浙江创都电子科技有限公司

ZHE JIANG CHUANG DU ELECTRONICS CO.,LTD

APPROVAL SHEET

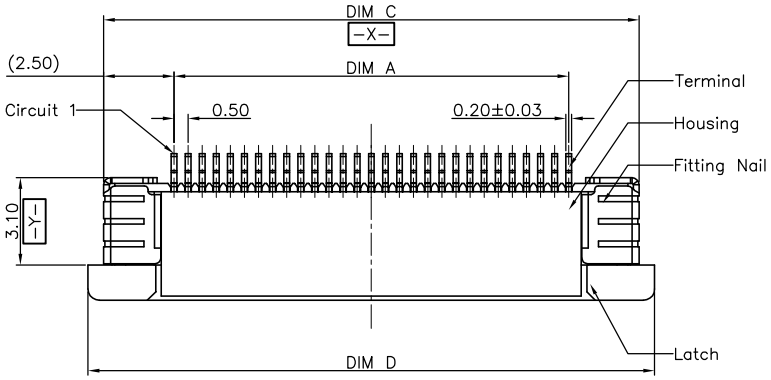
CUSTOMER:

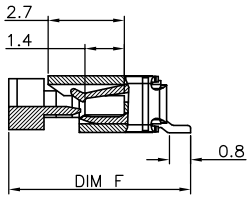
CUSTOMER P/N: (小批可用管装）(批货推荐卷装)

PART NAME: 0.5mmPitch H=2.0mm SMT 拉拔三代上接

PART NO.: CAX-AFC07-06SCB-H2.0

MANUFACTURE SIGNATURE			CUSTOMER SIGNATURE
SALES REP.	R&D DEPT.	QA DEPT	
DAET:	DAET:	DAET:	DAET:



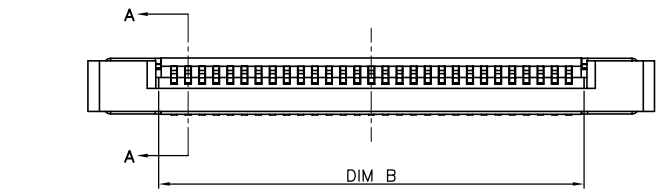


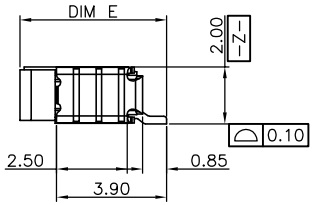
SECTION A–A
SCALE 1:1

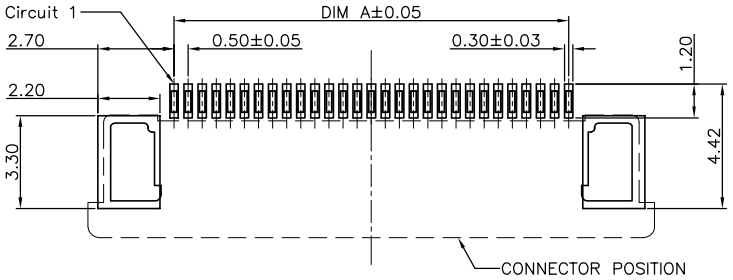
Note:
1. Material:
 1.1 Housing: thermoplastic high temp.UL94V–0; Color: natural.
 1.2 Latch: thermoplastic high temp.UL94V–0; Color: black.
 1.3 Terminal: copper alloy.
 1.4 Fitting Nail: copper alloy.
2. Finsh:
 2.1 Terminal:
  Underplating: Au/matt Tin overall.
 2.2 Fitting Nail:
  Underplating: matt Tin overall.
3. Product must comply HF RoHS specification.
4. Product No:

AFC07–S ** E * A – 00
- ** : CKTS
- E : CONTACTS TYPE (E:Upper, F:Lower)
- * : PLATING (1:Gold flash 1u", 2:Gold flash 2u", 3:Gold flash 3u", B:Bright–Tin 90–120u", C:Matt–Tin 90–120u")
- A : PACKING (A:Tape&Reel, C:Tube)
- 00 : REMARKS (HF:Halogen free)

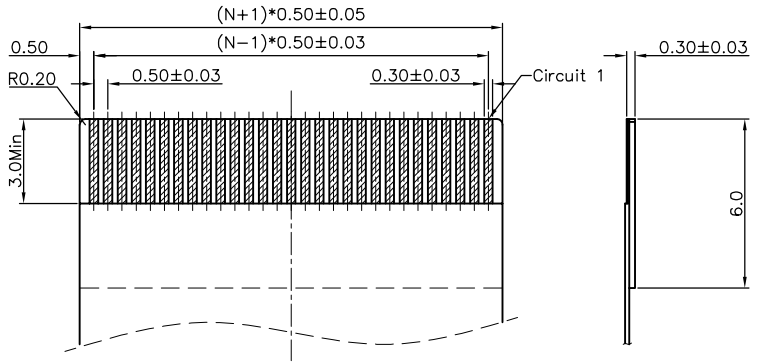
CKTS	DIM A	DIM B	DIM C	DIM D	DIM E	DIM F
4	1.50	2.60	6.50	7.60		
5	2.00	3.10	7.00	8.10		
6	2.50	3.60	7.50	8.60		
7	3.00	4.10	8.00	9.10		
8	3.50	4.60	8.50	9.60		
9	4.00	5.10	9.00	10.10		
10	4.50	5.60	9.50	10.60		
11	5.00	6.10	10.00	11.10		
12	5.50	6.60	10.50	11.60		
13	6.00	7.10	11.00	12.10		
14	6.50	7.60	11.50	12.60		
15	7.00	8.10	12.00	13.10		
16	7.50	8.60	12.50	13.60		
17	8.00	9.10	13.00	14.10		
18	8.50	9.60	13.50	14.60		
19	9.00	10.10	14.00	15.10	5.20	6.45
20	9.50	10.60	14.50	15.60		
21	10.00	11.10	15.00	16.10		
22	10.50	11.60	15.50	16.60		
23	11.00	12.10	16.00	17.10		
24	11.50	12.60	16.50	17.60		
25	12.00	13.10	17.00	18.10		
26	12.50	13.60	17.50	18.60		
27	13.00	14.10	18.00	19.10		
28	13.50	14.60	18.50	19.60		
29	14.00	15.10	19.00	20.10		
30	14.50	15.60	19.50	20.60		
31	15.00	16.10	20.00	21.10		
32	15.50	16.60	20.50	21.60		
33	16.00	17.10	21.00	22.10		
34	16.50	17.60	21.50	22.60		
35	17.00	18.10	22.00	23.10		
36	17.50	18.60	22.50	23.60		
37	18.00	19.10	23.00	24.10		
38	18.50	19.60	23.50	24.60		
39	19.00	20.10	24.00	25.10		
40	19.50	20.60	24.50	25.60		
41	20.00	21.10	25.00	26.10		
42	20.50	21.60	25.50	26.60		
43	21.00	22.10	26.00	27.10		
44	21.50	22.60	26.50	27.60		
45	22.00	23.10	27.00	28.10		
46	22.50	23.60	27.50	28.60		
47	23.00	24.10	28.00	29.10	5.75	7.00
48	23.50	24.60	28.50	29.60		
49	24.00	25.10	29.00	30.10		
50	24.50	25.60	29.50	30.60		
51	25.00	26.10	30.00	31.10		
52	25.50	26.60	30.50	31.60		
53	26.00	27.10	31.00	32.10		
54	26.50	27.60	31.50	32.60		
55	27.00	28.10	32.00	33.10		
56	27.50	28.60	32.50	33.60		
57	28.00	29.10	33.00	34.10		
58	28.50	29.60	33.50	34.60		
59	29.00	30.10	34.00	35.10		
60	29.50	30.60	34.50	35.60		







RECOMMENDED P.C.B PATTERN LAYOUT



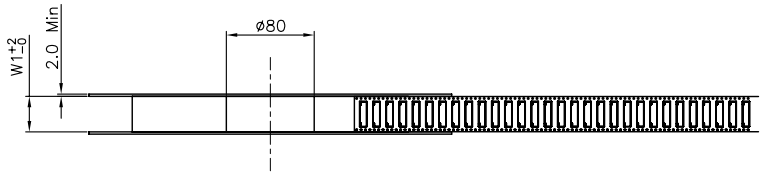
RECOMMENDED FPC/FFC DIMENSION

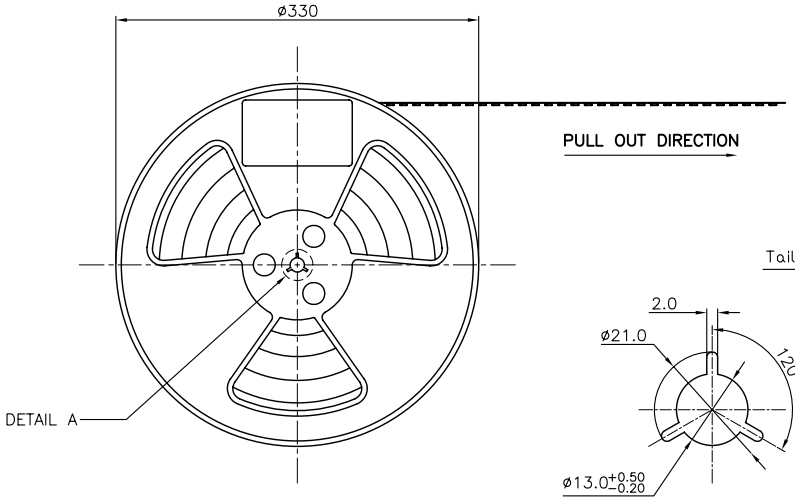
Rev 版本	Change Description 变更内容	Date 日期	Revisor 制/修订人
A	初版发行	2011/09/16	

CUSTOMER DRAWING

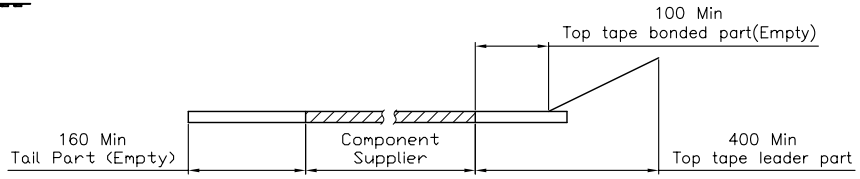
浙江创都电子科技有限公司
ZHE JIANG CHUANG DU ELECTRONICS CO.,LTD

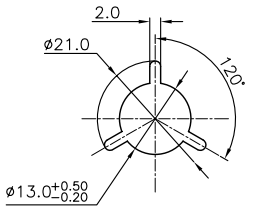
Tolerance Unspecified (未注公差) 0.0 ±0.15 0°. ±5° 0.00 ±0.10 0°.0 ±3° 0.000 ±0.05 0°.00 ±1°	Size(图幅): A4
Project View (投影视角)	Unit(单位): MM
	Scale(比例): 1:1
	Page(页数): 1 OF 1
	Rev(版本): A
Product Name(产品名称): 0.5Pitch H=2.0 FPC ZIF R/A Upper Type3 SMT CONN	
Product No(产品料号): CAX-AFC07-06SCB-H2.0	
Designer(设计):	Checked(审核): Approved(核准):



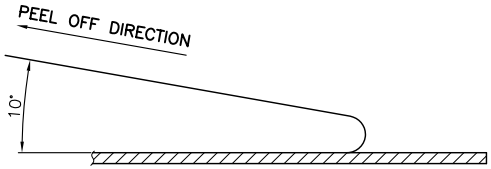


NOTES:
1. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE.±0.20mm
2. CARRIER CAMBER NOT TO EXCEED 1mm IN 250mm.
3. ALL DIMENSIONS MEET EIA-481-C REQUIREMENTS.
4. MATERIAL: BLACK ANTI-STATIC POLYSTYRENE.
5. THICKNESS: 0.35 ± 0.05 mm.
6. PACKING LENGTH PER 13" REEL : 24.60METERS.
7. COMPONENT LOAD PER 13" REEL : 2000PCS.
8. PEELING OFF FORCE OF TOP TAPE 0.1N~0.7N(10.2gf~100gf).

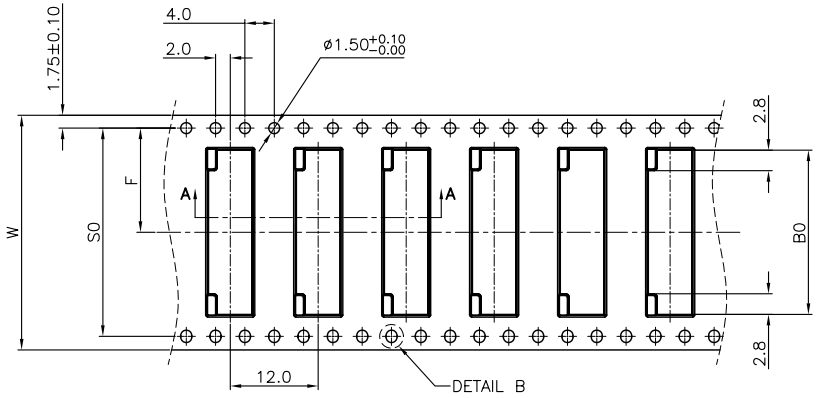


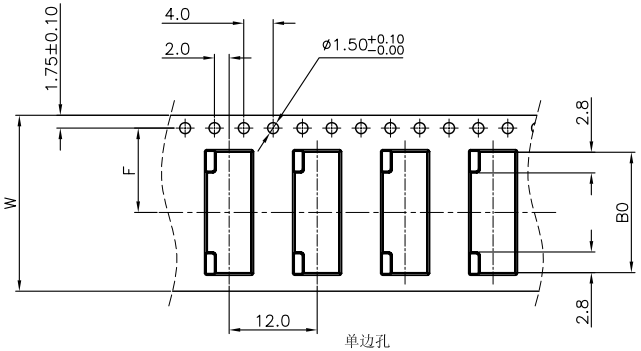


DETAIL A

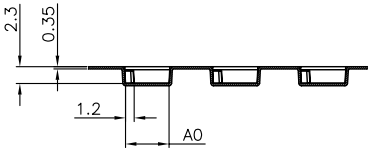


PULL OUT DIRECTION

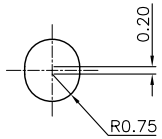




单边孔



SECTION A-A
SCALE 1:1



DETAIL B
SCALE 5:1

CKTS	B0±0.10	A0±0.10	W	W1	F	S0±0.10
4	7.90	5.95	16+0.3/-0	16.4	7.5±0.10	单边孔
5	8.40					
6	8.90					
7	9.40					
8	9.90					
9	10.40		24+0.3/-0	24.4	11.5±0.10	
10	10.90					
11	11.40					
12	11.90					
13	12.40					
14	12.90					
15	13.40					
16	13.90					
17	14.40					
18	14.90					
19	15.40					
20	15.90					
21	16.40					
22	16.90		32±0.30	32.4	14.2±0.10	28.4
23	17.40					
24	17.90					
25	18.40					
26	18.90					
27	19.40					
28	19.90					
29	20.40					
30	20.90					
31	21.40					
32	21.90					
33	22.40					
34	22.90					
35	23.40	6.50	44±0.30	44.4	20.2±0.15	40.4
36	23.90					
37	24.40					
38	24.90					
39	25.40					
40	25.90					
41	26.40					
42	26.90					
43	27.40					
44	27.90					
45	28.40					
46	28.90					
47	29.40					
48	29.90					
49	30.40					
50	30.90					
51	31.40					
52	31.90					
53	32.40					
54	32.90					
55	33.40					
56	33.90					
57	34.40					
58	34.90		56±0.30	56.4	26.2±0.15	52.4
59	35.40					
60	35.90					

Rev 版本	Change Description 变更内容	Date 日期	Revisor 制/修订人
1.0	初版发行	2011/05/05	

CLASSIFICATION DIMENSION(尺寸类别):
FAI(首次检验): ⑪ To ⑬
"■"MARK IS MAJOR DIM(重点尺寸标示)
"◇"MARK IS CRITICAL DIM(Cpk&Cp标示)

Tolerance Unspecified (未注公差)
0.0 ±0.10 0°. ±3°
0.00 ±0.05 0°.0 ±2°
0.000 ±0.02 0°.00 ±1°

Project View (投影视角)

Size(图幅): A4
Unit(单位): MM
Scale(比例): 1 : 1
Page(页数): 1 OF 1
Rev(版本): 1.0

浙江创都电子科技有限公司
ZHE JIANG CHUANG DU ELECTRONICS CO.,LTD

Product Name(产品名称): 0.5Pitch H=2.0 FPC 拉拔卧式SMT型3代.载带

Product No(产品料号): EB-595XXX230-00

Drawing No(图面编号): DNE00013-1

Date(日期): 2011/05/05

Designer(设计):

Checked(审核):

Approved(核准):

浙江创都电子科技有限公司

ZHE JIANG CHUANG DU ELECTRONICS CO.,LTD

REV. A

产 品 规 格 书

PRODUCT SPECIFICATION

【1】适用范围 SCOPE

本规格书适用于0.5mmPitch FPC 拉拔卧式SMT型连结器系列.

This specification covers the 0.5mmPitch FPC ZIF R/A SMT Type Connectors series.

【2】外观尺寸 CONNECTOR DIMENSIONS

请参照图面

See attached drawings.

【3】材质 MATERIAL

绝缘胶体 Housing: LCP

颜色 Color:白色 White

耐燃等级(UL94V-0)Flammability Rating(UL94V-0).

后盖 Actuator: PA6T

颜色 Color:黑色 Black

耐燃等级(UL94V-0)Flammability Rating(UL94V-0).

端子 Terminal: 磷青铜 Phosphor Bronze.

焊片 Fitting Nail:黄铜 Brass.

【4】建议 P.C.B LAYOUT 图 ACCOMMODATED P.C.B LAYOUT

请参照图面

See attached drawings.

【5】等级 RATING

项 目 ITEM	规 格 SPECIFICATIONS
最大容许电压 Operating Voltage(Max.)	50V AC
最大容许电流 Current Rating(Max.)	0.4A DC
使用温度范围 Operating Temperature range	-25°C～+85°C
使用湿度范围 Operating humidity range	相对湿度90%以下 Relative humidity 90% max.
保存温度范围 Storage temperature range	-10°C ～ +50°C
保存湿度范围 Storage humidity range	相对湿度90%以下 Relative humidity 90% max.

*:包含电流通过所产生的上升温度 Including terminal temperature rise.

【6】性能 PERFORMANCE

6.1 电气特性 ELECTRICAL PERFORMANCE

项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT
接触阻抗 Contact Resistance	将样品与适合之FPC连接，测试电压20mV，限电流10mA下进行阻抗测试。(EIA-364-23) Mate applicable FPC and measure by dry circuit, 20mV Max, 10mA. (EIA-364-23)	40 mΩ最大. 40 mΩ Max.
绝缘阻抗 Insulation Resistance	将样品与适合之FPC连接，提供相邻端子间测试电压500V DC进行绝缘阻抗测试(EIA-364-21) Mate applicable FPC and apply 500V DC between adjacent terminal or ground. (EIA-364-21)	500MΩ最小. 500 MΩ Min.
耐电压 Dielectric Strength	将样品与适合之FPC连接，相邻端子间需可承受250V AC(rms) 1分钟。(EIA-364-20) Mate applicable FPC, apply 250V AC(rms) for1 minute between adjacent terminal or ground.(EIA-364-20)	目视外观无任何损坏异状 No Breakdown

6.2 机械特性 MECHANICAL PERFORMANCE

项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT
FPC保持力 FPC Retention Force	将盖子盖上，与FPC连接，以操作速度每分钟位移25±3mm进行FPC保持力测试。 Insert the actuator, pull the FPC at a rate of 25±3mm per minute.	Pos.x 0.3N最小 Pos.x 0.3N Min.
端子保持力 Terminal Retention Force	端子与Housing组装后，以操作速度每分钟位移25±3mm将端子拔出Housing，进行端子保持力测试。 Apply axial pull out force at the rate of 25±3 mm/minute on the terminal assembled in the housing.	3N最小. 3N Min.

项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT
焊片保持力 Fitting Nail Retention Force	焊片与Housing组装后，以操作速度每分钟位移25±3mm将焊片拔出Housing，进行焊片保持力测试。 Apply axial pull out force at the rate of 25±3 mm/minute on the Fitting Nail assembled in the housing.	1N最小. 1N Min

6.3 环境特性及其它性能 ENVIRONMENTAL PERFORMANCE AND OTHERS

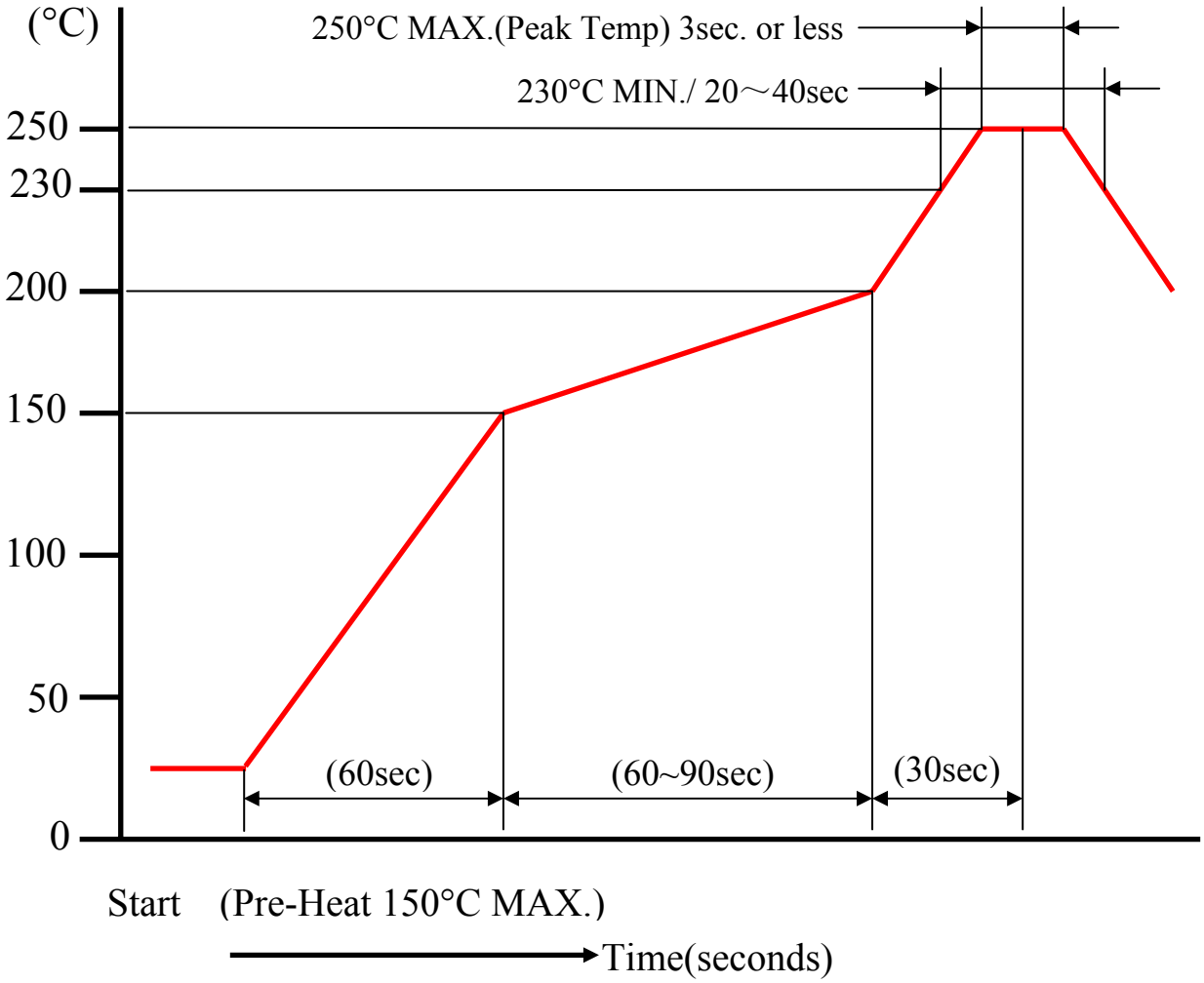
项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT	
耐久性 Durability	将盖子与FPC反复连接，以每分钟小于10 cycles连续操作20次。 Insert and withdraw actuator up to 20 cycles at the speed rate of less than 10 cycles/minute.	接触阻抗 Contact Resistance	60mΩ最大. 60mΩ Max.
温度上升 Temperature Rise	量测通过FPC最大容许电流时，样品接触点之温升 (EIA-364-70 METHOD 2) Mate applicable FPC and measure the temperature rise of contact when the maximum AC rated current is passed. (EIA-364-70 METHOD 2)	温升 Temperature rise	30°C最大. 30°C Max.
耐振性 Vibration	通过DC电流1mA，位移相对距离1.5mm，振动周期10～55～10 Hz在1分钟内，持续2小时，方向在X,Y,Z轴做测试。(EIA-364-28 Condition I) Mate connectors and subject to the following vibration conditions, for period of 2 hours in each of 3 mutually perpendicular axes, passing DC 1mA during the test. Amplitude : 1.5mm P-P Frequency : 10～55～10 Hz in 1 minute. Duration : 2 hours in each of X,Y,Z axes. (EIA-364-28 Condition I)	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ最大. 60mΩ Max.
		瞬间断电 Discontinuity	1μsec最大 1μsec Max.

项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT	
耐冲击性 Shock	将样品与适合之FPC连接，通过DC 1 mA测试条件，连续测试3次。在X、Y、Z 3轴6个垂直方向施予重力加速度490m/s2 {50G} 冲击。 (EIA-364-27, test condition A) Mate applicable FPC and subject to the following shock conditions. 3 times of shocks shall be applied for each 6 directions along 3 mutually perpendicular axes, passing DC 1 mA current during the test. (Total of 18 shocks) Peak value : 490m/s2 {50G}(EIA-364-27, test condition A)	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.
		瞬间断电 Discontinuity	1μsec 最大 1μsec Max.
耐热性 Heat Resistance	将样品与适合之FPC连接，置于环境温度85±2°C测试时间96小时，再置放于室温下1～2小时。 Mate applicable FPC and expose to 85±2°C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.
耐寒性 Cold Resistance	将样品与适合之FPC连接，置于环境温度-40±2°C，测试时间96小时，再置放于室温下1～2小时。 Mate applicable FPC and expose to -40±2°C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.

项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT	
耐湿性 Humidity	将样品与适合之FPC连接，置于环境温度60±2°C，相对湿度90～95%，测试时间96小时，再置放于室温下1～2小时。 Mate applicable FPC and expose to 60 ± 2°C, relative humidity 90 to 95% for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ最大. 60mΩMax.
		耐电压 Dielectric Strength	需能符合耐电压测试 No Breakdown
		绝缘阻抗 Insulation t Resistance	40 MΩ 最小. 40 MΩ Min
冷热冲击 Temperature Cycling	将样品与适合之FPC连接，承受5 cycles冷热冲击后置放于室温下1～2小时。1 cycle time如下 a) -55±3°C 30分钟 b) +85±3°C 30分钟 Mate applicable FPC and subject to the following conditions for 5 cycles. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 1 cycle a) -55±3°C 30minutes b) +85±3°C 30minutes	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.
盐水喷雾 Salt Spray	将样品与适合之FPC连接，使用5±1%浓度盐水，测试温度35±2°C，测试时间48±4小时,后于室温下使用清水冲洗后再干燥。 Mate applicable FPC and expose to the following salt mist conditions. Upon completion of the exposure period, salt deposits shall be removed by a gentle wash or dip in running water, after which the specified measurements shall be performed. NaCl solution Concentration : 5 ± 1% Spray time : 48 ± 4 hours Ambient temperature : 35 ± 2°C	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.

项目 ITEM	测试条件 TEST CONDITION	规格 REQUIRMENT	
二氧化硫(气体) SO2 Gas	将样品与适合之FPC连接，将其置放于50±5 ppm浓度二氧化硫气体中，测试温度40±2°C，测试时间24小时。 Mate applicable FPC and expose them to the following SO2 gas atmosphere. Temperature 40 ± 2°C Gas Density 50 ± 5 ppm Duration 24 hours	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.
氨(气体) NH3 Gas	暴露来自浓度28%阿摩尼亚之蒸发气体NH3中，测试时间40分钟。 40 minutes exposure to NH3 gas evaporating from28% Ammonia solution.	外观 Appearance	目视外观无任何损坏异状 NoDamage
		接触阻抗 Contact Resistance	60mΩ 最大. 60mΩ Max.
焊锡性 Solderability	锡温245±5°C，将导电端子浸入锡炉液面至Housing距离锡面0.1mm位置，焊锡时间3±0.5秒。 Tip of solder tails and fitting nails into the molten solder (held at 245±5°C) up to 0.1mm from the bottom of the housing for 3±0.5 seconds.	润湿性 Solder Wetting	润湿面积75%以上，并不得有漏焊针孔现象 75% of immersed area must show no voids, pin holes.
焊锡耐热性 Resistance to Soldering Heat	使用红外线回焊时请参考第7 When reflowing Refer to paragraph 7. 使用烙铁手焊时须可符合下述焊锡条件 Soldering iron method 0.3mm from terminal tip and fitting nail tip. Soldering time : 3 seconds Max. Solder temperature : 370～400°C	外观 Appearance	目视外观无任何损坏异状 NoDamage

【7】红外线回焊温度曲线 INFRARED REFLOW CONDITION



温度条件TEMPERATURE CONDITION GRAPH
(基板表面温度) (TEMPERATURE ON BOARD PATTERN SIDE)

Test Report

Report No. RLSHF001401630005 Page 1 of 4

Applicant ZHE JIANG HEFEENG TECHNOLOGY.CO.LTD
Address THESECONDINDUSTRIALZONE,DANXITOWN,YUE QING CITY,ZHEJIAGNPROVINCE,CHINA

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

Sample Name LCP plastic core
Color Natural color
Sample Received Date Mar. 11, 2013
Testing Period Mar. 11, 2013 to Mar. 15, 2013

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs) in the submitted sample(s).

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2mg/kg
Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2mg/kg
Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2mg/kg
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis	2mg/kg
Polybrominated Biphenyls (PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg

Test Result(s) Please refer to the following page(s).

Tested by Verna chen Reviewed by Urey Zhong

Approved by Joy Su Date Mar. 15, 2013

Joy Su
Senior Laboratory Manager

No. 1248888564

Test Report

Report No. RLSHF001401630005

Test Result(s)

Tested Item(s)	Result
Lead(Pb)	N.D.
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium (Cr(VI))	N.D.

Tested Item(s)	Result
Polybrominated Biphenyls (PBBs)	
Monobromobiphenyl	N.D.
Dibromobiphenyl	N.D.
Tribromobiphenyl	N.D.
Tetrabromobiphenyl	N.D.
Pentabromobiphenyl	N.D.
Hexabromobiphenyl	N.D.
Heptabromobiphenyl	N.D.
Octabromobiphenyl	N.D.
Nonabromobiphenyl	N.D.
Decabromobiphenyl	N.D.

Tested Item(s)	Result
Polybrominated Diphenyl Ethers (PBDEs)	
Monobromodiphenyl ether	N.D.
Dibromodiphenyl ether	N.D.
Tribromodiphenyl ether	N.D.
Tetrabromodiphenyl ether	N.D.
Pentabromodiphenyl ether	N.D.
Hexabromodiphenyl ether	N.D.
Heptabromodiphenyl ether	N.D.
Octabromodiphenyl ether	N.D.
Nonabromodiphenyl ether	N.D.
Decabromodiphenyl ether	N.D.

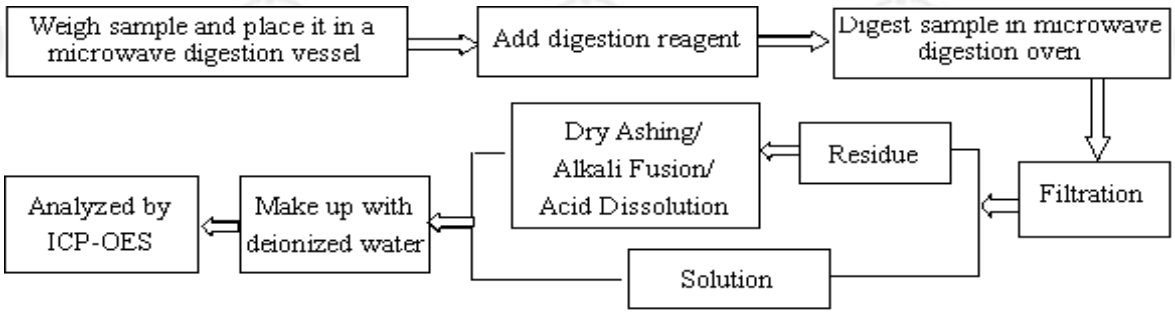
Tested Sample/Part Description White plastic

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million

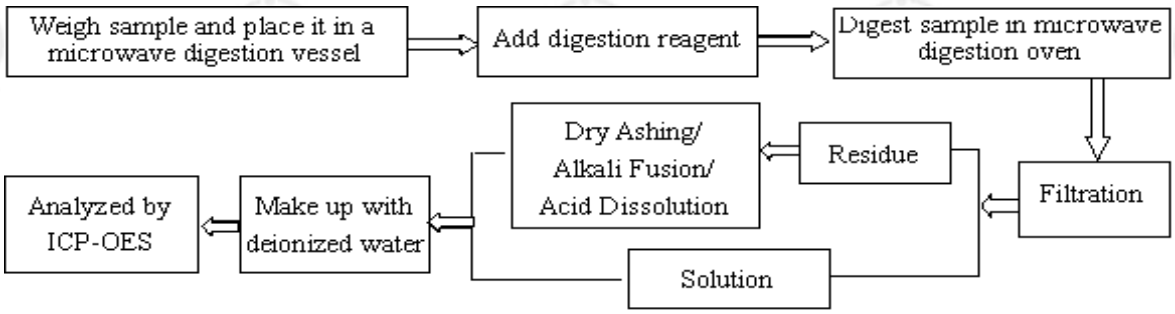
Test Report

Test Process

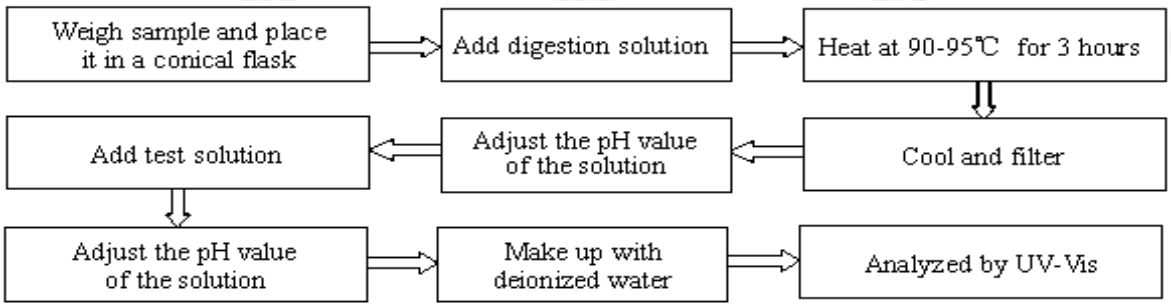
1. Lead(Pb), Cadmium(Cd)



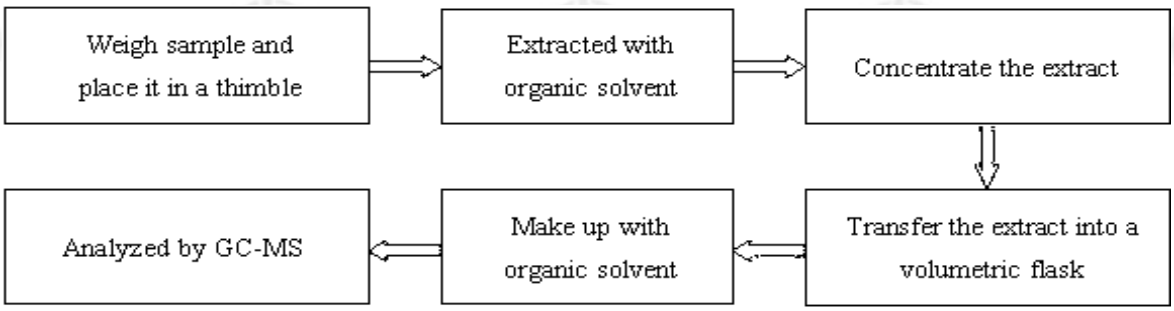
2. Mercury(Hg)



3. Hexavalent Chromium (Cr(VI))



4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



Test Report

Photo(s) of the sample(s)

*** End of report ***

Test Report

Report No. RLSHF001401630007

Applicant ZHE JIANG HEFEENG TECHNOLOGY.CO.LTD
Address THESECONDINDUSTRIALZONE,DANXITOWN,YUE QING CITY,ZHEJIAGNPROVINCE,CHINA

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

Sample Name The PA6T plastic core
Sample Received Date Mar. 11, 2013
Testing Period Mar. 11, 2013 to Mar. 15, 2013

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs) in the submitted sample(s).

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2mg/kg
Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2mg/kg
Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2mg/kg
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis	2mg/kg
Polybrominated Biphenyls (PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg

Test Result(s) Please refer to the following page(s).

Tested by Verna chen Reviewed by Urey Zhong

Approved by Joy Su Date Mar. 15, 2013

Joy Su
Senior Laboratory Manager

No. 1248888564

Test Report

Report No. RLSHF001401630007

Test Result(s)

Tested Item(s)	Result
Lead(Pb)	5 mg/kg
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium (Cr(VI))	N.D.

Tested Item(s)	Result
Polybrominated Biphenyls (PBBs)	
Monobromobiphenyl	N.D.
Dibromobiphenyl	N.D.
Tribromobiphenyl	N.D.
Tetrabromobiphenyl	N.D.
Pentabromobiphenyl	N.D.
Hexabromobiphenyl	N.D.
Heptabromobiphenyl	N.D.
Octabromobiphenyl	N.D.
Nonabromobiphenyl	N.D.
Decabromobiphenyl	N.D.

Tested Item(s)	Result
Polybrominated Diphenyl Ethers (PBDEs)	
Monobromodiphenyl ether	N.D.
Dibromodiphenyl ether	N.D.
Tribromodiphenyl ether	N.D.
Tetrabromodiphenyl ether	N.D.
Pentabromodiphenyl ether	N.D.
Hexabromodiphenyl ether	N.D.
Heptabromodiphenyl ether	N.D.
Octabromodiphenyl ether	N.D.
Nonabromodiphenyl ether	N.D.
Decabromodiphenyl ether	N.D.

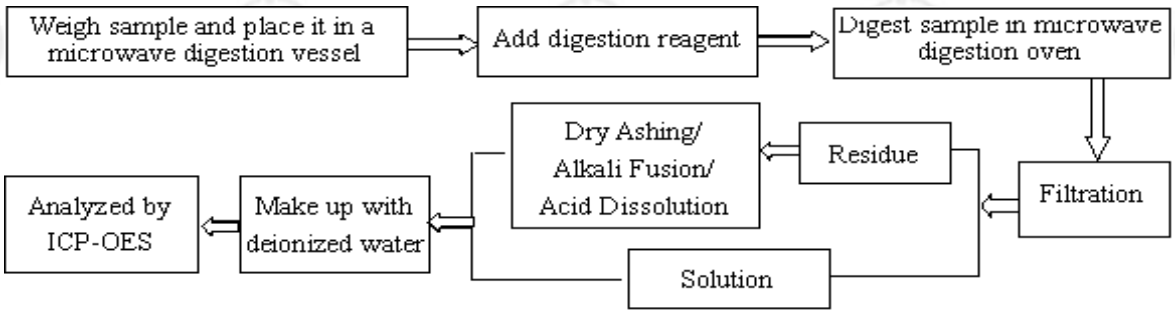
Tested Sample/Part Description Beige yellow plastic

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million

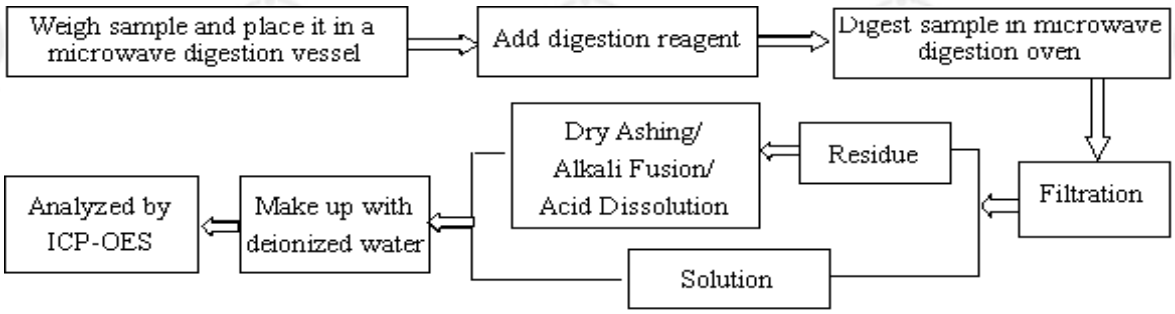
Test Report

Test Process

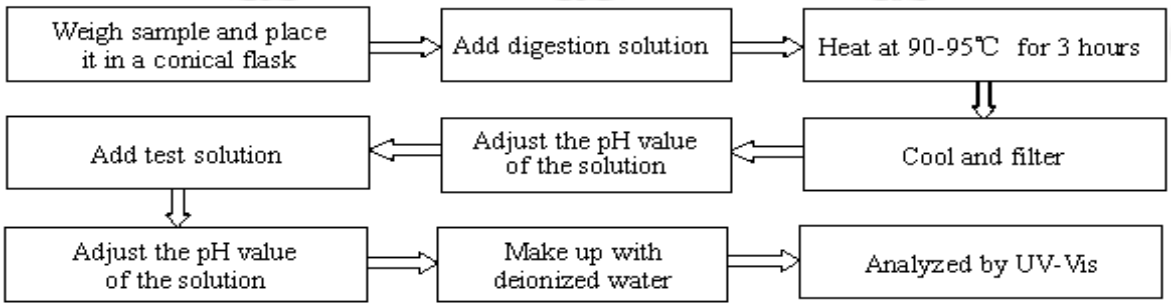
1. Lead(Pb), Cadmium(Cd)



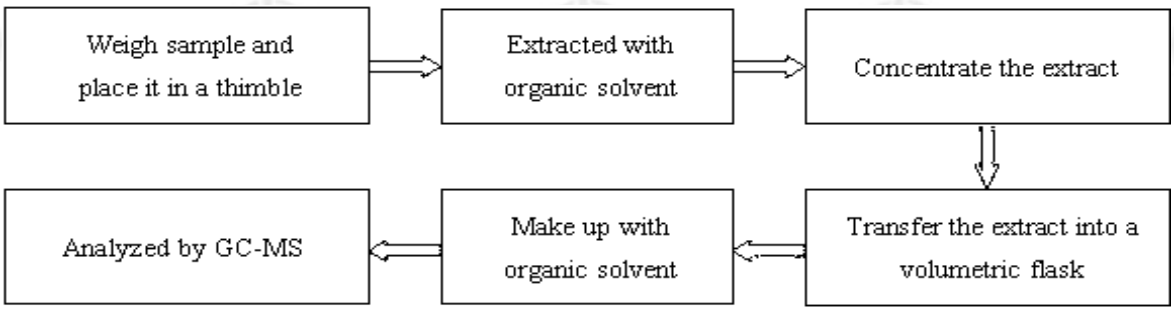
2. Mercury(Hg)



3. Hexavalent Chromium (Cr(VI))

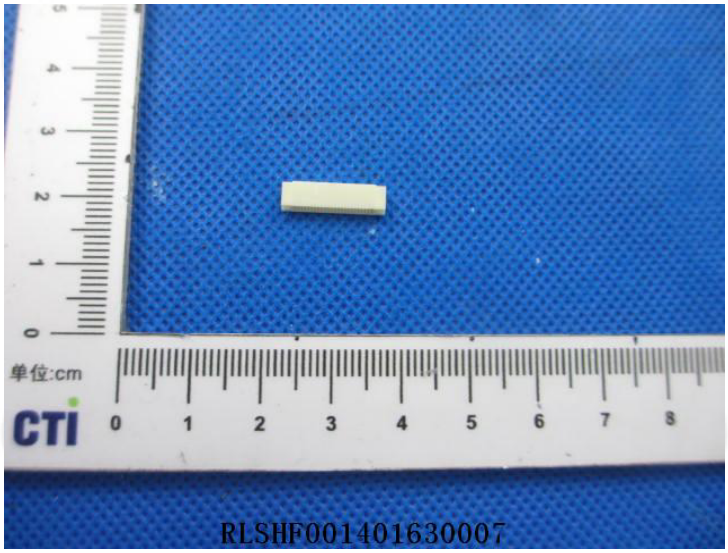


4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



Test Report

Photo(s) of the sample(s)



*** End of report ***

Test Report

Report No. RLSHF001401630002

Applicant ZHE JIANG HEFEENG TECHNOLOGY.CO.LTD

Address THESECONDINDUSTRIALZONE,DANXITOWN,YUE QING CITY,ZHEJIAGNPROVINCE,CHINA

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

Sample Name Tinned terminal

Sample Received Date Mar. 11, 2013

Testing Period Mar. 11, 2013 to Mar. 15, 2013

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)) in the submitted sample(s).

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
Cadmium(Cd)	Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
Mercury(Hg)	Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/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 Verna chen. Reviewed by Lucy Zhong

Approved by Joy Su Date Mar. 15, 2013

Joy Su

Senior Laboratory Manager

No. 1248888564

Test Report

Report No. RLSHF001401630002

Test Result(s)

Tested Item(s)	Result
Lead(Pb)	35 mg/kg
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium (Cr(VI))	Negative

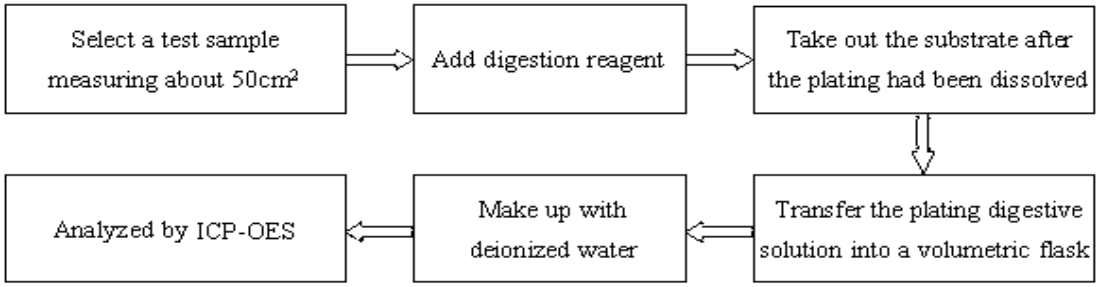
Tested Sample/Part Description Silvery white plating

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**
-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.
*=Appropriate acid is used for deplating, and the solution is analyzed by ICP –OES.

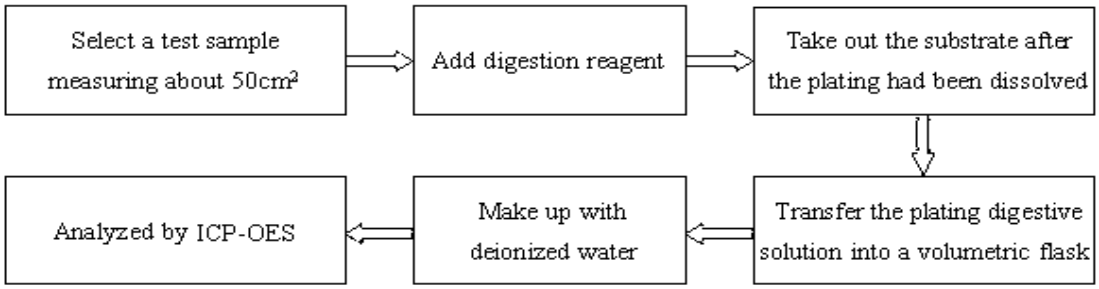
Test Report

Test Process

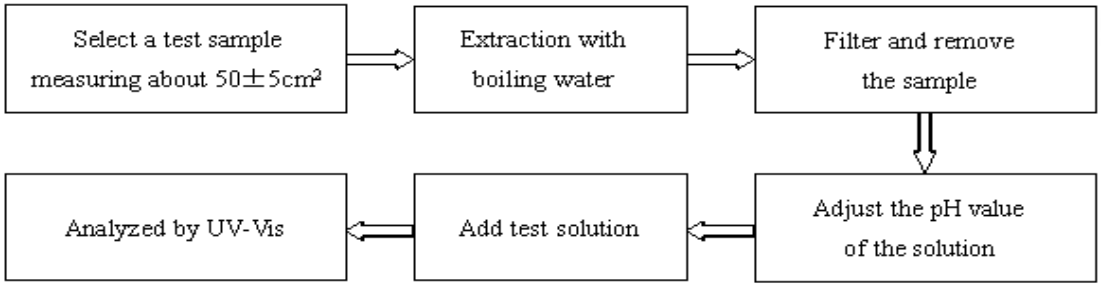
1. Lead(Pb), Cadmium(Cd)



2. Mercury(Hg)



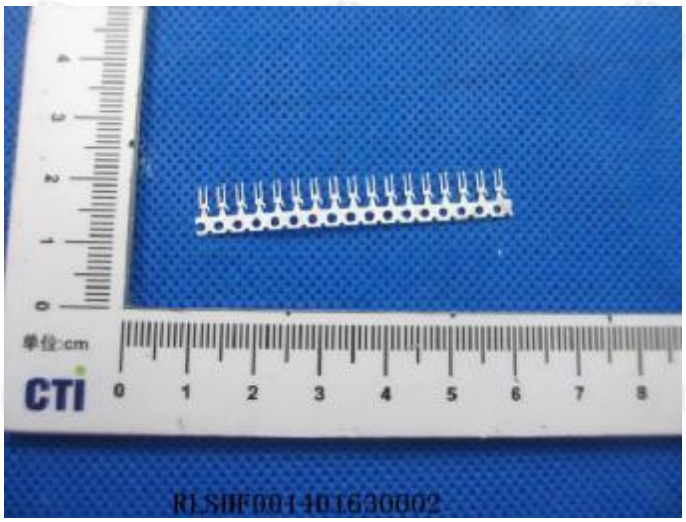
3. Hexavalent Chromium (Cr(VI))



Test Report

Report No. RLSHF001401630002

Photo(s) of the sample(s)



*** End of report ***

Test Report

Report No. RLSHF001401630003

Applicant ZHE JIANG HEFEENG TECHNOLOGY.CO.LTD

Address THESECONDINDUSTRIALZONE,DANXITOWN,YUE QING CITY,ZHEJIAGNPROVINCE,CHINA

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

Sample Name Tinned lug

Sample Received Date Mar. 11, 2013

Testing Period Mar. 11, 2013 to Mar. 15, 2013

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)) in the submitted sample(s).

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
Cadmium(Cd)	Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
Mercury(Hg)	Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/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 Verna chen. Reviewed by Lucy Zhong

Approved by Joy Su Date Mar. 15, 2013

Joy Su

Senior Laboratory Manager

No. 1248888564

Test Report

Report No. RLSHF001401630003

Test Result(s)

Tested Item(s)	Result
Lead(Pb)	39 mg/kg
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium (Cr(VI))	Negative

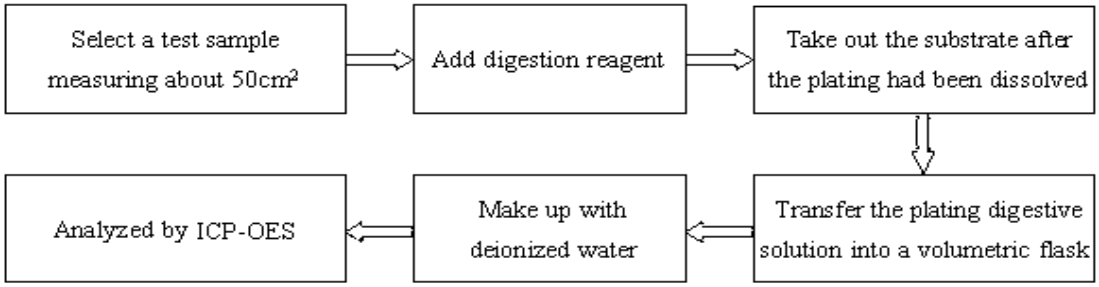
Tested Sample/Part Description Silvery white plating

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**
-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.
*=Appropriate acid is used for deplating, and the solution is analyzed by ICP –OES.

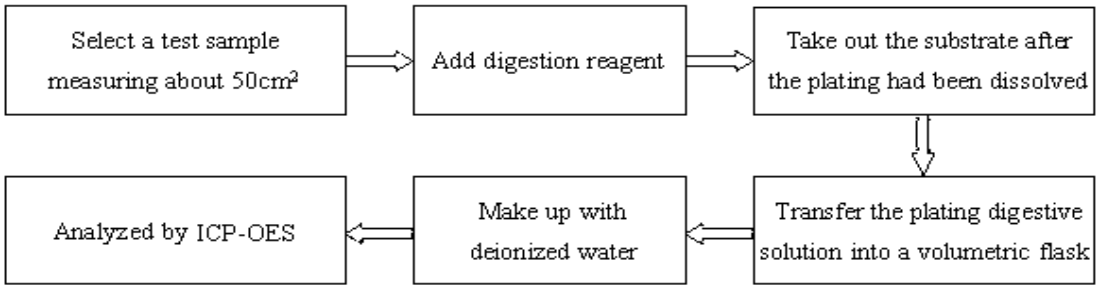
Test Report

Test Process

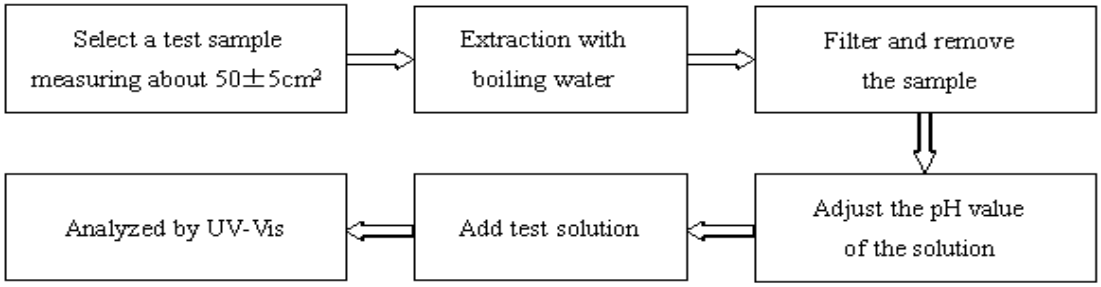
1. Lead(Pb), Cadmium(Cd)



2. Mercury(Hg)



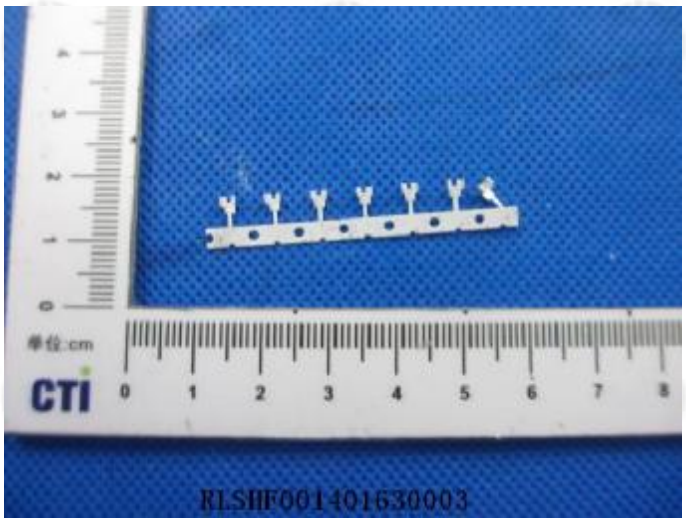
3. Hexavalent Chromium (Cr(VI))



Test Report

Report No. RLSHF001401630003

Photo(s) of the sample(s)



*** End of report ***

Test Report

NINGBO XINGTONG METAL MATERIAL CO.,LTD/NINGBO XINGYE SHENGTAI GROUP CO.,LTD

LINFANG ROAD,BAILIANGQIAO,ZONGHAN,CIXI CITY,ZHEJIANG PROVINCE,PRC/ND.2-9,HANG ZHOU BAY NEW ZONE,CIXI LOTY.NINGBO CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : COMMON BRASS STRIPS

SGS Job No. :	SP12-019514 - SH
Composition :	COPPER BASED ALLOY/Cu Zn
Model No. :	C2680 (H65) 6/23-126
Date of Sample Received :	02 Jul 2012
Testing Period :	02 Jul 2012 - 05 Jul 2012
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 samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Fan Jingjie, JJ
Approved Signatory

SGS-CSTC Standards Technical Services (Shanghai) Co.,Ltd.
Testing Center
3rd Building,No.889 Yishan Road Xuhui District,Shanghai China 200233
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233
t E&E (86-21) 61402553 f E&E (86-21)64953679 www.cn.sgs.com
HL: (86-21) 61402594 HL: (86-21)54500353 e sgs.china@sgs.com

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA12-111707.008	Golden metal sheet

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*008*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	32
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II

(2) ◇Spot-test:

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) 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 Cr(VI) coating

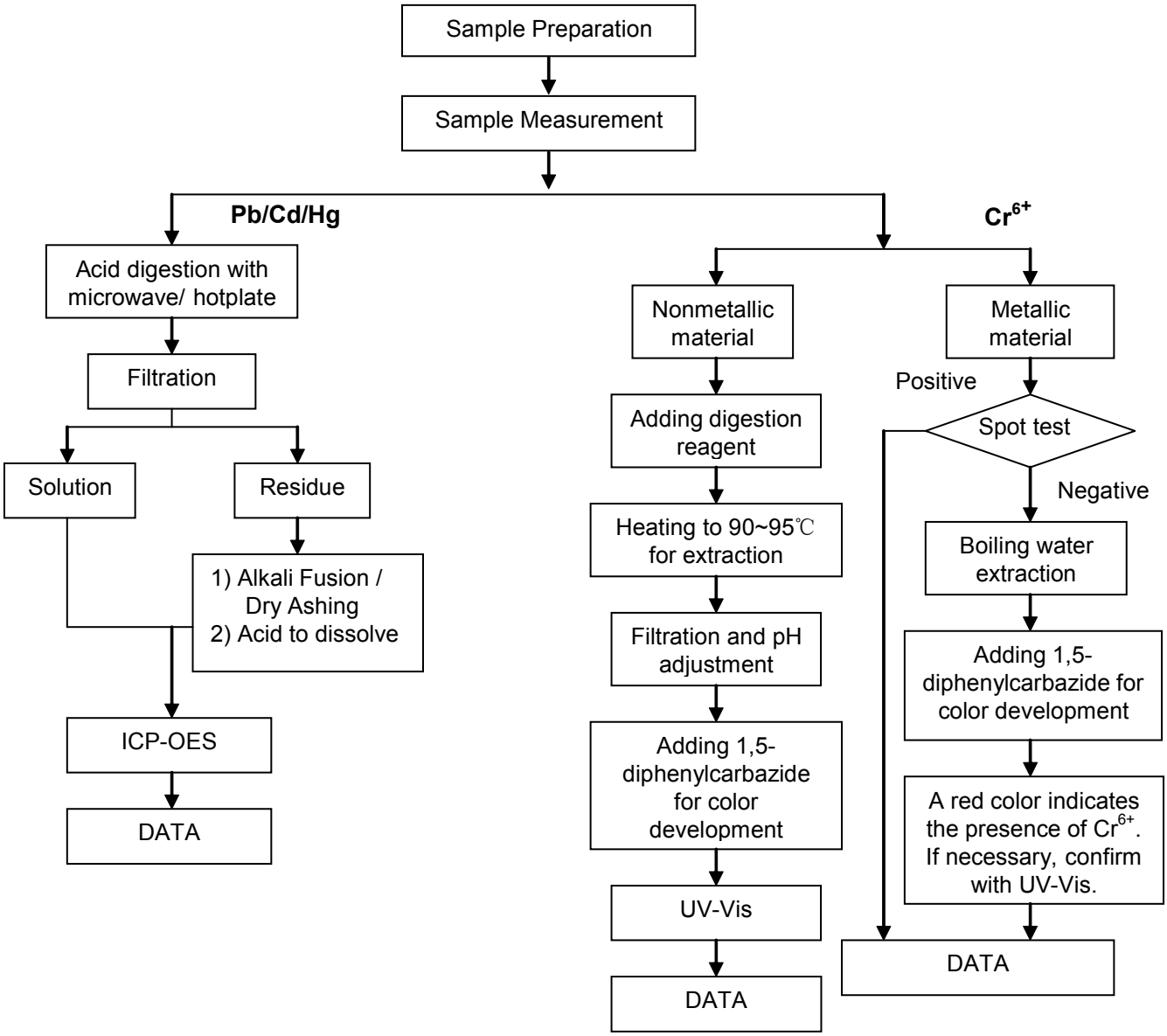
Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao
2) Name of the person in charge of testing: Jeff Zhang/George Xu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)



Sample photo:

SHA12-111707.008

SGS authenticate the photo on original report only

*** End of Report ***

SGS-CSTC Standards Technical Services (Shanghai) Co.,Ltd.
Testing Center
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Test Report

NINGBO XINGTONG METAL MATERIAL CO.,LTD/NINGBO XINGYE SHENGTAI GROUP CO.,LTD

LINFANG ROAD,BAILIANGQIAO,ZONGHAN,CIXI CITY,ZHEJIANG PROVINCE,PRC/ND.2-9,HANG ZHOU BAY NEW ZONE,CIXI LOTY.NINGBO CHINA

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

SGS Job No. :	SP12-019514 - SH
Composition :	COPPER BASED ALLOY/Cu Sn P
Model No. :	C5191(QSn6.5-0.1) 5/3-81
Date of Sample Received :	02 Jul 2012
Testing Period :	02 Jul 2012 - 05 Jul 2012
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 samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Fan Jingjie, JJ
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA12-111707.015	Copper metal sheet

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*015*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	13
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II

(2) ◇Spot-test:

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) 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 Cr(VI) coating

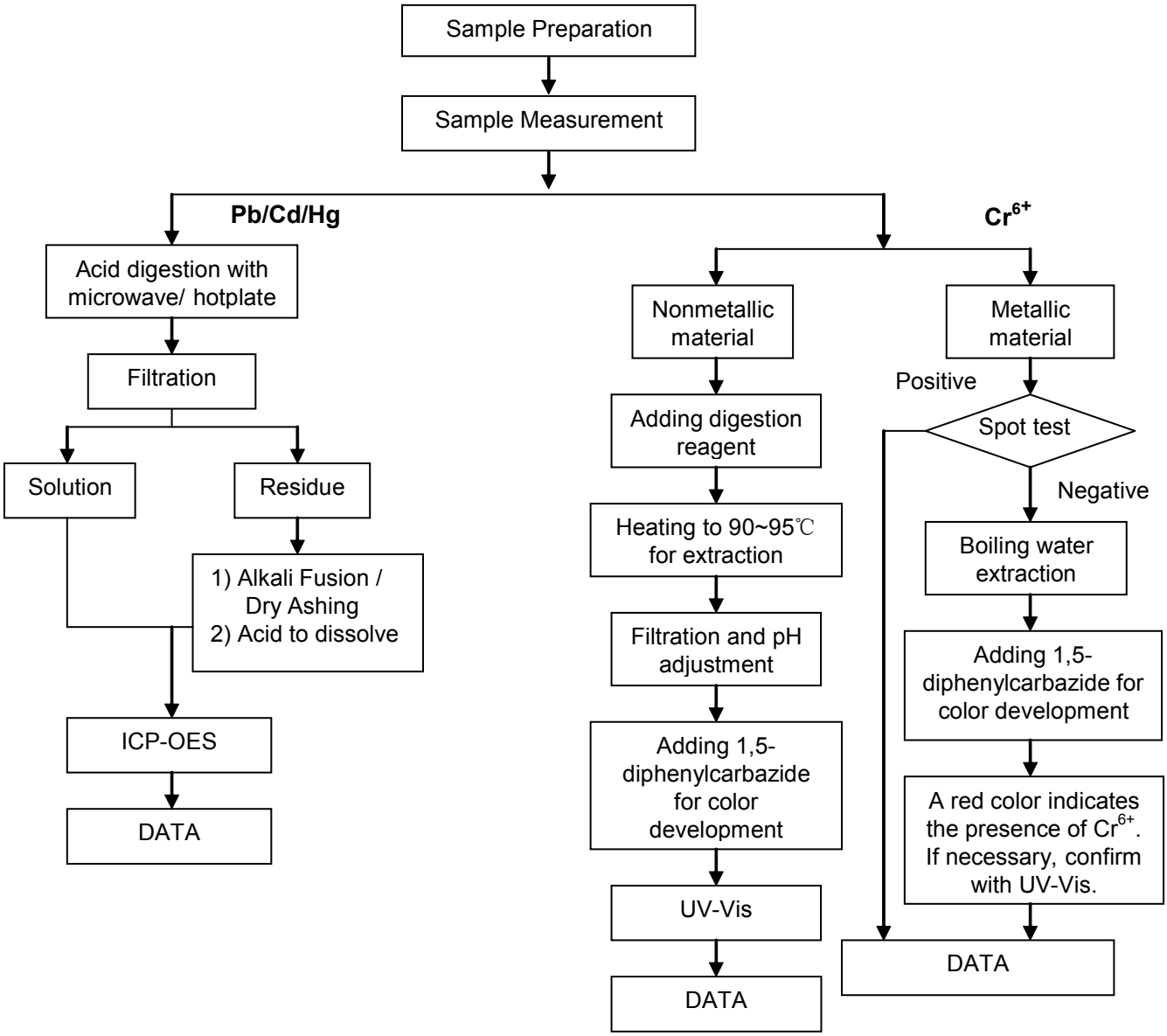
Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao
2) Name of the person in charge of testing: Jeff Zhang/George Xu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)



Sample photo:

SHA12-111707.015

SGS authenticate the photo on original report only

*** End of Report ***

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MATERIAL SAFETY DATE SHEET（MSDS）

Production:	LCP M-401	Page of 1 - 6
MSDS NO.: 110401	Version 1.0	Revision Date: 2011/08/08

1. CHEMICAL PRODUCT & COMPANY IDETFICATION

CHEMICAL PRODUCT NAME :LCP M-401
NAME OF COMPANY :DZT Engineering Plastics Tech. Co.,Ltd
ADDRESS :Building 2 Zhichong Industrial Park, Hi-Tech Zone, Jiangmen City, Guangdong Province, China
SECTION IN CHARGE : Quality Assurance Department
TEL/FAX :+86-750-3689920/+86-750-3689921
EMERGENCY TEL :+86-750-3689705

2. COMPOSITION/INFORMATION ON INGREIENTS

SUBSTANCE/MIXTURE :Mixture
CHEMICAL NAME :Not open
SYNONYM(S) :Aromatic Liquid Crystal Polymer(LCP)
CAS REGISTRY NUMBER :Not open
INGREDIENTS AND COMPOSITON :LCP resin 55%, Glass fiber 25%, Mine fiber 20%
ADDITIVES : < 2%
CHEMICAL FORMULA :Not open
FILE NO. IN OFFICIAL GAZETTE :Not open
UN CLASS :Not applicable
UN NUMBER :Not applicable

3. HAZARDS IDENTIFICATION

CLASS OF HAZARDOUS CHEMICALS FOR MSDS IN CHINA: Not applicable
PHYSICAL AND CHEMICAL HAZARDS: Neither dangerous reaction nor explosion can be caused under normal conditions.

4. FIRST-AID MEASURES

- **EYE CONTACT**

Cool and rinse the eye with clean water for at least 15 minutes when the eyes had contact with molten polymer.
In case of wearing contact lenses, remove the lenses as soon as possible, and ask a physician for advice.
When the eye had contact with the polymer in an ordinary solid form, rinse the eye with clean water without delay.
If the discomfort persists, ask a physician for advice.

- **SKIN CONTACT**

Cool the contacted skin with clean water without delay, if a contact with the polymer in a molten form. Do not remove the solid resin on the skin.

- **INHALAION**

When a gas generated from the molten polymer has been inhaled, remove fresh air without delay and wait until the victim is recovered.

If sick feeling continues, ask a physician for advice.

- **INGESTION**

Help to vomit as much as possible .If sick feeling continues, and ask a physician for advice.

5. FIRE-FIGHTING MEASURES

- **FIRE-EXTINGUISHING MEASUES:**

Extinguish the fire with water. A method of extinguishing an ordinary fire may be applied.

Caution:

1) Incomplete combustion leads to generation of toxic gases such as carbon monoxide, in addition to carbonic acid gas and water.
2) In case the fire gained force, use a gas mask or other protective equipment.
3) Do not apply water directly to processing machines.

- **FIRE- EXTINGUISHING AGENTS:**

Water, foam fire-extinguishing agent, powder fire-extinguishing agent, and carbon dioxide gas.

6. ACCIDENTAL LEAKAGE MEASURES

When pellets were spilled on the road or floor, wipe them off with a besom or cleaner. Handle the spillage in accordance with provisions given in the "Resin pellet spillage preventive manual", in order to prevent intakes by marine animals and birds.

7. HANDLING AND STORAGE

HANDLING:

1) LCP resin in a pellet form will neither ignite nor explode at room temperatures.
2) LCP resin pellets spilled on the floor are likely to cause slipping.
   Remove such spillage at any times.
3) For molding work, effective means for local exhaust are required to discharge gases generated by melt processing.
4) Avoid inhaling of gases generated in moulding work..
   Do not directly touch resin of high temperature.
5) Avoid retaining hot resin in the processing machines for many hours.
6) Glass fibers are not generally exposed in a single substance under normal processing and handing conditions as they are compounded in pellets. However, the following measures will be necessary to minimize the exposure to glass fibers or dusts containing glass fibers, when pellets or molded parts containing glass fibers are cut, ground or burnt, depending on environmental and operational conditions.

Handling

- Those who are sensitive in skin to glass fiber should wear suitable (protective) clothes to minimize the exposure of their skin.
- Wash working clothes apart from other laundry. So that the latter with not cause contamination glass fibers.
- provide the workshop with partition to prevent diffusion of glass fiber dusts.

- pay precautions not to rub face ,neck or arms with hands, wash hands and gargle after working without fall.
- keep dust sources totally enclosed.
- provide local air exhausters, and implement periodical inspections and adjustments at least once a year.
- Reduce cutting and grinding processes to the possible minimum, and devise working procedures to minimize dust generation.
- provide dust-preventive masks, protective glasses and gloves for personal hygiene.
- Determine the operational environment at indoor working places and confirm the effects of environmental improvement.

Notice:

Glass fibers are, like road dusts told to be least hazardous to human bodies, but proper measures are required to avoid useless inhaling.

STORAGE:

1) Keep the substance away from any fire or heat sources for the sake of safe storage.
2) LCP resin should be handled in accordance with municipal rules and regulations.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

CONTROL CONCENTRION :None at present

PERMISSIBLE EXPOSURE CONCNTRATION:

OSHA PEL (nuisance/inert dust)

	total	15 mg/m^3
	respirable	5 mg/m^3

ACGIH TLV (nuisance particulates)

	total	10 mg/m^3
	respirable	3 mg/m^3

ENGINEERING MEASURES

When handing dust: Use totally enclosed containers resisting dust explosion.

When heat melted in molding: Effective local ventilation must be provided.

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATOBY PROTECTION :Wear a dust-proof mask.

EYE PROTECTION :Wear protective glassed or goggles.

HAND PROTECTION :Wear heat-resisting gloves against bums, When handing molten polymer.

SKIN&BODY PROTECTION :wear long sleeve clothes against bums when handling molten polymer.

9. PHYSICAL AND CHEMICAL PROPRTIES

APPEARANCE	:Pellet
DENSITY	:1.6 g/cm^3
BOILING POINT	:Not applicable
MELTING POINT	:335 ℃-345℃

VAPOR PRESSURE	:Not applicable
VOLATILITY	:Not applicable
SUBLIMATION	:None
SOLUBILITY IN WATER	:Insoluble

10. PHYSISCAL HAZARD (STABILITY AND REACTIVITY)

FLASH POINT	
IGNION POINT	:540℃ or higher
DUST EXPLOSIVENESS	
UPPER EXPLOSION LIMIT	:Not applicable
LOWER EXPLOSION LIMIT	:35 g/cm^3
INFLAMMABILITY	:Self-extinguishing
SPONTANEOUS COMBUSTIBILITY	:None
REACTIVITY WITH WATER	:None
OXIDIZABILITY	:None
SELF-REACTIVITY	:None
STABILITY	:Stable for normal storage or handling
OTHERS	:Note

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY（INCLUDING LD_{50}）	:No finding.
SUBACUTE TOXICTY	:No finding.
CHRONIC TOXICITY	:No finding.
SKIN CORROSIVE PROPERTIS	:No finding.
SENSITIZING & IRRITANT EFFECTS	:Gas generated in drying or melting is irritating eyes and skins.
CARCINOGENECITY	:No finding.
MUTAGENCITY(Micro organisms, chromosomal aberration)	:No finding.
REPRODUCTIVE TOXICTY	:No finding.
TERATOGENICITY	:No finding.
OTHERS (Including generation of hazardous gases by reaction with water, for example)	:No finding.

(**Remarks**) "No finding" in this report means that there will be no hazard in general, but no proving data is available at the time of reporting.

➢ **Effects on Human Bodies**

(1) Effects on the skin

Stimulation to the skin with glass fibers may be caused when glass fibers diameter is larger than 4.5~5μm. They give mechanical stimulation followed by itchiness to the skin, but further continuous exposure reportedly results in extinction of stimulation. It may sometimes leads to irritable dermatitis complicated with urticaria or eczema-like reaction. It is, however reported that such dermatitis is not so serious in general and does not last too long. Therefore, skin stimulation can be prevented by proper use of glass fibers.

(2) Effects on Tumor

Investigations made on glass fibers till today reveal that there is neither Increase in mortality

of glass fiber production worker due to lung cancer or mesothelioma nor such cases reported.

- **Animal Test Report**

It is suggested that carcinogenicity of mineral fibers is dependent on their shapes rather than on their constituents. According to a report on experiments using 17 kinds of artificial mineral fibers in various sizes prepared by Dr Stanton of National Cancer lnstitute, in USA, statistical studies on correlations between the diameter and length of fibers and the coincidence of mesothelioma have revealed that mineral fibers having a diameter smaller than 0.25μm and a length larger than 8μm are closely related to the coincidence of cancers. Since these experiments were performed by artificially dosing the subject animals with a large quantity of glass fibers and consequently they are quite different from the actual exposures to human bodies, it is told to be problematic to make a conclusion that mineral fibers are hazardous to human health, basing on the results obtained from these experiments. Up to the present time, there is no result obtainable to demonstrate a mechanism of glass fibers causing lung cancers in spite of experiment by long exposure to glass fibers with high concentration.

12. ECOLOGICAL INFORMATION

BIODEGRADABILITY	:No finding.
BIOACCUMULATION	:No finding.
FISH TOXICITY	:No finding.

13. DISPOSAL CONSIDERAION

1) This is designated as waste as waste plastics among industrial by the Wastes Disposal Law. Dispose waste through licensed wastes handlers or local autonomous bodies if they are handling wastes disposal.
2) When disposed by incineration, use the well controlled incinerators in accordance with the Wastes Disposal Law, Air Pollution Control Law and Water Pollution Prevention Law.

14. TRANSPORT CONSIDERATION

1) Handle with care so as not give damages to not to be subjected to wetting.
2) Secure the containers firmly so as not to cause collapsing.

15. REGULATORY INFORMATION

Wastes Disposal Law designates it as waste plastics among industrial wastes.

16. OTHER INFORMATION

HANDLING OF THE DETAILS GIVEN ABOVE:

This MSDS is the English version.

Details given above are based on references, information and data available at this moment, but no warranty can be made on exactness of these details. They are also prepared on the assumption that the product will be handled in a normal way. For special handling, adequate safety and environmental measures should be taken in respect to its applications. Our products are not specifically intended for implants for medical and dental applications, and therefore they are not recommended for such applications. Please contact Quality Assurance Department of Jiangmen

Dezhongtai (DZT) Engineering Plastics Tech. Co., Ltd. for further information.

DEPARTMENT ISSUING MSDS: DZT ENGEERING PLASTICS TECH. CO., LTD
TEL: +86-750-3689707, +86-750-3689708

MATERIAL SAFETY DATA SHEET

Date January 15, 2008

1.CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : **ARLEN**
(GF-reinforced, flameproof grades containing titanium dioxide)

Information & Electronics Materials Division
Mitsui Chemicals, Inc.
Shiodome City Center
1-5-2, Higashi-Shimbashi, Minato-ku
Tokyo 105-7117, Japan
Telephone: +81-3-6253-3494 Telefax: +81-3-6253-4221

Mitsui Chemicals America, Inc.
800 Westchester Avenue,
Suite N607, Rye Brook, NY 10573, USA
Telephone: 914-253-0777 Telefax: 914-253-0790

Mitsui Chemicals Europe GmbH
Oststrasse 10, 40211 Dusseldorf, Germany
Telephone: 49-211-173320 Telefax: 49-211-323487

2.COMPOSITION/INFORMATION ON INGREDIENTS

Component	%	CAS No.	EC No.
Hexamethylenediamine-terephthalic acid copolymer		-	-
Glass fiber	<45	-	-
Brominated flame retardant		-	-
Antimony flame retardant	2-4.2	-	-
Titanium dioxide	<10	13463-67-7	236-675-5

Classification according to EC regulations
This product is not classified according to the EC regulations.

* Occupational exposure limits are, if available, listed in Section 8.

3.HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW :
Colored pellet.
Can burn in a fire.
Fumes from hot-molten resin may cause irritation to eyes and respiratory tract.
Slippery, can cause falls if walked on.

POTENTIAL HEALTH EFFECTS
Route(s) of Entry : Skin contact, eye contact, ingestion

INHALATION :
Pellet is not respirable as solid. Exposure to small amount of dust is not expected to present a hazard. At processing in high temperature, the material may produce fumes irritating to nose and throat.

INGESTION :
Small amounts swallowed during normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

SKIN CONTACT :
Rubbing may cause irritation similar to sand or dust.
Hot-molten polymer contacting the skin will cause thermal burns.

EYE CONTACT :
May cause irritation or scratch the surface of the eye.
Contact with fumes in processing may cause eye irritation.

CARCINOGENICITY :
NTP : Not listed.
IARC: Not listed.
OSHA: Not regulated.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE :
No information found.

4. FIRST AID MEASURES

INHALATION :
If exposed to excessive levels of fumes, remove to fresh air. Get medical attention if cough or other symptoms develop.

EYE CONTACT :
Immediately flush eyes with plenty of water and get medical attention.
Part eyelids with fingers to assure complete flushing. Check for and remove contact lenses if easily possible.

SKIN CONTACT :
Immediately remove contaminated clothing and shoes. Flush skin with large amounts of water, clean off with soap and water. Get medical attention if symptoms develop.
If molten polymer contacts the skin, cool immediately with cold water. Do not attempt to peel polymer from the skin. Get medical attention for thermal burn.

INGESTION :
Rinse mouth with water and give 1 or 2 glasses of water or milk. Get medical attention immediately. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious or convulsing person.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES : See Section 9.

EXTINGUISHING MEDIA : water fog, foam, dry chemical, CO_2, dry sand
EXTINGUISHING MEDIA WHICH MUST NOT BE USED: Not available.

GENERAL HAZARD :
This material does not ignite easily, but will burn if involved in a fire. Products of combustion include irritating and poisonous gases.

FIRE FIGHTING INSTRUCTIONS
Keep unnecessary and unprotected personnel away. Remove containers to safe place if possible. Keep containers and surroundings cool by spraying with water. Fight fire from an upwind position.

FIRE FIGHTING EQUIPMENT :
Respiratory and eye protection required for fire-fighting personnel.
Full protective equipment and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires.

HAZARDOUS COMBUSTION PRODUCTS :
Carbon oxides, nitrogen oxides, hydrogen bromide, antimony oxides.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Keep unnecessary and unprotected personnel away. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8.
This material forms slippery surfaces on floors, posing an accident risk.

ENVIRONMENTAL PRECAUTIONS:
Do not let this chemical enter the environment.

CLEAN-UP METHODS:
Use non-sparking tools and equipment. Vacuum or sweep up material and place in a disposal container.

7. HANDLING AND STRAGE

HANDLING
Technical Measures:
Use with adequate ventilation. Keep away from heat, sparks, and flame. Use explosion-proof electrical equipment. Take precautions against build-up of electrostatic charges. Avoid contact with eyes, skin, and clothing. Wear appropriate personal protective equipment. Provide hand and eye wash station near work area. Wash thoroughly after handling.

Precautions:
Use under local exhaust ventilation. Follow good industrial hygiene practices for clean-up.

STORAGE:
Storage Conditions:
Protect from direct sunlight. Keep away from heat, flame, and all sources of ignition. Store in dark, well-ventilated area. Keep indoors.

Packaging Material: Aluminum-lined paper bags.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS :
Provide general ventilation. Use closed system or local exhaust ventilation. Provide safety shower and eye wash station near work area.

EXPOSURE LIMITS :
Particulates(Not otherwise regulated)
OSHA-PEL 15 mg/m^3, 8 Hr. TWA, total dust
5 mg/m^3, 8 Hr. TWA, respirable dust
Particulates(Not otherwise specified)
ACGIH-TLV 10 mg/m^3, 8 Hr. TWA, inhalable
3 mg/m^3, 8 Hr. TWA, respirable

[Continuous filament glass fibers]
ACGIH-TLV 1 fiber/cc (TWA) respirable fiber
5 mg/m^3 (TWA) inhalable fraction
[Antimony compound]
ACGIH-TLV 0.5 mg/m^3(TWA) as /Sb/
OSHA-PEL 0.5 mg/m^3(TWA) as /Sb/
[Titanium dioxide]
ACGIH-TLV 10 mg/m^3(TWA)
OSHA-PEL 15 mg/m^3(TWA)

PERSONAL PROTECTIVE EQUIPMENT
Respiratory protection : Dust respirator.
Hand protection : Protective gloves.
Eye protection : Safety glasses or goggles.
Protective clothing :
Safety helmet, protective clothing, safety boots.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	: Colored pellet (See Appendix).
ODOR	: Characteristic odor.
PH	: Not applicable.
MELTING POINT	: 310 °C
FLASH POINT	: 200 °C or higher
AUTOIGNITION TEMPERATURE	: Not available.
FLAMMABLE LIMITS	: Not available.
SPECIFIC GRAVITY	: 1.30 - 1.80 (at 4 °C)
SOLUBILITY IN WATER	: Insoluble.

10. STABILITY AND REACTIVITY

STABILITY : Stable under normal conditions.
INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID :
Not available.

HAZARDOUS DECOMPOSITION PRODUCTS :
Carbon oxides, nitrogen oxides, hydrogen bromide, antimony oxides in fire.
HAZARDOUS POLYMERIZATION : Will not occur.

11. TOXICOLOGICAL INFORMATION

No data is available on the product itself. Toxicological information of some components is known as follows:
[GLASS FIBER]
CARCINOGENICITY :
Classified 3 (Not classifiable as to carcinogenicity in humans) by IARC.

[ANTIMONY]
ACUTE TOXICITY :

Oral	rat	LD_{50}	7 g/kg
Intraperitoneal	rat	LD_{50}	100 mg/kg

CARCINOGENICITY :
Inhalation rat TCLo 50 mg/m^3/7hr/52W, intermittent

[TITANIUM DIOXIDE]
ACUTE TOXICITY :
Intratracheal rat LD 100 μg/kg

LOCAL EFFECTS :
Skin irritation human 300 μg/kg mild

MUTAGENICITY :
Micronucleus test mouse (intraperitoneal) : Positive
Sister Chromatid Exchange hamster 1 μmol/l: Positive

12. ECOLOGICAL INFORMATION

ECOTOXICITY : Not available.
DEGRADABILITY/PERSISTENCY : Not available.

13. DISPOSAL CONSIDERATIONS

WASTE FROM RESIDUES :
Whatever cannot be saved for recovery may be burned in an approved incinerator or disposed in approved waste facility. Ensure compliance with local, state, federal and national regulations.

CONTAMINATED PACKAGING :
Empty the container completely before disposal.

14. TRANSPORT INFORMATION

U.N. Class : Not a hazardous material
U.N. Number : None

15. REGULATORY INFORMATION

UNITED STATES
OSHA STATUS :
This product is hazardous under the criteria of Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS :
All ingredients of this product are listed on the TSCA Inventory.

CERCLA Reportable Quantity :
Antimony compound: Hazardous substance that no RQ assigned.

SARA Title III :
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: None
SECTION 311/312 HAZARDOUS CATEGORIES :
Immediate health hazard, delayed health hazard.
SECTION 313 TOXIC CHEMICALS: Antimony compound $\leqq$4.2%

CALIFORNIA PROPOSITION 65 :
This product contains, no chemicals known to the state of California to cause cancer.

EUROPEAN UNION
EU STATUS:
All components of this product are listed on EINECS or exempt from EINECS registration.

Labeling according to EC Directive:
This product is not classified according to the EU regulations.

16. OTHER INFORMATION

This MSDS was prepared in compliance with EU Directive 91/155/EEC as amended by 2001/58/EC and USA OSHA Hazard Communication Standard (29 CFR 1910.1200).

To the best of our knowledge, the information contained herein is accurate.
However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Appendix
This Material Safety Data Sheet covers these products :

Grade name	Appearance	Melting Point	Hazardous components under OSHA HCS	
C215N(W1)	White pellet	310 °C (590 °F)	Glass fiber	15 %
			Antimony compound	6.0 %
			Titanium dioxide	2.5 %
C430NW	White pellet	310 °C (590 °F)	Glass fiber	30 %
			Antimony compound	4.0 %
			Titanium dioxide	1.8 %
CH230N(W2)	White pellet	310 °C (590 °F)	Glass fiber	30%
			Antimony compound	4.0%
			Titanium dioxide	3.0%
CH230NW	White pellet	310 °C (590 °F)	Glass fiber	30 %
			Antimony compound	4.0 %
			Titanium dioxide	2.4 %
CH230NWX	White pellet	310 °C (590 °F)	Glass fiber	30 %
			Antimony compound	4.0 %
			Titanium dioxide	3.0 %
CT230NWX	White pellet	310 °C (590 °F)	Glass fiber	15 %
			Antimony compound	4.0 %
			Titanium dioxide	3.0 %
E430N(UB)	Gray pellet	320 °C (608 °F)	Glass fiber	30 %
			Antimony compound	4.0 %
			Titanium dioxide	1.1 %

乐清市城南电镀有限公司

物质安全数据（MSDS）

1、化学产品及企业标识

物品名称：电镀锡

英文名称：Tin

CAS NO.：7440-31-5

供应商名称：乐清市城南电镀有限公司

地 址：乐成镇界岱工业区

电 话：0577-62519214

传 真：0577-62515033

2、化学成分/有关数据

化学成分含量（%）									
Sn	As	Fe	Cu	Pb	Bi	Sb	Cd	Zn	AL
99.99	0.0005	0.0025	0.0015	0.0003	0.0002	0.0025	0.0003	0.0017	0.0005

3、危险性说明

危险性/对健康的危害性

健康危害:本品对眼和呼吸道有刺激性. 长期吸入锡的烟雾或粉尘可引起锡尘肺（或锡末沉着症）。

环境危害： 对环境有危害，对水体可造成污染。

燃爆危险： 本品可燃，具刺激性。

4、急救措施

皮肤接触： 脱去污染的衣着，用流动清水冲洗。

眼睛接触： 提起眼睑，用流动清水或生理盐水冲洗。就医。

吸入： 脱离现场至空气新鲜处。如呼吸困难，给输氧。就医。

食入： 饮足量温水，催吐。就医。

5、消防措施

危险特性： 其粉体遇高温、明火能燃烧。

有害燃烧产物： 氧化锡。

灭火方法： 消防人员须佩戴防毒面具、穿全身消防服，在上风向灭火。灭火剂：干粉、砂土。

6、排除故障的措施

应急处理： 隔离泄漏污染区，限制出入。切断火源。建议应急处理人员戴防尘面具（全面罩），穿防毒服。用洁净的铲子收集于干燥、洁净、有盖的容器中。若大量泄漏，收集回收。

7、安全处置和储存

操作注意事项：

操作人员必须经过专门培训，严格遵守操作规程。建议操作人员佩戴自吸过滤式防尘口罩，戴化学安全防护眼镜，穿防毒物渗透工作服，戴橡胶手套。远离火种、热源，工作场所严禁吸烟。使用防爆型的通风系统和设备。避免与氧化剂、酸类接触。搬运时轻装轻卸，防止包装破损。配备相应品种和数量的消防器材及泄漏应急处理设备。倒空的容器可能残留有害物。

储存注意事项：

储存于阴凉、通风的库房。远离火种、热源。应与氧化剂、酸类分开存放，切忌混储。配备相应品种和数量的消防器材。储区应备有合适的材料收容泄漏物。

8、接触控制及人体防护

监测方法： 火焰原子吸收光谱法；催化极谱法

工程控制： 一般不需要特殊防护，但需防止烟尘危害。

呼吸系统防护： 空气中粉尘浓度超标时，必须佩戴自吸过滤式防尘口罩。紧急事态抢救或撤离时，应该佩戴空气呼吸器。

眼睛防护： 戴化学安全防护眼镜。

身体防护： 穿防毒物渗透工作服。

手防护： 戴橡胶手套。

其他防护： -----

9、物理及化学性质

主要成分： 纯品

外观与性状： 银白色金属。

pH： ----

熔点(℃)： 232

沸点(℃)： 2260

相对密度(水=1)： 7.29

相对蒸气密度(空气=1)： 无资料

饱和蒸气压(kPa)： 无资料

燃烧热(kJ/mol)： 无资料

10、稳定性和可反应性

稳定性： 稳定

禁配物： 强氧化剂、强酸。

11、有关此化学剂毒性的资料

请参阅第 3 章节的此化学剂的危险性和对人体的危害性。

12、有关生态的资料

生态毒性性：无相关资料

污染水质：无相关资料

13、有关排污的说明

咨询当地有关排污的法规和要求

废物排放：按照当地有关的法规和要求排污

14、运送资料

运输注意事项：运输前应检查包装容器是否完整,密封,运输过程中要确保容器不泄漏,不倒塌,不坠落,不损坏。运输时运输车辆应配备相应品种和数量的消防器材及泄漏应急处理设备。

15、法律法规

化学危险物品安全管理条例 (1987 年 2 月 17 日国务院发布)，化学危险物品安全管理条例实施细则 (化劳发[1992] 677 号)，工作场所安全使用化学品规定 ([1996]劳部发 423 号)等法规，针对化学危险品的安全使用、生产、储存、运输、装卸等方面均作了相应规定；车间空气中锡卫生标准 (GB 16217-1996)，规定了车间空气中该物质的最高容许浓度及检测方法。

16、其他资料

制作单位：乐清市城南电镀有限公司

联 系 人：谭成珺

日　　期：2009 年 02 月 25 日

材 料 安 全 数 据 表 （ MSDS）

一、物品与厂商资料

物品名称：黄铜带	
供应商：中铝上海铜业有限公司	
二、成分辨别资料	
化学性质：铅含量在铜合金中最高可达 4%	
危害物质成分之中英文名称	浓度或浓度范围（成百分比）
铜 Cu	64.2-65.5
铅 Pb	0.01
铁 Fe	0.001
锌 Zn	余量
最 重 要 危害效应	健康危害效应：在生产铜带时铅不会产生化学反应
	急性：无
	慢性：经常性的触摸铜制品直接接触口腔可能导致慢性病
	环境影响：在熔铸时会造成环境影响
	物理性质化学危害：铅挥发
	特殊危害：大量吸入肺内会造成慢性铅中毒
主要症状：	人身铅含量增加但未发现病症
物品危害分类：无	
四、急救措施	
不同解救途径之解救方法：	
吸入：保持环境通风，操作熔铸坯料时	
皮肤接触：无	
食　　入：无	
最重要症状及危害效应：铅中毒就医	
对急救人员之防护：送医院输氧	
提示：慢性中毒	
五、灭火措施	
适用灭火剂：二氧化碳干粉、泡沫、水	
灭火时可能遭遇之特殊危害：不会产生化学反应	
特殊灭火程序：无	
消防人员之特殊防护设备：不需要	
六、泄露处理方法	
个人应注意事项：穿劳保用品	
环境注意事项：直接无环境危害	
处理方法：通风避免直接吸入熔铸坯料时的空气和尘土	
七、安全处理与储存方法	
处置：安全防护眼睛	
储存：有通风装置	
八、预防措施	
工程控制：/	
控制参数：/	
八小时内时量平均容许浓度/短时间量平均容许浓度/最高容许浓度	

生物指示：/	
个人防护设备：工作时戴好劳保用品不接触铜带	
呼吸防护：同上	
上颌防护：同上	
眼镜防护：同上	
皮肤及身体防护：同上、上班时洗澡	
九、物理及化学性质	
物质状态：固态	形状：板带及卷铜
颜色：金黄色	气味：无
PH 值：/	沸点/沸点范围
	闪火点：无
分解温度：1200 度	测试方法：检测
自燃温度：不会自燃	爆炸界限：
蒸汽压：/	蒸汽密度：/
密度：8.8	溶解度：1200 度
十、安全性及反应	
安全性：在常温下稳定	
特殊状态下可能之危害反应：熔铸时加温 1200 度会挥发	
应避免之状况：加强通风	
应避免之物质：铅含量大于 1000ppm	
危害分解物：铅挥发	
十一、毒性资料	
急毒性：未发现	
局部效应：未发现	
致敏感性：未发现	
慢毒性或长期毒性：慢性	
特殊效应：未发现	
十二、生态资料	
生态资料：铅含量大于 1000 个 ppm 可能会造成环境污染	
十三、废弃处置方法	
废弃处置方法：循环使用	
十四、运送资料	
国际运送规定：防雨水、防污染	
联合国编号：EV 有害物质限制指令（ROHS）	
国内运送规定：无	
特殊运送方法及注意事项：无	
十五、法规资料	
适用法规：根据 EV 有害物质限制指令（ROHS）法律法规	
十六、其他资料	
参 考 文 献	2002/Pd/CE 指令简称 WEEE 其内容是要延伸生产者责任，加强对报废电子电气设备
	的循环回收以及再利用的管理，禁止含有超标有害物质进入欧盟市场

材料安全数据表（MSDS）

第 1 部分　　产品概述

产品名称：锡磷青铜带　　Phosphor bronze strip

代名词：无

生产商：中铝上海铜业有限公司

编写日期：2009 年 3 月

第 2 部分　　主要组成与性状

主要组成：

化 学 成 分，% 不大于					
Fe	Sn	P	Zn	Cu	Cu+Sn+P
0.1	5.5~7.0	0.03~0.35	0.2	余量	不小于 99.5

第 3 部分　　使用与储存

储存：应存放于通风良好、干燥、且避免日晒雨淋之场所

使用：注意划伤人员

第 4 部分　　物理和化学特性

外观：黄色或红色的金属色泽、不溶于水、无味。

熔点：1290-2260F

溶解性：不溶于水。

主要用途：接插端子等。

密度：8800kg/m^3

第 5 部分　　生态影响

可能的环境影响：

执行欧洲环标准，对生态无影响

序号	化学成分	限制标准	
1	Pb 铅及铅的化合物	＜80PPM	＜0.008%
2	Cd 镉及镉的化合物	＜5PPM	＜0.0005%
3	Hg 汞	＜5PPM	＜0.0005%
4	Ba 钡	＜100 PPM	＜0.01%
5	Sb 锑	＜80 PPM	＜0.006%
6	Sc 硒	＜500 PPM	＜0.05%
7	As 砷	＜25 PPM	＜0.0025%
8	铅、镉、汞、六价格 Cr	＜100 PPM	＜0.01%

第 6 部分　　急救措施

皮肤接触：清除多余粉尘，用肥皂水清洗
眼睛接触：立即翻开上下眼睑，用水清洗
吸入：至空气新鲜处，服用药物

第 7 部分　　消防措施

危险特性：液态金属遇水反应强烈。
有害燃烧产物：

第 8 部分　　接触控制/个体防护

最高容许浓度：CU：0.1MG/M^3　SN：2MG/CUM
监测方法：OSHA PEL 标准
工程控制：加强通风。
呼吸系统防护：超过标准浓度时佩带过滤式防毒面具。
眼睛防护：佩戴边部带遮片的防护眼镜。
身体防护：穿戴防护工作服。
手防护：佩戴防护手套。
其他防护：面罩，特制的染色镜。

第 9 部分　　稳定性和反应活性

稳定性：稳定
禁配物：酸、氧化剂
避免接触的条件：水，高热，明火，化学反应

第 10 部分　　毒理学资料

急性毒性：无
亚急性和慢性毒性：无
致敏性：金属过敏，皮炎，手足角质化，上呼吸道不适。
致癌性：无

第 11 部分：生态学资料

生态毒性：无

第 12 部分　　废弃处置

废弃物性质：□危险废物 ■工业固体废物
废弃处置方法：可回收再利用

第 13 部分　　运输信息

包装方法:密封包装(参照《重有色金属加工产品的包装、标志、运输和贮存》(GB8888-88)
运输注意事项：防止水分接触，导致腐蚀

To : LINK UPON ADVANCED MATERIAL CORP.

MITSUI CHEMICALS INC.
SHIODOME CITY CENTER 1-5-2,
HIGASHI-SHIMBASHI, MINATO-KU,
TOKYO 105-7117, JAPAN
TEL +81-3-6253-3494

Issue Date 2010/10/20

CERTIFICATE OF ANALYSIS

Product name ARLEN E430N(T5)
Lot No. 100843G

Item	Unit	Result
A s h	%	31.3
T S	MPa	200
F M	MPa	12000
F S	MPa	290
I Z O D	J/m	85
H D T	℃	303
E L	%	4

We hereby certify that the above is true and correct.

Signature by Quality Assurance Team Kouchi Arai

Date 2010.10.20

Materials Information

PRODUCT NAME: LCP M-401

COMPOSITION/INFORMATION OF LCP M-401

SUBSTANCE/MIXTURE: Mixture
SYNONYM(S): Aromatic Liquid Crystal Polymer(LCP)
INGREDIENTS AND COMPOSITON: LCP resin 55%, Glass fiber 25%, Mine fiber 20%
ADDITIVES: < 2%
CHEMICAL FORMULA: Not open

NAME OF COMPANY: DZT Engineering Plastics Tech. Co.,Ltd
ADDRESS: Building 2 Zhichong Industrial Park, Hi-Tech Zone, Jiangmen City, Guangdong Province, China
SECTION IN CHARGE: Quality Assurance Department
TEL/FAX : +86-750-3689920/+86-750-3689921
EMERGENCY TEL: +86-750-3689705

物质安全资料表

一、物品与厂商资料

物品名称：**普通黄铜带**
制造商及供应商名称、地址及电话： 公司：宁波兴业盛泰电子金属材料有限公司 地址：浙江省宁波市杭州湾经济开发区金溪路、 电话：（0574）63073314
部门：质量服务部

二、成分辨识资料

化学性质：

普通黄铜带的化学成分，%									
合　金	Cu	Fe	Pb	Al	Mn	Sn	Ni	Zn	杂质总和
H70 [C2600]	68.5~71.5	0.10	0.03	—	—	—	0.5	余量	0.3
H68	67.0~70.0	0.10	0.03	—	—	—	0.5	余量	0.3
H65 [C2680]	63.5~68.0	0.10	0.03	—	—	—	0.5	余量	0.3
H63 [C2720]	62.0~65.0	0.15	0.08	—	—	—	0.5	余量	0.5
H62 [C2800]	60.5~63.5	0.15	0.08	—	—	—	0.5	余量	0.5

三、危害辨识资料

辨识符和危害描述：金属性固体，易碰伤身体
对人体和环境的特殊危害：易碰伤身体
有害影响和表现：易碰伤身体

四、急救措施

不同暴露途径之急救方法： · 吸入（因深加工而形成的粉尘和气体）：**呼吸新鲜空气，若有不适找医生就诊** 皮肤接触：**不会产生健康危害** · 眼睛接触：**睁大眼睛，并用水冲洗数分钟** · 食入：**若有持续不适找医生就诊**
对医师之提示：**无**

五、灭火措施

适用灭火剂：不易燃烧

物质安全资料表

灭火时可能遭遇之特殊危害： 无
消防人员之特殊防护設备: 防护衣、防护手套等
其它提示： 无

六、洩漏处理方法

个人应注意事项： 无
环境注意事项： 无
清理方法： 无
其它提示： 无

七、安全处置与储存方法

处置: **安全处置有关信息: 注意安全** **火灾及泄漏保护的有关信息：** 无泄露
储存: 单独贮存；禁止与强氧化剂、酸、碱等物质混合储存； 不要在潮湿和有水蒸气的环境下储存； 远离热源和引火源；检查所有新进铜带，清楚标示及无受损； 须具备随时可用于火灾的紧急处理装备

八、暴露预防及个人防护措施

工程控制： -
呼吸系统防护：供气式呼吸防护具
手部防护：耐磨防护手套防护衣

九、物理及化学性质

化学性能：化学稳定性强，对稀硫酸有较强的抗蚀性； 易于在流速较大的潮湿水蒸气中腐蚀； 高温下，易与 Cl、Br、F 及其氢化物、干燥 CO2 发生反应，形成挥发性化合物。	
物理特性：具有较高的弹性、耐磨性和抗磁性， 在热态和冷态均可压力加工，易于焊接和钎焊， 可削性、可塑性、延展性、铸造性较好， 有较强的热导率、电导率，	
物质状况：固体	形状：带状
分解温度：996℃	气味：无味
密度：8.8 g/cm3	溶解性：不溶于水

十、安定性及反应性

物质安全资料表

应避免之状况：避免加熱，与流速大的水蒸气混合
应避免之物质：强氧化剂、水蒸气
危害分解物： 无

十一、毒性资料

急毒性：无
其它：

十二、生态资料

对水的危害等级： 无
概述：

十三、废弃处置方法

1．参考相关法规处理，符合相关环保法规
2．作为产业废弃物可再回收利用

十四、运输资料

概述：搬运时注意安全防护，严禁摔落、互相碰撞、损伤； 不要用油污的手接触铜带； 其他根据消防法、道路安全运输等法令实施。

十五、法规资料

EC 指令有关法规辨识：ROSH 指令 **其它**：GB/T5231-2001 加工铜及铜合金化学成分和产品形状 《部件和材料中环境管理物质 管理规定》（索尼 SS-00259-0-2005） **本地法规**：环境保护法’固体废弃污染环境防治法’消防法 **道路交通安全规则：** **作业环境空气中有害物质含量的有关技术指令：大气污染防治法** **对水的污染等级：无** **对水没有危害性/污染无**

十六、其他资料

本资料表阐述了就环保和劳工安全方面我们对处于出货时状态下的产品的现有知识。 **然而，本资料表不就某些产品性能做出任何担保，不具有任何法律约束性质。**

制表：2010 年 1 月

一、物品与厂商资料

物品名称：锡磷青铜带
制造商及供应商名称、地址及电话： 公司：宁波兴业盛泰电子金属材料有限公司 地址：浙江省宁波市杭州湾经济开发区金溪路 电话：（0574）63073314
部门：质量服务部

二、成分辨识资料

化学性质:

锡磷青铜带的化学成分，%											
合 金	Sn	Al	Zn	Ni	Fe	Pb	P	As	Si	Cu	杂质总和
QSn4-0.3 [C51100]	3.5~4.9	—	0.30	0.2	0.10	0.05	0.03~0.35	—	—	余量	—
QSn6.5-0.1 [C5191]	6.0~7.0	0.002	0.3	0.2	0.05	0.02	0.10~0.25	—	—	余量	0.1
QSn6.5-0.4	6.0~7.0	0.002	0.3	0.2	0.02	0.02	0.26~0.40	—	—	余量	0.1
QSn8-0.3 [C5210]	7.0~9.0	—	0.20	0.2	0.10	0.05	0.03~0.35	—	—	余量	—

三、危害辨识资料

辨识符和危害描述：金属性固体，易碰伤身体
对人体和环境的特殊危害：易碰伤身体
有害影响和表现：易碰伤身体

四、急救措施

不同暴露途径之急救方法： · 吸入(因深加工而形成的粉尘和气体)：**呼吸新鲜空气，若有不适找医生就诊** 皮肤接触：**不会产生健康危害** · 眼睛接触：**睁大眼睛，并用水冲洗数分钟** · 食入：**若有持续不适找医生就诊**
对医师之提示：**无**

五、灭火措施

适用灭火剂：不易燃烧

灭火时可能遭遇之特殊危害： 无
消防人员之特殊防护設备：防护衣、防护手套等
其它提示： 无

六、洩漏处理方法

个人应注意事项： 无
环境注意事项： 无
清理方法： 无
其它提示： 无

七、安全处置与储存方法

处置： **安全处置有关信息: 注意安全** **火灾及泄漏保护的有关信息：** 无泄露
储存： 单独贮存；禁止与强氧化剂、酸、碱等物质混合储存； 不要在潮湿和有水蒸气的环境下储存； 远离热源和引火源；检查所有新进铜带，清楚标示及无受损； 须具备随时可用于火灾的紧急处理装备

八、暴露预防及个人防护措施

工程控制： -
呼吸系统防护：供气式呼吸防护具
手部防护：耐磨防护手套防护衣

九、物理及化学性质

化学性能：化学稳定性强，对稀硫酸有较强的抗蚀性； 易于在流速较大的潮湿水蒸气中腐蚀； 高温下，易与 Cl、Br、F 及其氢化物、干燥 CO2 发生反应，形成挥发性化合物。	
物理特性：具有较高的弹性、耐磨性和抗磁性， 在热态和冷态均可压力加工，易于焊接和钎焊， 可削性、可塑性、延展性、铸造性较好， 有较强的热导率、电导率，	
物质状况：固体	形状：带状
分解温度：996℃	气味：无味
密度：8.8 g/cm3	溶解性：不溶于水

十、安定性及反应性

应避免之状况： 避免加热，与流速大的水蒸气混合
应避免之物质： 强氧化剂、水蒸气

危害分解物： 无

十一、毒性资料

急毒性：无
其它：

十二、生态资料

对水的危害等级： 无
概述：

十三、废弃处置方法

1．参考相关法规处理，符合相关环保法规
2．作为产业废弃物可再回收利用

十四、运输资料

概述：搬运时注意安全防护，严禁摔落、互相碰撞、损伤； 不要用油污的手接触铜带； 其他根据消防法、道路安全运输等法令实施。

十五、法规资料

EC 指令有关法规辨识：ROSH 指令
其它：GB/T5231-2001 加工铜及铜合金化学成分和产品形状
《部件和材料中环境管理物质 管理规定》（索尼 SS-00259-0-2005）
本地法规：环境保护法’固体废弃污染环境防治法’消防法
道路交通安全规则：
作业环境空气中有害物质含量的有关技术指令：大气污染防治法
对水的污染等级：无
对水没有危害性/污染无

十六、其他资料

本资料表阐述了就环保和劳工安全方面我们对处于出货时状态下的产品的现有知识。 **然而，本资料表不就某些产品性能做出任何担保，不具有任何法律约束性质。**

制表：2010 年 1 月

物质安全资料表

一、物品与厂商资料

物品名称：**普通黄铜带**
制造商及供应商名称、地址及电话： 公司：宁波兴业盛泰电子金属材料有限公司 地址：浙江省宁波市杭州湾经济开发区金溪路、 电话：（0574）63073314
部门：质量服务部

二、成分辨识资料

化学性质：

普通黄铜带的化学成分，%									
合　金	Cu	Fe	Pb	Al	Mn	Sn	Ni	Zn	杂质总和
H70 [C2600]	68.5~71.5	0.10	0.03	—	—	—	0.5	余量	0.3
H68	67.0~70.0	0.10	0.03	—	—	—	0.5	余量	0.3
H65 [C2680]	63.5~68.0	0.10	0.03	—	—	—	0.5	余量	0.3
H63 [C2720]	62.0~65.0	0.15	0.08	—	—	—	0.5	余量	0.5
H62 [C2800]	60.5~63.5	0.15	0.08	—	—	—	0.5	余量	0.5

三、危害辨识资料

辨识符和危害描述：金属性固体，易碰伤身体
对人体和环境的特殊危害：易碰伤身体
有害影响和表现：易碰伤身体

四、急救措施

不同暴露途径之急救方法： · 吸入（因深加工而形成的粉尘和气体）：**呼吸新鲜空气，若有不适找医生就诊** 皮肤接触：**不会产生健康危害** · 眼睛接触：**睁大眼睛，并用水冲洗数分钟** · 食入：**若有持续不适找医生就诊**
对医师之提示：**无**

五、灭火措施

适用灭火剂：不易燃烧

物质安全资料表

灭火时可能遭遇之特殊危害： 无
消防人员之特殊防护設备: 防护衣、防护手套等
其它提示： 无

六、洩漏处理方法

个人应注意事项： 无
环境注意事项： 无
清理方法： 无
其它提示： 无

七、安全处置与储存方法

处置: **安全处置有关信息: 注意安全** **火灾及泄漏保护的有关信息：** 无泄露
储存: 单独贮存；禁止与强氧化剂、酸、碱等物质混合储存； 不要在潮湿和有水蒸气的环境下储存； 远离热源和引火源；检查所有新进铜带，清楚标示及无受损； 须具备随时可用于火灾的紧急处理装备

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物理特性：具有较高的弹性、耐磨性和抗磁性， 在热态和冷态均可压力加工，易于焊接和钎焊， 可削性、可塑性、延展性、铸造性较好， 有较强的热导率、电导率，	
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分解温度：996℃	气味：无味
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十、安定性及反应性

物质安全资料表

应避免之状况：避免加熱，与流速大的水蒸气混合
应避免之物质：强氧化剂、水蒸气
危害分解物： 无

十一、毒性资料

急毒性：无
其它：

十二、生态资料

对水的危害等级： 无
概述：

十三、废弃处置方法

1．参考相关法规处理，符合相关环保法规
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概述：搬运时注意安全防护，严禁摔落、互相碰撞、损伤； 不要用油污的手接触铜带； 其他根据消防法、道路安全运输等法令实施。

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十六、其他资料

本资料表阐述了就环保和劳工安全方面我们对处于出货时状态下的产品的现有知识。 **然而，本资料表不就某些产品性能做出任何担保，不具有任何法律约束性质。**

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