

承 認 書

Specification For Approval

Customer (客戶名稱): 華泰電子股份有限公司

Yr. Part No. (客戶料號): 70G1152-1050

Yr. Dwg. No. (客戶圖號):

Description (品 名): SMT Shielded Power Inductors

Part No. (料 號): GSRH129-151M02

Dwg. No. (圖 號):

Revision (版 本): 1.0

Date (日 期): 2009 / 01 / 20



Prepared By (製作員):

吳俊益

Checked By (檢查員):

吳靖中

Supervisor By (主管):

吳添富

Customer Approval Signature

(客戶承認簽回章)

Authorized Signature(簽章):



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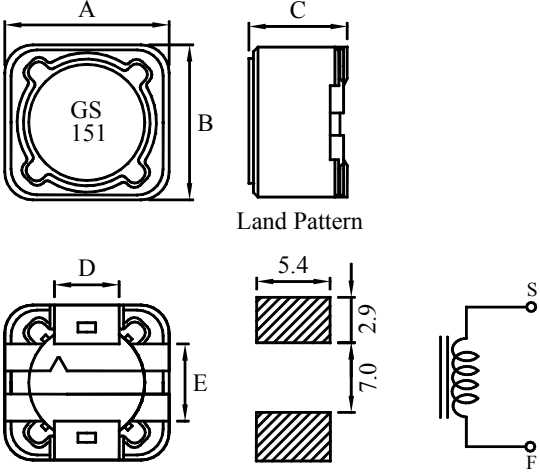
剛 松 股 份 有 限 公 司
 GANG SONG ELECTRONICS CO., LTD.
 SPECIFICATION FOR APPROVAL

CUST. NAME	N0558	DATE	JAN 20,09'
DESCRIPTION	SMT Shielded Power Inductors	TYPE	
GS PART NO.	GSRH129-151M02	DWG. NO.	040470
CUST. PART NO.	70G1152-1050	GS SAMPLE NO.	

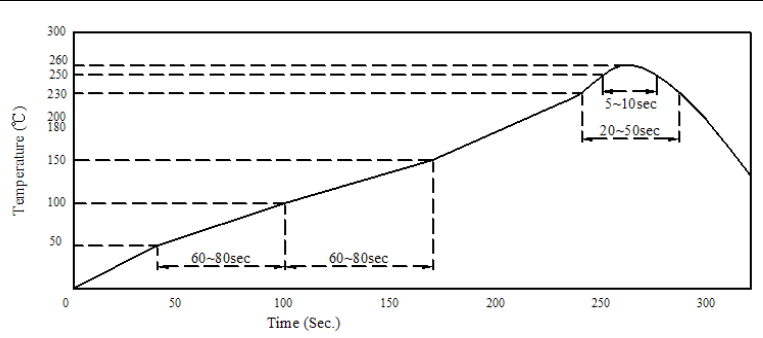
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SPECIFICATION FOR APPROVAL

CUST. NAME		N0558			DATE	JAN 20,09'	
DESCRIPTION		SMT Shielded Power Inductors			TYPE		
GS PART NO.		GSRH129-151M02			DWG. NO.	040470	
CUST. PART NO.		70G1152-1050			GS SAMPLE NO.		
DIM	Unit in mm	MECHANICAL MEASUREMENTS					
A	12.2±0.3						
B	12.2±0.3						
C	10.0 (max)						
D	5.0±0.2						
E	7.6±0.2						
F							
G							
H							
I							
J							
K							
L							
ELECTRICAL MEASUREMENTS & TEST EQUIPMENT							
TEST ITEM 檢驗項目/單位	L+/-% uH	Q(min)	SRF(Typ.) MHz	DCR(max) (Ω)	Isat(max) (A)		Irms(max) (A)
TEST FREQUENCY 測試頻率	1KHz/0.25V				1KHz/0.25V	1KHz/0.25V	
TEST EQUIP. 測試儀器	WK3260B			HP34401A	WK3260B WK3265B	WK3260B WK3265B	
SPECIFICATION. 測試標準	130+20% -7%			0.140	2.0	3.0	
1	134.6			0.101	OK	OK	
2	126.3			0.101	OK	OK	
3	140.8			0.101	OK	OK	
4	129.4			0.103	OK	OK	
5	130.0			0.104	OK	OK	
6							
7							
8							
9							
10							
DRAWN BY: Fion		CHECKED BY: Ching Chung			APPROVED BY: William		

SPECIFICATION FOR APPROVAL

CUST. NAME	N0558	DATE	JAN 20,09'
DESCRIPTION	SMT Shielded Power Inductors	TYPE	
GS PART NO.	GSRH129-151M02	DWG. NO.	040470
CUST. PART NO.	70G1152-1050	GS SAMPLE NO.	
Material List			
No.	Item	Supplier	Material
1	CORE	K008	DL5 DR 10x9 B=6 F=6.5 DL5 SRI 12x10.65x8.6
2	WIRE	F013,F019,F060,CF010,CF011	0.5 ϕ 2UEW x 40 $\frac{1}{2}$ Ts(Ref.)
3	TERMINAL	B006	A1201(H)-1 / A1201(H)
		CB004	DR125-127
		B021	GS-077-1
4	COVER TAPE	M010/M015-3/M028	21.3mm.
5	CARRIER TAPE	M015-3	GSRH129
		CM003	GSRH-129
		M020-1	GSRH129
		CM035	GSRH129
6	QUANTITY		300PCS / 13"Reel
IR-迴流焊曲線(IR-Reflow) 傳輸速度(Speed)70 cm/min		Remark :	Weight: 5.71g
 <p>The graph shows a temperature profile for IR-reflow. The y-axis is Temperature (°C) from 0 to 300. The x-axis is Time (Sec.) from 0 to 300. The profile includes: a ramp up from 0 to 100°C (60-80sec), a dwell at 100°C (60-80sec), a ramp up to 250°C, a dwell at 250°C (5-10sec), a peak at 260°C (20-50sec), and a ramp down to 150°C.</p>		<ul style="list-style-type: none"> ※ MARK: GS 151 ※ 生產時 L 值需控制在 130uH+20% -7% ※ Inductance drop=20% typ. at Isat. ※ $\Delta T=40^{\circ}\text{C}$ rise at Irms. 	

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GANG SONG ELECTRONICS CO., LTD.
SPECIFICATION FOR APPROVAL

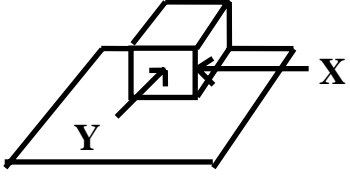
CUST. NAME	N0558	DATE	JAN 20,09'
DESCRIPTION	SMT Shielded Power Inductors	TYPE	
GS PART NO.	GSRH129-151M02	DWG. NO.	040470
CUST. PART NO.	70G1152-1050	GS SAMPLE NO.	

材料表 (Material List)

No	項目 Item	材 料 Material	代 理 商 Supplier	UL No.	SGS 報告 SGS NO.
1	Core	Ferrite Core	Shinn Der (供應商: Japan Metals)		CANEC0802809702
2	Wire	THS4-U130(130°C)	Ta Ya	E197768	GZ0810146509/CHEM
3	Teriminal	C1100R-H(Copper Strip(Hard))	Bobbin Master (供應商: 名佳利)		CE/2008/52638
4	Tinned	QD-308	Thousand Island		CANEC0801624502

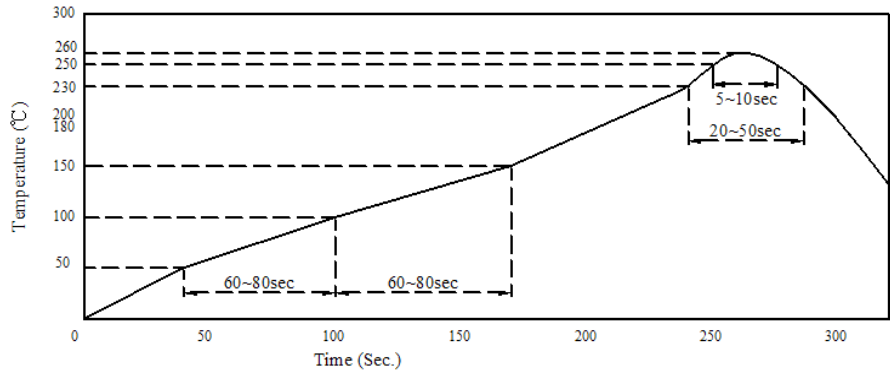
GENERAL CHARACTERISTICS

(GSRH73 / GSRH74 / GSRH124 / GSRH125 / GSRH127 / **GSRH129** Series)

NO	ITEM	SPECIFICATION	TEST METHOD&CONDITON
1	Operating Temperature 工作溫度	- 40°C ~ + 85°C	
2	External Appearance 外觀	On visual inspection, the coil has no external defects. 當外觀檢驗時不能有任何缺點	
3	Terminal Strength 線端強度	0.5Kg 10 ±2 seconds	After soldering, between copper plate and terminal of coil ,push in two directions of X,Y withstanding. terminal should not peel off. (refer to figure at bottom). 當線圈之端面焊在基板後，依照 X,Y 方向量測推力時，端面不能脫落 
4	Press Strength of Core 鐵芯受壓強度	5.00Kg 10 ±2 seconds.	
5	Heat Endurance Test 耐熱性	Inductance deviation within ±5 % 電感偏差值須於±5%之內	Inductors shall be subjected to +85±2°C for 96 hours. Inductors are to be tested after 1 hour at room temperature. 將電感器放置於溫度 +85±2°C 的環境中存放 96 小時，在室溫下放置 1 小時後進行測試.
6	Insulating Resistance 絕緣阻抗	Over 100MΩ at 100V D.C. between coil and core. 在 100 V D.C.時線圈及鐵芯之間之絕緣阻抗值超過 100MΩ	
7	Humidity Test 耐濕試驗	Inductance deviation within ±5 % 電感偏差值須於±5%之內	After 96 Hours in 90 ~ 95% relative humidity at 40 ±2°C and 1 hour drying under normal condition. 在相對濕度 90 ~ 95%、溫度 40 ±2°C 的環境下放置 96 小時，取出置於常溫下乾燥一個小時後再測試

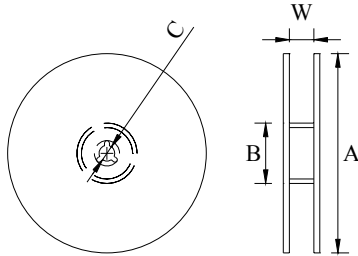
GENERAL CHARACTERISTICS

(GSRH73 / GSRH74 / GSRH124 / GSRH125 / GSRH127 / **GSRH129** Series)

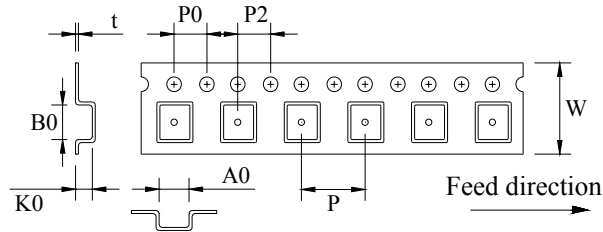
NO	ITEM	SPECIFICATION	TEST METHOD&CONDITON
8	Vibration Test 耐震試驗	Inductance deviation within $\pm 5\%$ 電感偏差值須於 $\pm 5\%$ 之內	After vibra-tion for 1 hours. In each of three orientations at sweep vibration (10~55~10Hz) with 1.5mm P-P amplitude. 在振幅 1.5 mm、頻率 10 ~ 55 ~ 10Hz 條件下，振動 X、Y、Z 三個方向各一個小時後，置於常溫下一個小時後再測試
9	Thermal Shock (Temperature Cycle) 冷熱沖擊試驗	Inductance deviation within $\pm 5\%$ 電感偏差值須於 $\pm 5\%$ 之內	Condition for 1 cycle w Step 1 : $-40\pm 2^{\circ}\text{C}$ 30min Step 2 : $25\pm 2^{\circ}\text{C}$ 15 min. Step 3 : $+85\pm 2^{\circ}\text{C}$ 30 min Step 4 : Room temperature 15 min Number of cycles:10
10	Low Temperature Resistance 耐寒試驗	Inductance deviation within $\pm 5\%$ 電感偏差值須於 $\pm 5\%$ 之內	Inductors shall be subjected to $-40\pm 2^{\circ}\text{C}$ for 96 hours. Inductors are to be tested after 1 hour at room temperature. 將電感器放置於溫度 $-40\pm 2^{\circ}\text{C}$ 的環境中存放 96 小時，在室溫下放置 1 小時後進行測試。
11	Solderability 焊錫性試驗	The metalized area must Have 90% min solder cove-range. 超過 90% 的端電極面應被焊錫覆蓋。	Preheat $125\pm 25^{\circ}\text{C}$, 60sec Solder : QD-107 Solder temperature: $260\pm 5^{\circ}\text{C}$ Flux: : rosin Dip time : 5 ± 1 sec
12	The condition of reflow 回流焊狀況	TEMPERATURE ($^{\circ}\text{C}$)  A test is made under the conditions mentioned above, and it is left for 2 hours in the normal temperature and humidity. After that, no mechanical and electrical defect should be found out. 先依照以上所提及之條件下試驗後，置於常溫常濕環境下二個小時後，不能出現有任何之機械或電子缺失。	

Tape and Reel Specifications For Surface Mount

1. Reel Dimensions



2. Tape Dimensions



Unit in mm

GS Part No.	Piece / Reel		Reel Dimensions				Tape Dimensions							
	178	330	A	B	C	W	A0	B0	K0	P	P0	P2	W	t
Shielded Power Inductors														
GSR63B	—	2,000	330	100	13	12.5	5.70	6.30	3.60	8	4	2	12	0.3
GSR74B	—	1,000	330	100	13	16.5	7.20	8.00	5.60	12	4	2	16	0.35
GSR105B	—	500	330	100	13	24.5	9.20	10.20	5.90	12	4	2	24	0.4
GSRH62B	—	1,500	330	100	13	16.5	6.55	7.00	3.20	12	4	2	16	0.4
GSRH64B	—	1,000	330	100	13	16.5	6.55	7.00	5.20	12	4	2	16	0.4
GSRH73	—	1,000	330	100	13	16.5	7.60	7.60	4.00	12	4	2	16	0.3
GSRH74	—	1,000	330	100	13	16.5	7.60	7.60	5.40	12	4	2	16	0.4
GSRH124	—	500	330	100	13	24.5	12.55	12.55	5.05	16	4	2	24	0.35
GSRH125	—	500	330	100	13	24.5	12.55	12.55	6.40	16	4	2	24	0.35
GSRH127	—	500	330	100	13	24.5	12.55	12.55	8.10	16	4	2	24	0.35
GSRH129	—	300	330	100	13	24.5	12.60	12.60	10.00	20	4	2	24	0.5
GSRH124B	—	500	330	100	13	24.5	12.55	12.55	5.05	16	4	2	24	0.35
GSRH125B	—	500	330	100	13	24.5	12.55	12.55	6.40	16	4	2	24	0.35
GSRH127B	—	500	330	100	13	24.5	12.55	12.55	8.10	16	4	2	24	0.35
GSRH129B	—	300	330	100	13	24.5	12.60	12.60	10.00	20	4	2	24	0.5
GSRH103R	—	1,000	330	100	13	24.5	10.30	10.50	3.10	16	4	2	24	0.35
GSRH104R	—	1,000	330	100	13	24.5	10.30	10.50	4.10	16	4	2	24	0.35
GSRH105R	—	500	330	100	13	24.5	10.30	10.50	5.10	16	4	2	24	0.35

Test Report

No. CANEC0802809702

Date: 07 Jun 2008

Page 1 of 4

TAK TECHNOLOGY CO.,LTD
NO.3RD INDUSTRIAL AREA JUZHOU SHIJIE TOWN DONGGUAN CITY GUANGDONG PROVINCE
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :
DL5 MATERIAL FERRITE CORE

SGS Job No. : 11064108 - SZ
SGS Internal Reference No. : 8.2
Date of Sample Received : 02 Jun 2008
Testing Period : 02 Jun 2008 - 06 Jun 2008
Test Requested : Selected test(s) as requested by client.
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.



Huang Fang, Sunny
Sr. Engineer

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Test Report

No. CANEC0802809702

Date: 07 Jun 2008

Page 2 of 4

Test Results:

ID for specimen 1 : CAN08-028097.002
 Description for specimen 1 : Dk-gray core

Heavy metal(s)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Cadmium (Cd)	mg/kg	IEC 62321/2nd CDV (111/95/CDV), ICP-OES	N.D.	2
Lead (Pb)	mg/kg	IEC 62321/2nd CDV (111/95/CDV), ICP-OES	94	2
Mercury (Hg)	mg/kg	IEC 62321/2nd CDV (111/95/CDV), ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321/2nd CDV (111/95/CDV), UV-Vis	N.D.	2

Note:

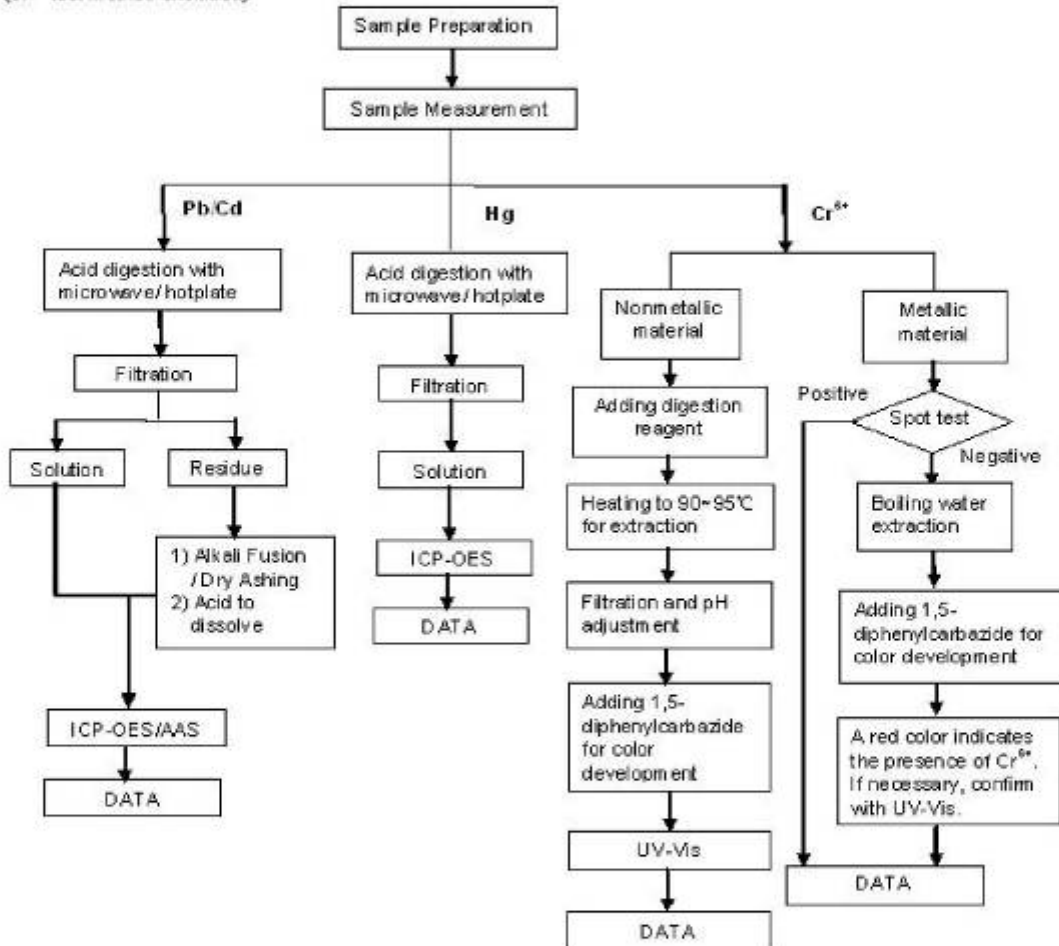
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

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ATTACHMENTS

Testing Flow Chart

- 1) Name of the person who made measurement: Bowen Chen
- 2) Name of the person in charge of measurement: Adams Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flowchart. (Cr⁶⁺ test method excluded)



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Sample photo:



SGS authenticate the photo on original report only
*** End of Report ***

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OBMW2 December 14, 2001
 (Systems, Electrical Insulation) Magnet Wire - Component
 TA YA ELECTRIC WIRE FACTORY
 XIA GANG INDUAREA CHAN AN DONGGUAN,
 GUANGDONG 523873 CHINA

E197768

Mtl Dsg	Coating Type		ANSI Type	TI
	BC	TC		
Magnet wire coatings.				
THS4-U130	Polyurethane	—	MW 75	130
THB5-EI180L	Modified Polyester	—	MW 30	180
THFN-216	Polyurethane	Polyamide	MW 28-C	130
THLT-E155S	Modified Polyester	—	MW 5-C	155
TYKH-E155	Modified Polyester	—	MW 5-C	155
TYPU-130	Polyurethane	—	MW 75C	130
TYE4-I050	Polyester-imide	—	MW 77C	180
TY1700-U155	Polyurethane	—	MW 79C	155
TYA1-130	Polyurethane	—	MW 75	130
TY981-DAI220	Polyamide-imide	—	MW 81C	200
				220
TYPEAI-N200	Polyester-imide	Polyamideimide	MW 35C,	200

1/28/2002

Underwriters Laboratories Inc.

Card 1 of 2

OBMW2 December 14, 2001
 (Systems, Electrical Insulation) Magnet Wire - Component
 TA YA ELECTRIC WIRE FACTORY

E197768

Mtl Dsg	Coating Type		ANSI Type	TI
	BC	TC		
			MW 73C	
TYSSEI-H180	Polyester-imide	—	MW 77C	180
			MW 74C	200
TYSUN-F155	Polyurethane	Polyamide	MW80C	155

Marking: Company name and material designation.

See General Information Preceding These Recognitions

For use only in equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

1/28/2002

Underwriters Laboratories Inc.

Card 2 of 2



Test Report

No.: GZ0810146509/CHEM

Date: OCT 17, 2008

Page 1 of 6

HENG YA ELECTRIC LIMITED TAYA ELECTRIC WIRE FACTORY
SOUTH INDUSTRIAL PARK, XIA GANG VILLAGE, CHANG AN TOWN, DONG GUAN CITY

The following sample(s) was/were submitted and identified on behalf of the applicant as MAGNET WIRE

SGS Job No. : SZ11347861
 SGS Internal Reference No. : 20.2
 Client Reference Information : Item No:UEW B class , LOT NO: t2010809231-2a
 Date of Sample Received : OCT 13, 2008
 Testing Period : OCT 13, 2008 TO OCT 17, 2008

Test Requested : Selected test (s) as requested by client.

Test Method : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Huang Fang, Sunny
Sr. Engineer

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SGS (China) Technical Services Co., Ltd.
Suzhou Branch - Suzhou Chemical Laboratory

19th Floor, South Hai Guanghua Tower 4, Technology Development Park, Suzhou, China 510663 | (86-20) 82155255 | (86-20) 82075125 | www.cn.sgs.com
 中国·广州·经济技术开发区科学城科珠路19B号 邮编: 510663 | (86-20) 82155255 | (86-20) 82075125 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Test Results:

Description for specimen 1 : Copper-colored metal wire w/ transparent surface

Heavy Metal(s)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Cadmium (Cd)	mg/kg	IEC 62321/2nd CDV (111/95/CDV), ICP-OES	N.D.	2
Lead (Pb)	mg/kg	IEC 62321/2nd CDV (111/95/CDV), ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	IEC 62321/2nd CDV (111/95/CDV), ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321/2nd CDV (111/95/CDV), UV-Vis	N.D.	2

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

Flame Retardants

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Sum of PBBs	mg/kg	-	N.D.	-
Monobromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Sum of PBDEs	mg/kg	-	N.D.	-
Monobromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5
Decabromodiphenyl ether ##	mg/kg	IEC 62321/2nd CDV (111/95/CDV), GC-MS	N.D.	5

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Test Report

No.: GZ0810146509/CHEM

Date: OCT 17, 2008

Page 3 of 6

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ## = The exemption of DecaBDE in polymeric application according 2005/717/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE will be included in the sum of PBDE after 01.07.2008
5. "-" = Not regulated

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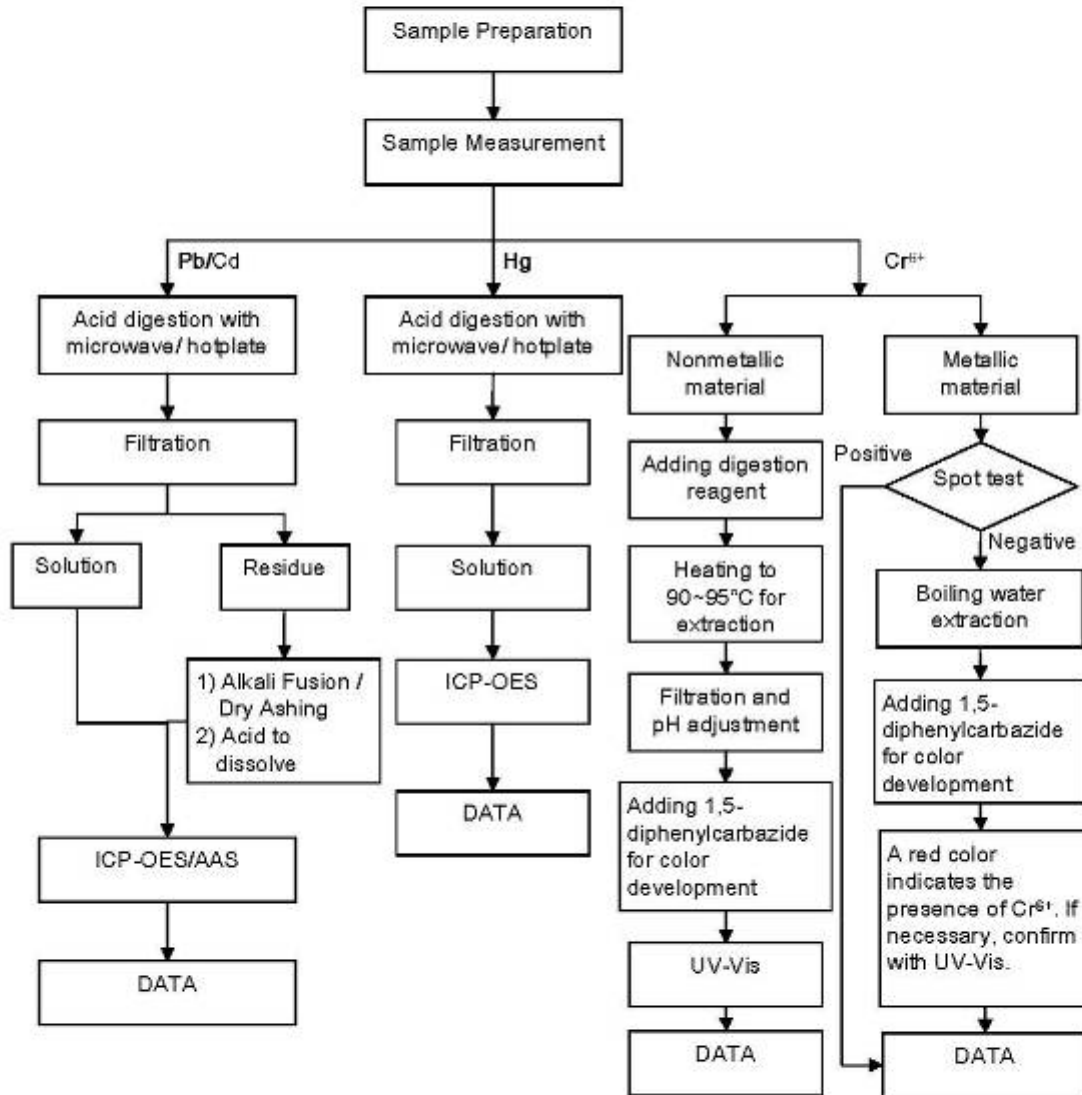
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ATTACHMENTS

Testing Flow Chart

- 1) Name of the person who made measurement: Bowen Chen
- 2) Name of the person in charge of measurement: Adams Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ test method excluded).



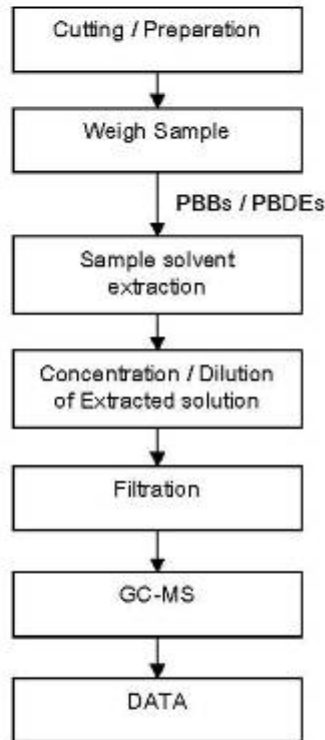
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Testing Flow Chart

- 1) Name of the person who made measurement: Lina Tang
- 2) Name of the person in charge of measurement: Tina Zhao



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Sample photo :



SGS authenticate the photo on original report only

*** End of Report ***

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測試報告 Test Report

號碼(No.): CE/2008/52638 日期(Date): 2008/05/16 頁數(Page): 1 of 6

名佳利金屬工業股份有限公司
MINCHALI METAL INDUSTRY CO., LTD
中壢市北園路11號
11, PEI YUAN ROAD, CHUNG LI CITY, TAIWAN

以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

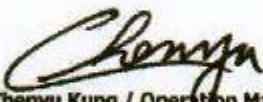
樣品名稱(Sample Description) : 紅銅
樣品型號(Style/Item No.) : C1100 (TCu)
收件日期(Sample Receiving Date) : 2008/05/09
測試期間(Testing Period) : 2008/05/09 TO 2008/05/16

測試需求(Test Requested) : 參照 RoHS 2002/95/EC 及其修定指令要求。 (In accordance with the RoHS Directive 2002/95/EC, and its amendment directives).

測試方法(Test Method) : (1) 參考IEC 62321/2nd CDV (111/95/CDV) - Clause 9方法，用感應耦合電漿原子發射光譜儀檢測鎘含量。 / With reference to IEC 62321/2nd CDV (111/95/CDV) - Clause 9. Determination of Cadmium by ICP-AES.
(2) 參考IEC 62321/2nd CDV (111/95/CDV) - Clause 9方法，用感應耦合電漿原子發射光譜儀檢測鉛含量。 / With reference to IEC 62321/2nd CDV (111/95/CDV) - Clause 9. Determination of Lead by ICP-AES.
(3) 參考IEC 62321/2nd CDV (111/95/CDV) - Clause 7方法，用感應耦合電漿原子發射光譜儀檢測汞含量。 / With reference to IEC 62321/2nd CDV (111/95/CDV) - Clause 7. Determination of Mercury by ICP-AES.
(4) 針對金屬材質之樣品，參考IEC 62321/2nd CDV (111/95/CDV) - Annex B方法檢測，用Spot test / boiling water extraction方法檢測六價鉻含量。 / With reference to IEC 62321/2nd CDV (111/95/CDV) - Annex B. Determination of Hexavalent Chromium for metallic samples by Spot test / boiling water extraction Method.
(5) 參考IEC 62321/2nd CDV (111/95/CDV) - Annex A方法，以氣相層析儀/質譜儀檢測多溴聯苯和多溴聯苯醚含量。 / With reference to IEC 62321/2nd CDV (111/95/CDV) - Annex A. Determination of PBB and PBDE by GC/MS.

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

結論(Conclusion) : 根據客戶所提供樣品的測試結果，符合RoHS(2002/95/EC)及其修定指令之要求 (Based on the performed tests on submitted samples, the test results are compliant with the limits of RoHS Directive 2002/95/EC and its subsequent amendments).


Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



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測試報告 Test Report

號碼(No.): CE/2008/52638 日期(Date): 2008/05/16 頁數(Page): 2 of 6

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MINCHALI METAL INDUSTRY CO., LTD
中經市北園路11號
11, PEI YUAN ROAD, CHUNG LI CITY, TAIWAN



測試結果(Test Results) 單位(Unit): mg/kg

測試項目 (Test Items)	測試方法 Method (Refer to)	結果 (Result)	方法偵測 極限值 (MDL)	RoHS 限值 (Limit)
		No.1		
鎘 / Cadmium (Cd)	(1)	n.d.	2	100
鉛 / Lead (Pb)	(2)	n.d.	2	1000
汞 / Mercury (Hg)	(3)	n.d.	2	1000
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 5	#
多溴聯苯總和 / Sum of PBBs	(5)	n.d.	-	1000
一溴聯苯 / Monobromobiphenyl		n.d.	5	-
二溴聯苯 / Dibromobiphenyl		n.d.	5	-
三溴聯苯 / Tribromobiphenyl		n.d.	5	-
四溴聯苯 / Tetrabromobiphenyl		n.d.	5	-
五溴聯苯 / Pentabromobiphenyl		n.d.	5	-
六溴聯苯 / Hexabromobiphenyl		n.d.	5	-
七溴聯苯 / Heptabromobiphenyl		n.d.	5	-
八溴聯苯 / Octabromobiphenyl		n.d.	5	-
九溴聯苯 / Nonabromobiphenyl		n.d.	5	-
十溴聯苯 / Decabromobiphenyl		n.d.	5	-
多溴聯苯醚總和 (一至九溴) / Sum of PBDEs (Mono to Nona) (Note 4)		n.d.	-	1000
一溴聯苯醚 / Monobromodiphenyl ether		n.d.	5	-
二溴聯苯醚 / Dibromodiphenyl ether		n.d.	5	-
三溴聯苯醚 / Tribromodiphenyl ether		n.d.	5	-
四溴聯苯醚 / Tetrabromodiphenyl ether		n.d.	5	-
五溴聯苯醚 / Pentabromodiphenyl ether		n.d.	5	-
六溴聯苯醚 / Hexabromodiphenyl ether		n.d.	5	-
七溴聯苯醚 / Heptabromodiphenyl ether		n.d.	5	-
八溴聯苯醚 / Octabromodiphenyl ether		n.d.	5	-
九溴聯苯醚 / Nonsabromodiphenyl ether	n.d.	5	-	
十溴聯苯醚 / Decabromodiphenyl ether	n.d.	5	-	
多溴聯苯醚總和 (一至十溴) / Sum of PBDEs (Mono to Deca)	n.d.	-	-	

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號碼(No.): CE/2008/52638

日期(Date): 2008/05/16

頁數(Page): 3 of 6

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MINCHALI METAL INDUSTRY CO., LTD
中壢市北園路11號
11, PEI YUAN ROAD, CHUNG LI CITY, TAIWAN



測試部位描述 (TEST PART DESCRIPTION):

NO.1 : 紅銅色金屬 (RED-COPPER COLORED METAL)

備註(Note):

1. mg/kg = ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. 根據2005年10月13日歐盟會議公佈2005/717/EC, 修訂2002/95/EC內容, 通過解除高分子材質中十溴聯苯醚之使用限制. (According to 2005/717/EC DecaBDE is exempt.)
5. Spot-test:
 - Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),
 - Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.
(當該測項無法確認時, 測試樣品可藉由boiling-water-extraction測試方法進一步確認)
Boiling-water-extraction:
 - Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),
 - Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.
該溶液濃度 ≥ 0.02 mg/kg with 50 cm² (sample surface area)
6. # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as not comply with RoHS requirement. (Positive表示測試區域之六價鉻不符合RoHS要求)
Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as comply with RoHS requirement. (Negative表示測試區域之六價鉻符合RoHS要求)
7. "-" = Not Regulated (無規格值)

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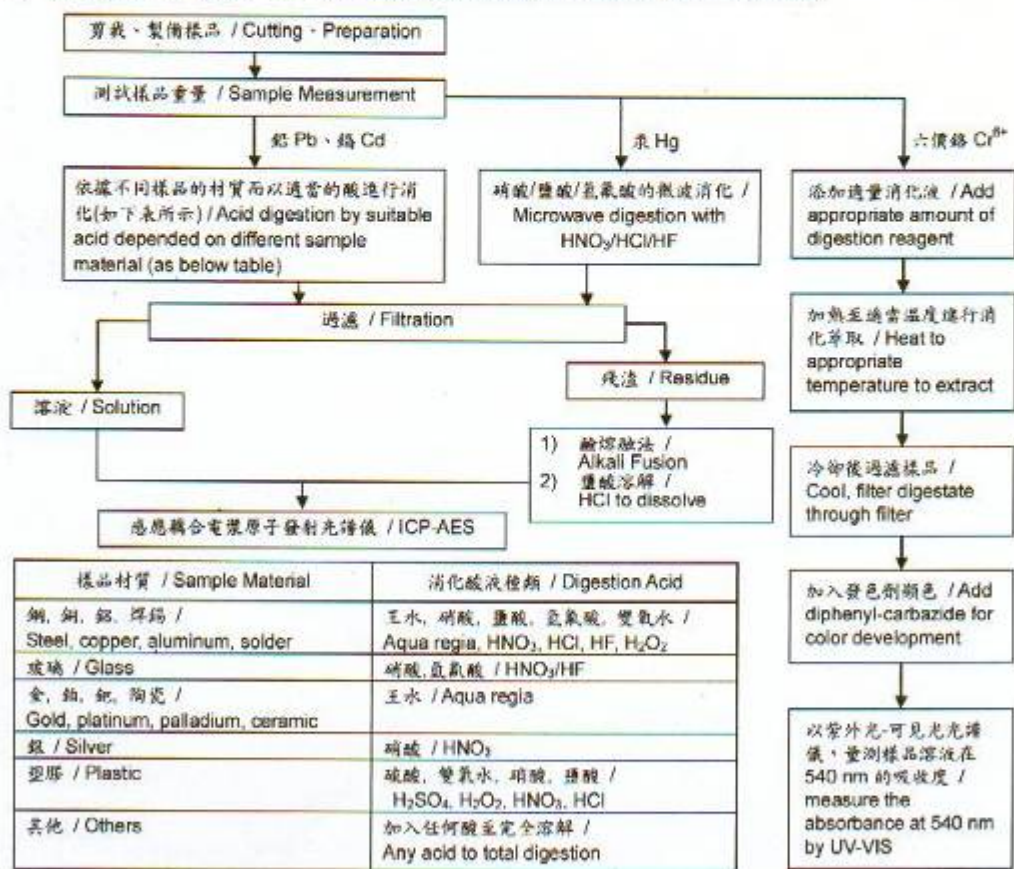
測試報告 Test Report

號碼(No.): CE/2008/52638 日期(Date): 2008/05/16 頁數(Page): 4 of 6

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MINCHALI METAL INDUSTRY CO., LTD
中壢市北園路11號
11, PEI YUAN ROAD, CHUNG LI CITY, TAIWAN



- 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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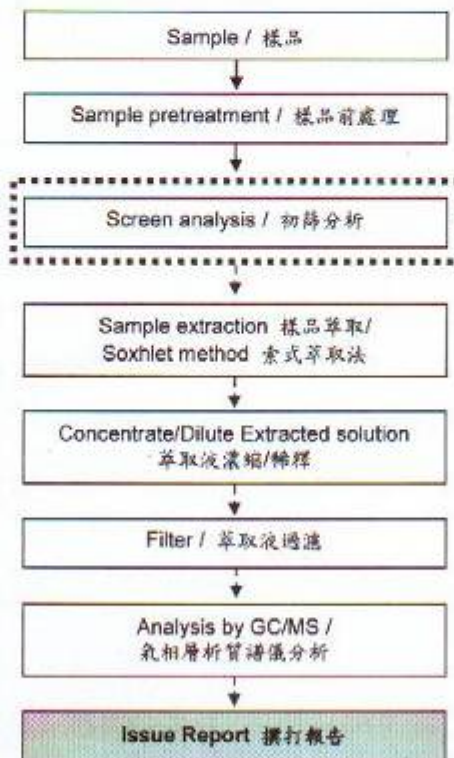
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 1) 測試人員: 翁瑞彬 / Name of the person who made measurement: Roman Wong
- 2) 測試負責人: 陳新智 / Name of the person in charge of measurement: Shirjyh Chen

初次測試程序 / First testing process →

選擇性篩檢程序 / Optional screen process

確認程序 / Confirmation process - - - →



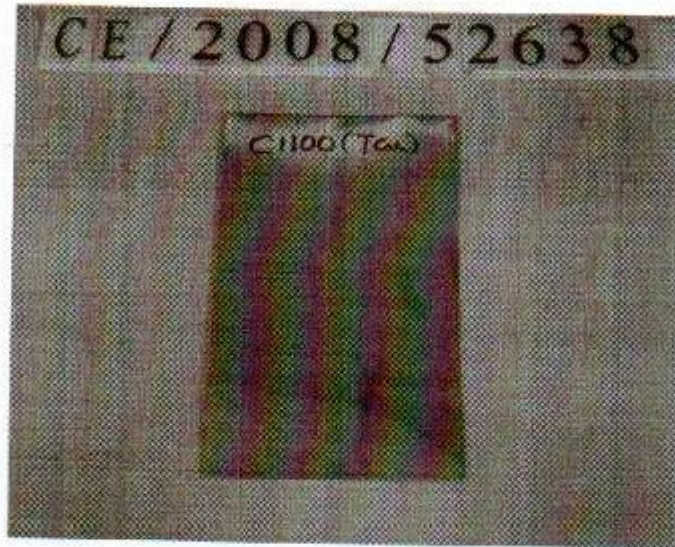
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測試報告 Test Report

號碼(No.): CE/2008/52638 日期(Date): 2008/05/16 頁數(Page): 6 of 6

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MINCHALI METAL INDUSTRY CO., LTD
中壢市北園路11號
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** 報告結尾 **



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測試報告 Test Report

號碼(No.) : CE/2008/B2273A 日期(Date) : 2008/11/17 頁數(Page) : 1 of 11

新原金屬工業股份有限公司
SOLNET METAL INDUSTRY CO., LTD.
台北縣新莊市化成路83巷9號
NO. 9, LANE 83, HWA CHENG RD., HSIN CHUANG, TAIPEI HSIEN, TAIWAN



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as) :

樣品名稱(Sample Description) : 無鉛錫 (LEAD-FREE SOLDER)
樣品型號(Style/Item No.) : S240※適用主成份(Sn 95-Sb 5) 無鉛錫系列產品
收件日期(Sample Receiving Date) : 2008/10/28 AND 2008/11/10
測試期間(Testing Period) : 2008/10/28 TO 2008/11/04 AND 2008/11/10 TO 2008/11/17

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

結論(Conclusion) : 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯及多溴聯苯醚的測試結果符合RoHS(2002/95/EC)及其修定指令之要求 (Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs are **compliant with** the limits of RoHS Directive 2002/95/EC and its subsequent amendments).

* 此份報告為合併 CE/2008/A6281 及 CE/2008/B2273 之報告 *
(This report is combined with CE/2008/A6281 and CE/2008/B2273)

Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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測試報告

Test Report

號碼(No.) : CE/2008/B2273A 日期(Date) : 2008/11/17 頁數(Page) : 2 of 11

新原金屬工業股份有限公司
SOLNET METAL INDUSTRY CO., LTD.
台北縣新莊市化成路83巷9號
NO. 9, LANE 83, HWA CHENG RD., HSIN CHUANG, TAIPEI HSIEN, TAIWAN



測試結果(Test Results)

測試部位(PART NAME) NO.1 : 銀色金屬線 (SILVER COLORED METAL WIRE (CE/2008/A6281))
測試部位(PART NAME) NO.2 : 銀色金屬線 (SILVER COLORED METAL WIRE (CE/2008/B2273))

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)		法規 限值 (Limit)
				NO.1	NO.2	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321/2nd CDV (111/95/CDV)方法, 用感應耦合電漿原子發射光譜儀 (ICP-AES) 檢測鎘含量. / With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.	2	n.d.	---	100
鉛 / Lead (Pb)	mg/kg	參考IEC 62321/2nd CDV (111/95/CDV)方法, 用感應耦合電漿原子發射光譜儀 (ICP-AES) 檢測鉛含量. / With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP-AES.	2	---	286	1000
汞 / Mercury (Hg)	mg/kg	參考IEC 62321/2nd CDV (111/95/CDV)方法, 用感應耦合電漿原子發射光譜儀 (ICP-AES) 檢測汞含量. / With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury by ICP-AES.	2	n.d.	---	1000
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	**	針對金屬材質之樣品, 參考IEC 62321/2nd CDV (111/95/CDV)方法檢測, 用Spot test / boiling water extraction方法檢測六價鉻含量. / With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Hexavalent Chromium for metallic samples by Spot test / boiling water extraction Method. (See Note 5)	0.02mg/kg with 50 cm ² surface area	Negative	---	#

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)		法規 限值 (Limit)
				NO.1	NO.2	
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS) PFOS - Acid PFOS - Metal Salt PFOS - Amide	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛烷磺酸含量。 / With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed	10	n.d.	---	-
全氟辛酸(銨) / PFOA	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛酸(銨)含量。 / With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed	10	n.d.	---	-
鹵素 / Halogen	---	參考BS EN 14582:2007, 以離子層析儀分析氟, 氯, 溴, 碘含量。 / With reference to BS EN 14582:2007. Analysis was performed by IC method for F, Cl, Br, I content.	---	---	---	---
鹵素(氟) / Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析氟含量。 / With reference to BS EN 14582:2007. Analysis was performed by IC method for Fluorine content.	50	n.d.	---	-
鹵素(氯) / Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析氯含量。 / With reference to BS EN 14582:2007. Analysis was performed by IC method for Chlorine content.	50	n.d.	---	-
鹵素(溴) / Halogen-Bromine (Br) (CAS No.: 010097-32-2)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析溴含量。 / With reference to BS EN 14582:2007. Analysis was performed by IC method for Bromine content.	50	n.d.	---	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)		法規 限值 (Limit)
				NO.1	NO.2	
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 014362-44-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析碘含量。 / With reference to BS EN 14582:2007. Analysis was performed by IC method for Iodine content.	50	n.d.	---	-
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321/2nd CDV (111/95/CDV)方法, 以氣相層析儀/質譜儀檢測多溴聯苯和多溴聯苯醚含量。 / With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of PBB and PBDE by GC/MS.	-	n.d.	---	1000
一溴聯苯 / Monobromobiphenyl			5	n.d.	---	-
二溴聯苯 / Dibromobiphenyl			5	n.d.	---	-
三溴聯苯 / Tribromobiphenyl			5	n.d.	---	-
四溴聯苯 / Tetrabromobiphenyl			5	n.d.	---	-
五溴聯苯 / Pentabromobiphenyl			5	n.d.	---	-
六溴聯苯 / Hexabromobiphenyl			5	n.d.	---	-
七溴聯苯 / Heptabromobiphenyl			5	n.d.	---	-
八溴聯苯 / Octabromobiphenyl			5	n.d.	---	-
九溴聯苯 / Nonabromobiphenyl			5	n.d.	---	-
十溴聯苯 / Decabromobiphenyl			5	n.d.	---	-
多溴聯苯醚總和 / Sum of PBDEs			-	n.d.	---	1000
一溴聯苯醚 / Monobromodiphenyl ether			5	n.d.	---	-
二溴聯苯醚 / Dibromodiphenyl ether			5	n.d.	---	-
三溴聯苯醚 / Tribromodiphenyl ether			5	n.d.	---	-
四溴聯苯醚 / Tetrabromodiphenyl ether			5	n.d.	---	-
五溴聯苯醚 / Pentabromodiphenyl ether			5	n.d.	---	-
六溴聯苯醚 / Hexabromodiphenyl ether			5	n.d.	---	-
七溴聯苯醚 / Heptabromodiphenyl ether			5	n.d.	---	-
八溴聯苯醚 / Octabromodiphenyl ether			5	n.d.	---	-
九溴聯苯醚 / Nonabromodiphenyl ether	5	n.d.	---	-		
十溴聯苯醚 / Decabromodiphenyl ether	5	n.d.	---	-		

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測試報告 Test Report

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備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
5. Spot-test:
Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),
Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);
The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.
(當該測項無法確認時, 測試樣品可藉由boiling-water-extraction測試方法進一步確認)
Boiling-water-extraction:
Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),
Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);
the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.
該溶液濃度 ≥ 0.02 mg/kg with 50 cm² (sample surface area)
6. # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as not comply with RoHS requirement. (Positive表示測試區域之六價鉻不符合RoHS要求)
Negative indicates the absence of Cr(VI) on the tested areas and
7. "---" = Not Conducted (未測項目)
8. ** = Qualitative analysis (No Unit) 定性分析(無單位)

PFOS參考資訊(Reference Information) : 指令 2006/122/EC (Directive 2006/122/EC)

- (1) 該物質不可置於市場上或使用於特殊物質或配置成分重量濃度等於或大於0.005%。
(May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.)
- (2) 該物質不可置於市場上的半成品或商品或其物件; 假若零件上明顯地具有PFOS並參照結構上及微細構造上計算PFOS重量濃度等於或大於0.1%, 而紡織品或其他覆蓋物質, 如果PFOS在覆蓋物質中含量等於或大於1 μ g/m².
(May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1 μ g/m² of the coated material.)

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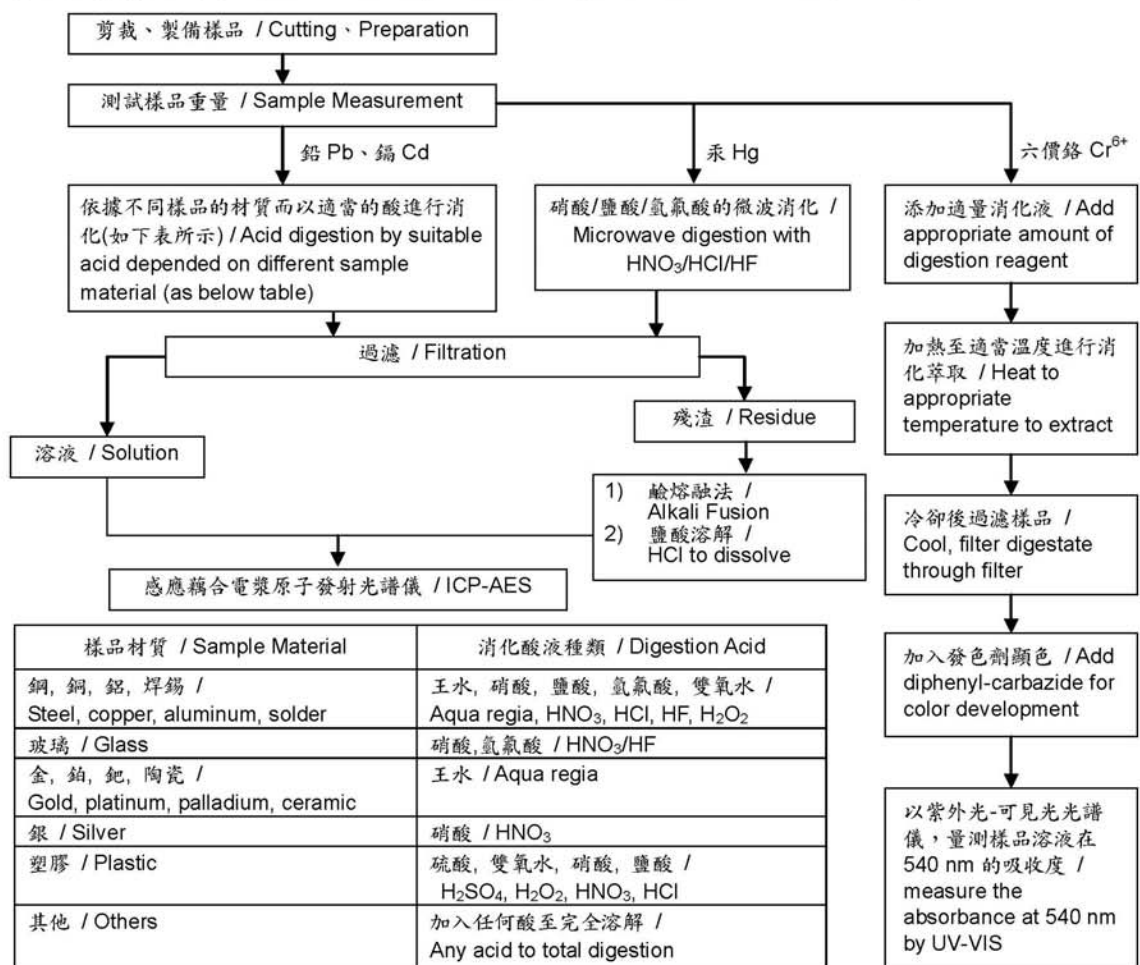
測試報告 Test Report

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新原金屬工業股份有限公司
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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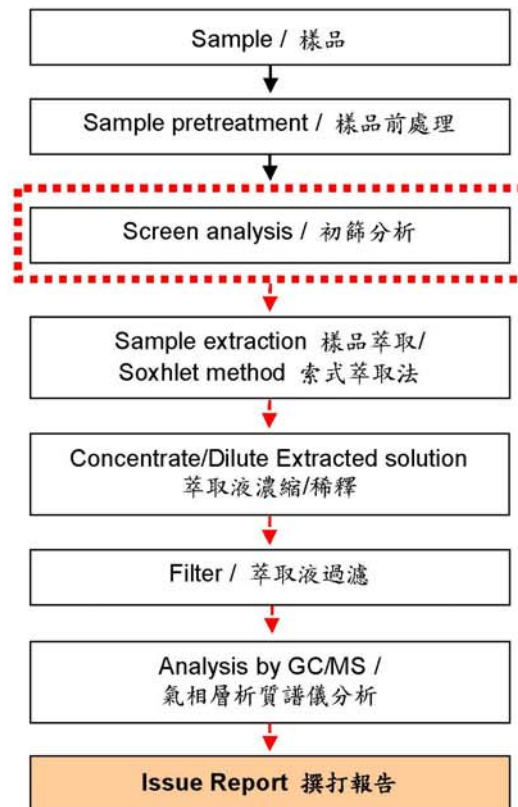
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 1) 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen

初次測試程序 / First testing process ———→

選擇性篩檢程序 / Optional screen process→

確認程序 / Confirmation process - - - ->



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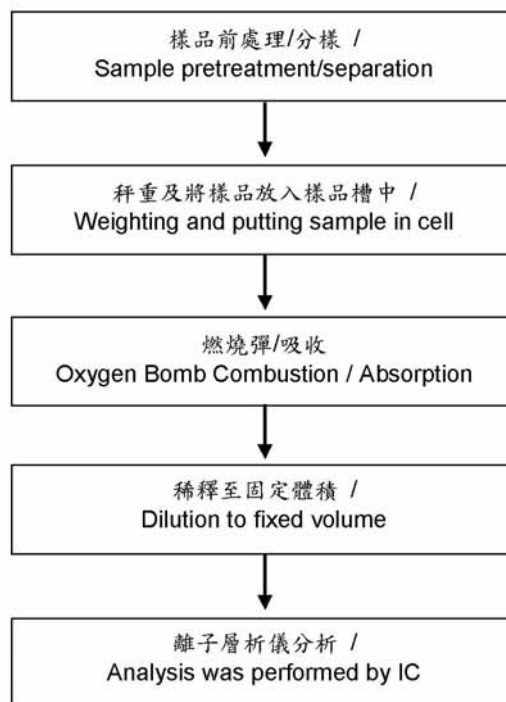
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鹵素分析流程圖 / Analytical flow chart of halogen content

- 1) 測試人員：陳立倫 / Name of the person who made measurement: Alan Chen
- 2) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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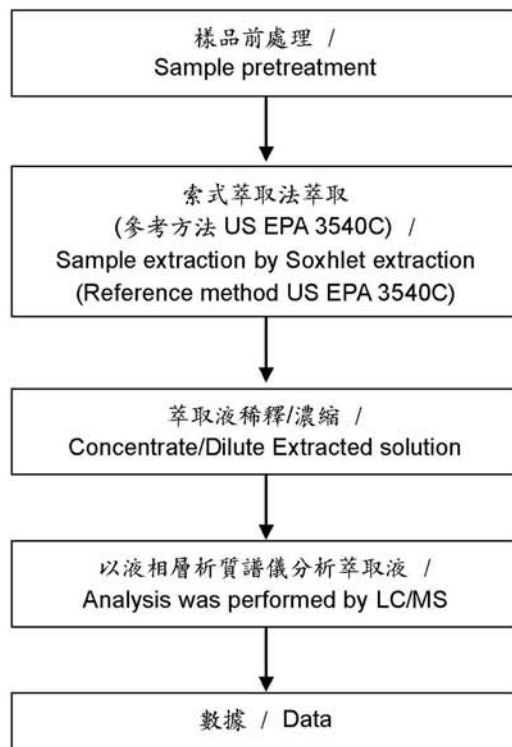
號碼(No.) : CE/2008/B2273A 日期(Date) : 2008/11/17 頁數(Page) : 9 of 11

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全氟辛酸(銨)/全氟辛烷磺酸分析流程圖 / Analytical flow chart of PFOA/PFOS content

- 1) 測試人員：劉家瑗 / Name of the person who made measurement: Carrie Liu
- 2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen



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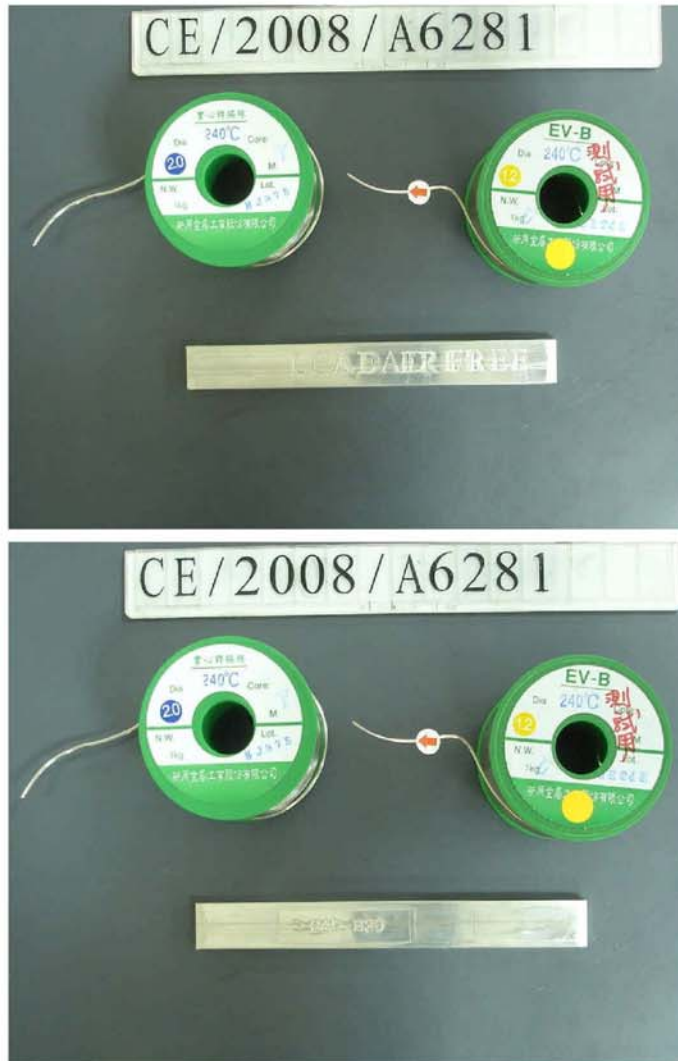
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新原金屬工業股份有限公司
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台北縣新莊市化成路83巷9號
NO. 9, LANE 83, HWA CHENG RD., HSIN CHUANG, TAIPEI HSIEN, TAIWAN



測試部位(PART NAME) NO.1



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測試部位(PART NAME) NO.2



** 報告結尾(End of Report) **

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