.D.	N.D.	N.D.
				2E,W2H,W3A	AYAA09-28881	N.D.	34.5% *	N.D.	1.37	N.D.
			RK73G	1E	AYAA09-28867	N.D.	N.D.	N.D.	N.D.	N.D.
				1J,2A,2B	AYAA09-28870	N.D.	N.D.	N.D.	N.D.	N.D.
			RK73A	1J,2A,2B	AYAA09-28882	N.D.	35.4% *	N.D.	N.D.	N.D.
			RK73B,Z,G	1J,2A,2B	AYAA09-28884	N.D.	N.D.	N.D.	N.D.	N.D.
	Marking	表示		2E,W2H,W3A	AYAA09-28888	N.D.	31.9% *	N.D.	N.D.	N.D.
			RK73H	1J,2A,2B,2E,W2H,W3A	AYAA09-28885	N.D.	N.D.	2.85	N.D.	N.D.
			RK73A	1J,2A,2B	AYAA09-28889	N.D.	32% *	N.D.	26	N.D.
				1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28890	N.D.	N.D.	N.D.	N.D.	N.D.
	Middle electrode(Ni)	中間電極(Ni)	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28891	N.D.	43.7	N.D.	N.D.	N.D.
	Outer electrode(Sn)	外部電極(Sn)	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28891	N.D.	43.7	N.D.	N.D.	N.D.

N.D.=Not Detected 未検出

(\*) The Pb is PbO. It is contained for glass material. It is an exclusion item of RoHS. このPbはRoHS除外項目のガラス材のPbOです

To: **KOA CORPORATION**  
Earth Wing in Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

<b>Product Name</b>	: Substrate-1
<b>SGS File No.</b>	: AYAA09-28842
<b>Received Date</b>	: October 16, 2009
<b>Test Performing Date</b>	: October 19, 2009
<b>Test Performed</b>	: SGS Testing Korea tested the sample(s) selected by applicant with following results
<b>Test Results</b>	: For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

[illegible]

F052 Version3	SGS Testing Korea Co. Ltd.	292, Daejeon City, 305-6, Hyeon-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-050 T +82 (0)2 +450-050 F +82 (0)2 +450-059 <a href="http://www.sgskor.co.kr">http://www.sgskor.co.kr</a> <a href="http://www.sgs.com.sgskor.co.kr">www.sgs.com.sgskor.co.kr</a>
		Member of the SGS Group (Société Générale de Surveillance)

Ministry of Education, Science and Technology, Ankara, Turkey.

Sample No. : AYAA09-28842.001  
Sample Description : Substrate-1  
Item No./Part No. : FLAT CHIP RESISTOR

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

### Flame Retardants-PBBs/PBOEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected.( $<MDL$ )  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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F052 Version3

Member of the AAS Glass Research Division in Washington

**Picture of Sample as Received:**

**Can not disclose it  
by KOA**

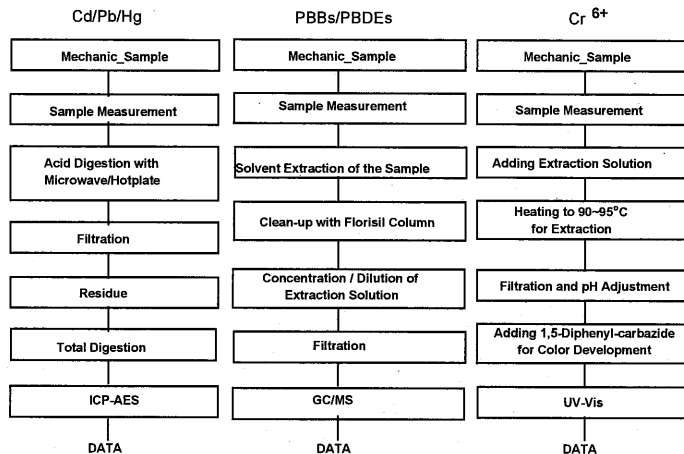
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F052 Version3	SGS Testing Korea Co. Ltd.	352, The O'center, 556-9, Hyeon-dong, Dongan-gu, Gyeonggi-do, Korea 431-080 T +82 (031) 4603-000, F +82 (031) 4603-099 fax 031-4603-099 E test@sgskorea.com, www.sgskorea.com
		Member of the SGS Group, Member of the Bureau Veritas Group

Member of the SCS Group (Bechtel Corporation, its subsidiaries)

### Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator	Dami Yeom
Section Chief	Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected,(<MDL)  
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(5) \*\* = Qualitative analysis (No Unit)  
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[illegible]

F052 Version3	SGS Testing Korea Co., Ltd	522 The Galleria, 650-9, Haejeong-ro, Daejeon-si, Jeongang-gu, Gyeonggi-do, Korea 427-030 t +82 42521 4000 030 f +82 42511 4000 010 <a href="http://www.sgstesting.co.kr">http://www.sgstesting.co.kr</a> <a href="http://www.sgstesting.com">www.sgstesting.com</a>
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Machado et al. BMC Public Health (2019) 19:1239

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

<b>Product Name</b>	: Electrode(Top-1)
<b>SGS File No.</b>	: AYAA09-28843
<b>Received Date</b>	: October 16, 2009
<b>Test Performing Date</b>	: October 19, 2009
<b>Test Performed</b>	: SGS Testing Korea tested the sample(s) selected by applicant with following results
<b>Test Results</b>	: For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

**Jeff Jang / Chemical Lab Mgr**

[illegible]

<b>Sample No.</b>	: AYAA09-28843.001
<b>Sample Description</b>	: Electrode(Top-1)
<b>Item No./Part No.</b>	: FLAT CHIP RESISTOR

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	9060
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1982), UV	1	N.D.

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

[illegible]

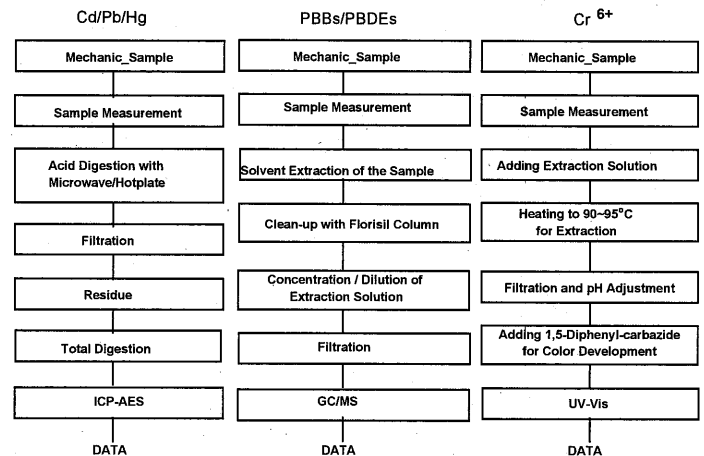
**Picture of Sample as Received:**

**Can not disclose it  
by KOA**

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
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### Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs & PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected. (<MDL)  
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F052 Version3

To: KOA CORPORATION  
Earth Wing in Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as:

Product Name : Electrode(Bottom-1)  
SGS File No. : AYAA09-28851  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

Jeff Jang / Chemical Lab Mgr

Sample No. : AYAA09-28851.001  
Sample Description : Electrode(Bottom-1)  
Item No./Part No. : FLAT CHIP RESISTOR

#### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	4590
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

#### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

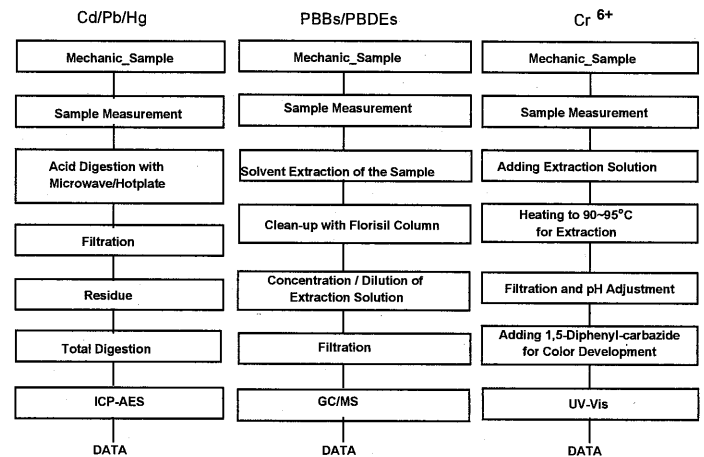
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(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

Picture of Sample as Received:

Can not disclose it  
by KOA

NOTE: (1) N.D. = Not detected, (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

#### Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected, (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



# Test Report No. F690501/LF-CTSAYAA09-28848

Issued Date: October 23, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Electrode(Side-1)  
SGS File No. : AYAA09-28848  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSAYAA09-28848

Issued Date: October 23, 2009 Page 2 of 4

Sample No. : AYAA09-28848.001  
Sample Description : Electrode(Side-1)  
Item No./Part No. : FLAT CHIP RESISTOR

## Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	110
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

## Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co. Ltd.

352, The Ch Valley, 555-9, Hyeon-Rang, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)11 4528 050 F +82 (0)11 4528 052 E korea@sgs.com korea@sgs.com

Member of the SGS Group (Societe Generale de Surveillance)

F052 Version3

SGS Testing Korea Co. Ltd.

352, The Ch Valley, 555-9, Hyeon-Rang, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)11 4528 050 F +82 (0)11 4528 052 E korea@sgs.com korea@sgs.com

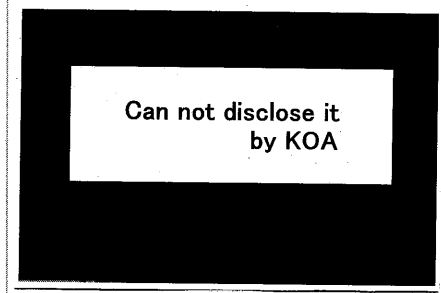
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# Test Report No. F690501/LF-CTSAYAA09-28848

Issued Date: October 23, 2009 Page 3 of 4

Picture of Sample as Received:



NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co. Ltd.

352, The Ch Valley, 555-9, Hyeon-Rang, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)11 4528 050 F +82 (0)11 4528 052 E korea@sgs.com korea@sgs.com

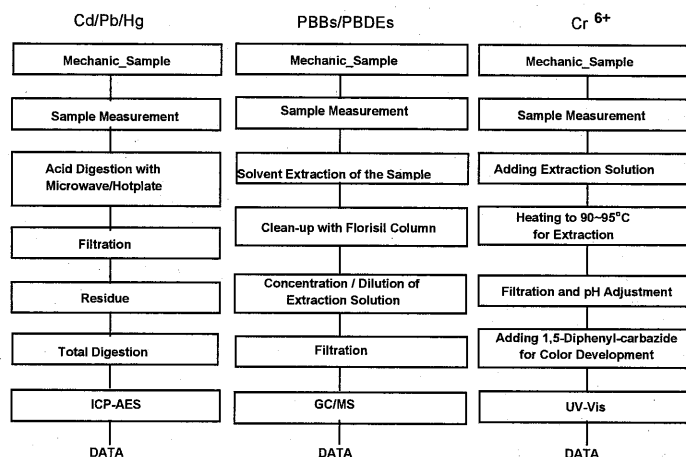
Member of the SGS Group (Societe Generale de Surveillance)



# Test Report No. F690501/LF-CTSAYAA09-28848

Issued Date: October 23, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator : Dami Yeom

Section Chief : Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co. Ltd.

352, The Ch Valley, 555-9, Hyeon-Rang, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)11 4528 050 F +82 (0)11 4528 052 E korea@sgs.com korea@sgs.com

Member of the SGS Group (Societe Generale de Surveillance)

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamima-gun  
Nagano-ken 399-4687  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Resistive Film-1

SGS File No. : AYAA09-28854

Received Date : October 16, 2009

Test Performing Date : October 19, 2009

Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

Sample No. : AYAA09-28854.001  
Sample Description : Resistive Film-1  
Item No./Part No. : FLAT CHIP RESISTOR

#### Heavy Metals

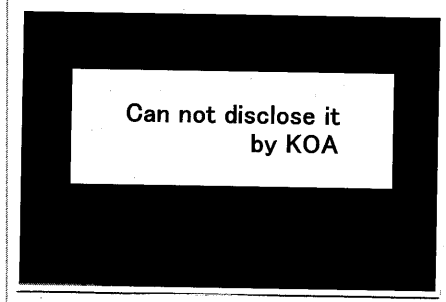
Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	13.4
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

#### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

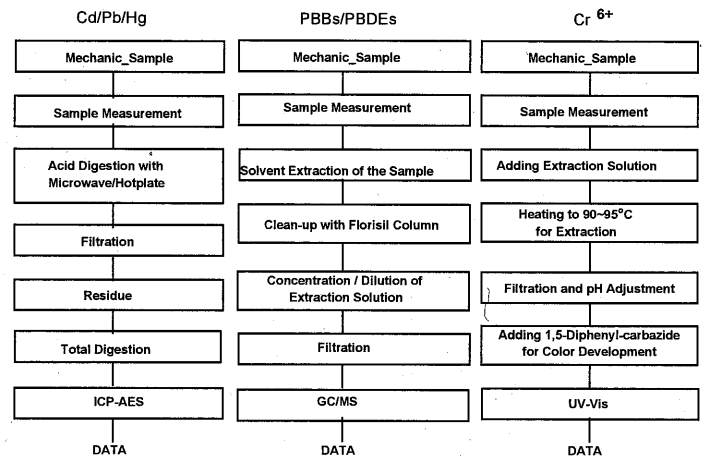
NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

Picture of Sample as Received:



NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

#### Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator : Dami Yeom  
Section Chief : Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

Member of the RSCG (Société Royale de Chimie)







# Test Report No. F690501/LF-CTSA009-28857

Issued Date: October 26, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamima-gun  
Nagano-ken 399-4687  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Resistive Film-4  
SGS File No. : AYAA09-28857  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

SGS Testing Korea Co., Ltd.

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSA009-28857

Issued Date: October 26, 2009 Page 2 of 4

Sample No. : AYAA09-28857.001  
Sample Description : Resistive Film-4  
Item No./Part No. : FLAT CHIP RESISTOR

## Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	18.1
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

## Flame Retardant-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co., Ltd.

32, The G-Valley, 550-9, Hyeon-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T+82 (0)11 4502 500 F+82 (0)11 4502 501 FAX 82 (0)11 4502 502 E-mail: sgstesting@sgs.com

Member of the SGS Group (Societe Generale de Surveillance)

F052 Version3

SGS Testing Korea Co., Ltd.

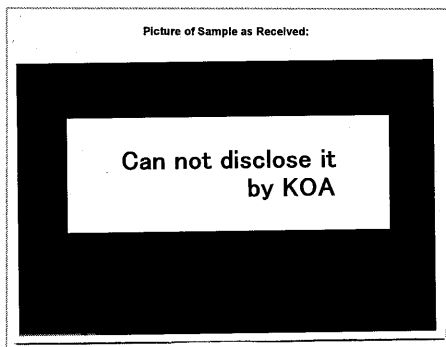
32, The G-Valley, 550-9, Hyeon-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T+82 (0)11 4502 500 F+82 (0)11 4502 501 FAX 82 (0)11 4502 502 E-mail: sgstesting@sgs.com

Member of the SGS Group (Societe Generale de Surveillance)



# Test Report No. F690501/LF-CTSA009-28857

Issued Date: October 26, 2009 Page 3 of 4



NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co., Ltd.

32, The G-Valley, 550-9, Hyeon-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T+82 (0)11 4502 500 F+82 (0)11 4502 501 FAX 82 (0)11 4502 502 E-mail: sgstesting@sgs.com

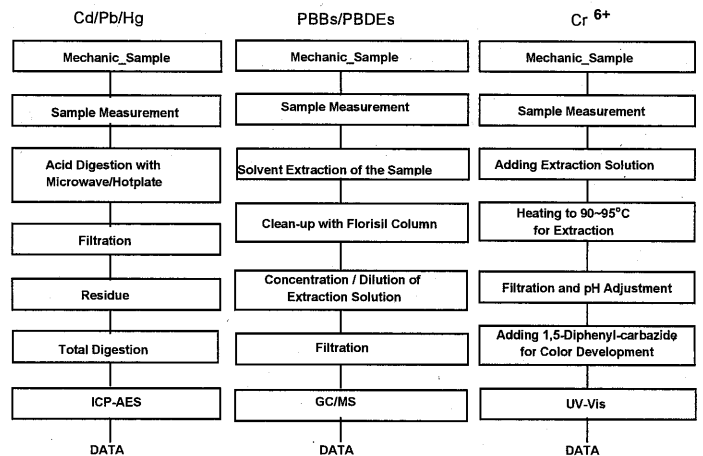
Member of the SGS Group (Societe Generale de Surveillance)



# Test Report No. F690501/LF-CTSA009-28857

Issued Date: October 26, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator : Dami Yeom  
Section Chief : Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co., Ltd.

32, The G-Valley, 550-9, Hyeon-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T+82 (0)11 4502 500 F+82 (0)11 4502 501 FAX 82 (0)11 4502 502 E-mail: sgstesting@sgs.com

Member of the SGS Group (Societe Generale de Surveillance)



# Test Report No. F690501/LF-CTSAYAA09-28858

Issued Date: October 27, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing in Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4687  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Resistive Film-5  
SGS File No. : AYAA09-28858  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr



Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamime-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Inner coat-1  
SGS File No. : AYAA09-28863  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Jeff Jang  
Jeff Jang / Chemical Lab Mgr

Pluto Kim  
Cindy Park  
Jinee Song / Testing Person



Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009 Page 2 of 4

Sample No. : AYAA09-28863.001  
Sample Description : Inner coat-1  
Item No./Part No. : FLAT CHIP RESISTOR

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	36.0
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7198A(1992), UV	1	N.D.

Flame Retardants-PBBs/PBDEs

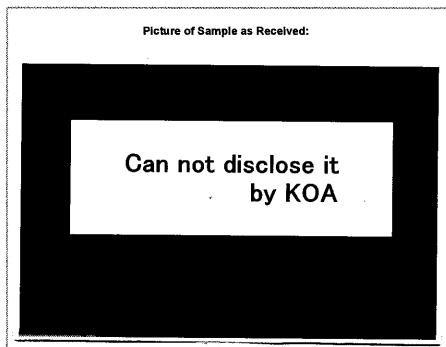
Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009 Page 3 of 4



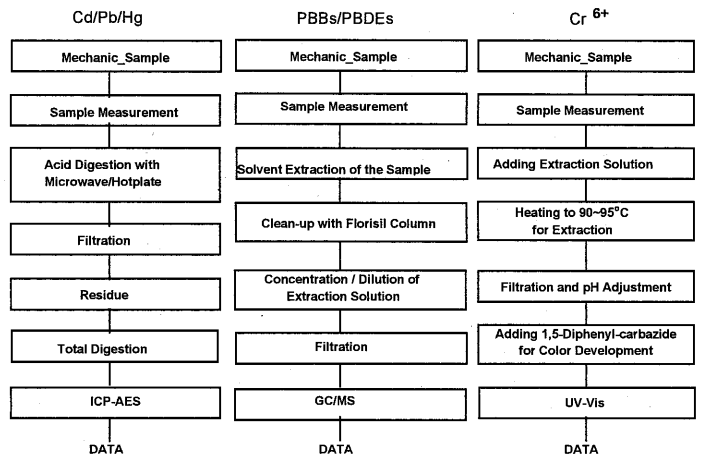
NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009 Page 4 of 4

Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



# Test Report No. F690501/LF-CTSAYAA09-28864

Issued Date: October 28, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamima-gun  
Nagano-ken 399-4687  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Inner coat-2  
SGS File No. : AYAA09-28864  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSAYAA09-28864

Issued Date: October 28, 2009 Page 2 of 4

Sample No. : AYAA09-28864.001  
Sample Description : Inner coat-2  
Item No./Part No. : FLAT CHIP RESISTOR

## Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 8010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	36.2
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 8010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

## Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co. Ltd.

122, The O Valley, 556-6, Hyeon-dong, Daejeon-gu, Chungcheong-do, Korea 411-020  
T +82 (0)42 450-0200 F +82 (0)42 450-0201 FAX +82 (0)42 450-0202 E-mail: korea@sgs.com.sg

Member of the SGS Group (Societe Generale de Surveillance)

F052 Version3

SGS Testing Korea Co. Ltd.

122, The O Valley, 556-6, Hyeon-dong, Daejeon-gu, Chungcheong-do, Korea 411-020  
T +82 (0)42 450-0200 F +82 (0)42 450-0201 FAX +82 (0)42 450-0202 E-mail: korea@sgs.com.sg

Member of the SGS Group (Societe Generale de Surveillance)



# Test Report No. F690501/LF-CTSAYAA09-28864

Issued Date: October 28, 2009 Page 3 of 4

Picture of Sample as Received:

Can not disclose it  
by KOA

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co. Ltd.

122, The O Valley, 556-6, Hyeon-dong, Daejeon-gu, Chungcheong-do, Korea 411-020  
T +82 (0)42 450-0200 F +82 (0)42 450-0201 FAX +82 (0)42 450-0202 E-mail: korea@sgs.com.sg

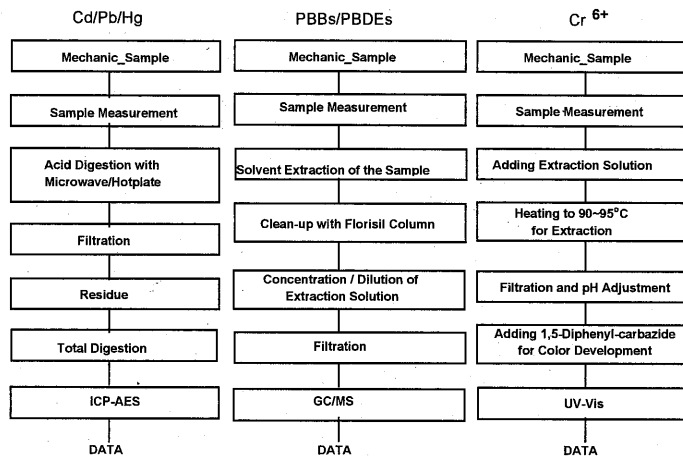
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# Test Report No. F690501/LF-CTSAYAA09-28864

Issued Date: October 28, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co. Ltd.

122, The O Valley, 556-6, Hyeon-dong, Daejeon-gu, Chungcheong-do, Korea 411-020  
T +82 (0)42 450-0200 F +82 (0)42 450-0201 FAX +82 (0)42 450-0202 E-mail: korea@sgs.com.sg

Member of the SGS Group (Societe Generale de Surveillance)



To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

<b>Product Name</b>	: Over coat-2
<b>SGS File No.</b>	: AYAA09-28867
<b>Received Date</b>	: October 16, 2009
<b>Test Performing Date</b>	: October 19, 2009
<b>Test Performed</b>	: SGS Testing Korea tested the sample(s) selected by applicant with following results
<b>Test Results</b>	: For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang

**Jeff Jang / Chemical Lab Mgr**

F052 Version3

222 Taitung Kase Co., Ltd.

822. The O'alley, 565-8, Seogyu-dong, Gwangju-pu, Anyang-si Gyeonggi-do, Korea 431-080  
E-mail: oalley@naver.com Tel: +82 (0)31-4108-000 Fax: +82 (0)31-4108-000 [www.oalley.com](http://www.oalley.com) [www.ice-angel.com/eng.htm](http://www.ice-angel.com/eng.htm)

Members of the GGG Group (Société Générale de Surveillance)

**Picture of Sample as Received:**

**Can not disclose it  
by KOA**

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

This document is issued  
Attention is drawn to the  
to its Child and the dis-  
appearance of this issue  
Unless otherwise stated the  
F052 Version3

SOS Testing Korea Co., Ltd.

352, Jisa O' valley, 556-6, Hwang-dong, Dongnae-gu, Anyang-si, Gyeonggi-do, Korea 421-020  
 E-mail: (063) 4508-000 F+62 10231 4508 000 <http://www.ygshin.com> [www.kyga.com/greenlab](http://www.kyga.com/greenlab)

Member of the RUS Group (Morille Generale, St. Sulpice)

Sample No. : AYAA09-28867.001  
Sample Description : Over coat-2  
Item No./Part No. : FLAT CHIP RESISTOR

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected.( $<MDL$ )  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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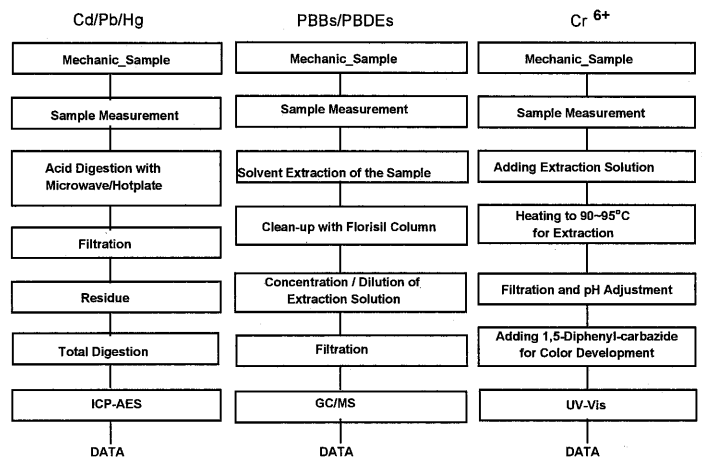
FD52 Version 3

SGS Testing Korea Co., Ltd.

322, The O'ceano, 565-61 Haggard-ang, Dongun-gu, Anyang-si, Gyeonggi-do, Korea 431-250  
E-mail: 052-552-050; F-051-0331-4578-055; <http://www.joseph.co.kr>; [jojo@joseph.co.kr](mailto:jojo@joseph.co.kr)

Ministry of the Environment (Ministère de l'Environnement)

### Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator	Dami Yeom
Section Chief	Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected.( $<MDL$ )  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version:

SGS Testing Korea Co., Ltd.

332 The O valley, 654-5, Hoggie-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-690  
 (+82 10)51 4803 000 (+82 10)51 4803 000 <http://www.lybnet.co.kr> <http://www.lybnet.co.kr/eng>

姓名: 学号: 班级: 日期: 2020年 月 日

Member of the SGE Group (Societa Generale de Servicii)

To: KOA CORPORATION  
Earth Wing in Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

<b>Product Name</b>	: Over coat-4
<b>SGS File No.</b>	: AYAA09-28869
<b>Received Date</b>	: October 16, 2009
<b>Test Performing Date</b>	: October 19, 2009
<b>Test Performed</b>	: SGS Testing Korea tested the sample(s) selected by applicant with following results
<b>Test Results</b>	: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

Jeff Jang / Chemical Lab Mgr

[illegible]

FD52 Version3	ECSA Tasting Korea Co., Ltd	262, The O Valley, 395-0, Myeong-dong, Gyeongju-si, Gyeongju-do, Korea +82-53-550-1182 (011) 4608-200 F +62 (011) 4602-069 Email: <a href="mailto:www.ecsa.co.kr">www.ecsa.co.kr</a> <a href="mailto:ecsa@ecsa.co.kr">ecsa@ecsa.co.kr</a>
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Sample No. : AYAA09-28869.001  
Sample Description : Over coat-4  
Item No./Part No. : FLAT CHIP RESISTOR

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 8010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 8010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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 SSG Testing Korea Co. Ltd.
 832, The 2nd Floor, 595-8, Myeong-dong, Dong-gu, Gyeongsang-do, Korea 711-070  
 E-02 (02) 4508 050 F-02 (02) 4508 050 [info@ssg.co.kr](mailto:info@ssg.co.kr) [www.ssg.com](http://www.ssg.com)

---

Member of the Asia Green Institute (Asia Green Institute of Seoul)

**Picture of Sample as Received:**

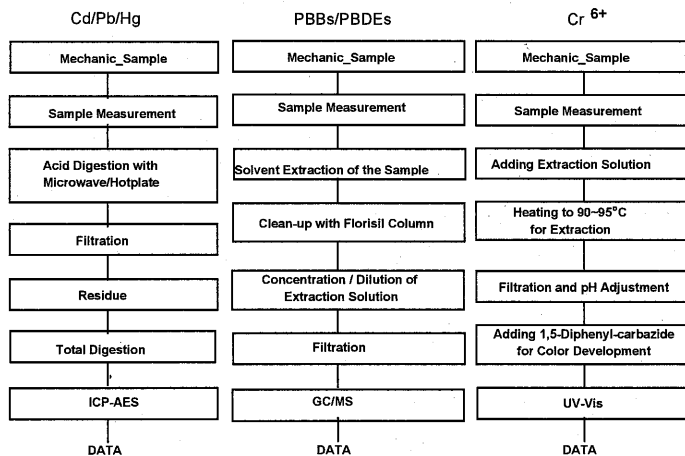
**Can not disclose it  
by KOA**

NOTE: (1) N.D. = Not detected.( $<MDL$ )  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

[illegible]

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---------------	-----------------------------	--

### Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator            Dami Yeom

Section Chief      Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

[illegible]

F052 Version3



To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Over coat-5

SGS File No. : AYAA09-28870

Received Date : October 16, 2009

Test Performing Date : October 19, 2009

Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

F052 Version3

SGS Testing Korea Co. Ltd.

32F, The O Valley, 955-8, Hageong-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)21 4528 000 F +82 (0)21 4528 009 info@sgs.com.sg korea@sgs.com

Member of the SGS Group (Société Générale de Surveillance)

Sample No. : AYAA09-28870.001  
Sample Description : Over coat-5  
Item No./Part No. : FLAT CHIP RESISTOR

#### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 8210B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 8210B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 8210B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

#### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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SGS Testing Korea Co. Ltd.

32F, The O Valley, 955-8, Hageong-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)21 4528 000 F +82 (0)21 4528 009 info@sgs.com.sg korea@sgs.com

Member of the SGS Group (Société Générale de Surveillance)

Picture of Sample as Received:

Can not disclose it  
by KOA

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

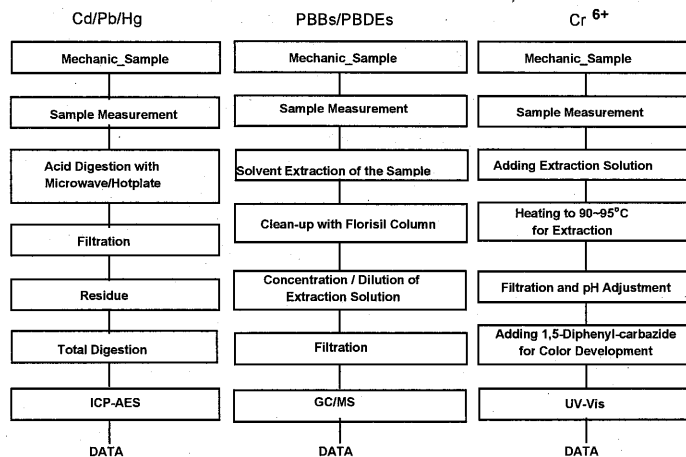
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32F, The O Valley, 955-8, Hageong-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
T +82 (0)21 4528 000 F +82 (0)21 4528 009 info@sgs.com.sg korea@sgs.com

Member of the SGS Group (Société Générale de Surveillance)

#### Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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32F, The O Valley, 955-8, Hageong-dong, Gangseo-gu, Anyang-si, Gyeonggi-do, Korea 431-020  
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Member of the SGS Group (Société Générale de Surveillance)



# Test Report No. F690501/LF-CTSAYAA09-28881

Issued Date: October 28, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamima-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Glass over coat-1

SGS File No. : AYAA09-28881

Received Date : October 16, 2009

Test Performing Date : October 19, 2009

Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song / Testing Person

SGS Testing Korea Co., Ltd.

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSAYAA09-28881

Issued Date: October 28, 2009 Page 2 of 4

Sample No. : AYAA09-28881.001  
Sample Description : Glass over coat-1  
Item No./Part No. : FLAT CHIP RESISTOR

## Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 8010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-96	5	34.5
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 8010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	1.37

## Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co., Ltd.

322, The O Valley, 555-9, Hyeon-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-070  
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Member of the SGS Group (Societe Generale de Surveillances)

F052 Version3

SGS Testing Korea Co., Ltd.

322, The O Valley, 555-9, Hyeon-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-070  
T +82 (0)2 4529 0050 F +82 (0)2 4529 0051 E korea@sgs.com.sg

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# Test Report No. F690501/LF-CTSAYAA09-28881

Issued Date: October 28, 2009 Page 3 of 4

Picture of Sample as Received:

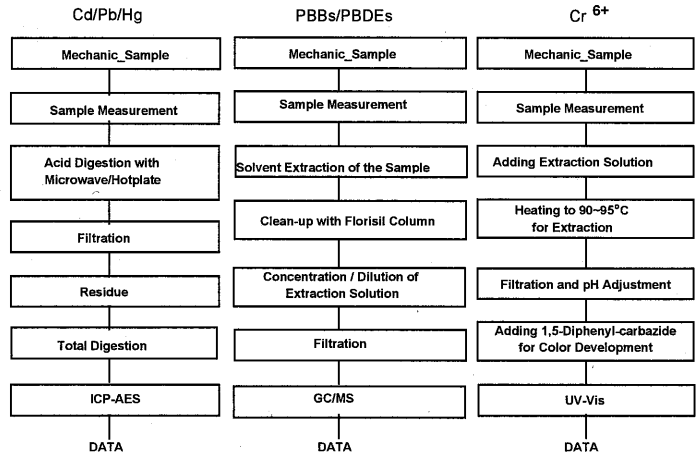
Can not disclose it  
by KOA



# Test Report No. F690501/LF-CTSAYAA09-28881

Issued Date: October 28, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator : Dani Yeom  
Section Chief : Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

F052 Version3

SGS Testing Korea Co., Ltd.

322, The O Valley, 555-9, Hyeon-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-070  
T +82 (0)2 4529 0050 F +82 (0)2 4529 0051 E korea@sgs.com.sg

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F052 Version3

SGS Testing Korea Co., Ltd.

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T +82 (0)2 4529 0050 F +82 (0)2 4529 0051 E korea@sgs.com.sg

Member of the SGS Group (Societe Generale de Surveillances)



# Test Report No. F690501/LF-CTSA009-28882

Issued Date: October 28, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa-minowa-machi  
Kamina-gun  
Nagano-gun 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Glass over coat-2

SGS File No. : AYAA09-28882

Received Date : October 16, 2009

Test Performing Date : October 19, 2009

Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSA009-28882

Issued Date: October 28, 2009 Page 2 of 4

Sample No. : AYAA09-28882.001  
Sample Description : Glass over coat-2  
Item No./Part No. : FLAT CHIP RESISTOR

## Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-85	5	35.4
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

## Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

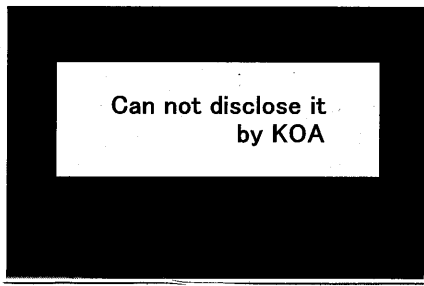
NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



# Test Report No. F690501/LF-CTSA009-28882

Issued Date: October 28, 2009 Page 3 of 4

Picture of Sample as Received:



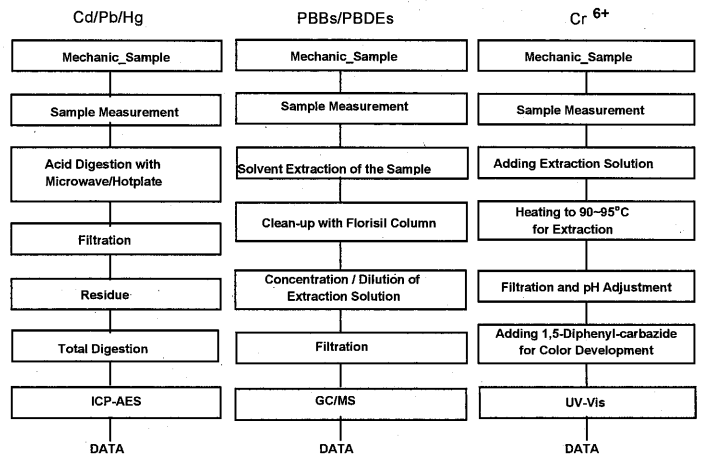
NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



# Test Report No. F690501/LF-CTSA009-28882

Issued Date: October 28, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dani Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



**To: KOA CORPORATION**  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken, 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

<b>Product Name</b>	: Marking-2
<b>SGS File No.</b>	: AYAA09-28885
<b>Received Date</b>	: October 16, 2009
<b>Test Performing Date</b>	: October 19, 2009
<b>Test Performed</b>	: SGS Testing Korea tested the sample(s) selected by applicant with following results
<b>Test Results</b>	: For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

**Jeff Jang / Chemical Lab Mgr**

[illegible]

F052 Version3 SGS Testing Korea Co., Ltd  
 122-1, Songdo 2-ro, Eui-Seong, Incheon 405-380, Korea  
 Tel: +82 (0)2 4504 0000 Fax: +82 (0)2 4504 0099 Email: [info@sgs.co.kr](mailto:info@sgs.co.kr) [www.sgs.co.kr](http://www.sgs.co.kr)

---

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Sample No. : AYAA09-28885.001  
Sample Description : Marking-2  
Item No./Part No. : FLAT CHIP RESISTOR

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	2.85

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected. (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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F052 Version3

S&S Trading Korea Co., Ltd.

주식회사 S&S 트레이딩 코리아  
주 소 : 서울특별시 강남구 테헤란로 15길 10 (삼성동, 삼성역) S&S 트레이딩 코리아  
주 소 : 서울특별시 강남구 테헤란로 15길 10 (삼성동, 삼성역) S&S 트레이딩 코리아

Members of the S&S Group (Société Générale de Surveillance)

**Picture of Sample as Received:**

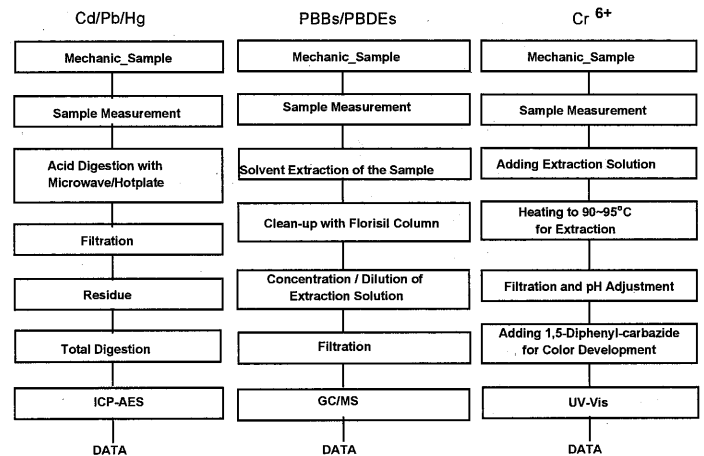
**Can not disclose it  
by KOA**

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

[illegible]

F052 Version3	SGS Testing Korea Co. Ltd.	352, The O'Henry 550-b, Hyeon-dong, Daejeon-gi, Republic of Korea 481-480 t+82-0431 4809 000 f+82-0431 4804 000 <a href="mailto:sgs@sgstesting.com">sgs@sgstesting.com</a> <a href="http://www.sgstesting.com">www.sgstesting.com</a>
		Member of the SGS Group (Société Générale de Surveillance)

### Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator	Dami Yeom
Section Chief	Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected.( $<MDL$ )  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

[illegible][illegible]



# Test Report No. F690501/LF-CTSAYAA09-28888

Issued Date: October 28, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as:

Product Name : Glass marking-1  
SGS File No. : AYAA09-28888  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song / Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSAYAA09-28888

Issued Date: October 28, 2009 Page 2 of 4

Sample No. : AYAA09-28888.001  
Sample Description : Glass marking-1  
Item No./Part No. : FLAT CHIP RESISTOR

Heavy Metals					
Test Items	Unit	Test Method	MDL	Results	
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.	
Lead (Pb)	%	ASTM D1844-86	5	31.9	
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.	
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.	

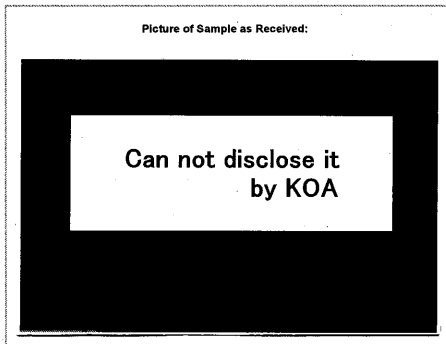
Flame Retardants-PBBs/PBDEs					
Test Items	Unit	Test Method	MDL	Results	
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Tri bromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Tri bromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.	

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



# Test Report No. F690501/LF-CTSAYAA09-28888

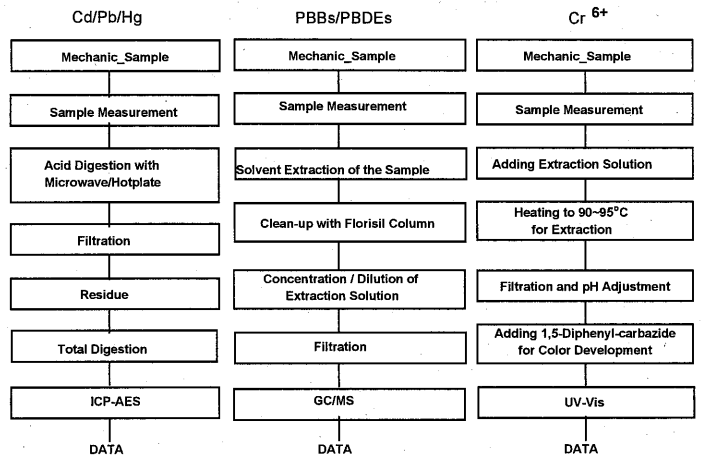
Issued Date: October 28, 2009 Page 3 of 4



# Test Report No. F690501/LF-CTSAYAA09-28888

Issued Date: October 28, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator : Dami Yeom  
Section Chief : Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

[illegible]



# Test Report No. F690501/LF-CTSA009-28890

Issued Date: October 23, 2009 Page 1 of 4

To: KOA CORPORATION  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

Product Name : Ni plating  
SGS File No. : AYAA09-28890  
Received Date : October 16, 2009  
Test Performing Date : October 19, 2009  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr



# Test Report No. F690501/LF-CTSA009-28890

Issued Date: October 23, 2009 Page 2 of 4

Sample No. : AYAA09-28890.001  
Sample Description : Ni plating  
Item No./Part No. : FLAT CHIP RESISTOR

## Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

## Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Trisbromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

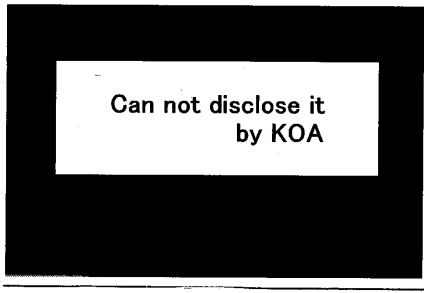
NOTE: (1) N.D. = Not detected (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable



# Test Report No. F690501/LF-CTSA009-28890

Issued Date: October 23, 2009 Page 3 of 4

Picture of Sample as Received:



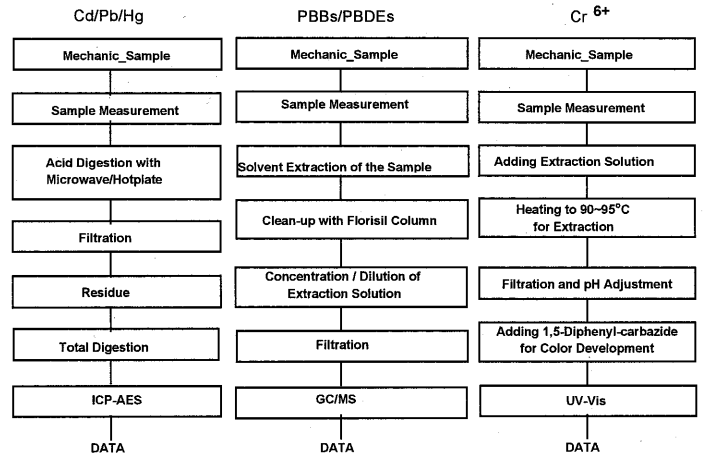
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# Test Report No. F690501/LF-CTSA009-28890

Issued Date: October 23, 2009 Page 4 of 4

## Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dani Yeom  
Section Chief Jeff Jang

\*\*\* End \*\*\*

NOTE: (1) N.D. = Not detected (<MDL)  
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**To: KOA CORPORATION**  
Earth Wing In Pine Park 14016  
Oaza, Naka-minowa minowa-machi  
Kamina-gun  
Nagano-ken 399-4697  
Japan

The following merchandise was submitted and identified by the client as :

**Product Name** : Sn plating

**SGS File No.** : AYAA09-28891

Received Date : October 16, 2009

**Test Performing Date** : October 19, 2009

**Test Performed** : SGS Testing Korea tested the sample(s) selected by applicant with following results

**Test Results** : For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Pluto Kim  
Cindy Park  
Jinee Song/ Testing Person

**Jeff Jang / Chemical Lab Mgr**

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SGS Testing Korea Co., Ltd

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Member of the SGS Group Société Générale de Surveillance

Sample No. : AYAA09-28891.001  
Sample Description : Sn plating  
Item No./Part No. : FLAT CHIP RESISTOR

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	43.7
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tri bromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
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**Picture of Sample as Received:**

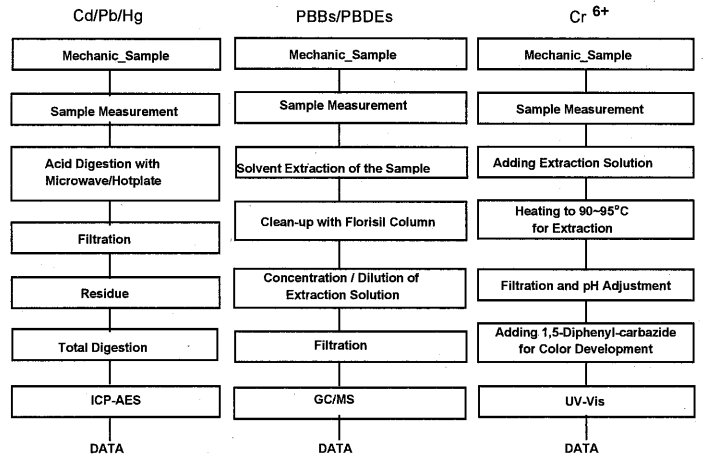
**Can not disclose it  
by KOA**

NOTE: (1) N.D. = Not detected.( $<$ MDL)  
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[illegible]

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### Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr<sup>6+</sup>/PBBs & PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator	Dami Yeom
Section Chief	Jeff Jang

\*\*\* End \*\*\*

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[illegible]

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