昆 山 金 成 功 电 子 有 限 公 司

KUNSHAN GOLDEN SUCCESS ELECTRONICS CO.，LTD

承　認　書

SPECIFICATION FOR APPROVAL

客戶名稱 CUSTOMER NAME	华凌光电(常熟)有限公司		
品　名 DESCRIPTION	FFC CABLE CONN	客　户　料　号 CUSTOMER PATR NO	CN55231XXXXXXXXXXX00
圖面編號 MODELNO	SD-F-A0.5-006-X-SMT-2		
客戶承認 APPROVED BY	承認 2018.01.17 工程		
常温下保存 90 天			
核　准 APPROVAL	審　核 CHECK	制　作 MAKE	
		Joy	
日期 DATE： 2018. 1. 15	日期 DATE： 2018. 1. 15		

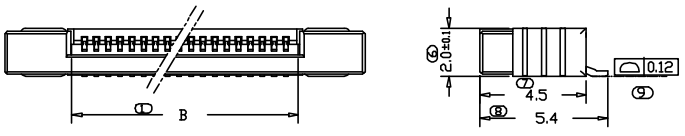
地址：昆山市桃花江路 77 号　T：0512-57086111　F
Http://www.kscgic.com　E-mail:Jcgic@kscgic.cc

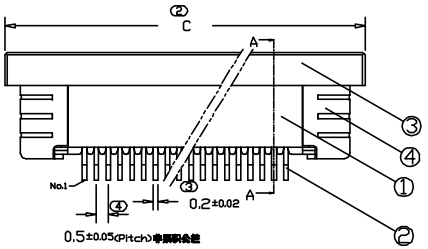
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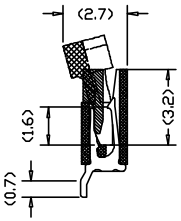
first FC components

FIRST Components srl Via Cavour 69, 21020 Buguggiate (VA)

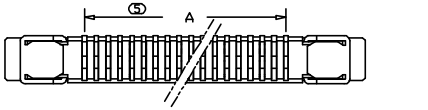
T. +39 0332 1888005　web: www.first-components.com

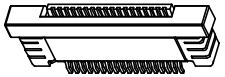


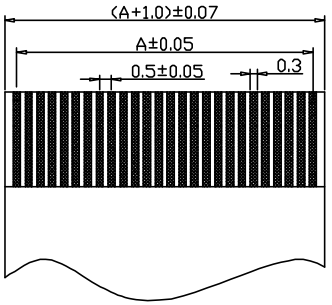


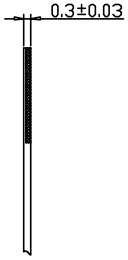


SECTION A-A





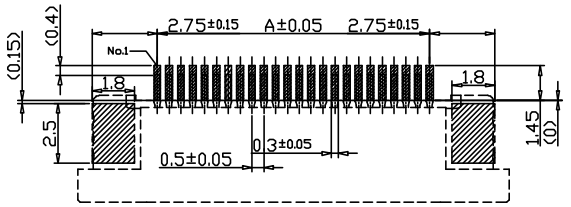




适用FPC寸法
APPLICABLE FPC

技术指标:

1、塑件表面应光洁、无毛刺、明显收缩、缺陷、裂纹等现象;
2、温度范围: -25° C~85° C;
3、额定电压: 50V, AC, DC(等效);
4、接触电阻: ≤0.03Ω;
5、绝缘电阻: ≥500MΩ;
6、耐压: 500V, AC/minute.



适用线路板
RECOMMENDED PCB LAYOUT

PIN位	A	B	C	PIN位	A	B	C
4	1.5	2.56	8.2	33	16	17.06	22.7
5	2	3.06	8.7	34	16.5	17.56	23.2
6	2.5	3.56	9.2	35	17	18.06	23.7
7	3	4.06	9.7	36	17.5	18.56	24.2
8	3.5	4.56	10.2	37	18	19.06	24.7
9	4	5.06	10.7	38	18.5	19.56	25.2
10	4.5	5.56	11.2	39	19	20.06	25.7
11	5	6.06	11.7	40	19.5	20.56	26.2
12	5.5	6.56	12.2	41	20	21.06	26.7
13	6	7.06	12.7	42	20.5	21.56	27.2
14	6.5	7.56	13.2	43	21	22.06	27.7
15	7	8.06	13.7	44	21.5	22.56	28.2
16	7.5	8.56	14.2	45	22	23.06	28.7
17	8	9.06	14.7	46	22.5	23.56	29.2
18	8.5	9.56	15.2	47	23	24.06	29.7
19	9	10.06	15.7	48	23.5	24.56	30.2
20	9.5	10.56	16.2	49	24	25.06	30.7
21	10	11.06	16.7	50	24.5	25.56	31.2
22	10.5	11.56	17.2	51	25	26.06	31.7
23	11	12.06	17.7	52	25.5	26.56	32.2
24	11.5	12.56	18.2	53	26	27.06	32.7
25	12	13.06	18.7	54	26.5	27.56	33.2
26	12.5	13.56	19.2	55	27	28.06	33.7
27	13	14.06	19.7	56	27.5	28.56	34.2
28	13.5	14.56	20.2	57	28	29.06	34.7
29	14	15.06	20.7	58	28.5	29.56	35.2
30	14.5	15.56	21.2	59	29	30.06	35.7
31	15	16.06	21.7	60	29.5	30.56	36.2
32	15.5	16.56	22.2				

序号	名 称	材 料	数 量	附 注
4	铆钉 Fitting Nail	磷铜铜 Phosphor Bronze	2	电镀(铜): 整个表面镀金镀30u"MIN,再镀镍 80u"MIN.
3	锁扣 Actuator	LCP(UL94V-0)	1	黑色
2	端子 Contact	磷铜铜 Phosphor Bronze	nx1	电镀(铜): 整个表面镀金镀30u"MIN,再镀镍 80u"MIN.
1	胶壳 Housing	LCP(UL94V-0)	1	本色

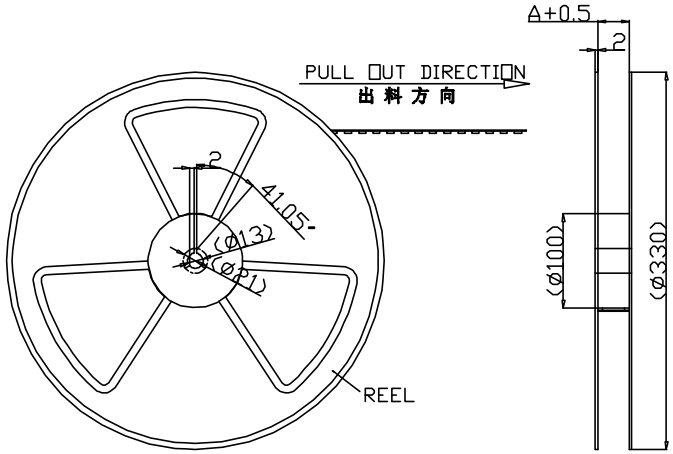
Marker	Describe	Data	DSND

UNSPECIFIED TOLERANCE	≤4	4-16	≥16	ANGULAR
	±0.20	±0.30	±0.40	±5°

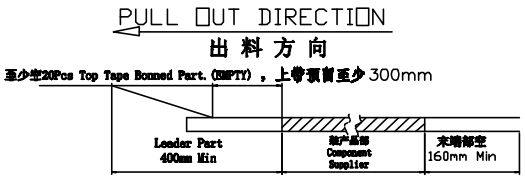
DSND	LICY	DATE	2011.04.02	SCALE: 1 : 1	NAME: FPC CABLE CONNECTOR
CHKD	AWEN	DATE	2011.04.02	VIEW:	
APVD	AWEN	DATE	2011.04.02	UNIT: mm	SD-F-A0.5-006-X-SMT-2

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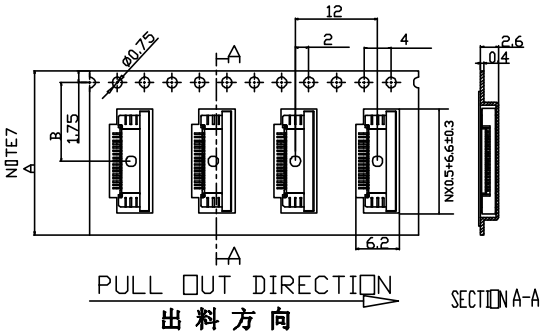
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FIRST Components s.r.l. Via Cavour, 69 21020 Buguggiate (VA) Italy Tel. +39 0332 1888005 Fax +39 0332 320856
web: www.first-components.com

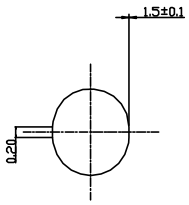


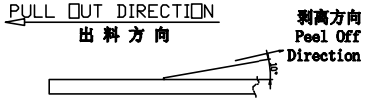
Note:
1. Sprocket holes pitch cumulative tolerance ±0.1.(Accumulative Pitch ±0.2)
2. Carrier camber is within 1mm in 100mm.
3. Number of connectors: 2000Pcs/REEL
4. All dimensions meet EIA-481-D requirements.
5. Thick ness:0.4±0.1mm.
6. Material of top fape:PET,PE.PEF
7. Material of carrier fape:Poystyrene
8. For tape width (dimension A) 16mm and 24mm a pilot hole is provided on one side. For tape width (dimension A)32mm and 44mm pilot holes are provided on both sides.



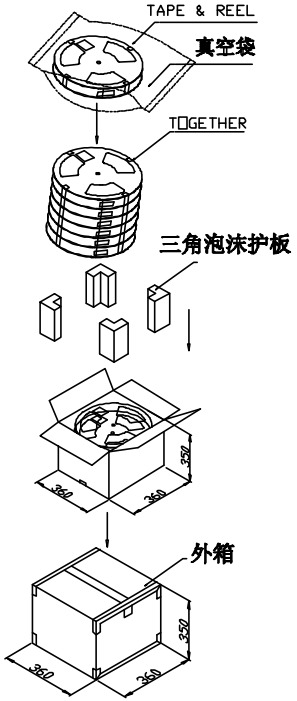
载带带头及带尾尺寸
Lead tape length







载带上下带剥离强度：0.1N--1.3N(10g-130g)
Peeling off force of top tape:
0.1N--1.3N(10g-130g)



REEL WIDTH	16	24	32	44	56
PCS/REEL	2000				
REEL/BOX	16	12	9	7	5
BOX/PCS	32K	24K	18K	14K	10K
CTN. SIZE	360*360*350				

芯数 Pin (n)	尺寸 Size A	B	C
4-5	16.0	7.5	----
6-19	24.0	11.5	----
20-31	32.0	14.2	28.4
32-55	44.0	20.2	40.4
56-60	56.0	26.2	52.4

Marker	Describe	Data	DSND

UNSPECIFIED TOLERANCE	≤4	4-16	≥16	ANGULAR
	±0.15	±0.20	±0.30	±5°

DSND	LICY	DATE	2011.01.01	SCALE:	1 : 1
CHKD	AWEN	DATE	2011.01.01	VIEW:	
APVD	AWEN	DATE	2011.01.01	UNIT:	mm

0.5P 2.0H FPC 包装图

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KUN SHAN GOLD SUCCESS ELECTRONICS CO., LTD

PK-SD-F-A0.5-00N-X-SMT-2

昆山金成功电子有限公司

产品尺寸检测记录

日期：2018-1-15

产品名称	插座	规格型号	SD-F-A0.5-006-X-SMT-2	客户名称	**华凌**
交验单位	成品仓库	抽检数量	10 pcs	物料编号	/

代号	尺寸标准	仪器	检测值 (单位：mm)										判定
			1	2	3	4	5	6	7	8	9	10	
1	2.5+/-0.2	B	2.54	2.53	2.51	2.50	2.52	2.54	2.55	2.55	2.53	2.52	OK
2	3.56+/-0.2	B	3.58	3.56	3.59	3.57	3.58	3.59	3.52	3.56	3.56	3.52	OK
3	9.2+/-0.3	B	9.25	9.26	9.27	9.25	9.26	9.28	9.23	9.24	9.23	9.2	OK
4	0.5±0.05	B	0.49	0.49	0.51	0.51	0.49	0.50	0.51	0.51	0.50	0.51	OK
5	4.5+/-0.3	B	4.5	4.52	4.51	4.52	4.48	4.49	4.50	4.51	4.50	4.52	OK
6	5.4+/-0.3	B	5.416	5.424	5.421	5.419	5.421	5.416	5.421	5.419	5.416	5.419	OK
7	2.0+/-0.1	B	2.024	2.014	2.006	1.998	1.996	2.024	2.006	1.998	2.024	1.998	OK
8	0.2+/-0.02	B	0.207	0.209	0.198	0.211	0.206	0.207	0.198	0.211	0.207	0.211	OK
9	2.7±0.2	B	2.713	2.687	2.706	2.698	2.712	2.713	2.706	2.698	2.713	2.698	OK
10	1.6±0.2	B	1.605	1.609	1.608	1.598	1.612	1.605	1.608	1.598	1.605	1.598	OK
11	0.7±0.2	B	0.712	0.712	0.683	0.709	0.692	0.712	0.683	0.709	0.712	0.709	OK

综合判定	☑ 合格 □ 不合格	检测日期	
检测工具及其编号:		说明：抽检数量≥10pcs时，只记录10个数据。	
A.目视 B.二次元(E04) C.千分尺( )			
D.卡尺( ) E.投影仪( ) F.深度规( )		检验员	审核
		邱月娥	李小英
备注：			

表单号：XFE-QER-QC-045 A/1

产 品 规 格 书
PRODUCT SPECIFICATION

【1】适用范围 SCOPE

本规格书适用于：0.5 间距柔性扁平电缆连接器

This specification covers the 0.5mm Pitch FPC/FFC Connectors series.

【2】产品名称及型号 PRODUCT NAME AND PART NUMBER

产品名称 Product Name	产品型号 Part Number
FFC/FPC 扁平电缆连接器 FPC/FFC Connectors series	n:pin(4-60)

【3】定格 RATINGS

项目 Item	规 格	Requirement
最大容许电压 Rated Voltage(MAX)	50V	[AC(有效值 rms)/DC]
最大容许电流 Rated Current(MAX)	0.5A	
使用温度范围 Ambient temperature Range	-25℃ ～ +85℃ *	

*: （包含通电后的温度上升）including terminal temperature rise

默认测试条件 Default test conditions

在具体试验方法中如无其他规定，试验样品应先在下述条件下放置24h后，然后再进行试验，样品的预处理条件和和默认的试验条件如下(标准GB5095)：

环境温度：(18～28)℃　　空气相对湿度：25%～85%　　大气压力：86kPa～106kPa

All test samples shall be preconditioned at(18~28)℃ and 45%~75% relative humidity for 24h ,Before the start of any test.All test shall be carried out at following basic condition: Ambient temperature: (18~28)℃, Relative humidity: 25%~85% , Atmospheric pressure: 86kPa~106kPa

【4】性能 PERFORMANCE

4.1 电气性能 Electrical Performance

项目 Item		条 件 Test Condition	规格 Requirement
4.1.1	接触电阻 Contact Resistance	适合 FPC/FFC 嵌合；开放电压 20mV 以下；短路电流 10mA 的状态下测定。 Mate applicable FPC/FFC and measure by dry circuit，20mV MAX，10mA.	30 mΩ MAX
4.1.2	绝缘电阻 Insulation Resistance	适合 FPC/FFC 嵌合；相邻端子间或端子与地面间加 DC 500V 下测定。 Mate applicable FPC/FFC and apply 500V DC between adjacent terminal or ground.	500MΩ MIN
4.1.3	耐电压 Dielectric	适合 FPC/FFC 嵌合；相邻端子间或端子与地面间加 AC 500V（有效值）历时 1 分钟下测定。 Mate applicable FPC/FFC and apply 500V AC（rms）for 1minute between adjacent terminal or ground.	无击穿现象 No Breakdown

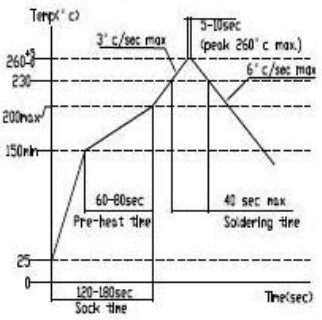
4.2 机械性能 Mechanical Performance

项目 Item		条 件 Test Condition	规格 Requirement
4.2.1	锁紧力及拔出力 Locking and Withdrawal Force	适合 0.3mm 厚的 FFC；用每分钟 25±3mm 的速度；平行地插入、锁紧、拔出。 Insert and extract applicable FFC at the speed rate of 25±3mm/minute.	锁紧力 Locking 1.96*n (N) MAX 拔出力 Withdrawal 0.49*n (N) MIN
4.2.2	端子保持力 Terminal /Housing Retention Force	以用每分钟 25±3mm 的速度平行向外拉 Pull the terminal at the speed rate of 25±3mm per minute	1.96 N MIN

4.3 环境和其他性能 Environmental Performance and Others

项目 Item		条 件 Test Condition	规格 Requirement	
4.3.1	重复插拔 Repeated Insertion and Withdrawal	无通电状态；以 10 次/分钟的速度插拔 20 次 Insertion and withdrawal actuator up to 20 cycles at the speed rate of less than 10 cycles/minute	接触抵抗 Contact Resistance	60 mΩ MAX

项目 Item		条 件 Test Condition	规格 Requirement	
4.3.2	温度上升 Temperature Rise	适合 FPC/FFC 嵌合：最大容许电流通电，温度测定。（UL 498） Carrying rated current load.（UL 498）	温度上升 Temperature Rise	30 ℃MAX
4.3.3	耐振动性 Vibration	DC 1mA 通电状态下：嵌合轴沿 XYZ 三个方向振动；振幅 1.5mm；频率 10-55-10Hz/分；历时 2 小时 Amplitude：1.5mm P-P Sweep time：10-55-10Hz in 1 minute Duration：2 hours in each X.Y.Z. axes	外观 Appearance	无损坏 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX
			瞬断 Discontinuity	1 ms.MAX.
4.3.4	耐冲击性 Shock	DC 1mA 通电状态下：嵌合轴沿相互垂直的 6 个方向：以 490m/s2{50G}冲击：各 3 次 490m/s2{50G}，3 strokes in each X.Y.Z. axes.	外观 Appearance	无损坏 No Damage
			瞬断 Discontinuity	1 ms.MAX.
4.3.5	耐热性 Heat Resistance	适合 FPC/FFC 嵌合：85±2℃的空气中：放置 96 小时：再回到室温中放置 1-2 小时 85±2℃，96 hour	外观 Appearance	无损坏 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX
4.3.6	耐寒性 Cold Resistance	适合 FPC/FFC 嵌合：-40±2℃的空气中：放置 96 小时：再回到室温中放置 1-2 小时 -40±2℃，96 hour	外观 Appearance	无损坏 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX
4.3.7	耐湿性 Humidity	适合 FPC/FFC 嵌合：40±2℃、相对湿度 90-95%的空气中：放置 96 小时：再回到室温中 0.5 小时内测定 Temperature：40±2℃ Relative Humidity：90-95% Duration：96 Hours	外观 Appearance	无损坏 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX
			耐电压 Dielectric Strength	必须满足 4.1.3 Must meet4.1.3
			绝缘抵抗 Insulation Resistance	30 MΩ MIN
4.3.8	温度循环 Temperature Cycling	适合 FPC/FFC 嵌合：-55±3℃ 30 分钟：常温常湿 10-15 分钟：85±2℃ 30 分钟：常温常湿 10-15 分钟，循环 5 次。 5 cycles of: a) -55±3℃ 30 minutes b) 85±2℃ 30 minutes	外观 Appearance	无损坏 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX

项目 Item		条 件 Test Condition	规格 Requirement	
4.3.9	耐盐雾性 Salt Spray	适合 FPC/FFC 嵌合：35±2℃、5±1%的盐水喷雾 24 小时；试验后常温水洗；再室温干燥。 24±4 hours exposure to a salt spray from the 5±1% solution at 35±2℃.	外观 Appearance	无损坏、腐蚀 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX
4.3.10	耐亚硫酸 SO2 Gas	适合 FPC/FFC 嵌合：40±2℃、50±5ppm 的亚硫酸中放置 24 小时 24 hours exposure to 50±5ppm SO2 gas at 40±2℃.	接触抵抗 Contact Resistance	60 mΩ MAX
4.3.11	耐氨性 NH3 Gas	适合 FPC/FFC 嵌合：浓度为 28%的氨水容器中：放置 40 分钟。 40 minutes exposure to NH3 gas evaporating from 28% Ammonia solution	外观 Appearance	无损坏 No Damage
			接触抵抗 Contact Resistance	60 mΩ MAX
4.3.12	可焊性 Solder ability	端子前端基准面 0.2mm 处浸入 245±5℃的锡槽中；历时 2±0.5 sec。 Soldering Time：2±0.5 sec. Soldering Temperature：245±5℃ 0.2 mm from terminal tip	沾敷性 Solder Wetting	沾敷面积 95%以上
4.3.13	耐焊接热 Resistance to Soldering heat	端子前端基准面 0.2mm 处浸入 260±5℃的锡槽中；历时 10±0.5 sec。 Soldering Time：10±0.5 sec. Soldering Temperature：260±5℃ 0.2 mm from terminal tip	外观 Appearance	无损坏、变形 No Damage
3.4.14	耐回流焊温度曲线图 Reflow soldering temperature condition graph	Reflow soldering  Temperature on board pattern side	1. Please check the mount condition (reflow soldering condition) by your own devices beforehand, because the condition changes by the soldering devices, P.C.B, and so on. 2. Thickness of the cream solder shall be maintained 0.12 mm MIN. After reflow process.	

【5】外观形状、寸法及材质 PRODUCT SHAPE, DIMENSIONS AND MATERIALS

图面参照 Refer to the drawing.

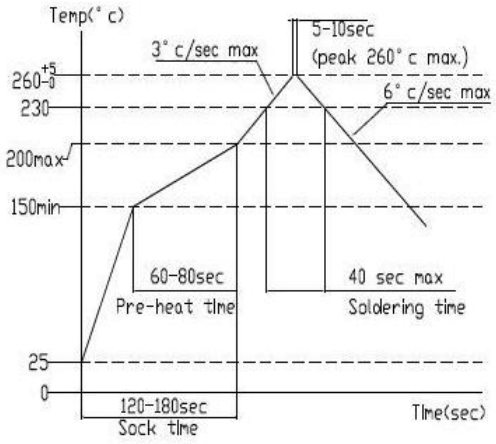
名 称 NAME	材 质 MATERIALS
基座 Housing	LCP(本色) UL 94V-0
锁条 Actuator	LCP(黑色) UL 94V-0
端子 Contact	磷青铜 Phosphor Bronze
焊片 Fitting Nail	磷青铜 Phosphor Bronze
备注 Remark	电镀(锡)：整个表面镀底镍 30u"MIN, 再镀亮锡 80u"MIN. Plating: BRIGHT-TIN 80u"Min OVER Ni 30u"Min..

【6】备注 Remarks

6.1 Refer the recommended PCB pattern to keep the strength of soldering

6.2 When reworking or soldering by hand, do not put solder flux to connector terminal.
That may cause contact problem by flux.

6.3 下图为所推荐的回流焊温度曲线图。
The following diagram shows the recommended reflow soldering temperature profile.



CTI 华测检测 CENTRE TESTING INTERNATIONAL

Test Report

Report No. ECL03J006660001

Applicant POLYPLASTICS TAIWAN CO., LTD.
Address NO. 13. JIANYE RD., DALIAO DIST., KAOHSIUNG CITY 831. TAIWAN(R.O.C.)

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

Sample Name	LCP E130i
Sample Received Date	Nov. 23, 2017
Testing Period	Nov. 23, 2017 to Nov. 27, 2017

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), Phthalates(DBP, BBP, DEHP, DIBP) in the submitted sample(s).

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

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

****

Conclusion

Tested Sample	According to directive	Result
Submitted Sample	RoHS Directive 2011/65/EU with amendment (EU) 2015/863	Pass

****

Pass means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

Tested by Guodong Jiang

Reviewed by Sha Chen

Approved by Lin Zhang
Lin Zhang
Technical Manager

Date Nov. 27, 2017

No. R138201152

Test Report

Report No. ECL03J006660001

Test Method

Test Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium(Cr(VI))	IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 Ed.1.0	UV-Vis/ICP-OES
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers(PBDEs)	IEC 62321-6:2015	GC-MS
Phthalates(DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS

Test Report

Test Result(s)

Tested Item(s)	Result	MDL	Limit
Lead (Pb)	N.D.	2 mg/kg	1000 mg/kg
Cadmium (Cd)	N.D.	2 mg/kg	100 mg/kg
Mercury (Hg)	N.D.	2 mg/kg	1000 mg/kg
Hexavalent Chromium (Cr(VI))	N.D.	8 mg/kg	1000 mg/kg

Tested Item(s)	Result	MDL	Limit
Polybrominated Biphenyls(PBBs)			
Monobromobiphenyl	N.D.	5 mg/kg	1000 mg/kg
Dibromobiphenyl	N.D.	5 mg/kg	
Tribromobiphenyl	N.D.	5 mg/kg	
Tetrabromobiphenyl	N.D.	5 mg/kg	
Pentabromobiphenyl	N.D.	5 mg/kg	
Hexabromobiphenyl	N.D.	5 mg/kg	
Heptabromobiphenyl	N.D.	5 mg/kg	
Octabromobiphenyl	N.D.	5 mg/kg	
Nonabromobiphenyl	N.D.	5 mg/kg	
Decabromobiphenyl	N.D.	5 mg/kg	

Tested Item(s)	Result	MDL	Limit
Polybrominated Diphenyl Ethers(PBDEs)			
Monobromodiphenyl ether	N.D.	5 mg/kg	1000 mg/kg
Dibromodiphenyl ether	N.D.	5 mg/kg	
Tribromodiphenyl ether	N.D.	5 mg/kg	
Tetrabromodiphenyl ether	N.D.	5 mg/kg	
Pentabromodiphenyl ether	N.D.	5 mg/kg	
Hexabromodiphenyl ether	N.D.	5 mg/kg	
Heptabromodiphenyl ether	N.D.	5 mg/kg	
Octabromodiphenyl ether	N.D.	5 mg/kg	
Nonabromodiphenyl ether	N.D.	5 mg/kg	
Decabromodiphenyl ether	N.D.	5 mg/kg	

CTI 华测检测 CENTRE TESTING INTERNATIONAL

Test Report

Report No. ECL03J006660001

Tested Item(s)	Result	MDL	Limit
Phthalates			
Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg	1000 mg/kg
Butylbenzyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg	1000 mg/kg
Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7	N.D.	50 mg/kg	1000 mg/kg
Diisobutyl phthalate(DIBP) CAS#:84-69-5	N.D.	50 mg/kg	1000 mg/kg

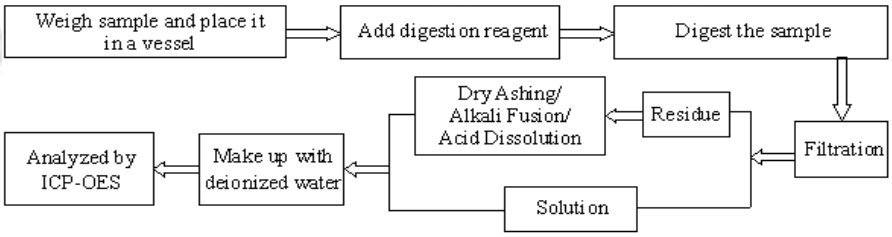
Tested Sample/Part Description Beige-yellow plastic grains

Remark: **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

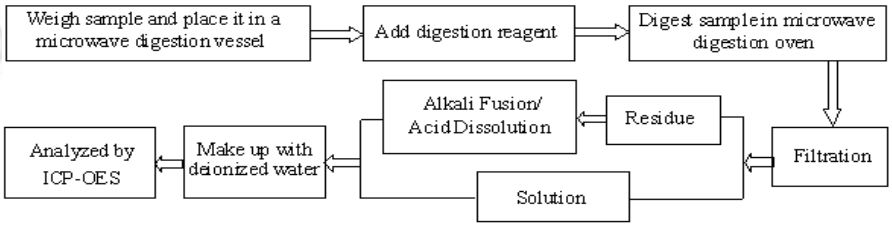
Test Report

Test Process

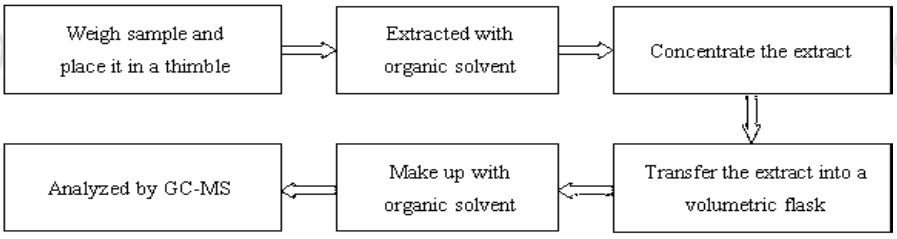
1. Lead (Pb), Cadmium (Cd), Chromium (Cr)



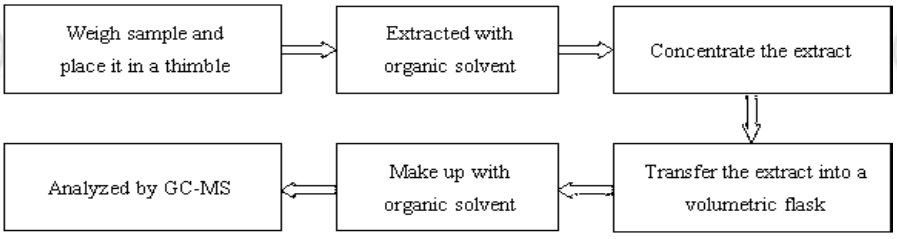
2. Mercury (Hg)



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

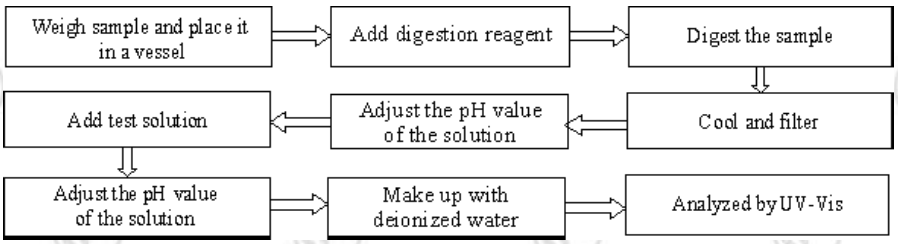


4. Phthalates(DBP, BBP, DEHP, DIBP)



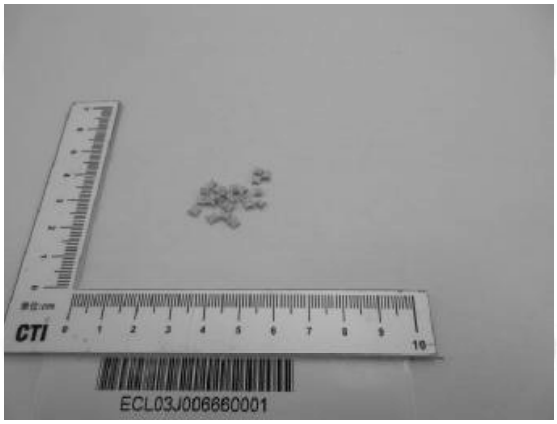
Test Report

5. Hexavalent Chromium(Cr(VI))



Test Report

Photo(s) of the sample(s)



*** End of report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

FUJIAN ZIJIN COPPER CO.,LTD.
NAN GANG DEVELOPMENT PARK SHANGHANG FUJIAN

The following sample(s) was/were submitted and identified on behalf of the clients as : BRONZE:C5191.

SGS Job No. :	18481063 - XM.
Date of Sample Received :.	24 Oct 2017.
Testing Period :.	24 Oct 2017 - 27 Oct 2017.
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 of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU. .

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Xiamen Branch.

Sunny Lu

Sunny Lu.
Approved Signatory.

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Test Results :.

Test Part Description :.

Specimen No.	SGS Sample ID	Description
SN1.	XMN17-013060.002	Copper metal sheet.

Remarks :.

(1) 1 mg/kg = 0.0001%.

(2) MDL = Method Detection Limit.

(3) ND = Not Detected (< MDL).

(4) "-" = Not Regulated.

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Test Method :. With reference to IEC 62321-4:2013+A1:2017 , IEC 62321-5:2013, IEC 62321-7-1:2015, analyzed by ICP-OES and UV-Vis .

Test Item(s).	Limit.	Unit.	MDL.	*002.*
Cadmium (Cd).	100	mg/kg.	2	ND
Lead (Pb).	1,000	mg/kg.	2	ND
Mercury (Hg).	1,000	mg/kg.	2	ND
Hexavalent Chromium (Cr(VI))▾.	-.	µg/cm².	0.10	ND

Notes :.

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f? p=104:30:1742232870351101::::FSP_ORG_ID, FSP_LANG_ID:1258637,25

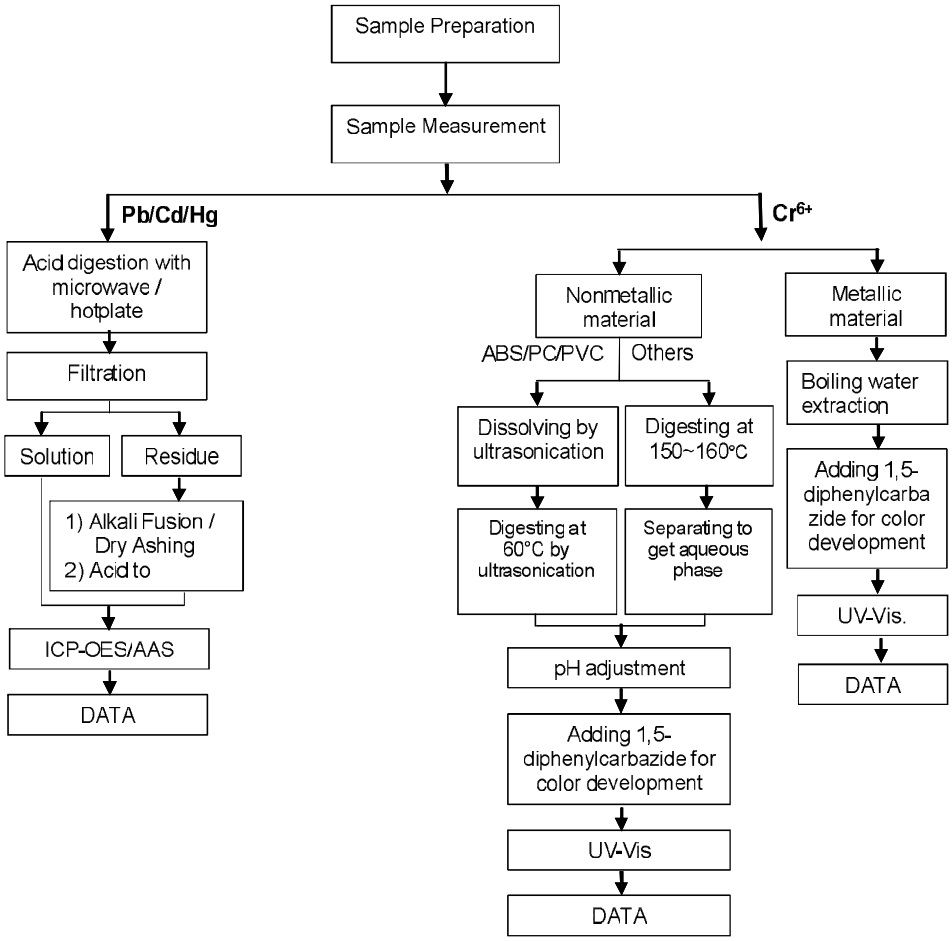
(2) ▾= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI
b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating
c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination
Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing..

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中国·福建·厦门市火炬(翔安)产业区翔虹路31号 邮编: 361101 t (86-592) 5766995 f (86-592) 5766999 e sgs.china@sgs.com
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ATTACHMENTS

Pb/Cd/Hg/Cr^{6+} Testing Flow Chart

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



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Sample photo:.



XMN17-013060.002.

SGS authenticate the photo on original report only.

*** End of Report ***.

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Member of the SGS Group (SGS SA)

Test Report Report No.: 170721021SZN-042 Issue date: Jul. 26, 2017

Applicant: **ZHEJIANG GONGGAN ELECTROPLA CO.,LTD**
ENVIRONMENTAL PROTECTION INDUSTRIAL PARK A1,YUEQING CITY,ZHEJIANG PROVINCE,CHINA

Sample Description:

Test item description……...…: COPPER TIN

Model/Type reference No.……...……: /

Date of Sample Received.....……..…: Jul. 19, 2017

Testing Period ……...……: Jul. 19, 2017 to Jul. 26, 2017

****

Tests conducted:

As requested by the applicant, refer to following page(s) for details.

****

Conclusion:

Submitted sample	Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU)	Pass

****

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Navy Wang
Engineer

Intertek Testing Services Shenzhen Ltd.
6/F. & 7/F.,301A, 302B, Shekou Technology Main Building, Industrial 7th Road, West of Shekou Industrial Avenue, Nanshan District, Shenzhen, Guangdong, China
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Postcode: 518067
www.intertek.com www.intertek.com.cn China Toll-Free:400 886 9926

Test Report Report No.: 170721021SZN-042 Issue date: Jul. 26, 2017

◆ **RoHS Chemical Test:**

(A) Test Result Summary:

Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	ND
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction on Metal)(μg/cm cm^2)	Negative

– ND = Not detected

– Positive = A positive test result indicated the concentration of Cr(VI) is greater than threshold of 0.13μg/cm^2 for boiling-water-extraction procedures by visual comparison / by UV-VIS Spectrophotometer analysis. The sample coating is considered to contain Cr(VI).

– Negative = A negative test result indicated the concentration of Cr(VI) is less than threshold of 0.10μg/cm^2 for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr(VI) based coating.

Tested Sample: Silver color metal

(B) RoHS Requirement:

Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)

The above limits were quoted from Directive 2011/65/EU for homogeneous material.

(C) Test Method:

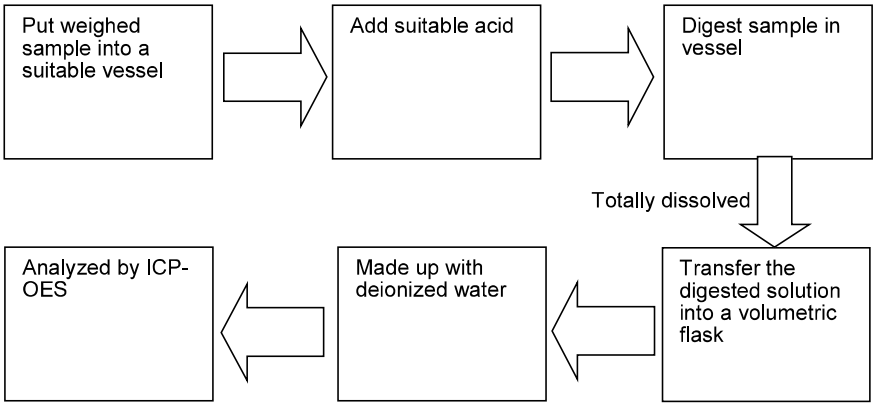
Cadmium (Cd) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321-4 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr^{6+}) Content	With reference to IEC 62321-7-1 Edition 1.0:2015, by boiling water extraction and determined by UV-VIS Spectrophotometer	0.10μg/cm^2

****

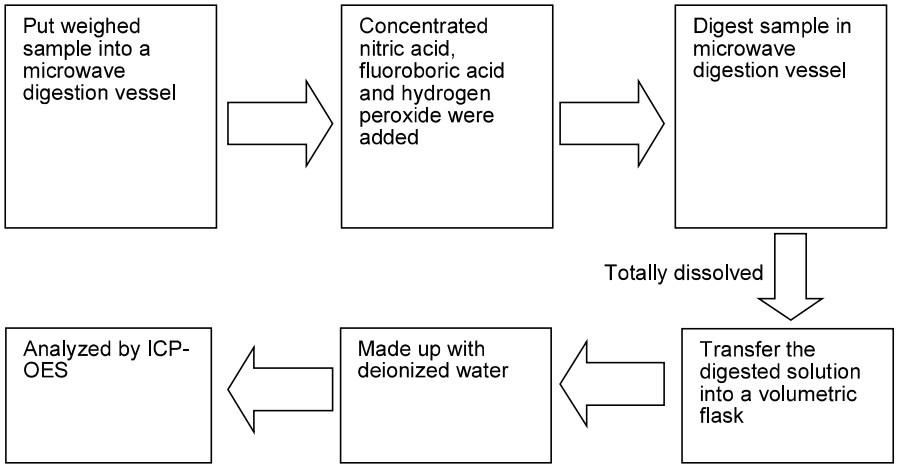
Intertek Testing Services Shenzhen Ltd.
6/F. & 7/F.,301A, 302B, Shekou Technology Main Building, Industrial 7th Road, West of Shekou Industrial Avenue,
Nanshan District, Shenzhen, Guangdong, China
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Postcode: 518067
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(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



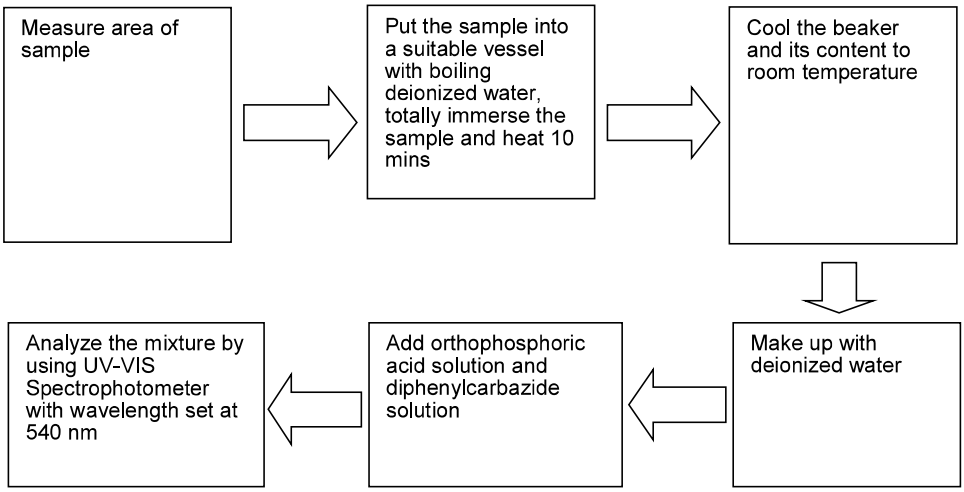
2. Test for Hg Content



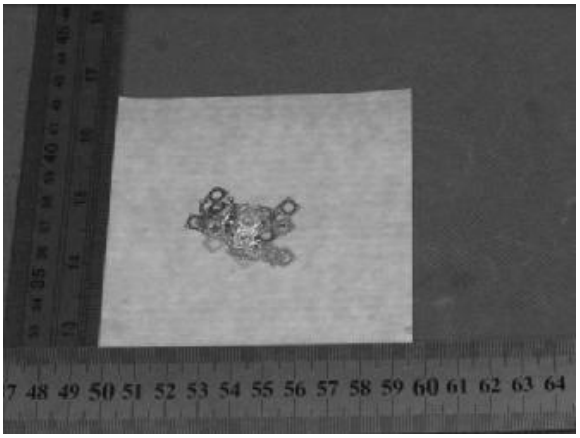
****

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3. Test for Chromium (VI) (Cr^{6+}) Content (Boiling Water Extraction)



Photos for Test Samples:



********** End of Report **********

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