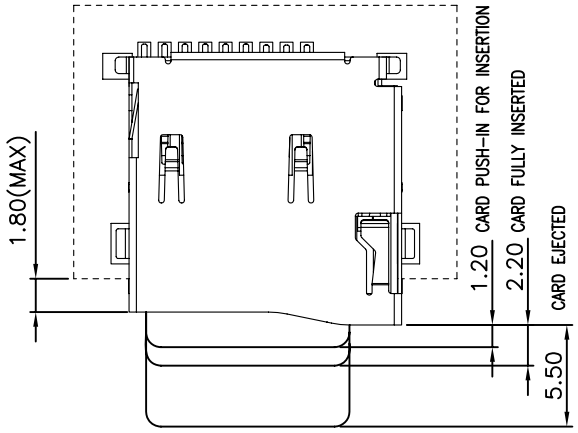
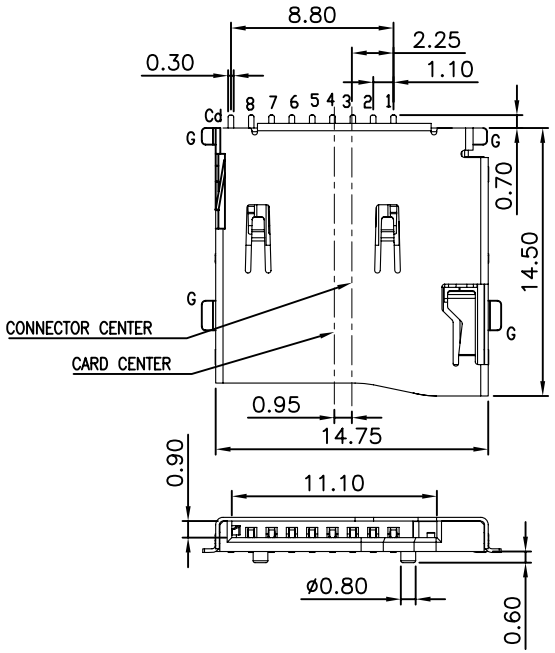
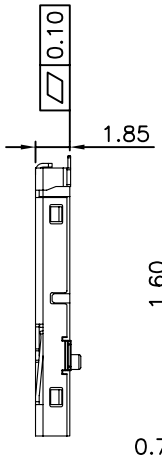
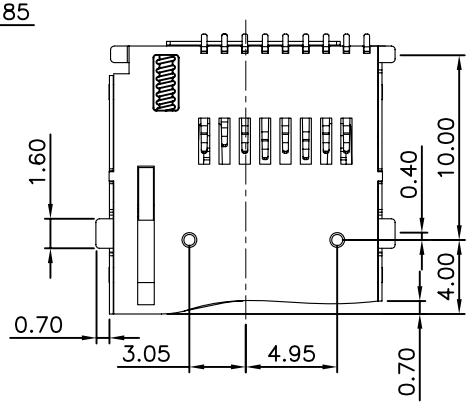
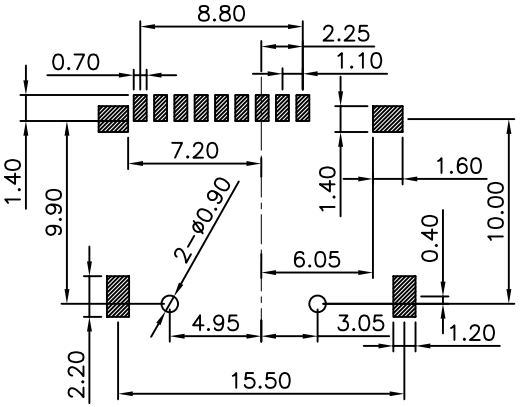
REV NO/版次	REVISION NOTE/修订注释	DATE/日期	SIGNATURE/签名
A	RELEASED/制作	10.04.19	taji











Pad Area

PCB LAYOUT TOP VIEW
(TOLERANCE:±0.05)

Specification
*Electrical Characteristics:
Contact Current Rating:0.5 Amperes.
Dielectric Withstanding Voltage:AC500V r.m.s.
Insulation Resistance:1000 MΩ Minimum.
Contact Resistance:40 mΩ Maximum.
*Environmental:
Operating Temperature:−25°C~+90°C.
*Environmental:
Mating Cyeles:5000~10,000 Insertions.
*Mechanical Characteristics:
Card Push Insertion/Out Force:0.7~1.20kgf.
Contact Separation Force:0.20kgf Minimum.
*Material:
Insulator:HI−Temp Plastic UL 94V−0 Rated.
Cantact:Copper Alloy(t=0.15mm).
Shell:Stainless Steel(t=0.15mm).
Spring:SWP.

Pin No.	Pin assigenment	Pin No.	Pin assigenment
1	DAT2	5	CLK
2	CD/DAT3	6	VSS
3	CMD	7	DAT0
4	VDD	8	DAT1
Cd	CARD DETECTION	G	GROUND

CARD DETECTION SWITCH	
WHEN CARD IS EJECTED	WHEN CARD IS INSERED
OPEN Cd G	CLOSE Cd G

		TOLERANCE UNSPECIFIED 未指的公差	± 0.10
TF 自弹外焊 客户图	UNIT 单位 mm	DESIGNED 设计	ganpin
PART_NUMBER: 零件编号 ZTF002-A0-001	SCALE 比例 1:1	CHECKED 核准	
DRAWING_NUMBER: 图纸编号 DWG-TF-501	SHEET 页码 1/1	APPROVED 审批	

品名	TF MEMORY CARD CONNECTOR
料号	TF-5011-01

Packing Operation Standard

干燥剂	208-00001
PE	203-00001
Type(卷盘)下带	206-00001
Type(自粘式)上带	205-00001
REEL (料盘)	207-00001
纸箱料号	201-00001-2

包装作业图示及说明 (PACKING OPERATION DIAGRAM & INSTRUCTION)

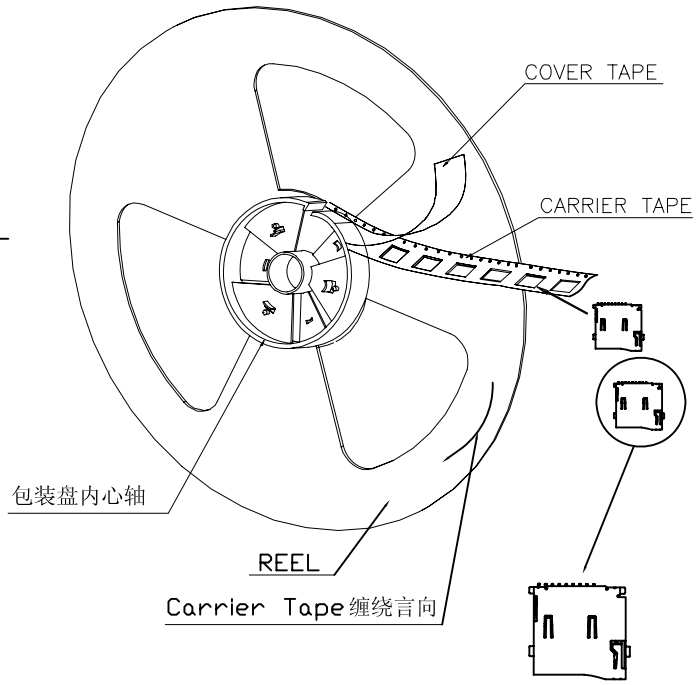
一：

1）将半成品一一放入包装盘内 依同一方向放入

2）包装时，依图所示

3）一个包装盘放置1000个成品

4）COVER不可盖住CARRIER TYPE孔



二：

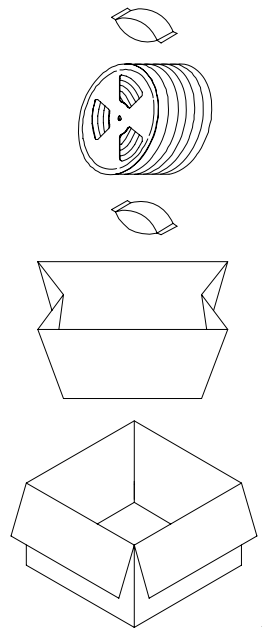
1）一个纸箱可放置10个包装盘。

2）一个纸箱可放10000个成品

3）Reel放入PE袋内

4）干燥剂放入PE袋内，Reel盘上下各一包（5g）

5）若有未装满之零数盘，须在包装盘上贴标签明示。



← 干燥剂 208-00001

← 包装盘 207-00001

← 干燥剂 208-00001

← PE袋 203-00001

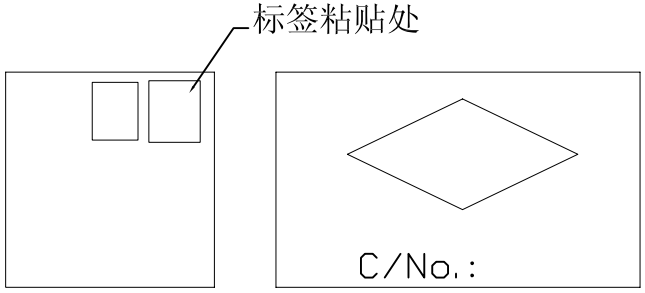
← 纸箱 201-00001-2

外箱尺寸:
长X 宽X 高=342X 305X 351

三：

1）用Tape将纸箱封实。

2）将标签贴在纸箱侧麦上方



备 注 (REMARK)

1)若有未装满之零数箱必须以缓冲材塞满
2)包装盘每盘上贴上小标签
3)在搬运过程中轻拿轻放
4)在运输过程中不可堆放过多,不可有重压现象
5)包装中有Carrier带,该卷以零数卷包装
6)Cover与Carrier Type不可有自动脱离现象
7)卷头至少须留300MM卷尾至少须留200MM以Cover封住.

Packing For T-Flash Push.type		UNIT 单位 mm	DESIGNED 设计 P.king.s
PART_NUMBER: 零件编号	TF-5010-01	SCALE 比例 1:1	CHECKED 核准 Z.Y.Z
DRAWING_NUMBER: 图纸编号	DWG-TF-5010	SHEET 页码 1/1	APPROVED 审批 J.B.X 2006.11.10

TOLERANCE UNSPECIFIED 未指的公差 ±0.05

文件履历表						
No.	Date	Document No.	Prepared	Checked	Approved	Summary
1						

Product specification

Prepared by：Je.Xia

Checked by：Ping.Gan

Approved by：DC.Feng

PRODUCT SPECIFICATION

1. SCOPE

This product specification defines the product performance and the test methods to ascertain the performance of the **TF Memony card push connector.** which is designed and manufactured by

2. REFERENCE DOCUMENTS

MIL-STD-1344A Test method for electrical connector **MIL-STD-202F** Test method for electrical components
EIA364 Test method for electrical components
JIS C 0051 Test method for electrical components
MIL-G-45204C Specification for gold plating
IEC-512-3 IEC standard for current carrying capacity tests
QQ-N-290A Specification for nickel plating
MIL-P-81728A Specification for tin/lead plating
MIL-T-10727B Specification for tin plating
UL498 UL standard for safety of attachment plug and receptacle
EN/ISO5961 Determination of total lead & cadmium content
EN1122 Determination of total lead & cadmium content
EN13346 Determination of heavy metals content
EPA3052 Determination of total lead & cadmium content

3. FEATURE & DIMENSIONS

3.1. PRODUCT DIMENSION

These connectors shall have the dimensions as shown in customer drawing。

3.2. PCB/PANEL LAYOUT

The recommended PCB layout is shown in customer drawing。

3.3. MATERIAL

The harmful material can follow the requirement of RoHS.

3.4. MECHANICAL & ELECTRICAL CHARACTERISTIC

The connector shall have the mechanical and electrical performance as described in table I：

3.5. PACKAGING

Products shall be packaged according to requirements specified in purchase order for safe delivery. Products required tray or carrier tape should meet the proper specification per purchase order. Connector container and the packaging specification is shown in customer drawing。

3.6. MARKING

Manufacturer’s name, industry recognized logo, or customer approved marks。

3.7.TRANSPORTATION

Any vehicle can be adopted for the transportation, but moisture-proof and no mechanical damage.

3.8.STORAGE

Temperature: -25℃~+85℃，Relative humidity: ≤80%，Not to storage in corrosive environments A re-qualification test shall be conducted immediately while the storage duration exceed 6 months.

4. ENVIRONMENTAL

4.1. SOLDERABILITY

Connector's solderability can meet MIL-STD-202F standard. Finish shall be free of contaminants.

4.2. RESISTANCE TO SOLDER HEAT

4.2.1. Wave Soldering

Consists of three consecutive phases.

4.2.1.1. Preheat

Increase in temperature not to exceed **4**℃per second. Final preheat temperature will be within **125**℃of solder temperature..

4.2.1.2. Soldering

Device leads will be exposed to solder wave at **250**℃for a maximum of 5 seconds.

4.2.1.3. Cool Down

Cool down in ambient air at approximately **20**℃**to 25**℃.

4.2.2. INFRARED REFLOW

Three cycles. Each cycle consisting of three consecutive phased.

4.2.2.1. Preheat

Increase in temperature not to exceed 4℃ per second.

4.2.2.2. Soldering

Maximum allowable time above reflow temperature of **183** ℃ is **90** seconds. Maximum temperature in this interval is 250℃, not to exceed 10 seconds.

4.2.2.3. Cool Down

Cool down shall not exceed 6℃ per second. **Note:**（注）Device temperature measurements are referenced from the top-center of the package outer surface.

4.3. CLEANING

Connectors resist to cleaning process. Aqueous Cleaning: Three cycles; each cycle consisting of a maximum of one minute exposure to 54℃ to 66℃ demineralized tap water at a maximum pressure of 30 psi; followed by air drying for 60℃to 90 seconds at 93℃ to 121℃.

5. PERFORMANCE AND TEST DESCRIPTION

5.1. REQUIREMENT

Product is designed to meet electrical, mechanical, and environmental performance requirements specified in **Table I**.

5.2. TEST CONDITION

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

5.3. SAMPLE SELECTION

Test samples shall be selected at random from current production. No test samples shall be reused. Samples are pre-conditioned with 10cycles of durability. Each group shall be containing 5 test samples.

5.4. TEST SEQUENCE

Products qualification test sequence as shown in **Table II.**

6. QUALITY ASSURANCE PROVISIONS

ZUITA is responsible for the quality of the part as it is delivered to customer. Failing lots will be return or other supplier corrective action.

TABLE I: PERFORMANCE REQUIREMENTS

Items	Requirements	Test Methods
1. Confirmation of Product	Product shall be conforming to the requirements of applicable product drawing.	Visually, dimensions and functionally inspected per applicable product drawing.
2. Contact resistance (Low Level)	initial 30 mΩ Max after 100 mΩ Max	Subject mated contacts assembled in housing to closed circuit of 100 mA max. at open circuit voltage of 20 mV max.
3. Insulation resistance	**1000** MΩ Min.	Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. MIL-STD-202, Method 302, Condition B (500 V DC±10%).
4. Dielectric Strength	Connector must withstand test potential of 500 V AC for 1 minute. Current leakage must be 1.0 mA max..	Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. MIL-STD-202, Method 301.
5. Durability (Repeated Mating/Unmating)	Contact Resistance: **100** mΩ Max. And insertion/extraction force must meet the association specification. After testing.	Mate and un-mate connector for 5000 cycle. The insertion force under 35N Max, and the extraction force meet 8N Min, 20N Max 。
6. Temperature rise	30° C Max. 不高于30° C	Carry rated current load.0.3A per contact.
7.Vibration Sinusoidal Low Frequency	No electrical discontinuity greater then 1 μ sec (s) shall occur. Contact resistance:**100** mΩ max.	Subject mated connector to 10-55-10 Hz traversed in 1 minute at 1.5 mm amplitude 2 hours each of 3 mutually perpendicular plane, 10 mA applied MIL-STD-202, Method 201.
8. Shock	No electrical discontinuity greater than 1 μ sec. shall occur. No damage to product.	Applying an appropriate holder is allowed in vibration test and shock test. MIL-STD-202, Method 213,490m/s$_2$, 3 axes.
Items	**Requirements**	**Test Methods**

9. Thermal shock	No damage, Contact Resistance (Low Level) (Final) **100** mΩ max.	Temperature range from -55°C to +85°C .Start from -55°C. After 30 min. change to +85°C, change time is no more than 30 seconds. Total 5 cycles. MIL-STD-202, Method 107D,condition A.
10. Humidity	No damage, Contact Resistance (Low Level) (Final) **100** mΩ max.. Dielectric Strength should be OK, Insulation Resistance should be 100 MΩ min.	Temperature :40±2° C 96 hours. Relative humidity: 90-95%; Duration: 96 Hours. MIL-STD-202, Method 103,
11.Solderability	Appearance of the specimen shall be inspected after the test with the assistance of a magnifier capable of giving a magnification of 10 X for any damage such as pinholes, void or rough surface.	Soldering time: 3 to 5 Seconds Temperature: 250±5°C.
12.Resistance to soldering heat	No damage	Leave subject product in the 255±5°C chamber for 2 minutes.
13. Salt Spray	Contact Resistance (Low Level) (Final) **100** mΩ max.	5±1% salt concentration 12±4 hours 35± 2°C MIL-STD-202, Method 101 Condition B.。
14.High temperature	Contact resistance: **100** mΩ max.	Subject product to 85±2°C for 96 hours continuously. MIL-STD-202, Method 108.

TABLE II: PRODUCT QUALIFICATION TEST SEQUENCE

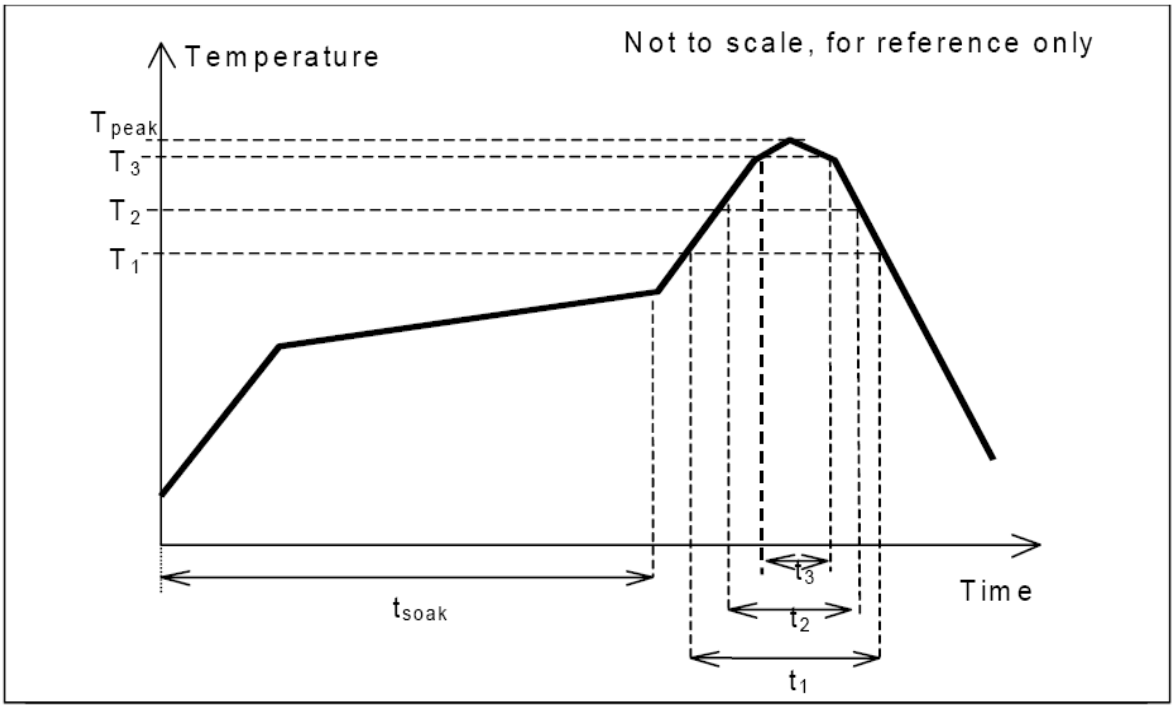
Test Description	Test Group					
	A	B	C	D	E	F
Appearance	1,6	1,3	1,5	1,6	1,5	1,3
Contact Resistance	2		2,4	2,5	2,4	
Insulation Resistance	3			3		
Dielectric Withstanding Voltage		2				
Durability			3			
Mating Force	4					
Un mating Force	5					
Humidity Resistance				4		
Salt Spray					3	
Solderability						2

TABLE III:

REFLOW SOLDERING PROFILE

Pb-free reflow profile requirements:

Parameter	Reference	Specification
Average temperature gradient in preheating		2.5°C/s
Soak time	tsoak	2-3 minutes
Time above 217°C	t1	60 s
Time above 230°C	t2	50 s
Time above 250°C	t3	5 s
Peak temperature in reflow	Tpeak	245°C (+/-5°C)
Temperature gradient in cooling		Max -5°C/s



This profile is the minimum requirement for evaluating soldering heat resistance of components. Heat transfer method used for reflow soldering is hot air convection. The actual air temperatures used to achieve the specified profile is higher and largely dependent on the reflow equipment.

Test Report

SHENZHEN BAO SHIDA PLASTIC PRODUCTS CO.,LTD.
SONGGANG TOWN,BAO`AN DISTRICT,SHENZHEN,SHA PO CHUNG YANG ROAD,INDUSTRIAL AREA,SIX FIRST FLOOR OF NO.4,CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :
LCP E473i BK/NC

SGS Job No.	:	12359084 - SZ
Date of Sample Received	:	21 Feb 2010
Testing Period	:	21 Feb 2010 - 26 Feb 2010
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).
Conclusion	:	A:Based on the performed tests on submitted sample(s), the results **comply with** the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of
SGS-CSTC Ltd.

Manson Yang
Sr. Engineer

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Test Results:

ID for specimen 1 : CAN10-005457.001
Description for specimen 1 : Black plastic grains

A:RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321:2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated

B:PFOS (Perfluorooctane sulfonates)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Perfluorooctane sulfonates (PFOS) PFOS Acid PFOS Metal Salt PFOS Amide	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10

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

For reference: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC):
(1) 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) 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 1µg /m² of the coated material.

C:Halogen

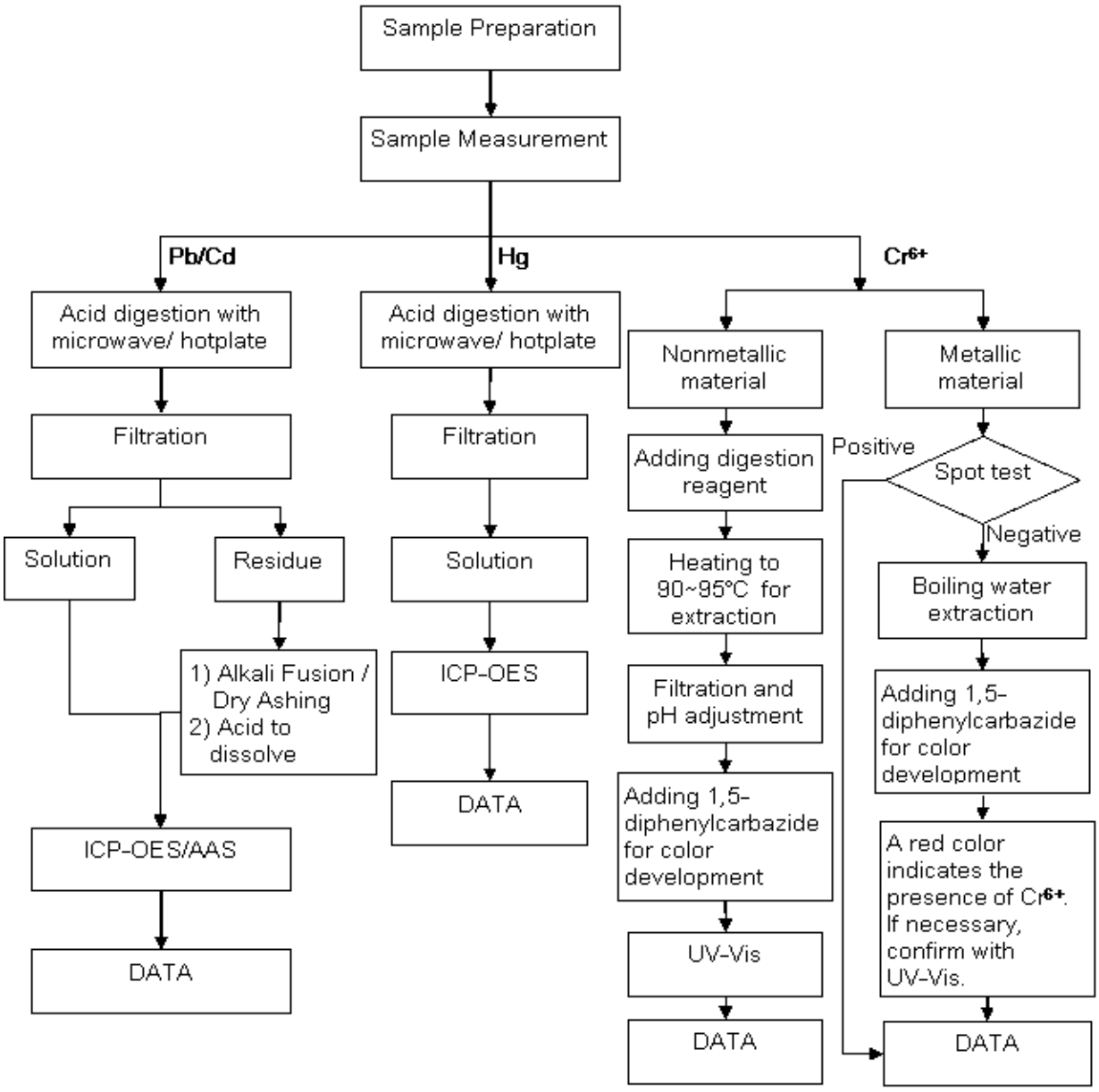
Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Fluorine (F)	mg/kg	BS EN 14582:2007, IC	723	50
Chlorine (Cl)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	185	50
Iodine (I)	mg/kg	BS EN 14582:2007, IC	N.D.	50

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

ATTACHMENTS

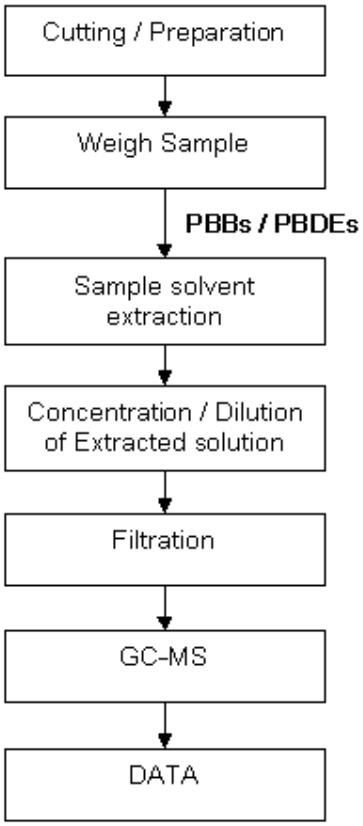
Testing Flow Chart

1) Name of the person who made measurement: Bella Wang
2) Name of the person in charge of measurement: Adams Yu



Testing Flow Chart

1) Name of the person who made measurement: Tina Zhao
2) Name of the person in charge of measurement: Ryan Yang



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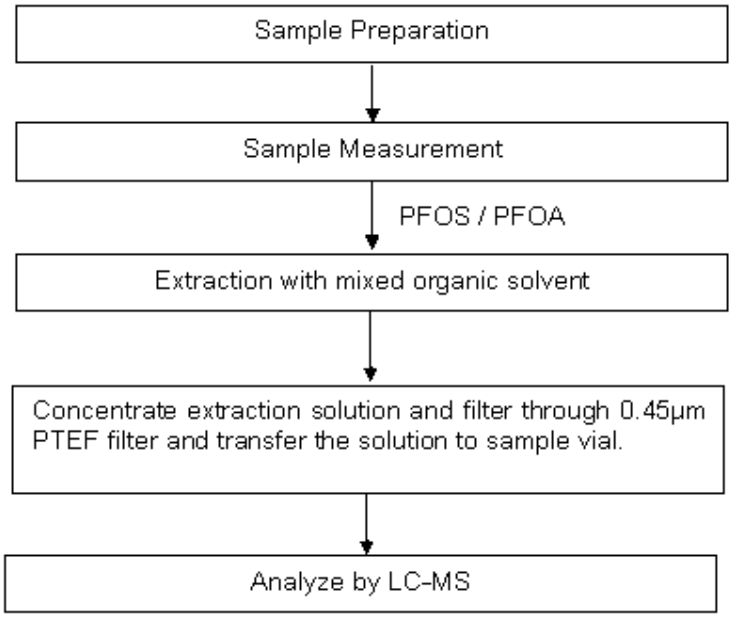
ATTACHMENTS

Testing Flow Chart

1) Name of the person who made measurement: Cindy Huang
2) Name of the person in charge of measurement: Ryan Yang



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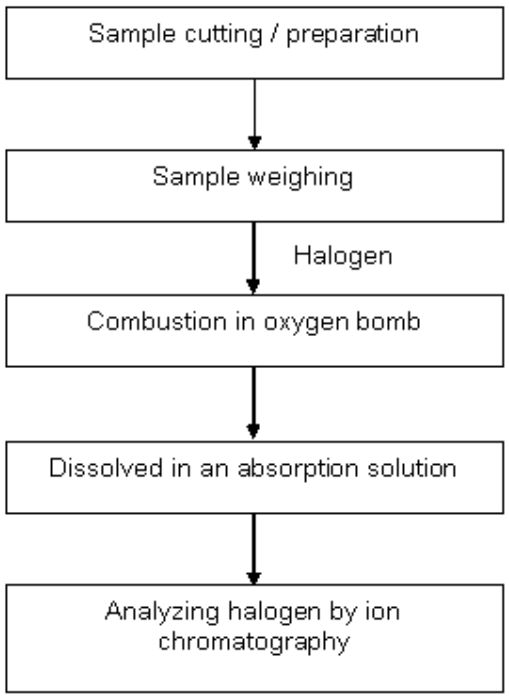
ATTACHMENTS

Testing Flow Chart

1) Name of the person who made measurement: Sawen, Chen
2) Name of the person in charge of measurement: Michael Tso



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Sample photo:

CAN10-005457.001

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*** End of Report ***

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SGS

Test Report

No. CANEC1000035101 Date: 08 Jan 2010 Page 1 of 3

DONGGUAN HUAYING METALS CO. TD
NO.104 GUANCHANG ROAD CHANG N TOWN DONGGUAN CITY CHINA

The following sample(s) was/were sub tted and identified on behalf of the clients as : stainless stee

SGS Job No.	:	12 0494 - SZ
Buyer	:	SG Y
Tested sample information	:	St 304
Date of Sample Received	:	08 n 2010
Testing Period	:	08 n 2010 - 08 Jan 2010
Test Requested	:	Sr ted test(s) as requested by client.
Test Method	:	Pl se refer to next page(s).
Test Results	:	Pl se refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Manson Yang
Sr. Engineer

SGS

Test Report

No. CANEC1000035101 Date: 08 Jan 2010 Page 2 of 3

Test Results

ID for specimen 1 : VN10-000351.001
Description for specimen 1 : ver-grey metal sheet

SS - 00259

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321:2008, UV-Vis	Negative	-

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. - = Spot-Test:
Negative = Absence of CrVI coatir Positive = Presence of CrVI coating;
(The tested sample should be furt verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed
Boiling-water-extraction:
Negative = Absence of CrVI coatin
Positive = Presence of CrVI coatin the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg v 50 cm² sample surface area.
Storage conditions and production ite of the tested sample are unc.ellable and thus results of Cr(VI) represent status of the sample at the ti of testing.
5. "-" = Not regulated

SGS

Test Report No. CANEC1000035101 Date: 08 Jan 2010 Page 3 of 3

Sample photo:

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*** End of Report ***

MATERIAL CERTIFICATE

No.	201000125				Clientile		Huaving	Issue Date	20100125	Certificate No
Tipe	304				Order No		84576182	By Standand	JIS	
Item	Coil No.	Thickness (MM)	Width (MM)	Length (MM)	Quantity	Weight (KG)	Surface Finish			
1	C2010000125	0.2	C	C	C		OK			
2										
3										
5										
6										

Spec	Chemical Anglysi Wtx (%)									Spec	Hardness	Yielddstress (N/mm²)	Tesile Stress (N/mm²)	Elongftion (%)	BendTest
	C	Si	Mn	P	S	Ni	Cr	N	Mo						
Item	0.08 MAX	1.00 MAX	2.00 MAX	0.045 MAX	0.03 MAX	8.00 10.00	18.00 20.00			Specimen	HV	min	min	min	min
1	0.05	0.60	1.8	0.031	0.02	8.00	18.00			84566178	1/2H				OK
2															
3															
4															
5															
6															

The results shown in this Test Report refer only to the sample(s) tested unless otherwise stated.

Test Report

No. CANEC0905875601 Date: 05 Dec 2009 Page 1 of 6

SHENZHEN MINGSCHIN INDUSTRIAL MATERIAL CO.,LTD
MINGSCHIN INDUSTRIAL PARK , HE YI CUN , NAN HUAN ROAD , SHAJING TOWN , BAO'AN DISTRICT,SHENZHEN, GUANGDONG
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :
PHOSPHOR BRONZE C5210

SGS Job No.	:	12269068 - SZ
Supplier	:	SHENZHEN MINGSCHIN INDUSTRIAL MATERIAL CO.,LTD
Date of Sample Received	:	02 Dec 2009
Testing Period	:	02 Dec 2009 - 04 Dec 2009
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).
Conclusion	:	Based on the performed tests on submitted sample(s), the results **comply with** the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of
SGS-CSTC Ltd.

Manson Yang
Sr. Engineer

198 Kezhu Road, Scientech Park Guangzhou Economic & Technology Development District Guangzhou, China 510663 t (86-20)82155555 f (86-20)82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20)82155555 f (86-20)82075113 e sgs.china@sgs.com

Test Results:

ID for specimen 1 : CAN09-058756.001

Description for specimen 1 : Copper-colored metal sheet

RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321:2008, UV-Vis	Negative	◇	#
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Services Technical Laboratory
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Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot-Test:
   Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
   (The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed.)
   Boiling-water-extraction:
   Negative = Absence of CrVI coating
   Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.
   Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
5. # = Positive indicates the presence of CrVI on the tested areas.
   Negative indicates the absence of CrVI on the tested areas.
6. "- " = Not regulated

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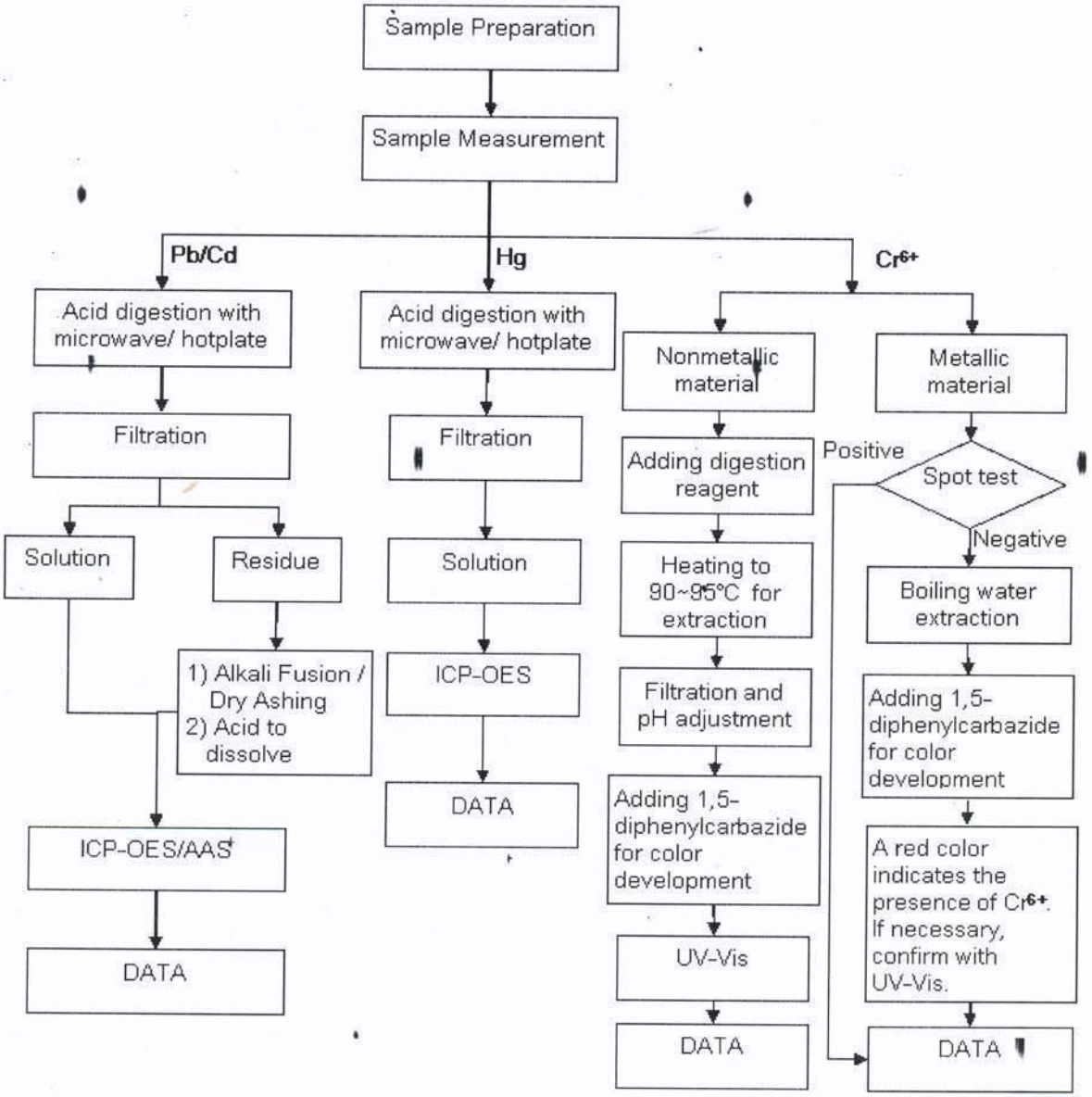
Member of the SGS Group (SGS SA)

ATTACHMENTS

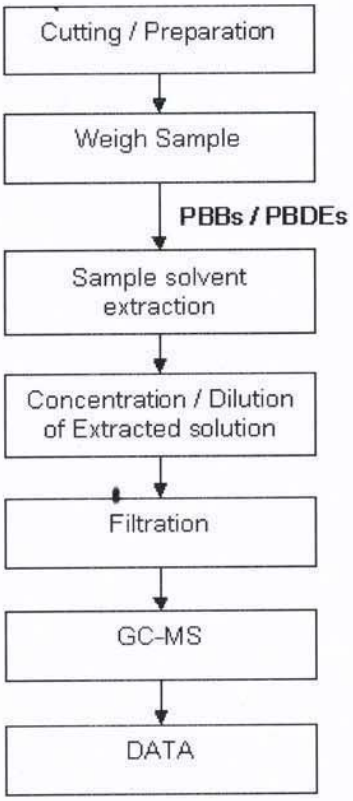
Testing Flow Chart

1) Name of the person who made measurement: Bella Wang
2) Name of the person in charge of measurement: Adams Yu



Testing Flow Chart

1) Name of the person who made measurement: Tina Zhao
2) Name of the person in charge of measurement: Ryan Yang



Sample photo:

CAN09-058756.001

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Member of the SGS Group (SGS SA)

Test Report

Report No.:GZR10012613231303

Applicant :ZHANXIANG METAL SPRING FACTORY
Address :CONGTOU INDUSTRIAL ZONE, CHANGAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

Report on the submitted sample(s) said to be:

Sample Name	:SPRING(发黑)
Sample Description	:Black metal
Part No.	:TF/SD/SIM SPRING
Material	:SWP
Supplier	:ZHANXIANG METAL SPRING FACTORY
Manufacturer	:ZHANXIANG METAL SPRING FACTORY
Sample Received Date	:Jan. 26, 2010
Testing Period	:Jan. 26, 2010 to Jan. 29, 2010

Test Requested :1.As specified by client, to determine the Lead(Pb), Cadmium (Cd) and Mercury(Hg) content in the submitted sample;
2. As specified by client, to identify if there is the Hexavalent Chromium (Cr(VI)) in the submitted sample.

Test Method:

Tested Item(s)	Test Method	Measured Equipment(s)	MDL
Lead (Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Cadmium (Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2 mg/kg
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/

Test Result(s) **:Please refer to the following page(s)**

Tested by _____ Inspected by Wang Wenjun

Approved by _____ Date Jan. 29, 2010

Technical Manager

Test Report

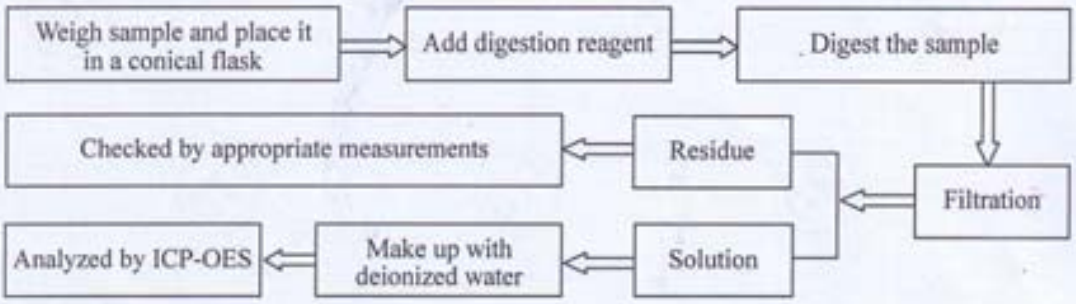
Test Result(s):

Tested Item(s)	Content/Conclusion
Lead (Pb)	N.D.
Cadmium (Cd)	N.D.
Mercury (Hg)	N.D.
Hexavalent Chromium (Cr(VI))	Negative

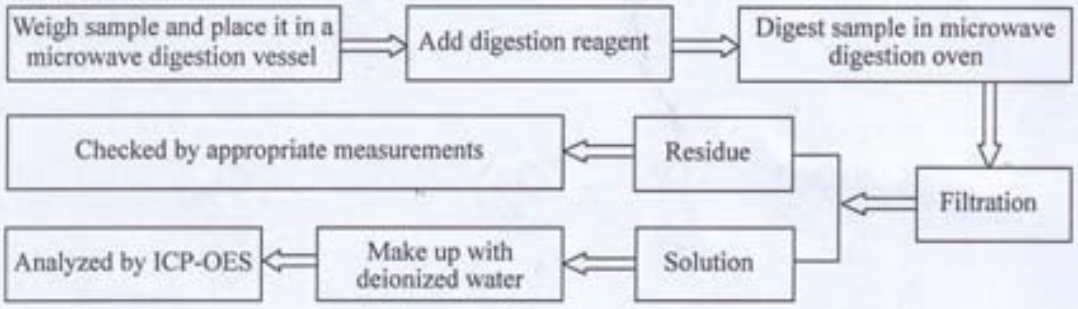
Note : -MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million
-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling–water-extraction solution is less than 0.02 mg/kg with 50cm^2 sample surface area used.

Test Process :

1.Lead(Pb), Cadmium(Cd)

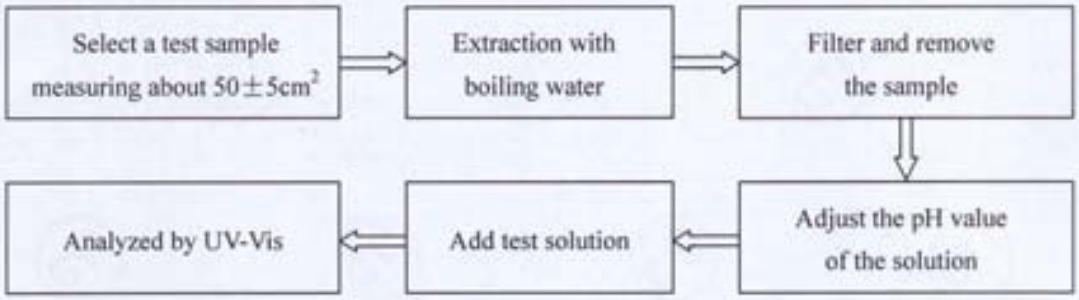


2.Mercury(Hg)



Test Report

3.Hexavalent Chromium(Cr(Ⅵ))



Photo(s) of the sample(s)

*** End of report ***

3/F., Building 3, No.2 Fengye Road, Ronggui, Shunde, Foshan, Guangdong, P.R.C.

CTI

Test Report

Report No.:GZR10012613231302

Applicant :ZHANXIANG METAL SPRING FACTORY
Address :CONGTOU INDUSTRIAL ZONE, CHANGAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

Report on the submitted sample(s) said to be:

Sample Name	:LINK(拉杆)
Sample Description	:Silver color metal
Part No.	:CARD LINK
Material	:SUS
Supplier	:ZHANXIANG METAL SPRING FACTORY
Manufacturer	:ZHANXIANG METAL SPRING FACTORY
Sample Received Date	:Jan. 26, 2010
Testing Period	:Jan. 26, 2010 to Jan. 29, 2010

Test Requested :1.As specified by client, to determine the Lead(Pb), Cadmium (Cd) and Mercury(Hg) content in the submitted sample;
2. As specified by client, to identify if there is the Hexavalent Chromium (Cr(VI)) in the submitted sample.

Test Method:

Tested Item(s)	Test Method	Measured Equipment(s)	MDL
Lead (Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Cadmium (Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2 mg/kg
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/

Test Result(s) **:Please refer to the following page(s)**

Tested by _____ Inspected by Wang Weijun

Approved by _____ Date Jan. 29, 2010

Technical Manager

CENTRE TESTING INTERNATIONAL CTI

Test Report

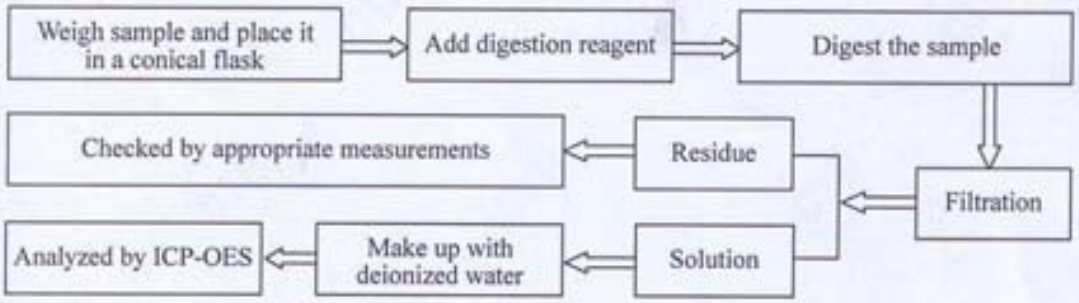
Test Result(s):

Tested Item(s)	Content/Conclusion
Lead (Pb)	15mg/kg
Cadmium (Cd)	N.D.
Mercury (Hg)	N.D.
Hexavalent Chromium (Cr(VI))	Negative

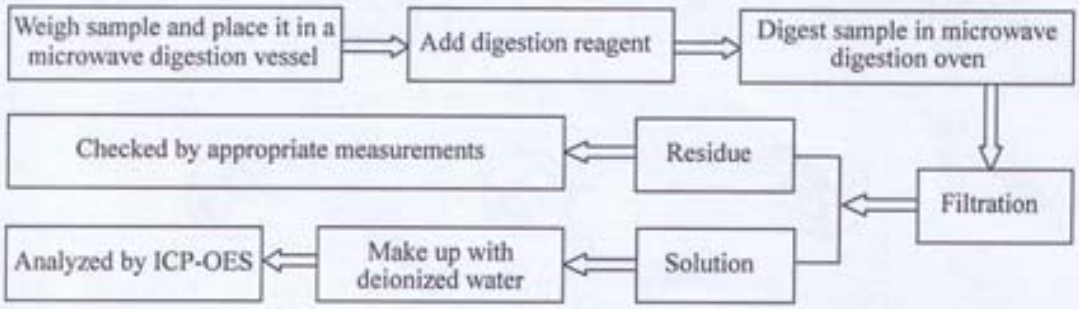
Note : -MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million
-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling–water-extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

Test Process :

1.Lead(Pb), Cadmium(Cd)

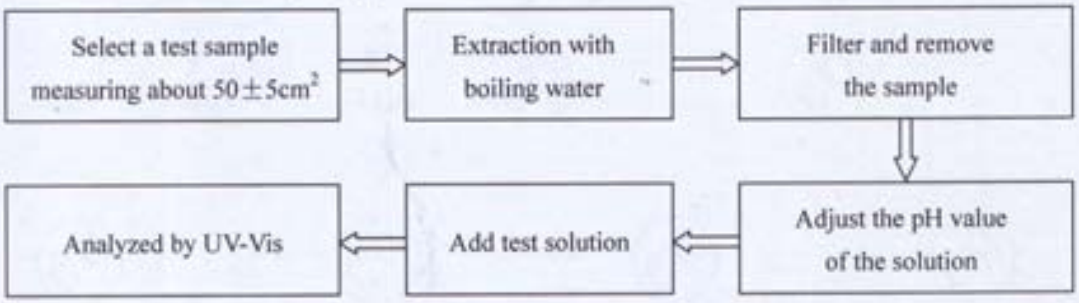


2.Mercury(Hg)



Test Report

3.Hexavalent Chromium(Cr(VI))



Photo(s) of the sample(s)

*** End of report ***

Test Report

Report No.:GZR10012613231301

Applicant :ZHANXIANG METAL SPRING FACTORY
Address :CONGTOU INDUSTRIAL ZONE, CHANGAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

Report on the submitted sample(s) said to be:

Sample Name	:SPRING(电镀)
Sample Description	:Silver color metal
Part No.	:TF/SD/SIM SPRING
Material	:SWP
Supplier	:ZHANXIANG METAL SPRING FACTORY
Manufacturer	:ZHANXIANG METAL SPRING FACTORY
Sample Received Date	:Jan. 26, 2010
Testing Period	:Jan. 26, 2010 to Jan. 29, 2010

Test Requested :1.As specified by client, to determine the Lead(Pb), Cadmium (Cd) and Mercury(Hg) content in the submitted sample;
2. As specified by client, to identify if there is the Hexavalent Chromium (Cr(VI)) in the submitted sample.

Test Method:

Tested Item(s)	Test Method	Measured Equipment(s)	MDL
Lead (Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Cadmium (Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2 mg/kg
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/

Test Result(s) **:Please refer to the following page(s)**

Tested by _____ Inspected by Wang Weijun

Approved by _____ Date Jan. 29, 2010

Technical Manager

Test Report

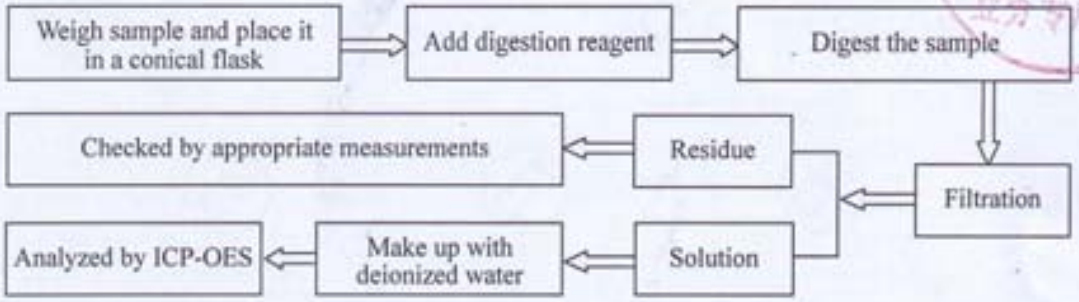
Test Result(s):

Tested Item(s)	Content/Conclusion
Lead (Pb)	N.D.
Cadmium (Cd)	N.D.
Mercury (Hg)	N.D.
Hexavalent Chromium (Cr(VI))	Negative

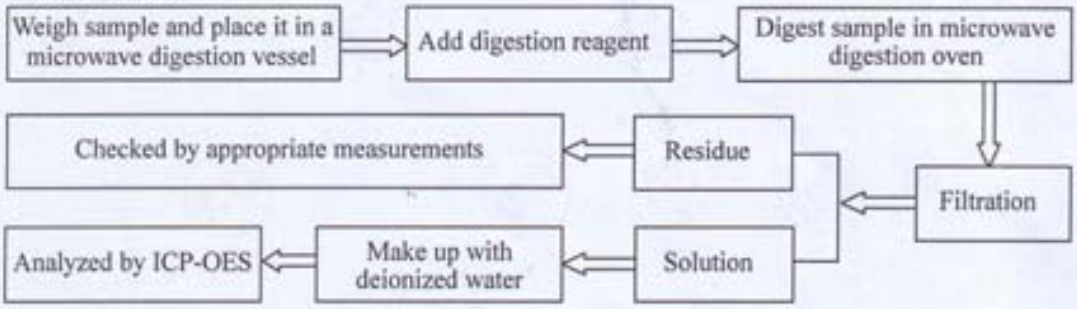
Note : -MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million
-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling-water-extraction solution is less than 0.02 mg/kg with 50cm^2 sample surface area used.

Test Process :

1.Lead(Pb), Cadmium(Cd)

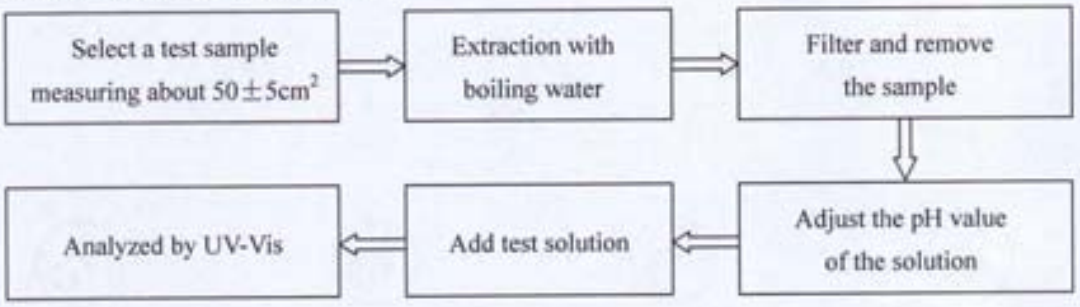


2.Mercury(Hg)



Test Report

3.Hexavalent Chromium(Cr(VI))



Photo(s) of the sample(s)

*** End of report ***