



PHT : 簽呈 / 聯絡單

案號 : 126301

開單人資訊

開單人	Joy Chen 陳兆祺	部門 :	特殊策採部 CF00T
日期 :	2021/05/20	職號 :	7204
分機 :	8100#1944	電子郵件 :	joy_chen@phihong.com.tw
身分 :	特殊策採部 CF00T/高級專員:	單號 :	P18-2021050218

內容說明

申請廠別 :	PHT : 總公司
主旨 :	康美斯(歌梅) 23137040001-R00(E-29302A) 物料 承認issue
內文 :	<p>康美斯(歌梅) 23137040001-R00(E-29302A) 物料 為目前EV 機種 AX 美分開發中機種採用料件，因未列入EV 8大機種的簡易承認流程，故改以連絡單方式送承認，附上 RD 同意使用簡易承認流程，以利承認作業</p> <ol style="list-style-type: none"> 1. 附件1為23137040001-R00(E-29302A)承認書. 2. 附件2為環境管理物質管制保證書. 3. 附件3為SGS報告. 4. 附件4為UL卡. <p>以上懇請長官簽核後由 DCC 轉為正式承認</p>
副本分發單位 :	C0C000T-全球策採處,R0VA00T-技術支援處
副本分發人員 :	

附件

附件明細
Steven_Huang 黃國豪 OK.pdf
附件1 23137040001-R00(E-29302A)承認書..pdf
附件2 環境管理物質管制保證書..pdf
附件3 SGS報告..pdf
附件4 UL卡..pdf

簽核流程	簽核意見 / 附件
※ 「加簽」站可選多人，但需全部簽過才能送往下一站。	
※ 請點圖選人後按「確定」；欲刪除，請點圖再按「確定」，即可刪除。	
1.1 加簽 :	
1.2 加簽 :	
2. 主管 :	Lisa Cheng 鄭綠潔 8210

2.1 加簽 :	Steven Huang 黃國豪	7998	
2.2 加簽 :			
3. 部級主管 :	Elaina Chen 陳湘怡	6850	
3.1 加簽 :			
3.2 加簽 :			
4. 群處主管 :			
4.1 加簽 :			
4.2 加簽 :			
4.3 加簽 :			
4.4 加簽 :			
4.5 秘書室 :	▲ 同時加簽「總經理」與「董事長」時，會先送「秘書室」審核		
5. 集團總經理 :	<input type="checkbox"/> 加簽(Add Sign)		
6. 董事長 :	<input type="checkbox"/> 加簽(Add Sign)		
99. 自選副本通知： (完成簽核後需通知 的人員)	※ 可選多人		
未承認物料通知人 員 : (系統預設名單)			

附件明細

簽核紀錄

簽核人員	簽核時間	簽核內容	站別	動作
特殊策採部 CF00T/高級專員: Joy Chen 陳兆祺	2021/05/20 00:19:49	Submit	1 : 申請人	申請
特殊策採部 CF00T/課長:Lisa Cheng 鄭綠潔	2021/05/20 08:51:10		2 : 主管	同意
電動車能源研發處研發一部 EOR210T/副理:Steven Huang 黃國豪	2021/05/20 09:09:19		2.1 : 加簽	同意
全球策採處 C000T/副處長:Elaina Chen 陳湘怡	2021/05/20 09:11:37		3 : 部級主管	同意
特殊策採部 CF00T/高級專員: Joy Chen 陳兆祺	2021/05/20 10:27:31		98 : 通知申請人	完成並通知
CF Chuang 莊啟發	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
Ruby Lin 林小琪	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
Grace Huang 黃桂珠	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
Shirley Hsu 許玉琦	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
JA Yang 楊建安	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
Anna Chang 張雅君	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
Jessica Wang 王惠美	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單
Kevin2 Lin 林俊宏	2021/05/20 10:27:31	AutoByPass	99 : 副本通知	送單

APPROVAL SHEET

CUSTOMER :	飛宏科技
PART NO. :	23137040001-R00
ITEM :	TR-23x16x10 COIL
CORMEX NO. :	E-29302A(TE29302A00)
DATE :	MAY.13.2021

RoHS

歌梅電子企業股份有限公司
CORMEX ELECTRONICS INDUSTRY CO., LTD.

23511 台灣新北市中和區建八路 16 號 3F

3F-1, No. 16, Jian 8TH Rd., Zhonghe Dist., New Taipei City 23511, Taiwan

TEL: (886) 02- 82265266

FAX: (886) 02-82265688

康美斯科技(深圳)有限公司
CORMEX TECHNOLOGY (SHENZHEN) CO., LTD.

中國廣東省深圳市龍華新區觀瀾桂花居委章企路金業工業區6號

Dashiban Sec., Zhangqi Rd., Guihua Village, Guanlan Town, Baoan Dist., henzen City, Guangdong Prov., China

TEL: (86) 0755-27520068

FAX: (86) 0755-27520736

蘇州歌梅電子有限公司
SUZHOU CORMEX ELECTRONICS CO., LTD.

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No. 11, Chenghu East Rd., Wuzhong Economic Zone, Suzhou City, Jiangsu Prov., China

TEL: (86) 0512-65618770

FAX: (86) 0512-6527-6445

SPECIFICATION FOR APPROVAL

CUSTOMER : 飛宏科技	ITEM : TR-23x16x10	COIL	P/N : 23137040001-R00
Mechanical Assembly :			
<p>灌膠面</p> <p>初級電流方向</p>			A 31.0 MAX mm
			B 31.5 MAX mm
			C 19.3 MAX mm
			D 3.5+/-0.5 mm
			E 15.0+/-0.3 mm
			F1 15.0+/-0.3 mm
			F2 19.3+/-0.5 mm
			G 1.0 ϕ +/-0.2 mm
			H 7.7 MIN mm
			I mm
			J mm
			K mm
ELECTRICAL REQUIREMENTS			TEST INSTRUMENTS :
ITEM	MEASURED POINT	TECHNICAL DATA	REMARK
Normal Primary Current		0~60A	(1) ZT-6205, GDM-8245 輸入 20Aac, 50Hz 1-2 RL10Ω 電阻 AT 25°C
Normal Secondary Voltage	1-2 RL10Ω	0.08V+/-5%	(2) TF-6881A 電流互感器校驗儀
Accuracy		0.1	
Pri To Sec Ratio		1:2500	
Load Resistance		10.0Ω	APPROVED BY
DCR	1-2	175.0 Ω MAX	Alex.Chen
Working Frequency		50/60Hz	CHECKED BY
Working Temperature		-40°C~+85°C	Chen Shiming
HI-POT	Pri To Sec	4000Vac 50Hz 1mA 60s	REPORTED BY
			Tong Xixi Wang Shuo
			CORMEX NO. E-29302A (TE29302A00) 2021/05/13

CORMEX ELECTRONICS IND. CO., LTD.

CUSTOMER: 飛宏科技

P/N : 23137040001-R00

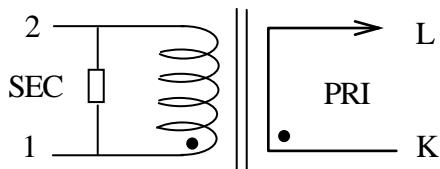
D/N : E-29302A

DATE : MAY.13,2021

(TE29302A00)

1. CORE : TR-23x16x10- Nanocrystalline

EPOXY : 本體與 CASE 灌膠固定



2. WINDING :

$$1 - 2 = \text{CU-} 0.12 \phi (2\text{UEW-Y}) \times 1\text{P} \times 2500\text{Ts} \pm 2\text{Ts}$$

3. CHARACTERISTICS : @ ZT-6205+GDM8245,AT25°C

$$V(1-2) = 0.08V \pm 5\% \text{ 【輸入 } 20\text{Aac}, 50\text{Hz RL } 10\Omega \text{ 電阻】}$$

$$\text{DCR}(1-2) = 175\Omega \text{ MAX}$$

4. TEST DATA(供參考)

比差角差特性：		50A/20mA/RL10Ω				
項目		5%Io	20%Io	100%Io	120%Io	
電流誤差 f(%)		0.1	0.1	0.1	0.1	
相位誤差 σ(')		15	13	10	8	
NO.	測試條件：	Io=20A,1-2 並聯 10Ω 負載(測試儀器：HES-1W 互感器校驗儀)				
1#	f(%)	-0.015	-0.032	-0.036	-0.033	
	σ(')	6.4	5.2	1.4	1.3	
2#	f(%)	-0.018	-0.032	-0.036	-0.033	
	σ(')	5.3	3.8	1.4	1.2	
3#	f(%)	-0.014	-0.03	0.035	0.033	
	σ(')	5.8	4.4	1.5	1.2	
4#	f(%)	-0.018	-0.032	-0.035	-0.033	
	σ(')	5.2	3.7	1.4	1.3	
5#	f(%)	-0.017	-0.036	-0.038	-0.034	
	σ(')	5.8	3.9	1.4	1.3	

MATERIAL LIST

Component	Manufacturer	Material	Note	UL File No
Core (Amorphous)	Beijing Shouye Magnetic Materials Science&Technology Co.Ltd.	TR-23x16x10 -Nanocrystalline		
Magnet Wire	Tai-I Electric Wire & Cable Co Ltd	MW-79C(UEWF)	155°C	E234896
Case	E I Dupont De Nemours & Co Inc	PET-FR530	155°C	E41938
Epoxy	Eatto Electronic Materials Coltd	3300A-1/3300B-1	130°C	E218090

RoHS COMPLIANT

蘇州包裝方式(出台灣)： 外包裝A30紙箱, 192PCS/箱

內包裝24格吸塑 x4PCS, 每格放2PCS

產品單重： 36.6g

OPERATING TEMPERATURE:-40~85°C

信賴性測試：

1. HUMIDITY RESISTANCE TEST:

PLACE INTO A SUMP OF 90 TO 95% RELATIVE HUMIDITY AND 40 +/-2°C CONSTANT TEMPERATURE FOR 96±4 HOUR, TAKE OUT AT CONSTANT HUMIDITY AND TEMPERATURE, AND WIPE OFF THE WATER DRIPS ON THE SURFACE THEN LAY IT FOR MORE THAN 30 MINUTES AND WITHIN 90 MINUTES, THERE SHALL NOT BE ANY ABNORMALITY.

2. SOLDERABILITY:

AFTER SUBJECTING FROM BOTTOM TO 2-3mm OF THE TERMINAL TO PER-SOLDERING TREATMENT AT 245±5°C 3~5SEC 95% MIN. SHALL BE SMOOTH AND BRIGHT , AND THERE SHALL NOT BE ANY ABNORMALITY.

3. RESISTANCE OF SOLDERING HEAT:

SOLDER TEMPERATURE: 240°C~260°C, MAX TEMPERATURE SHOULD BE UNDER 260°C FOR 10 SECONDS.SHOULDNT SOLDERING MORE THAN 2 WAVE CREST, AND MAKE SURE SOLDERED PRODUCTS MEET SPEC REQUIREMENTS.

4. HEAT RESISTANCE TEST:

PLACE INTO A ROOM OF 80±2°C RELATIVE HUMIDITY: 40-45% CONSTANT TEMPERATURE WITH NO LOAD STATE FOR 24 HOURS. TAKE OUT THE MATERIAL TESTED AND PLACE IN NORMAL TEMPERATURE FOR MORE THAN 60 MINUTES. THE VARIATION OF DIELECTRIC COEFFICIENT MEASURED MUST BE WITHIN INITIAL VALUE+-10%.

5. COLD TEST (LOW TEMP):

AT -40°C IN A CONSTANT TEMP.TANK FOR 96 HOURS, AND THE TAKE OUT TO AT AMBIENT TEMP. FOR ONE HOUR, SHOULD MEET ELECTRICAL CHARACTERISTICS AND SHALL NOT BE ANY ABNORMALITY.

6. HIGH TEMP:

AT 125°C IN A CONSTANT TEMP.TANK FOR 96 HOURS, AND THE TAKE OUT TO AT AMBIENT TEMP. FOR ONE HOUR, SHOULD MEET ELECTRICAL CHARACTERISTICS AND SHALL NOT BE ANY ABNORMALITY.

7. TEMP. CYCLING TEST:

REPEATING FIVE TIMES FROM THE STAGE SPECIFIED IN CHART TO TEST MATERIAL SEPARATELY TIMES, SHOULD MEET THE REQUIREMENTS OF ELECTRICAL CHARACTERISTICS.

Stage	Temperature(degc)	Time (minute)
1	-40 °C±2	30
2	20 °C±2	2-3
3	125 °C±2	30
4	20 °C±2	2-3

8. PULL STRENGTH FOR TERMINAL:

THE LEADWIRE TENSILE STRENGTH OF THE PRODUCTS SHALL BE WITH STAND THE STATIC FORCE OF 1.0KG

9. INSULATION RESISTANCE [I.R.]:

500V DC, 100M OHM MIN. BETWEEN WINDINGS TO CORE

Joy_Chen 陳兆祺

寄件者: Steven_Huang 黃國豪
寄件日期: 2021年5月17日星期一 下午 3:37
收件者: Joy_Chen 陳兆祺; Yiyuan_Ting 丁奕元; Joker_Xiao 蕭嘉豪; stone.chen@cormex.com.tw;
Yaoming_Huang 黃耀民; jason(李曉軍); danny.ho@cormex.com.tw
副本: Lisa_Cheng1 鄭綠潔; Jim_Chen 陳俊成; Vincent_Tsai 蔡文龍
主旨: 回覆: 23137040001-R00(E-29302A) 環境管理物質管制保證書及承認書
附件: E-29302A(23137040001-R00)-210513.pdf; 環境管理物質管制保證書.pdf; SGS報告.pdf

Hi Joy
Good day!

同意採用聯絡單方式進行簡易承認流程，謝謝。

Best regards,
Steven Huang 黃國豪 #1462

R&D Dept. I / Electric Vehicles BU
電動車能源事業群 / 研發一部
PHIHONG TECHNOLOGY CO., LTD. 飛宏科技股份有限公司
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寄件日期: 2021年5月17日 下午 03:12
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<danny.ho@cormex.com.tw>
副本: Lisa_Cheng1 鄭綠潔 <Lisa_Cheng1@phihong.com.tw>
主旨: FW: 23137040001-R00(E-29302A) 環境管理物質管制保證書及承認書

奕元 / 國豪

請同意 **開立內部聯絡單(EV 8大機種使用料件),以利辦理此料件簡易承認-----謝謝**

飛宏科技股份有限公司
全球策採-陳兆祺 Joy Chen
333桃園市龜山區復興三路568號
TEL: 886-3-327-7288 #1944
EMail: Joy_Chen@phihong.com.tw

From: Sam(梁岳義) [mailto:sam.liang@cormex.com.tw]
Sent: Monday, May 17, 2021 11:57 AM
To: Joy_Chen 陳兆祺 <Joy_Chen@phihong.com.tw>; Ruby_Lin 林小琪 <Ruby_Lin@phihong.com.tw>
Cc: Yiyuan_Ting 丁奕元 <Yiyuan_Ting@phihong.com.tw>; Steven_Huang 黃國豪



File E234896

Vol 1

Auth. Page 1

Issued: 2003-05-28

Revised: 2012-03-26

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

COMPONENT - MAGNET WIRE
(OBMW2)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

Applicant: 124506 (Party Site)
(586858-001) TAI-I COPPER (GUANGZHOU) CO LTD
77 DONGPENG DADAO
EASTERN DISTRICT OF ECONOMIC &
TECHNOLOGICAL DEVELOPMENT DISTRICT
GUANGZHOU
GUANGDONG 510530 CHINA

Recognized Company: 124506 (Party Site)
(586858-001) SAME AS APPLICANT

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party and any applicable Service Terms. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

UL further defines responsibilities, duties and requirements for both Manufacturers and UL representatives in the document titled, "UL Mark Surveillance Requirements" that can be located at the following web-site: <http://www.ul.com/fus> and in the document titled "UL and Subscriber Responsibilities" that can be located at the following website: <http://www.ul.com/responsibilities>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the applicable Service Terms, please contact UL's Customer Service at <http://www.ul.com/global/eng/pages/corporate/contactus>, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Recognized Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable agreement is a Global Services Agreement ("GSA") with an effective date of January 1, 2012 or later and this Follow-Up Service Procedure is issued on or after that effective date, the Applicant, the specified Manufacturer(s) and any Recognized Company will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of use of the prescribed UL Mark, acceptance of the factory inspection, or payment of the Follow-Up Service fees which will incorporate such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking here:

<http://www.ul.com/contracts/Terms-After-12-31-2011>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

It is the responsibility of the Recognized Company to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

This Follow-Up Service Procedure contains information for the use of the above Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Manufacturer with the understanding that it will be returned upon request and is not to be copied in whole or in part.

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the above named Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

UL LLC has signed below solely in its capacity as the accredited entity to indicate that this Follow-Up Service Procedure is in compliance with the accreditation requirements.

William R. Carney
Director
North American Certification Program

File E234896 Vol 1 Addendum To Page 1 Issued: 2003-05-28
Authorization Page Revised: 2012-03-26

LOCATION

(586858-001) 124506 (Party Site)
TAI-I COPPER (GUANZHOU) CO LTD
77 DONGPENG DADAO
EASTERN DISTRICT OF ECONOMIC &
TECHNOLOGICAL DEVELOPMENT DISTRICT
GUANGZHOU
GUANGDONG 510530 CHINA

Factory ID:
UL Contracting Party for above site is: UL AG



Underwriters Laboratories, Inc.

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Camas, WA 98607-9526
Corporate Phone: (360) 817-550
Corporate FAX: (360) 817-
6000
<http://www.ul.com>

File E234896
Project 03CA05909

May 28, 2003

REPORT

ON

COMPONENT - MAGNET WIRE

TAI-I Copper (Guangzhou) Co., Ltd.
Guangzhou Guangdong, China

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DESCRIPTION

PRODUCT COVERED:

Component Magnet Wire:

Material			ANSI	Temperature
Designation	Base Coat	Top Coat	Type+	Rating
UEWF @	Polyurethane	-	MW79-C	155°C
UEWF-E @, QPN@	Polyurethane	Polyamide	MW80-C#	155°C
DFWF @, DFWS @	Polyesterimide	Polyamide-imide	MW73-C	200°C
SMPEWN @	Polyester	Polyamide	MW76-C	180°C
* UEWH @	Polyurethane	-	MW82-C	180°C
FIW@	Polyurethane	-	MW85-C	180°C

- The magnet wire may perform better than the rating reflects and hence may not be suitable for thermal aging or sealed tube testing.

@ - Maybe replaced by letters "LZ" indicating Litz wire construction, and signifies two or more magnet wires twisted together.

+ - ANSI Type applies to round magnet wire.

GENERAL CHARACTER:

The products covered by this Report are enamel-type insulating films applied to copper or aluminum magnet wire. The materials have been investigated with respect to chemical composition, thermal aging, and certain physical, electrical, and chemical properties. Some film coatings were evaluated according to the applicable sections of the ANSI/NEMA MW1000.

*

The wire is subsequently used in electrical equipment such as motors, transformers, and coils. This report will be used only to establish that the magnet wire may be used as substitutes for generically similar coatings in Recognized Insulation Systems.

The ANSI type designations shown are the nomenclature for round magnet wire. However, the Recognitions in this category also apply to rectangular and square magnet wire. See ANSI/NEMA MW1000 for compatible ANSI type designation.

The thermal life expectancy for each magnet wire coating was determined by subjecting samples of the magnet wire, formed into special configuration, to a specific set of functional testing procedures and securing end live points for all samples at certain specified temperatures which are above the normal expected operating temperature. ASTM Method D2307 guided the tests.

The thermal life performance is analyzed by using the least squares method of regression analysis. A linear relationship between life and temperature is assumed and the regression line equation is calculated. This equation can be used to compare the relative thermal life of the enamel under consideration to other enamels.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

Conditions of Acceptability -

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

1. Magnet wires covered in this report have been investigated and Recognized for use as turn insulation in magnetic devices such as motors, transformers and the like. The use of this wire in applications where the wire alone is being relied upon as insulation between multiple windings, e.g., between the primary and secondary windings of a transformer, or as insulation to ground, has not been investigated.
2. Unless specifically indicated in the individual Recognitions, resistance to oil, chemicals, refrigerants, soaps, x-rays, ultraviolet light and the like, has not been investigated.
3. Magnet wires covered in this report may be substituted for other magnet wires in Recognized Insulation Systems if:
 - A. The ANSI class of the substitute film coatings or combination of film coatings is the same as that originally used or,
 - B. The film coatings or combinations of film coatings are generically similar to those used in the Recognized system (as demonstrated either by infrared analysis or comparative chemical description) and,
 - C. The temperature index of the magnet wire (based solely on the criteria of ASTM D2307) is at least equivalent to the temperature index of the magnet wire used in the Recognized insulation system and,
 - D. The conductor material of the substitute magnet wire shall be the same; except aluminum magnet wires may be substituted for copper magnet wires.

MARKING:

Packages or reels are marked with the manufacturer's name and material designation or marked designation.

Material Designation	Marked Designation
UEWF @	(1)
UEWF-E @, QPN@	(1)
DFWF @, DFWS @	(1)
SMPEWN @	(1)
*UEWH @	(1)
FIW@	(1)

(1) -Marked designations are the same as the material designations.

File E234896
SR9313926-T001

September 18, 1998

REPORT

ON

COMPONENT - MAGNET WIRE

TAI-I COPPER (GUANZHOU) CO LTD.
Guangdong 510530 ChinA

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DESCRIPTION

PRODUCT COVERED:

Component - Magnet Wire.

Material Designation	Coating Type		ANSI Type	Temp. Rating, °C
	Basecoat	Topcoat		
AIW @	Polyamide-imide	-	MW 81-C, --&	220
EIW @	Polyester-imide	-	MW 30-C	180#
EIW HB @	Polyester-imide	Polyamide-imide	MW 37-C	220
EIW H @, DFWFH @	Polyester-imide	Polyamide-imide	MW 35-C, MW 36-C	200#
EIW H @	Polyester-imide	Polyamide-imide	MW 35-A MW 36-A MW 37-C	220
DFWB @	Polyester	Polyamide	MW 24-C	155
DFWF @%	Polyester-imide	Polyamide-imide	MW 73-C	200
FTW @	Polyester	-	MW 5-C	155#
PEW @	Polyester	-	MW 5-C	155#
PEWN @	Polyester	Polyamide	MW 24-C	155#
UEW @	Polyurethane	-	MW 75-C	130
UEWB @	Polyurethane	-	MW 75-C	130
UEWE @	Polyurethane	Polyamide	MW 28-C	130

Material Designation	Coating Type			ANSI Type	Temperature Rating, °C
	Basecoat	Topcoat	Bondcoat		
FBWHA @, FBWHC @	Polyester-imide	Polyamide-imide	Polyamide	-	200

- The magnet wire may perform better than the rating reflects and may not be suitable for insulation system, varnish or end product testing. Further consideration is necessary prior to its use in testing.

@ - Maybe replaced by letters "LZ" indicating Litz wire construction, and signifies two or more magnet wires twisted together.

% - Magnet wire is not suitable for use after July 28, 2012.

& - Non-ANSI Type for rectangle wire.

Magnet Wires Designated EIW H @ and DFWFH @ are identical except for alternate designations for marketing purposes.

EIW HB @ is identical construction to Magnet Wires EIW H @ and DFWFH @ except EIW H @ and DFWFH @ are the downrated for marketing purposes.

***GENERAL:**

The products covered by this Report are enamel-type insulating films applied to copper or aluminum magnet wire. The materials have been investigated with respect to chemical composition, thermal aging, and certain physical, electrical, and chemical properties. Some film coatings were evaluated according to the applicable sections of the ANSI/NEMA MW1000.

The wire is subsequently used in electrical equipment such as motors, transformers, and coils. This Report will only be used to establish that the magnet wire coatings may be used as substitutes for generally similar coatings in Recognized insulation systems.

The ANSI type designations shown are the nomenclature for round magnet wire. However, the Recognitions in this category also apply to rectangular and square magnet wire. See ANSI/NEMA MW1000 for compatible ANSI type designation.

The thermal life expectancy of each magnet wire was determined by subjecting samples of the magnet wire, formed into a special configuration, to a specific set of functional testing procedures and securing end life points for all the samples at certain specified temperatures which are above the normal expected operating temperature. The tests were guided by ASTM Method D-2307.

*The thermal life performance is analyzed by using the least squares method of regression analysis. A linear relationship between life and temperature is assumed and the regression line equation is calculated. This equation can be used to compare the relative thermal life of the enamel under consideration to other enamels.

*

*

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):**Conditions of Acceptability –**

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

1. Magnet wires covered in this report have been investigated and Recognized for use as turn insulation in magnetic devices such as motors, transformers and the like. The use of this wire in applications where the wire alone is being relied upon as insulation between multiple windings, e.g., between the primary and secondary windings of a transformer, or as insulation to ground, has not been investigated.

2. Unless specifically indicated in the individual Recognitions, resistance to oil, chemicals, refrigerants, soaps, x-rays, ultraviolet light and the like, has not been investigated.

3. Magnet wires covered in this report may be substituted for other magnet wires in Recognized Insulation Systems if:

- A. The ANSI class of the substitute film coatings or combination of film coatings is the same as that originally used or,**
- B. The film coatings or combinations of film coatings are generically similar to those used in the Recognized system (as demonstrated either by infrared analysis or comparative chemical description) and,**
- C. The temperature index of the magnet wire (based solely on the criteria of ASTM D2307) is at least equivalent to the temperature index of the magnet wire used in the Recognized insulation system and,**
- D. The conductor material of the substitute magnet wire shall be the same; except aluminum magnet wires may be substituted for copper magnet wires.**

MARKING:

Packages or reels are marked with the manufacturer's name and material designation or marked designation.

Material Designation	Marked Designation
AIW @	(1)
EIW @	(1)
EIW HB @	(1)
EIW H, DFWFH @	(1)
DFWB @	(1)
DFW F @%	(1)
FTW @	(1)
PEW @	(1)
PEWN @	(1)
UEW @	(1)
UEWB @	(1)
UEWE @	(1)
FBWHA @, FBWHC @	(1)

(1)-Marked designations are the same as the material designations.

File E234896
Project 13CA37983

October 10, 2013

REPORT

On

COMPONENT - Magnet Wire

TAI-I COPPER (GUANZHOU) CO LTD
GUANGZHOU, GUANGDONG, CHINA

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DESCRIPTION

PRODUCT COVERED: Component - Magnet Wire.

Magnet Wire Designation	Coating Type			ANSI MW1000 Type	Temperature Ratings, °C
	Basecoat	Overcoat (Topcoat)	Bond coat		
SMPEW@	Modified Polyester	-	-	MW 77-C	180
	Modified Polyester	-	-	MW 26-C	155#
UEWHE@ or QPN180@ or QPN200@	Polyurethane	Polyamide	-	MW 83-C	180

@ - Maybe replaced by letters "LZ" indicating Litz wire construction, and signifies two or more magnet wires twisted together.

- The magnet wire may perform better than the rating reflects and may not be suitable for insulation system, varnish or end product testing. Further consideration is necessary prior to its use in testing.

GENERAL:

The products covered by this Report are enamel-type insulating films applied to copper or aluminum magnet wire. The materials have been investigated with respect to chemical composition, thermal aging, and certain physical, electrical, and chemical properties. Some film coatings were evaluated according to the applicable sections of the ANSI/NEMA MW1000.

The wire is subsequently used in electrical equipment such as motors, transformers, and coils. This Report will only be used to establish that the magnet wire coatings may be used as substitutes for generally similar coatings in Recognized insulation systems.

The ANSI type designations shown are the nomenclature for round magnet wire. However, the Recognitions in this category also apply to rectangular and square magnet wire. See ANSI/NEMA MW1000 for compatible ANSI type designation.

The thermal life expectancy of each magnet wire was determined by subjecting samples of the magnet wire, formed into a special configuration, to a specific set of functional testing procedures and securing end life points for all the samples at certain specified temperatures which are above the normal expected operating temperature. The tests were guided by ASTM Method D-2307.

The thermal life performance is analyzed by using the least squares method of regression analysis. A linear relationship between life and temperature is assumed and the regression line equation is calculated. This equation can be used to compare the relative thermal life of the enamel under consideration to other enamels.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):**Conditions of Acceptability –**

Use - For use only in products where the acceptability of the combination is determined by UL LLC.

1. Magnet wires covered in this report have been investigated and Recognized for use as turn insulation in magnetic devices such as motors, transformers and the like. The use of this wire in applications where the wire alone is being relied upon as insulation between multiple windings, e.g., between the primary and secondary windings of a transformer, or as insulation to ground, has not been investigated.
2. Unless specifically indicated in the individual Recognitions, resistance to oil, chemicals, refrigerants, soaps, x-rays, ultraviolet light and the like, has not been investigated.
3. Magnet wires covered in this report may be substituted for other magnet wires in Recognized Insulation Systems if:
 - A. The ANSI class of the substitute film coatings or combination of film coatings is the same as that originally used or,
 - B. The film coatings or combinations of film coatings are generically similar to those used in the Recognized system (as demonstrated either by infrared analysis or comparative chemical description) and,
 - C. The temperature index of the magnet wire (based solely on the criteria of ASTM D2307) is at least equivalent to the temperature index of the magnet wire used in the Recognized insulation system and,
 - D. The conductor material of the substitute magnet wire shall be the same; except aluminum magnet wires may be substituted for copper magnet wires.

MARKING:

Packages or reels are marked with the manufacturer's name and material designation or marked designation.

Magnet Wire Designation	Marked Designation
SMPEW@	(1)
UEWHE@ or QPN180@ or QPN200@	(1)

(1) -Marked designations are the same as the material designations .

E I DUPONT DE NEMOURS & CO INC E41938 ENGINEERING POLYMERS CHESTNUT RUN PLAZA PO BOX 80713 WILMINGTON, DE 19880 USA		1.5	HB	1	0	140	140	140	
		3.0	HB	0	0	140	140	140	
RE5213	ALL	0.75	HB	-	-	75	75	75	
Polyethylene Terephthalate (PET), glass reinforced, flame retardant, "Rynite", furnished as pellets.									
FR330	ALL	0.81	V-0	3	1	140	140	140	3 6 3
	NC, BK	1.5	5VA	0	1	140	140	140	
	ALL	3.0	V-0	0	1	140	140	140	
FR515	ALL	0.86	V-0	0	0	140	140	140	1 7 3
	NC, BK	1.5	5VA	0	0	140	140	140	
	ALL	3.0	V-0	0	1	140	140	140	
FR530 (I) (+)(F1), FR530L (I) (+) (f1)									
	NC, BK	0.35	V-0	3	1	155	-	-	1 6 2
	ALL	0.75	V-0	2	1	155	155	155	
	NC	0.9	5VA	2	1	155	155	155	
	NC, BK	1.5	5VA	0	1	155	155	155	
	ALL	2.0	5VA	0	1	155	155	155	
		3.0	5VA	0	1	155	155	155	
FR543	NC, BK	0.81	V-0	0	1	155	155	155	1 5 2
		1.5	V-0, 5VA	0	1	155	155	155	
		3.0	V-0, 5VA	0	1	155	155	155	
Polyethylene Terephthalate (PET), glass reinforced, flame retardant, "RYNITE", furnished as pellets.									
GW525CS	ALL	0.8	HB	1	2	140	140	140	4
		1.5	HB	1	1	140	140	140	
		3.0	HB	0	0	140	140	140	
Polyethylene Terephthalate (PET), glass reinforced, flame retardant, "Rynite", furnished as pellets.									
RE19045	NC, BK	0.75	V-0	2	1	75	75	75	3
		1.5	V-0	0	1	75	75	75	
		3.0	V-0	0	0	75	75	75	
RE19060	BK	0.75	V-0	2	1	155	155	155	3
		1.5	V-0	0	1	155	155	155	
		3.0	V-0	0	0	155	155	155	



QMFZ2.E218090 Plastics - Component

For enhanced search functionality, please visit UL's [iQ™ Family of Databases](#).

Click on a product designation for complete information.

[Page Bottom](#)

Plastics - Component

[See General Information for Plastics - Component](#)

DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD

E218090

GUANWAN INDUSTRIAL

XINWAN

HUMEN TOWN

DONGGUAN, GUANGDONG 523938 CHINA

										H	D	
		Min.		H	H	RTI			V	4	C	
		Thk	Flame	W	A	Elec	Mech	T	9	T		
Material Dsg	Color	mm	Class	I	I		Imp	Str	R	5	I	
Epoxy Molding Compound (EP - Molding), furnished as paste.												
E-500 (XX)	ALL	3.0	V-0	-	-	130	130	130	-	-	-	
Epoxy Potting Compound (EP - Potting), furnished as single-part paste.												
3300	WT, BK	3.0	V-0, 5VA	-	-	90	90	90	-	-	-	
		10.0	V-0, 5VA	-	-	90	90	90				
Epoxy Potting Compound (EP - Potting), furnished as two liquid components.												
3300A-1/3300B-1	BK, YL	1.0	V-0	3	0	130	130	130	-	-	0	
		3.0	V-0	1	0	130	130	130				
3300A-2/3300B-2	NC, WT, RD	1.0	V-0	-	-	130	130	130	-	-	-	
		3.0	V-0	-	-	130	130	130				
3300A/B	BK	1.0-1.1	V-0	-	-	90	90	90	-	-	-	
		2.6-2.86	V-1	-	-	90	90	90				
	WT, RD	1.0	V-0	-	-	90	90	90				
		2.6-2.86	V-0	-	-	90	90	90				
3300AB(1)	ALL	3.0-3.3	V-0, 5VA	0	0	90	90	90	-	-	4	

(XX) - Denotes two letters, AA - ZZ, representing a customer code of Dongguan Eatto.

Marking: Company name and material designation on container, wrapper or finished part.

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测试报告

No. TSNEC2001538818

日期: 2020年08月26日 第1页,共8页

北京首冶磁性材料科技有限公司
北京市海淀区清河小营东路1号

以下测试之样品是由申请者所提供及确认 : 纳米晶带材

SGS工作编号 : TP20-006103 - TJ

原产国 : 中国

样品接收日期 : 2020年08月21日

测试周期 : 2020年08月21日 - 2020年08月26日

测试要求 : 根据客户要求测试

测试方法 : 请参见下一页

测试结果 : 请参见下一页

结论 : 基于所送样品进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯(如邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP))的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

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测试报告

No. TSNEC2001538818

日期: 2020年08月26日 第2页,共8页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	TSN20-015388.009	银灰色金属带

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS 指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-5:2013, IEC 62321-4:2013+AMD1:2017, IEC 62321-7-1:2015, IEC 62321-6:2015和IEC 62321-8:2017, 采用ICP-OES,UV-Vis 和GC-MS进行分析.

测试项目	限值	单位	MDL	009
镉(Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	ND
汞(Hg)	1000	mg/kg	2	ND
六价铬(Cr(VI))▼	-	µg/cm ²	0.10	ND
多溴联苯之和(PBBs)	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND



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测试报告

No. TSNEC2001538818

日期: 2020年08月26日 第3页,共8页

测试项目	限值	单位	MDL	009
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯(DBP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯(BBP)	1000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863.

IEC 62321系列等同于 EN 62321系列

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

- (2) ▼=a. 当六价铬的浓度高于0.13 μg/cm²时, 样品为阳性, 即含有六价铬;
b. 当六价铬的浓度为ND(低于0.10 μg/cm²)时, 样品为阴性, 即未检测到六价铬;
c. 当六价铬的浓度介于0.10 μg/cm²与0.13 μg/cm²之间时, 无法直接判定是否检测到六价铬,
因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态.
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测试报告

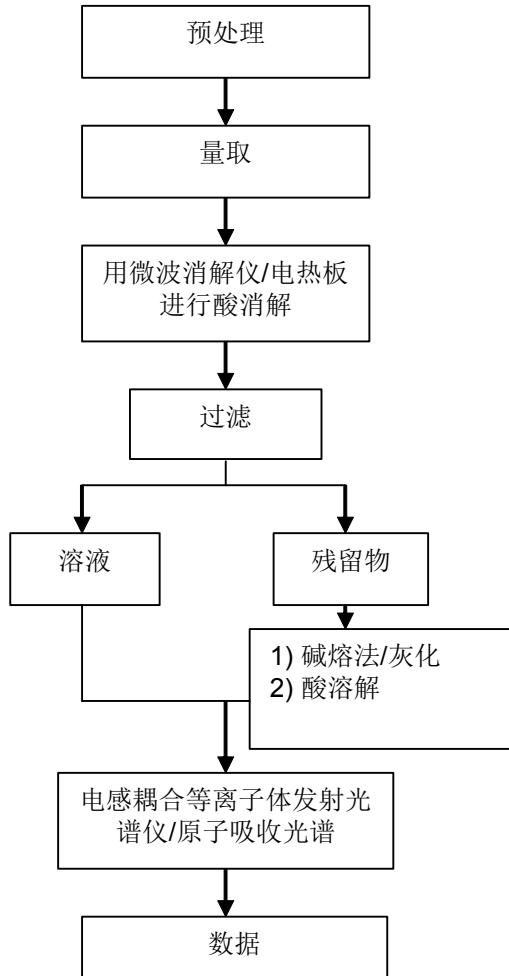
No. TSNEC2001538818

日期: 2020年08月26日 第4页,共8页

附件

元素(IEC62321) 测试流程图

1) 样品按照下述流程被完全消解



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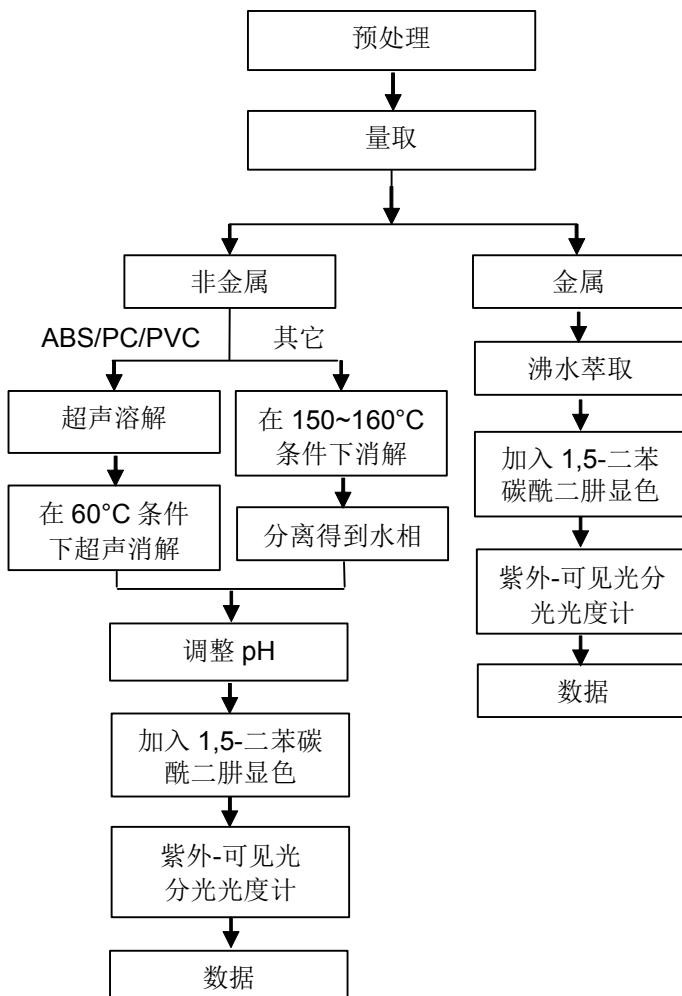
测试报告

No. TSNEC2001538818

日期: 2020年08月26日 第5页,共8页

附件

六价铬测试流程图



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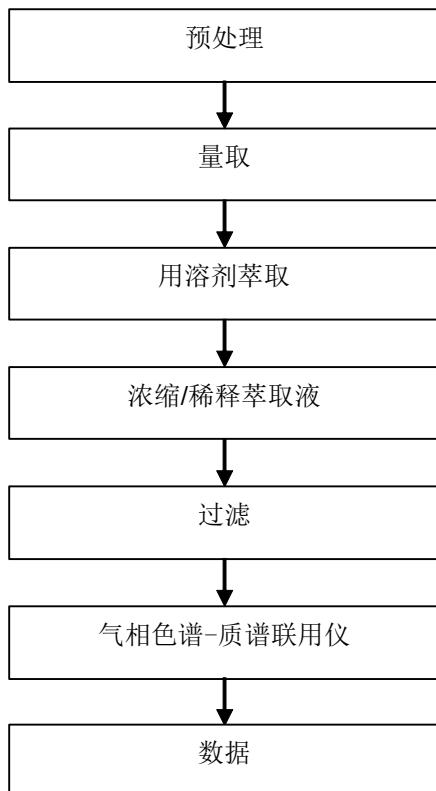
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阻燃剂测试流程图



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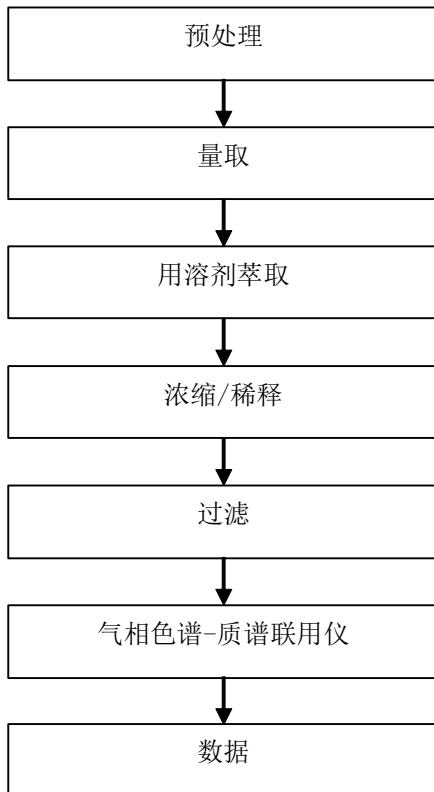
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邻苯二甲酸酯测试流程图



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测试报告

No. TSNEC2001538818

日期: 2020年08月26日 第8页,共8页

样品照片:



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*** 报告完 ***



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测试报告

No. TSNEC2001538802

日期: 2020年08月26日 第1页,共8页

北京首冶磁性材料科技有限公司
北京市海淀区清河小营东路1号

以下测试之样品是由申请者所提供及确认：白色护盒

SGS工作编号 : TP20-006103 - TJ

原产国 : 中国

样品接收日期 : 2020年08月21日

测试周期 : 2020年08月21日 - 2020年08月26日

测试要求 : 根据客户要求测试

测试方法 : 请参见下一页

测试结果 : 请参见下一页

结论 : 基于所送样品进行的测试，镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯（如邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP)）的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务（天津）有限公司
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(周艳)

Reabeca Zhou 周艳
批准签署人



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测试报告

No. TSNEC2001538802

日期: 2020年08月26日 第2页,共8页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	TSN20-015388.001	白色塑料

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS 指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-5:2013, IEC 62321-4:2013+AMD1:2017, IEC 62321-7-2:2017, IEC 62321-6:2015和IEC 62321-8:2017, 采用ICP-OES,UV-Vis 和GC-MS进行分析.

测试项目	限值	单位	MDL	001
镉(Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	ND
汞(Hg)	1000	mg/kg	2	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND
多溴联苯之和(PBBs)	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND



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测试报告

No. TSNEC2001538802

日期: 2020年08月26日 第3页,共8页

测试项目	限值	单位	MDL	001
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯(DBP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯(BBP)	1000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863.

IEC 62321系列等同于 EN 62321系列

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID , FSP_LANG_ID:1258637, 25

(2) 2021年7月22号开始, DEHP, BBP, DBP 和 DIBP的限制适用于医疗器械, 包括体外医疗器械, 监控仪表, 包括工业监测和控制仪器。

(3) DEHP、BBP、DBP和DIBP的限制不适用于玩具产品, 因为No.1907/2006附录XVII第51条已对玩具产品中的DEHP、BBP、DBP和DIBP含量进行了限制。

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检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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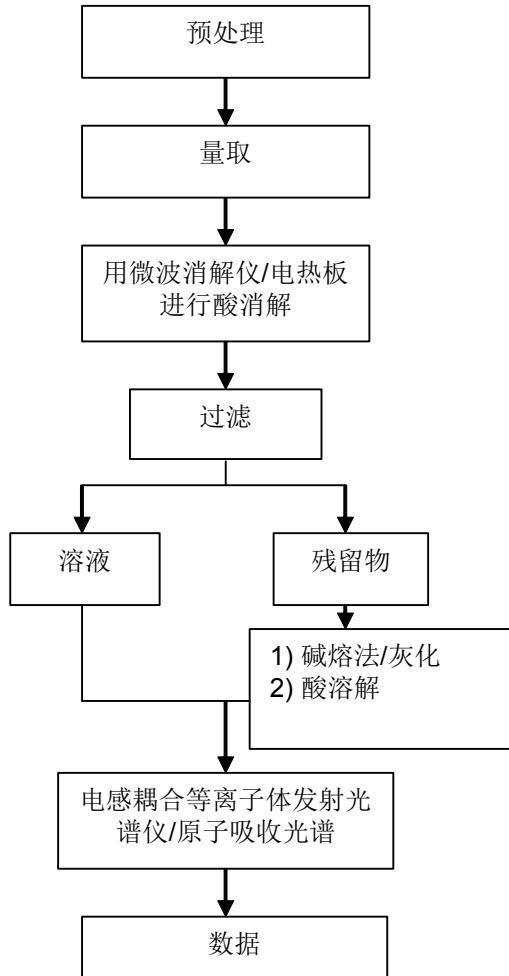
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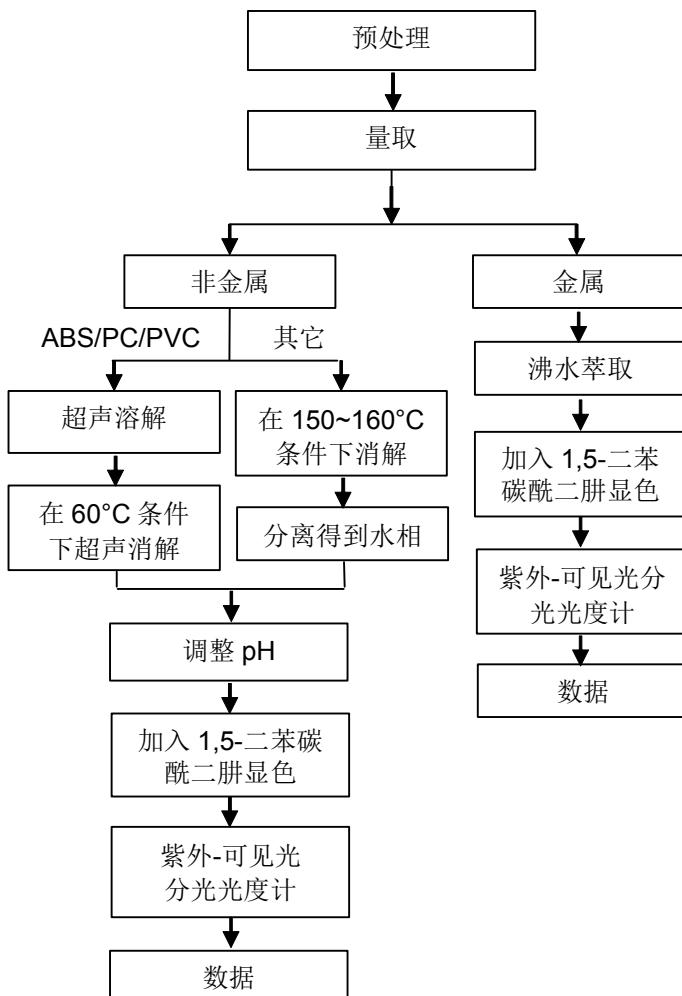
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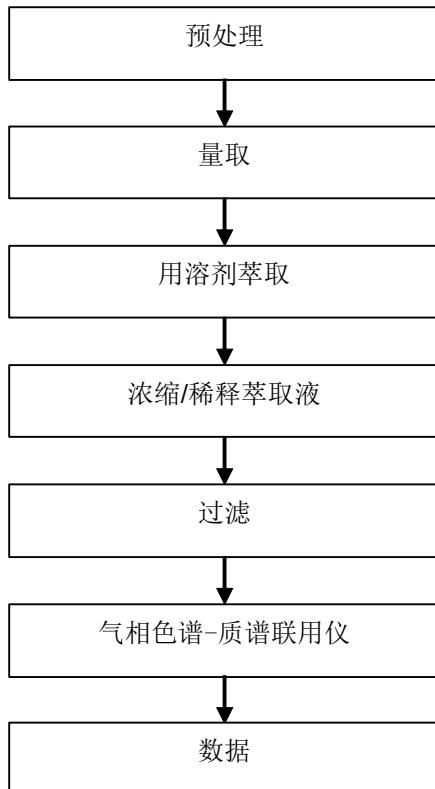
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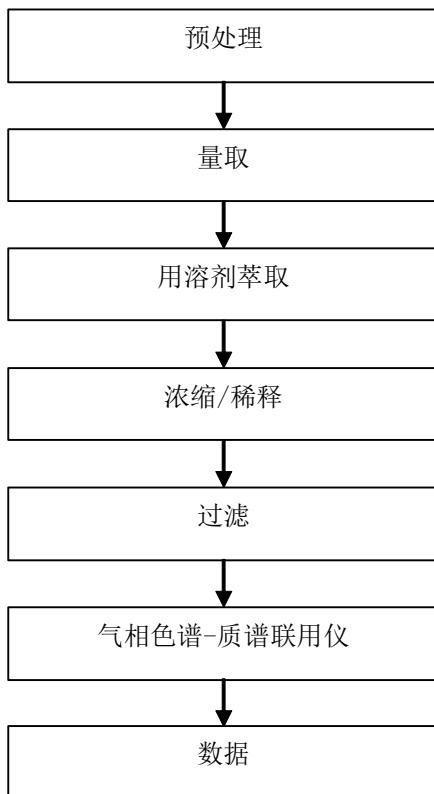
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邻苯二甲酸酯测试流程图



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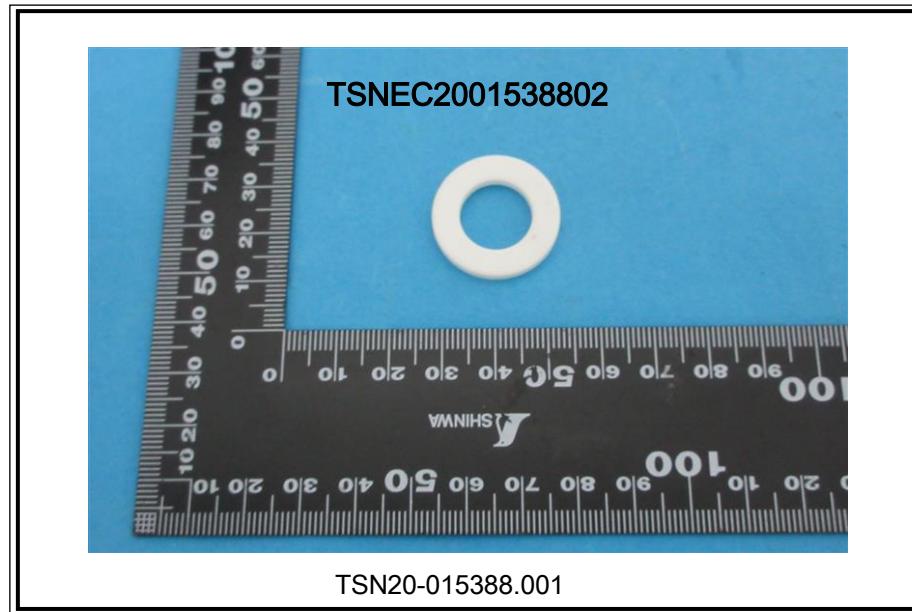
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测试报告

No. TSNEC2001538802

日期: 2020年08月26日 第8页,共8页

样品照片:



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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 1 of 17

TAI-I COPPER (GUANGZHOU) CO.,LTD

NO.77 DONGPENG DADAO EASTERN DISTRICT OF ECONOMIC&TECHNOLOGICAL DEVELOPMENT
DISTRICT GUANGZHOU
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Enameled wire UEWF

SGS Job No. : CP20-033401 - GZ

Date of Sample Received : 07 Jul 2020

Testing Period : 07 Jul 2020 - 14 Jul 2020

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, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) 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. Guangzhou Branch



Violet,Shi

Approved Signatory



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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 2 of 17

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN20-112144.016	Copper-colored surfaced metal wire

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 62321-7-2:2017 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

Test Item(s)	Limit	Unit	MDL	016
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 (CrVI)	1,000	mg/kg	8	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND

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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 3 of 17

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>016</u>
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1,000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1,000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1,000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1,000	mg/kg	50	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall not apply to toys which are already subject to the restriction of DEHP, BBP, DBP and DIBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

Halogen

Test Method : With reference to EN 14582:2016, analysis was performed by IC.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>016</u>
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

Elementary Analysis

Test Method : SGS In-house method (GZTC CHEM-TOP-009-01, with reference to EPA 3050B:1996), analysis was performed by ICP-OES.

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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 4 of 17

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>016</u>
Arsenic (As)	mg/kg	10	ND

Tetrabromobisphenol A (TBBP-A)

Test Method : SGS In-house method (GZTC CHEM-TOP-065, With reference to EPA 3540C:1996 & EPA 8270E:2017), analysis was performed by GC-MS&LC-MS.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>016</u>
Tetrabromobisphenol A (TBBP-A)	mg/kg	10	ND

Phthalates

Test Method : With reference to IEC 62321-8:2017, analyzed by GC-MS.

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>016</u>
Dibutyl phthalate (DBP)	84-74-2	% (w/w)	0.005	ND
Butyl benzyl phthalate (BBP)	85-68-7	% (w/w)	0.005	ND
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	% (w/w)	0.005	ND
Diisononyl Phthalate (DINP)	28553-12-0 / 68515-48-0	% (w/w)	0.005	ND
Di-n-octyl Phthalate (DNOP)	117-84-0	% (w/w)	0.005	ND
Diisodecyl Phthalate (DIDP)	26761-40-0 / 68515-49-1	% (w/w)	0.005	ND
Dimethyl Phthalate (DMP)	131-11-3	% (w/w)	0.005	ND
Diethyl Phthalate (DEP)	84-66-2	% (w/w)	0.005	ND
Diisobutyl Phthalates (DIBP)	84-69-5	% (w/w)	0.005	ND
Dinonyl Phthalate (DNP)	84-76-4	% (w/w)	0.005	ND
Diisoctyl Phthalate (DIOP)	27554-26-3	% (w/w)	0.005	ND
Dipropyl Phthalate (DPrP)	131-16-8	% (w/w)	0.005	ND
Dicyclohexyl Phthalate (DCHP)	84-61-7	% (w/w)	0.005	ND
Dipentyl Phthalates (DPENP/DnPP)	131-18-0	% (w/w)	0.005	ND
Dibenzyl Phthalate (DBzP)	523-31-9	% (w/w)	0.005	ND
Diphenyl Phthalate (DPhP)	84-62-8	% (w/w)	0.005	ND
Di-n-hexyl Phthalate (DnHP)	84-75-3	% (w/w)	0.005	ND



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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 5 of 17

Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

Test Item(s)	CAS NO.	Unit	MDL	016
Perfluorooctanoic acid (PFOA) and its salts+	-	µg/m ²	1.0	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	µg/m ²	1.0	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	µg/m ²	1.0	ND
N-methylperfluoro-1-octanesulfonamide(MeFOSA)	31506-32-8	µg/m ²	1.0	ND
N-Ethylperfluorooctane sulfonamide(EtFOSA)	4151-50-2	µg/m ²	1.0	ND
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol(MeFOSE)	24448-09-7	µg/m ²	1.0	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol(EtFOSE)	1691-99-2	µg/m ²	1.0	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	µg/m ²	1.0	ND

Notes :

- (1) + PFOA refer to its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
- (2) ^ PFOS refer to its derivatives including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH4 (CAS No.: 29081-56-9), PFOS-NH(OH)2 (CAS No.: 70225-14-8), PFOS-N(C2H5)4 (CAS No.: 56773-42-3), PFOS-DDA(CAS No.: 251099-16-8) and POSF (CAS No.: 307-35-7)

AfPS GS 2019:01 PAK - Polycyclic Aromatic Hydrocarbons (PAHs)

Test Method : With reference to AfPS GS 2019:01 PAK, analysis was performed by GC-MS.

Test Item(s)	CAS NO.	Unit	MDL	016
Naphthalene(NAP)	91-20-3	mg/kg	0.1	ND
Phenanthrene(PHE)	85-01-8	mg/kg	0.1	ND
Anthracene(ANT)	120-12-7	mg/kg	0.1	ND
Fluoranthene(FLT)	206-44-0	mg/kg	0.1	ND
Pyrene(PYR)	129-00-0	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	56-55-3	mg/kg	0.1	ND
Chrysene(CHR)	218-01-9	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)	205-99-2	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)	205-82-3	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	207-08-9	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	50-32-8	mg/kg	0.1	ND

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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 6 of 17

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>016</u>
Benzo(e)pyrene(BeP)	192-97-2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	193-39-5	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	53-70-3	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	191-24-2	mg/kg	0.1	ND
Sum of 4 PAHs (Phenanthrene, Pyrene, Anthracene, Fluoranthene)	-	mg/kg	-	ND
Sum of 15 PAHs	-	mg/kg	-	ND

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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 7 of 17

AfPS (German commission for Product Safety) : PAHs requirements

Parameter (mg/kg)	Category 1	Category 2		Category 3	
	Materials intended to be placed in the mouth, or materials coming into long-term contact with skin (more than 30s) during the intended use -in toys according to Directive 2009/48/EC or -for the use by children ^{a,b} up to 3 years of age.	a. use by children	b. other consumer products	a. use by children	b. other consumer products
Benzo(a)pyrene (BaP)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(e)pyrene (BeP)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(a)anthracene (BaA)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(b)fluoranthene (BbF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(j)fluoranthene (BjF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(k)fluoranthene (BkF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene (CHR) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(a,h)anthracene (DBA)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(g,h,i)perylene (BPE)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno(1,2,3-cd)pyrene (IPY)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Phenanthrene (PHE), pyrene (PYR), anthracene (ANT), fluoranthene (FLT)	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene (NAP)	< 1	< 2		< 10	
Sum of 15 PAHs	<1	< 5	< 10	< 20	< 50

Note:

^a A "Child" is legally defined as a person before reaching the age of 14 years.

^b Use by children includes both active and passive contact by children.

^c Definition "short-term repetitive contact" taken from REACH Annex XVII entry 50 amendment (Regulation (EC) No. 1272/2013)

^d According to the definition of the German Product Safety Act (ProdSG) (chapter 1 Article 2 No. 28) "foreseeable use" shall mean the use of a product in a manner that the person placing it on the market, has not intended, but which could be reasonably foreseeable.

Remark: The German committee on Product Safety (AfPS) published a new PAHs document (AfPS GS 2019:01 PAK) on April 10, 2020, which will be binding for the issue of GS mark certificate from July 1, 2020.

Hexabromocyclododecane (HBCDD)

Test Method : SGS in house method (GZTC CHEM-TOP-073, with reference to EPA 3550C:2007 & EPA 8270E:2017), analysis was performed by GC-MS.



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Guangzhou Branch Testing Center Chemical Laboratory

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Test Report

No. CANEC2011214416

Date: 14 Jul 2020

Page 8 of 17

Test Item(s)	CAS NO.	Unit	MDL	016
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD)	25637-99-4	mg/kg	10	ND
	3194-55-6			
	134237-50-6			
	134237-51-7			
	134237-52-8			



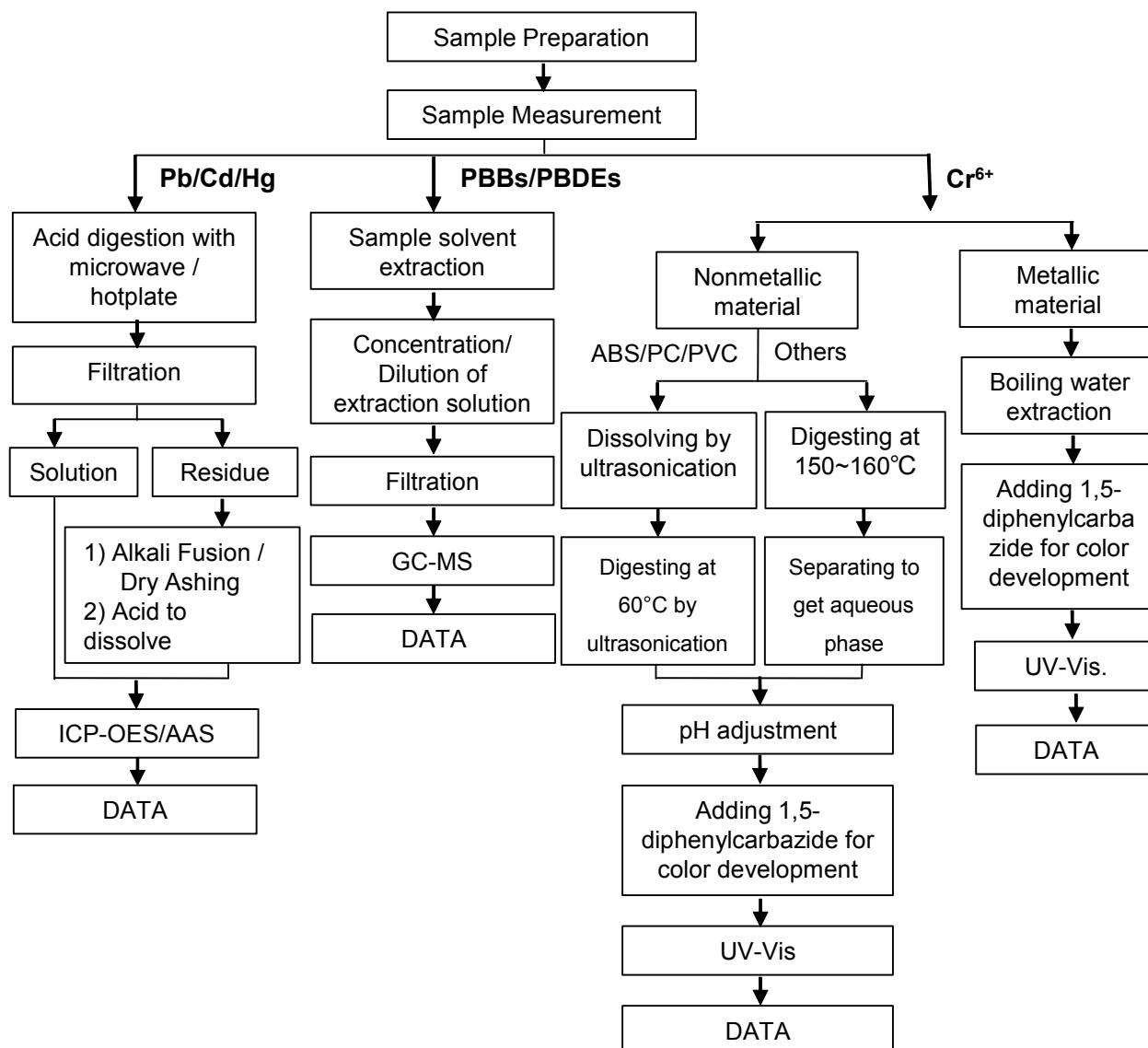
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Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

- 1) These samples were dissolved totally by pre -conditioning method according to below flow chart.
 (Cr⁶⁺ and PBBs/PBDEs test method excluded).



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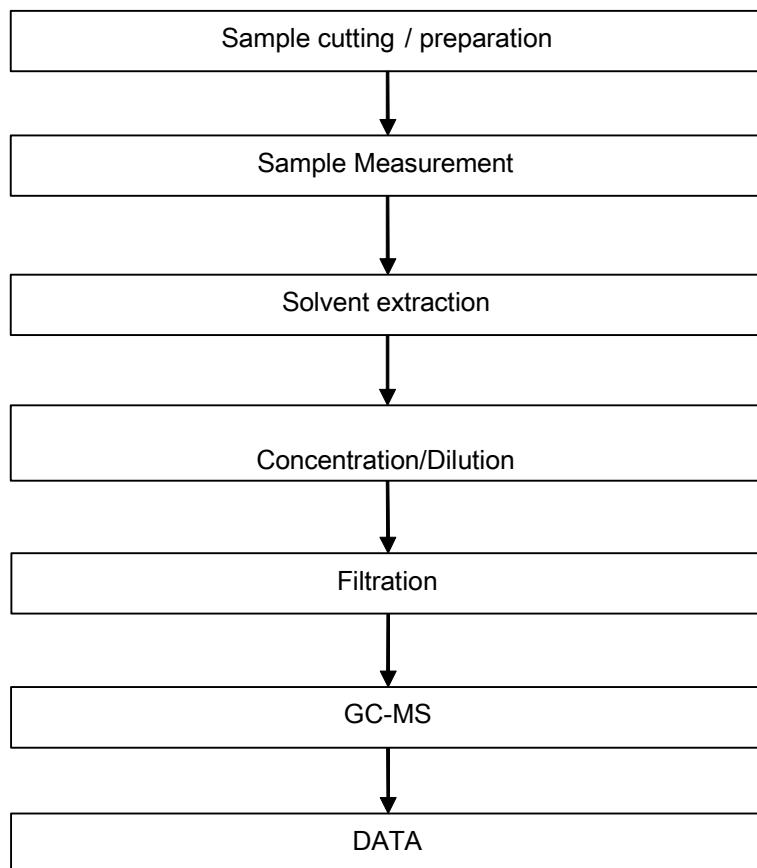
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Page 10 of 17

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Phthalates Testing Flow Chart



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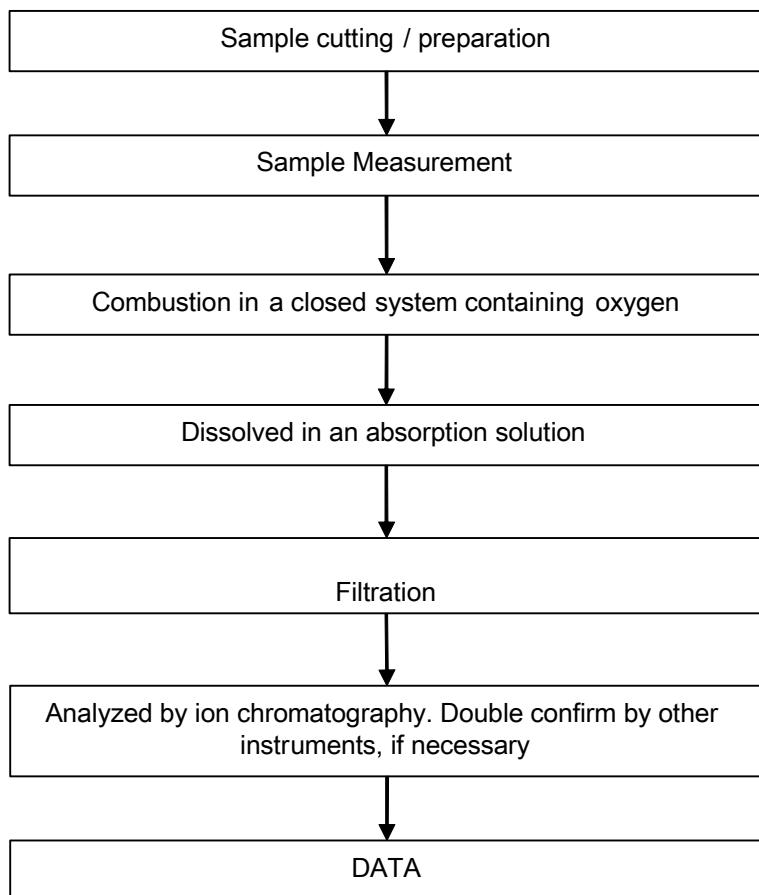
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Page 11 of 17

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Halogen Testing Flow Chart



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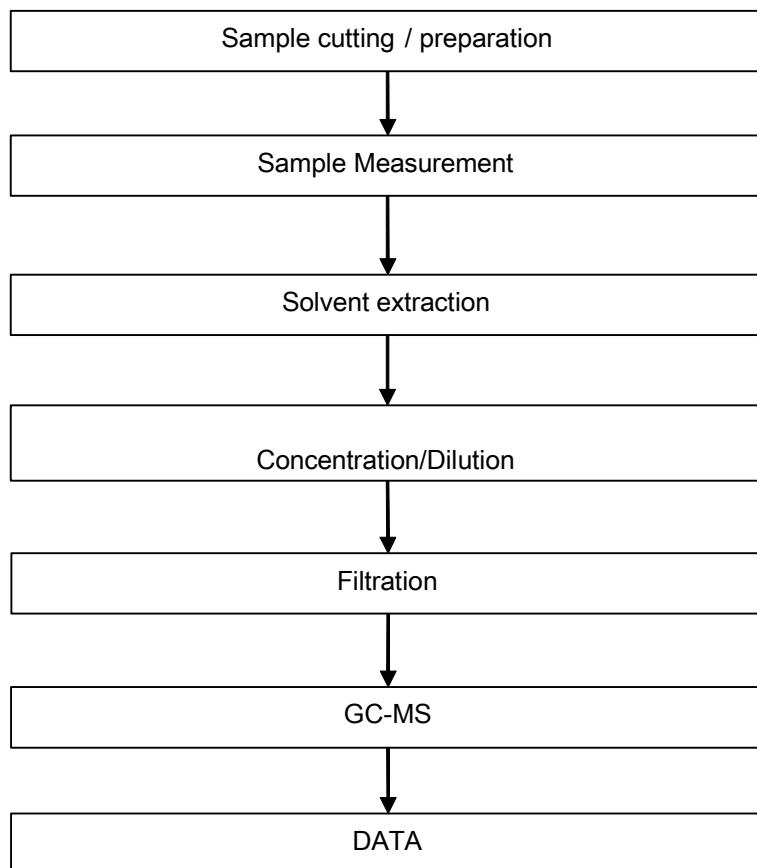
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Page 12 of 17

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HBCDD Testing Flow Chart



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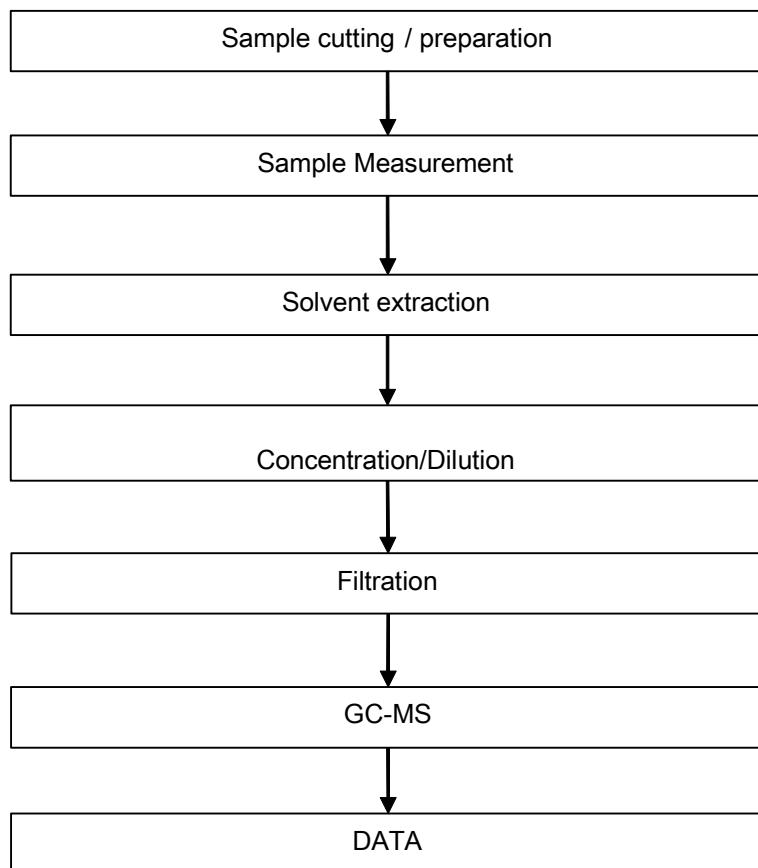
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Page 13 of 17

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PAHs Testing Flow Chart



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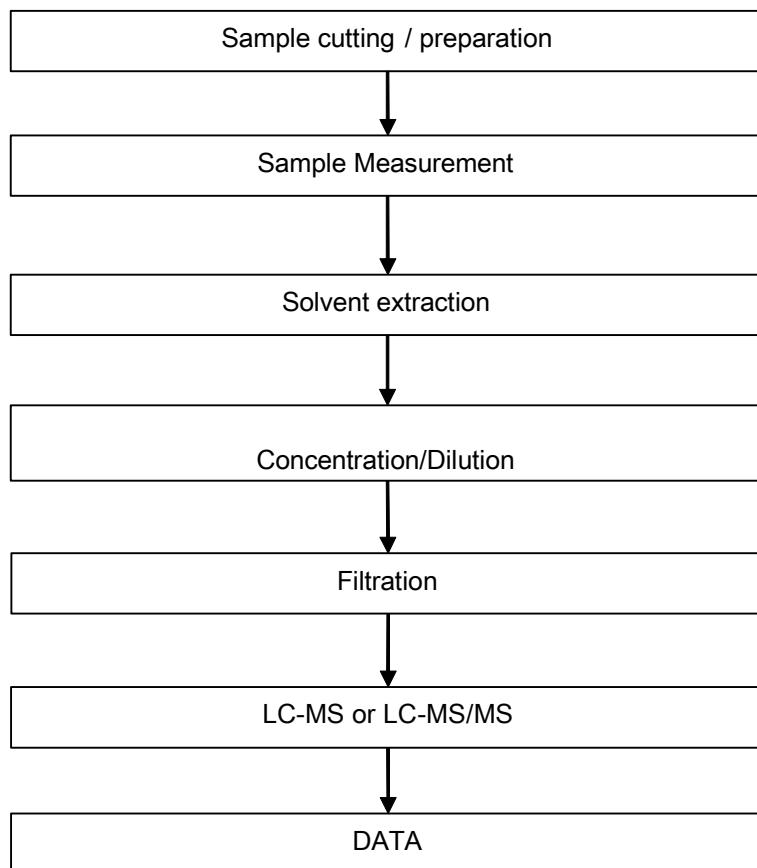
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Page 14 of 17

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PFOA / PFOS Testing Flow Chart



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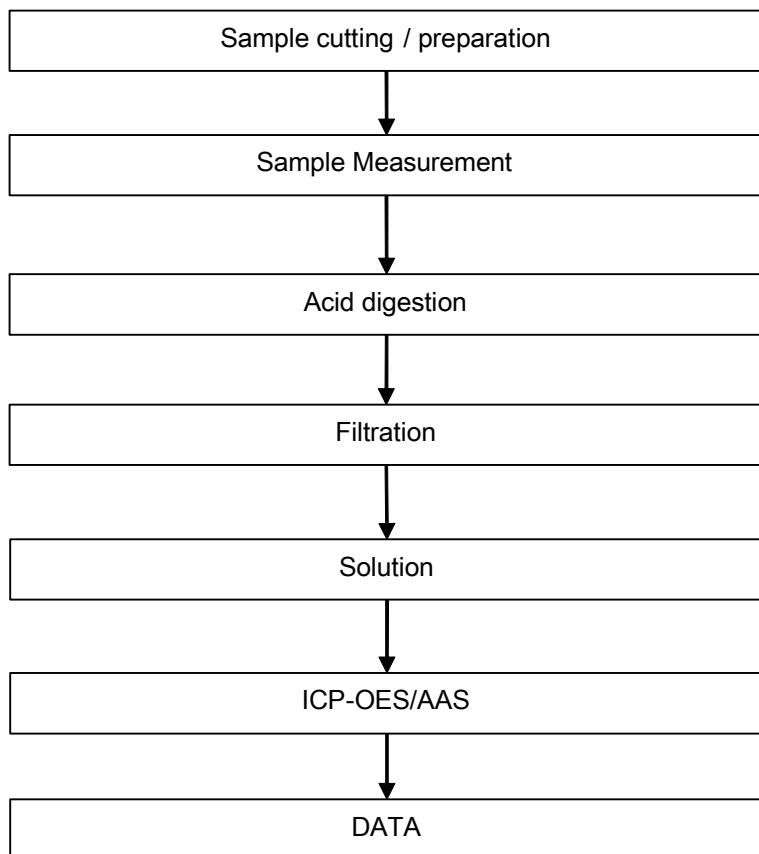
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Page 15 of 17

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Elementary Testing Flow Chart



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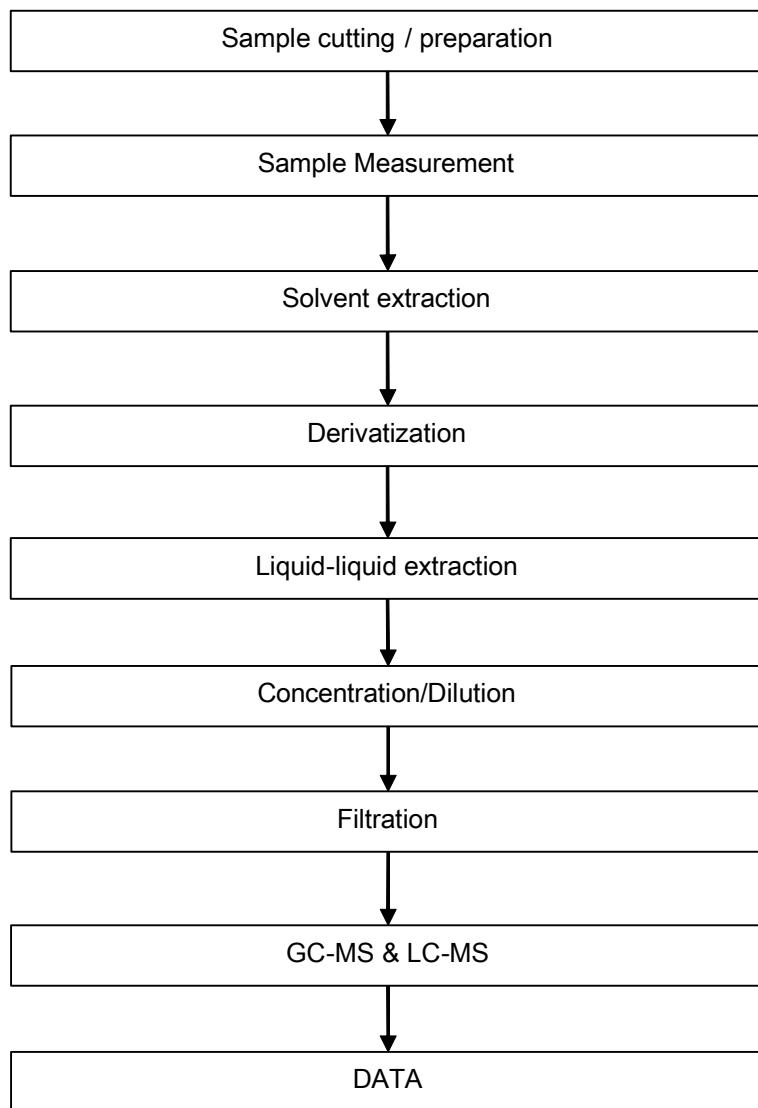
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Page 16 of 17

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TBBP-A Testing Flow Chart



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Sample photo:



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測試報告

Test Report

號碼(No.): ETR21300849

日期(Date): 09-Mar-2021

頁數(Page): 1 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

以下測試樣品係由申請廠商所提供之確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

送樣廠商(Sample Submitted By) : 協祐股份有限公司 (WGJ COMPANY LTD.)

樣品名稱(Sample Name) : DUPONT RYNITE PET

樣品型號(Style/Item No.) : FR530BK

=====

收件日(Sample Receiving Date) : 03-Mar-2021

測試期間(Testing Period) : 03-Mar-2021 to 09-Mar-2021

測試需求(Test Requested) : (1) 依據客戶指定，參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP。(As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)

(2) 其他測試項目請見下一页。(Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請參閱下一页 (Please refer to following pages.)

Troy Chang, Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



PIN CODE: 2CB35307

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測試報告

Test Report

號碼(No.): ETR21300849

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頁數(Page): 2 of 9

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桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

測試部位敘述 (Test Part Description)

No.1 : 黑色塑膠粒 (BLACK PLASTIC PELLETS)

測試結果 (Test Results)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)
				No.1
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-43-9)	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
鉛 (Pb) (Lead (Pb)) (CAS No.: 7439-92-1)	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	7.15
汞 (Hg) (Mercury (Hg)) (CAS No.: 7439-97-6)	參考IEC 62321-4: 2013+ AMD1: 2017 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
六價鉻 Cr(VI) (Hexavalent Chromium Cr(VI)) (CAS No.: 18540-29-9)	參考IEC 62321-7-2: 2017 · 以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.)	mg/kg	8	n.d.
一溴聯苯 (Monobromobiphenyl)	參考IEC 62321-6: 2015 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	mg/kg	5	n.d.
二溴聯苯 (Dibromobiphenyl)		mg/kg	5	n.d.
三溴聯苯 (Tribromobiphenyl)		mg/kg	5	n.d.
四溴聯苯 (Tetrabromobiphenyl)		mg/kg	5	n.d.
五溴聯苯 (Pentabromobiphenyl)		mg/kg	5	n.d.
六溴聯苯 (Hexabromobiphenyl)		mg/kg	5	n.d.
七溴聯苯 (Heptabromobiphenyl)		mg/kg	5	n.d.
八溴聯苯 (Octabromobiphenyl)		mg/kg	5	n.d.
九溴聯苯 (Nonabromobiphenyl)		mg/kg	5	n.d.
十溴聯苯 (Decabromobiphenyl)		mg/kg	5	n.d.
多溴聯苯總和 (Sum of PBBs)		mg/kg	-	n.d.

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測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)
			No.1	
一溴聯苯醚 (Monobromodiphenyl ether)	參考IEC 62321-6: 2015 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	mg/kg	5	n.d.
二溴聯苯醚 (Dibromodiphenyl ether)		mg/kg	5	n.d.
三溴聯苯醚 (Tribromodiphenyl ether)		mg/kg	5	n.d.
四溴聯苯醚 (Tetrabromodiphenyl ether)		mg/kg	5	n.d.
五溴聯苯醚 (Pentabromodiphenyl ether)		mg/kg	5	n.d.
六溴聯苯醚 (Hexabromodiphenyl ether)		mg/kg	5	n.d.
七溴聯苯醚 (Heptabromodiphenyl ether)		mg/kg	5	n.d.
八溴聯苯醚 (Octabromodiphenyl ether)		mg/kg	5	n.d.
九溴聯苯醚 (Nonabromodiphenyl ether)		mg/kg	5	n.d.
十溴聯苯醚 (Decabromodiphenyl ether)		mg/kg	5	n.d.
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	-	n.d.
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP)) (CAS No.: 117-81-7)	參考IEC 62321-8: 2017 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) (CAS No.: 84-69-5)		mg/kg	50	n.d.
鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP)) (CAS No.: 84-74-2)		mg/kg	50	n.d.
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP)) (CAS No.: 85-68-7)		mg/kg	50	n.d.
鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl phthalate (DIDP)) (CAS No.: 26761-40-0, 68515-49-1)		mg/kg	50	n.d.
鄰苯二甲酸二異壬酯 (DINP) (Diisononyl phthalate (DINP)) (CAS No.: 28553-12-0, 68515-48-0)		mg/kg	50	n.d.
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl phthalate (DNOP)) (CAS No.: 117-84-0)		mg/kg	50	n.d.

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測試報告

Test Report

號碼(No.): ETR21300849

日期(Date): 09-Mar-2021

頁數(Page): 4 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)
				No.1
全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763-23-1 and its salts)	參考CEN/TS 15968: 2010 · 以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.
全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	參考CEN/TS 15968: 2010 · 以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.

備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n.d. = Not Detected (未檢出) ; 小於MDL / Less than MDL
4. "-" = Not Regulated (無規格值)
5. 全氟辛烷磺酸及其鹽類包含 (PFOS and its salts including) :
CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.
6. 全氟辛酸及其鹽類包含 (PFOA and its salts including) :
CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.

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測試報告

Test Report

號碼(No.): ETR21300849

日期(Date): 09-Mar-2021

頁數(Page): 5 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

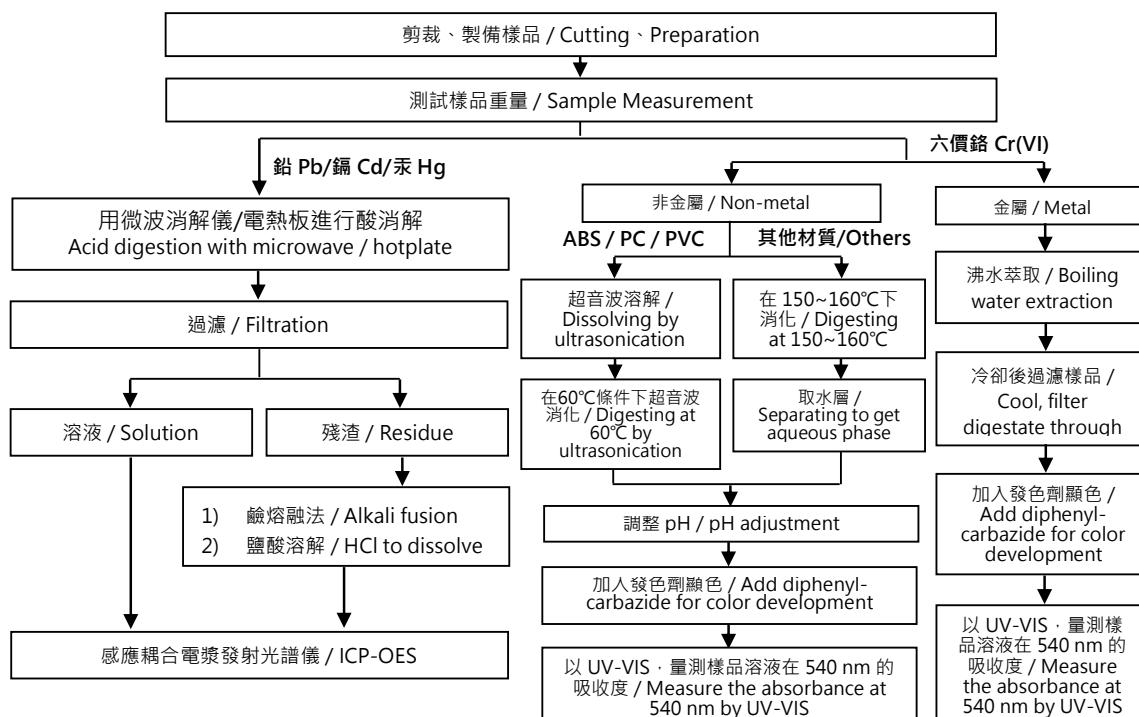
桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。（六價鉻測試方法除外）

These samples were dissolved totally by pre-conditioning method according to below flow chart.

(Cr⁶⁺ test method excluded)



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日期(Date): 09-Mar-2021

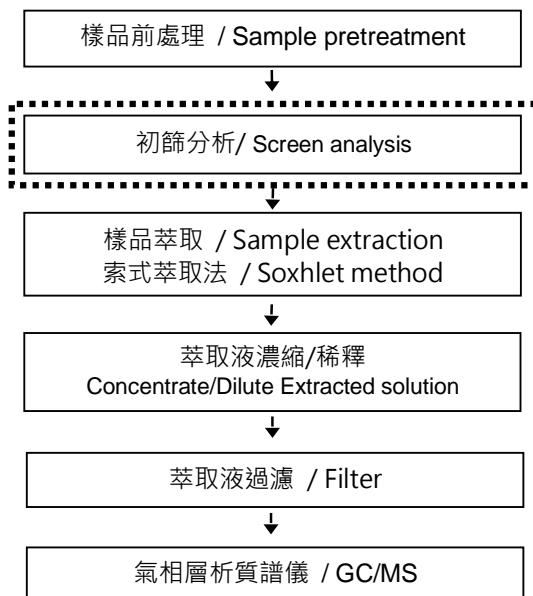
頁數(Page): 6 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs

初次測試程序 / First testing process →
選擇性篩檢程序 / Optional screen process ······
確認程序 / Confirmation process - - - →



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測試報告

Test Report

號碼(No.): ETR21300849

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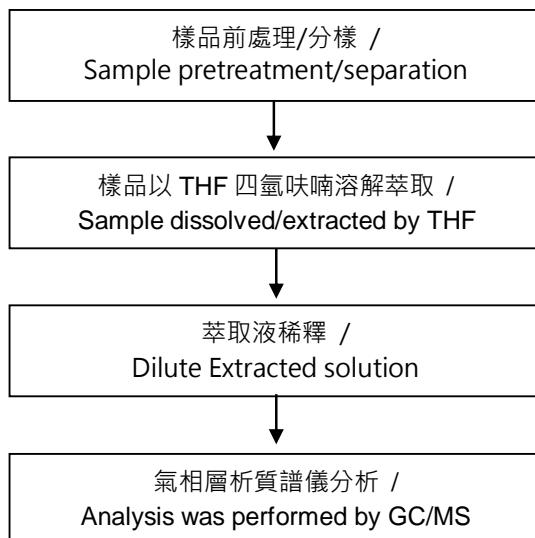
頁數(Page): 7 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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測試報告

Test Report

號碼(No.): ETR21300849

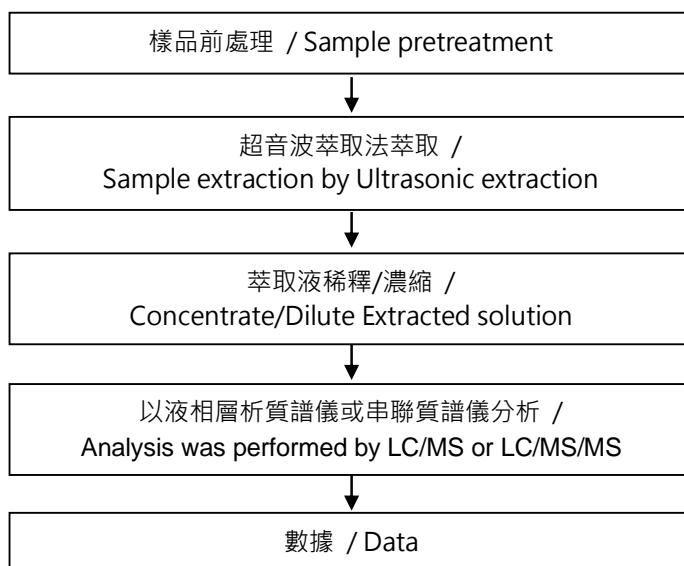
日期(Date): 09-Mar-2021

頁數(Page): 8 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS



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測試報告

Test Report

號碼(No.): ETR21300849

日期(Date): 09-Mar-2021

頁數(Page): 9 of 9

協祐股份有限公司 (WGJ COMPANY LTD.)

桃園市龜山區頂湖五街5號 (NO.5, DINGHU 5TH ST., GUISHAN DIST., TAOYUAN CITY 33378, TAIWAN (R.O.C.))

* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位.*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

ETR21300849

** 報告結尾 (End of Report) **

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Test Report

Report No. A2210034916101001

Page 1 of 8

Company Name JIANGYIN LIUHUAN ALLOY WIRE CO.,LTD**shown on Report****Address** NO. 23, LONGYUN ROAD, ZHOZHUANG TOWN, JIANGYIN CITY**The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant**

Sample Name(s) Hard tinned copper clad steel wire

Sample Received Date Jan. 27, 2021

Testing Period Jan. 27, 2021 to Feb. 9, 2021

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

Tested by

Reviewed by

Approved by

Date

Feb. 9, 2021

Chen kaimin

Lab Manager

No. R201804981

Centre Testing International Pinpiao(Shanghai) Co., Ltd.



No.1351, Wanfang Road, Minhang District, Shanghai, China

Test Report

Report No. A2210034916101001

Page 2 of 8

Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013	ICP-OES
	Refer to IEC 62321-5:2013	
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES
	Refer to IEC 62321-5:2013	
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
	Refer to IEC 62321-4:2013+AMD1:2017 CSV	
Hexavalent Chromium (Cr(VI))	IEC 62321-7-1:2015	UV-Vis
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 Result(s)

Tested Item(s)	Result		MDL
	001	002	
Lead (Pb)	66 mg/kg	N.D.	2 mg/kg
Cadmium (Cd)	N.D.	N.D.	2 mg/kg
Mercury (Hg)	N.D.	N.D.	2 mg/kg
Hexavalent Chromium (Cr(VI))	N.D. [▼]	N.D. [▼]	0.10 µg/cm ² (LOQ)

Tested Item(s)	Result		MDL
	002		
Polybrominated Biphenyls (PBBs)			
Monobromobiphenyl	N.D.		5 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

Test Report

Report No. A2210034916101001

Page 3 of 8

Tested Item(s)	Result	MDL
	002	
Polybrominated Diphenyl Ethers (PBDEs)		
Monobromodiphenyl ether	N.D.	5 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

Tested Item(s)	Result	MDL
	002	
Phthalates (DBP, BBP, DEHP, DIBP)		
Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	50 mg/kg
Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	50 mg/kg
Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg
Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	50 mg/kg

Test Report

Report No. A2210034916101001

Page 4 of 8

Tested Item(s)	Result	MDL
	001	
Polybrominated Biphenyls (PBBs)		
Monobromobiphenyl	N.D.	5 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
	001	
Polybrominated Diphenyl Ethers (PBDEs)		
Monobromodiphenyl ether	N.D.	5 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

Test Report

Report No. A2210034916101001

Page 5 of 8

Tested Item(s)	Result	MDL
	001	
Phthalates (DBP, BBP, DEHP, DIBP)		
Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	50 mg/kg
Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	50 mg/kg
Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg
Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	50 mg/kg

Sample/Part Description

001 Silvery plating

002 Metal base

Remark: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL or LOQ)

-mg/kg = ppm = parts per million

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm²

▼ The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 µg/cm². The coating is considered a non-Cr(VI) based coating.

Test Report

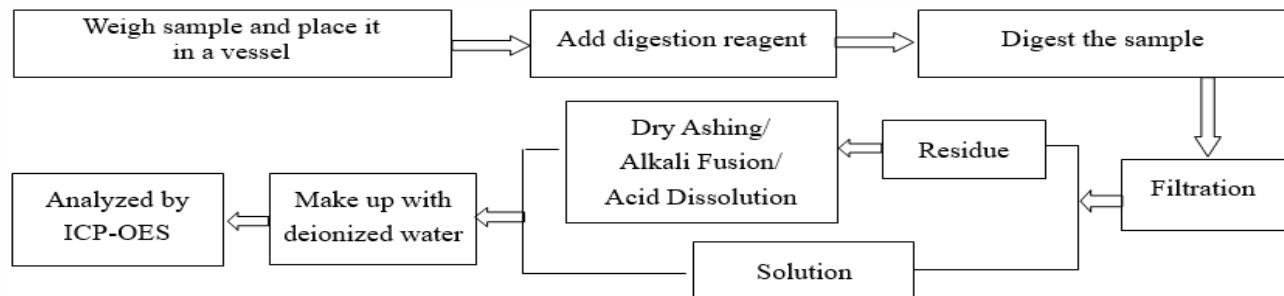
Report No. A2210034916101001

Page 6 of 8

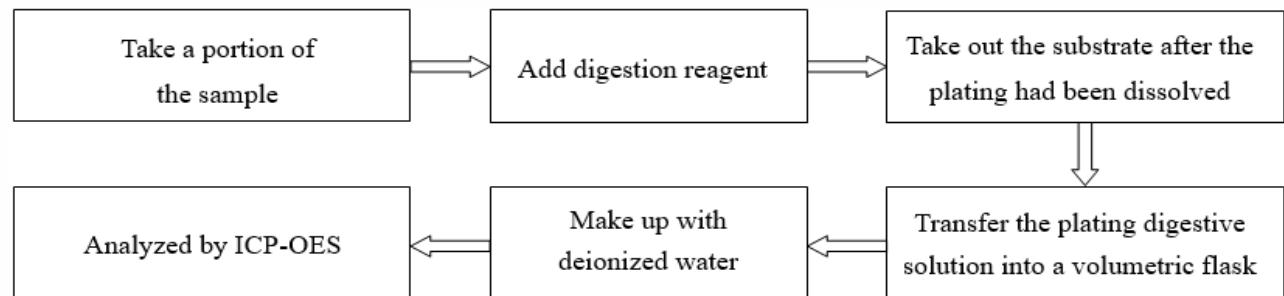
Test Process

1. Lead (Pb), Cadmium (Cd)

(1) IEC 62321-5:2013

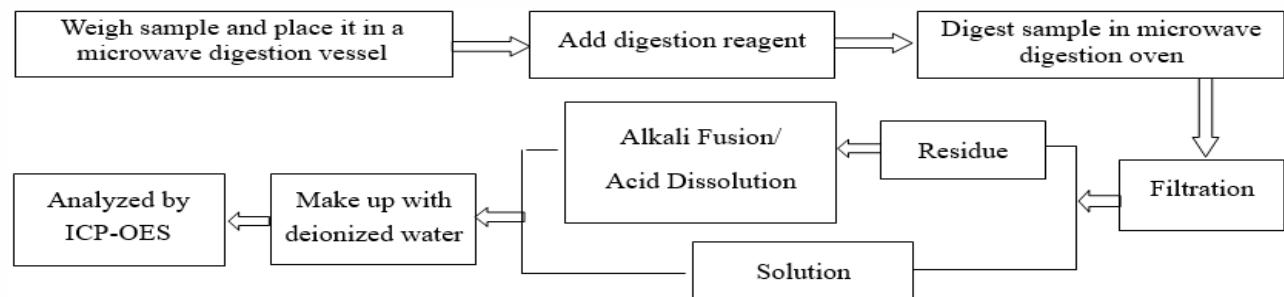


(2) Refer to IEC 62321-5:2013

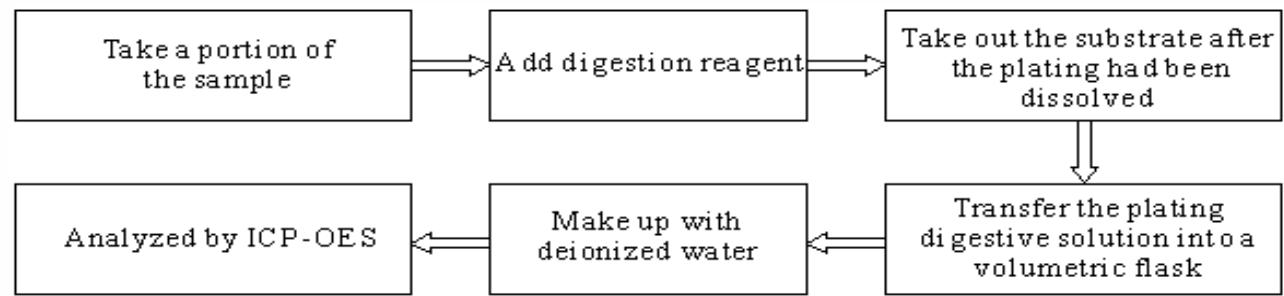


2. Mercury (Hg)

(1) IEC 62321-4:2013+AMD1:2017 CSV



(2) Refer to IEC 62321-4:2013+AMD1:2017 CSV

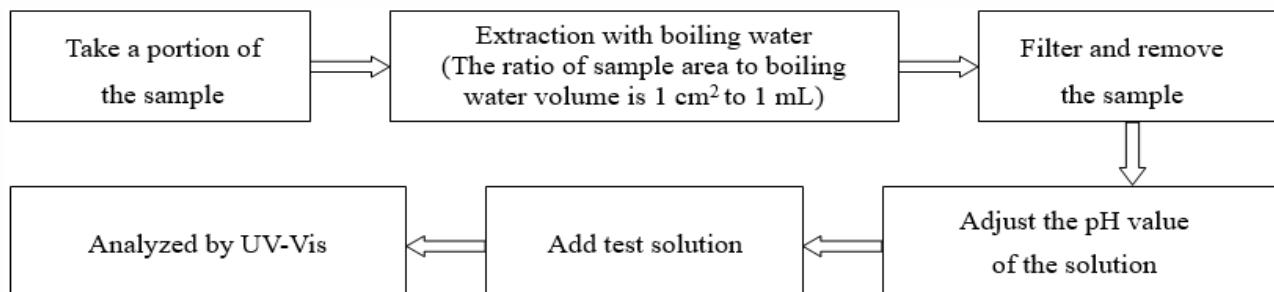


Test Report

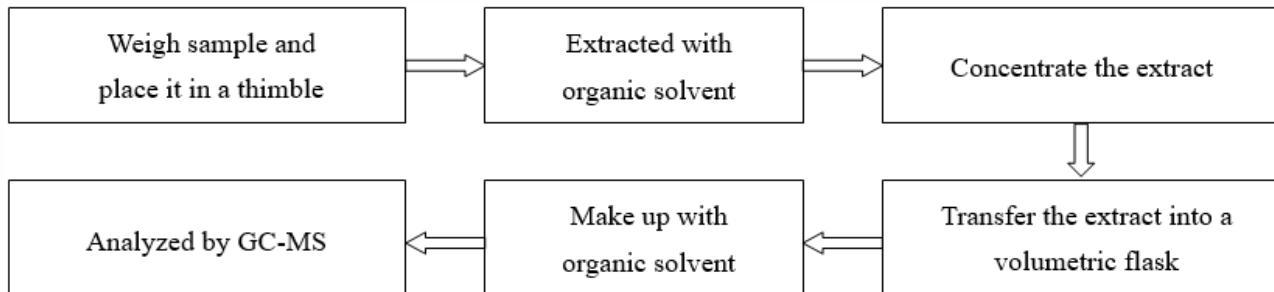
Report No. A2210034916101001

Page 7 of 8

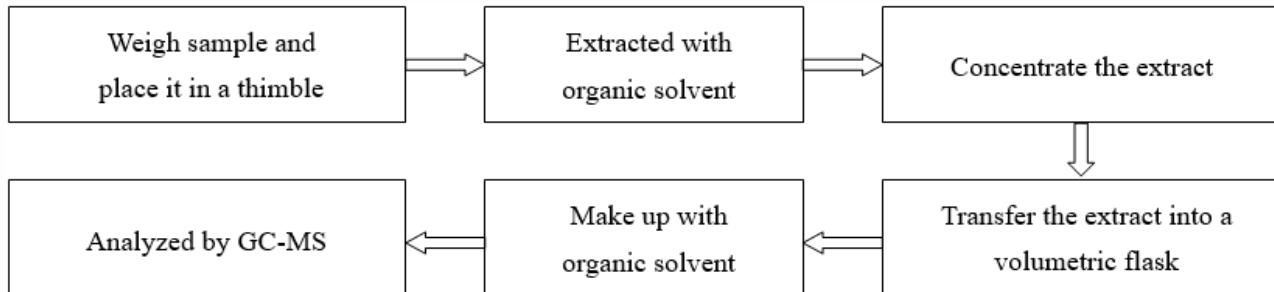
3. Hexavalent Chromium (Cr(VI))



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



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



Test Report

Report No. A2210034916101001

Page 8 of 8

Photo(s) of the sample(s)



Statement:

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of CTI, this report can't be reproduced except in full;
5. In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

*** End of Report ***



测试报告

No. CANEC2020070108

日期: 2020年11月24日 第1页,共7页

东莞市力多电子材料有限公司
东莞市虎门镇新湾港湾工业区
苏州力多电子材料有限公司
中国苏州市吴中区临湖镇和安路1239号

以下测试之样品是由申请者所提供及确认 : EPOXY

SGS工作编号 :	CP20-058630 - GZ
型号 :	3300A/B
客户参考信息 :	3300A/B, series, 3300A/B, 3300A/B-1, 3300A/B-2, 3300A/B-3, 3300A/B-SY, 3300A/B-MD, 3300A/B-LS, 3300A/B-MP, 3300A/B/C-5005, 3300A/B-2008, 2006AB, 2008AB, 3300A/B-2006, 3300A/B/C-6005, 3300A/B-5217, 3300A/B-5C, 3300A/B-Y, 3300A/B-4, 3300A/B-5, 3300A/B-6, 3300A/B-7, 3300A/B-HD, 3300A/B-8, 3300A/B-9, 3300A/B-10, 3300A/B-(XX), 3300A/B-W, 3300A/B-WJ, 3300A/B-D, 3300A/B-BH, 3300A/B-SYL, 3300A/B-SYF, 3300A/B-F, 3300A/B-XB, 3300A/B-YH, 3300A/B-Y-K, 3300A/B-LD, 3300A/B-X, 3300A/B-15, 3006A/B, 3008A/B, 3300A/B-M, 3300A/B-HX, 2006A/B-N, 2006A/B-N-JG, 3300A/B-JR, 3300A/B-1(V90), 4006A/B
样品接收日期 :	2020年11月13日
测试周期 :	2020年11月13日 - 2020年11月19日
测试要求 :	根据客户要求测试
测试方法 :	请参见下一页
测试结果 :	请参见下一页
结论 :	基于所送样品进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯(如邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP))的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

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测试报告

No. CANEC2020070108

日期: 2020年11月24日 第2页,共7页

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谢冬育

Dongyu Xie 谢冬育
批准签署人



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测试报告

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测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	CAN20-200701.002	黑色物料

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017 , IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES , UV-Vis 和 GC-MS 进行分析.

测试项目	限值	单位	MDL	002
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	ND
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))	1,000	mg/kg	8	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND

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日期: 2020年11月24日 第4页,共7页

测试项目	限值	单位	MDL	002
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯(DBP)	1,000	mg/kg	50	ND
邻苯二甲酸丁苄酯(BBP)	1,000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1,000	mg/kg	50	ND
邻苯二甲酸二异丁酯(DIBP)	1,000	mg/kg	50	ND

备注:

- (1)最大允许极限值引用自RoHS指令(EU) 2015/863 。IEC 62321系列等同于 EN 62321系列
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) 2021年7月22号开始, DEHP, BBP, DBP 和 DIBP的限制适用于医疗器械, 包括体外医疗器械, 监控仪表, 包括工业监测和控制仪器。
- (3) DEHP, BBP, DBP 和 DIBP的限制不适用于玩具产品, 因为No.1907/2006附录XVII第51条已对玩具产品中的DEHP, BBP, DBP 和 DIBP含量进行了限制。
- 除非另有说明, 此报告结果仅对测试的样品负责。本报告未经本公司书面许可, 不可部分复制。
检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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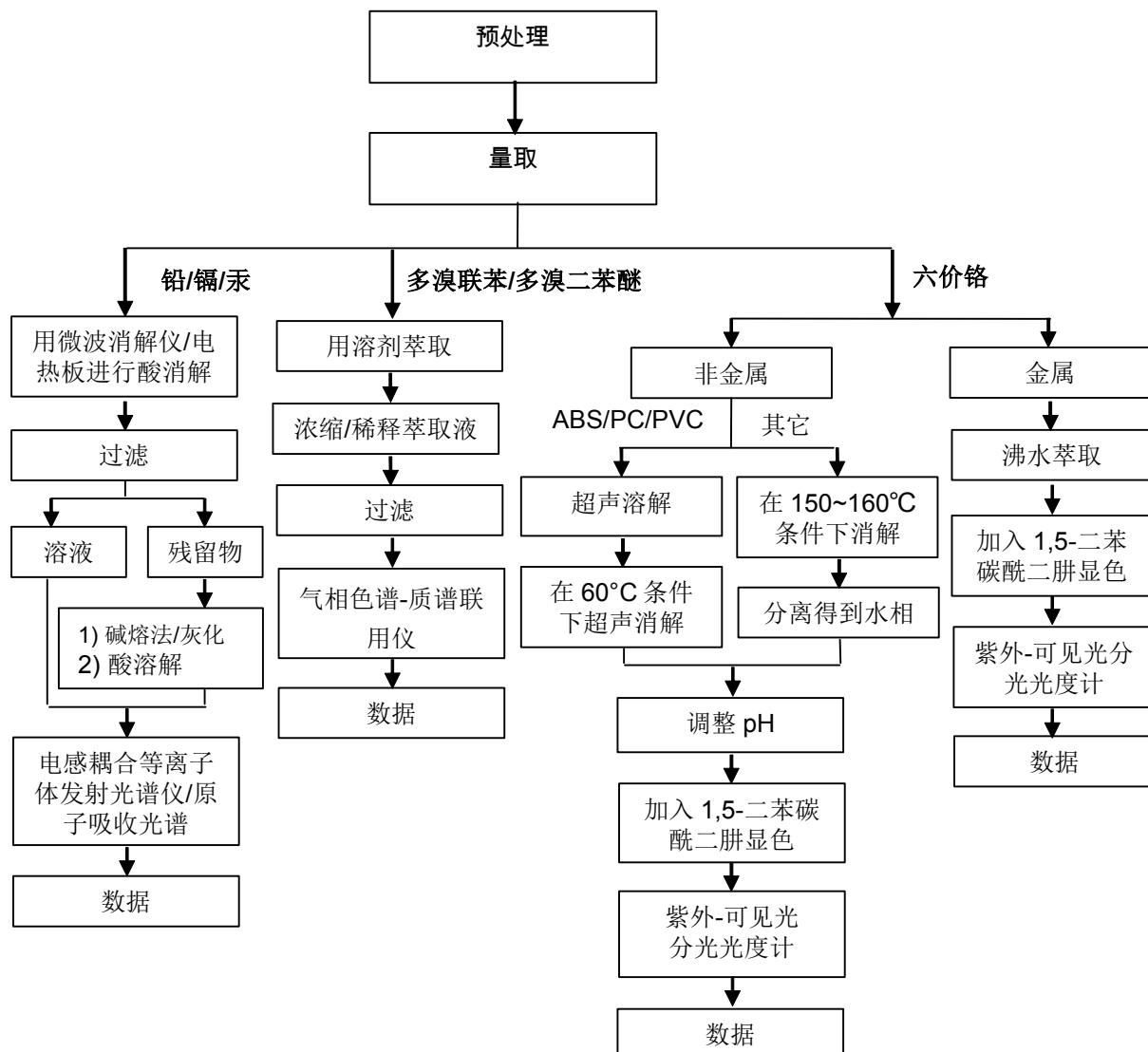
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日期: 2020年11月24日 第5页,共7页

附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

- 1) 样品按照下述流程被完全消解（六价铬和多溴联苯/多溴二苯醚测试除外）。



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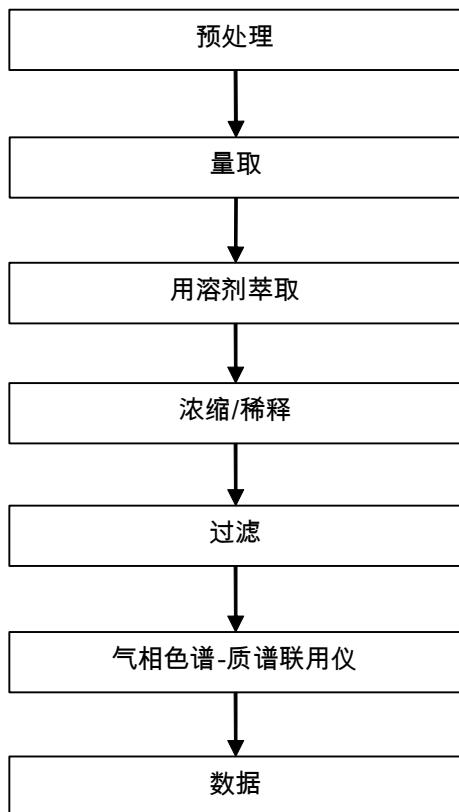
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No. CANEC2020070108

日期: 2020年11月24日 第6页,共7页

附件

Phthalates 测试流程图



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