

號碼(No.): CE/2019/90768 日期(Date): 2019/09/12 頁數(Page): 1 of 14

Test Report

東協化工股份有限公司

TONG HSIEH CHEMICAL INDUSTRIAL CO., LTD.

苗栗縣竹南鎮和興路346號

NO. 346 HO-HSING ROAD, CHUNAN IND. PARK, CHUNAN, MIAO-LI HSIEN, TAIWAN 35048 R. O. C.

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

送樣廠商(Sample Submitted By) 東協化工股份有限公司 (TONG HSIEH CHEMICAL INDUSTRIAL CO., LTD.)

POLYURETHANE INSULATING VARNISH (聚胺基甲酸酯絕緣凡立水) 樣品名稱(Sample Description)

PU-130-XX(N), PU-180-XX(N), PU-200-XX(N)樣品型號(Style/Item No.)

買主/訂單號碼(Buyer/Order No.) 0015001 < PU-130-XX(N) > ; 0019005 < PU-180-XX(N) >

收件日期(Sample Receiving Date) 2019/09/05

測試期間(Testing Period) 2019/09/05 to 2019/09/12

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測試編、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頁. (Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).

Troy Chang / Manager -√ec Signed for and behalf of SĞS TAIWAN LTD. Chemical Laboratory - Taipei



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測試結果(Test Results)

苗栗縣竹南鎮和興路346號

測試部位(PART NAME)No.1 淡棕色液體 (LT. BROWN LIQUID)

測試項目 (Test Items)			MDL	結果 (Result) No.1	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013),以感應耦合電 漿發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-OES.	2	n. d.	
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5 (2013),以感應耦合電 漿發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-OES.	2	n. d.	
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4:2013+ AMD1:2017,以感 應耦合電漿發射光譜儀檢測. / With reference to IEC 62321-4:2013+ AMD1:2017 and performed by ICP-0ES.	2	n. d.	
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	参考IEC 62321-7-2 (2017),以UV-VIS檢 測. / With reference to IEC 62321-7- 2 (2017) and performed by UV-VIS.	8	n. d.	
多溴聯苯總和 / Sum of PBBs	mg/kg		-	n. d.	
一溴聯苯 / Monobromobiphenyl	mg/kg	1	5	n. d.	
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.	
三溴聯苯 / Tribromobiphenyl	mg/kg	参考IEC 62321-6 (2015),以氣相層析/ 質譜儀檢測. / With reference to IEC - 62321-6 (2015) and performed by	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	GC/MS.	5	n. d.	
七溴聯苯 / Heptabromobiphenyl	mg/kg	00/ mo.	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.	



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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result) No.1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		-	n. d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg	1	5	n. d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg]	5	n. d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg	<u> </u>	5	n. d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg	參考IEC 62321-6 (2015),以氣相層析/	5	n. d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg	質譜儀檢測,/ With reference to IEC 62321-6 (2015) and performed by	5	n. d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg	GC/MS.	5	n. d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg	UC/ MG.	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.
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α - HBCDD, β - HBCDD, γ - HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考IEC 62321 (2008),以氣相層析/質 譜儀檢測. / With reference to IEC 62321 (2008). Analysis was performed by GC/MS.	5	n. d.
鹵素 / Halogen				
鹵素(氟)/ Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg		50	n. d.
鹵素 (氣) / Halogen-Chlorine (C1) (CAS No.: 22537-15-1)	mg/kg	参考BS EN 14582 (2016),以離子層析儀 分析. / With reference to BS EN	50	n. d.
鹵素(溴)/ Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	14582 (2016). Analysis was performed by IC.	50	n. d.
鹵素(碘)/ Halogen-Iodine(I)(CAS No.: 14362-44-8)	mg/kg		50	n. d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	参考CEN/TS 15968 (2010),以液相層析/ 質譜儀檢測. / With reference to CEN/TS 15968 (2010). Analysis was	0. 01	n. d.
全氟辛酸 / PFOA (CAS No.: 335-67-1)	mg/kg	performed by LC/MS.	0.01	n. d.



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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result) No.1
多環芳香煙 / Polycyclic Aromatic				1.00 2
Hydrocarbons (PAHs)	/1		0.0	1
苊 / Acenaphthene (CAS No.: 83-32-9)	mg/kg		0. 2	n. d.
苊烯 / Acenaphthylene (CAS No.: 208-96-8)	mg/kg		0. 2	n. d.
蔥 / Anthracene (CAS No.: 120-12-7)	mg/kg	1	0.2	n. d.
苯駢蒽 / Benzo[a]anthracene (CAS No.: 56-55-3)	mg/kg		0. 2	n. d.
苯騈(a)芘 / Benzo[a]pyrene (CAS No.: 50-32-8)	mg/kg		0.2	n. d.
苯(b)苯駢芴 / Benzo[b]fluoranthene (CAS No.: 205-99-2)	mg/kg		0.2	n. d.
苯駢苝 / Benzo[g,h,i]perylene (CAS No.: 191-24-2)	mg/kg		0.2	n. d.
苯騈(k)螢蔥 / Benzo[k]fluoranthene (CAS No.: 207-08-9)	mg/kg		0.2	n. d.
Chrysene (CAS No.: 218-01-9)	mg/kg	参考AfPS GS 2014:01 PAK,以氣相層析/ 質譜儀檢測. / With reference to AfPS	0. 2	n. d.
二苯騈蔥 / Dibenzo[a,h]anthracene (CAS No.: 53-70-3)	mg/kg	GS 2014:01 PAK. Analysis was performed by GC/MS.	0.2	n. d.
苯騈苊 / Fluoranthene (CAS No.: 206-44-0)	mg/kg		0.2	n. d.
芴 / Fluorene (CAS No.: 86-73-7)	mg/kg	1	0. 2	n. d.
茚酮芘 / Indeno[1, 2, 3-c, d] pyrene (CAS No.: 193-39-5)	mg/kg		0.2	n. d.
茶 / Naphthalene (CAS No.: 91-20-3)	mg/kg	1	0. 2	1.84
菲 / Phenanthrene (CAS No.: 85-01-8)	mg/kg	1	0.2	n. d.
芘 / Pyrene (CAS No.: 129-00-0)	mg/kg		0.2	n. d.
苯(j)苯駢芴 / Benzo[j]fluoranthene (CAS No.: 205-82-3)	mg/kg		0.2	n. d.
苯騈(e)芘 / Benzo[e]pyrene (CAS No.: 192-97-2)	mg/kg		0. 2	n. d.
多環芳香烴18項總和 / Sum of 18 PAHs	mg/kg		-	1.84



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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result) No.1
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg		50	n. d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg		50	n. d.
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	参考IEC 62321-8 (2017),以氣相層析/ 質譜儀檢測. / With reference to IEC	50	n. d.
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg		50	n. d.
鄰苯二甲酸二異癸酯 / DIDP (Di- isodecyl phthalate) (CAS No.: 26761- 40-0; 68515-49-1)	mg/kg	62321-8 (2017). Analysis was performed by GC/MS.	50	n. d.
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (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) (CAS No.: 117-84-0)	mg/kg		50	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)
- 4. "-" = Not Regulated (無規格值)

PFOS参考資訊(Reference Information): 持久性有機污染物 POPs - (EU) 2019/1021

PFOS濃度在物質或製備中不得超過0.001%(10ppm),在半成品、成品或零部件中不得超過0.1%(1000ppm),在紡織品或 塗層材料中不得超過1μg/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above $1\mu g/m^2$.)



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△ 德國產品安全委員會(AfPS) GS PAHs 要求 /

AfPS (German commission for Product Safety): GS PAHs requirements

		• • • • • • • • • • • • • • • • • • • •					
	第1類(Category 1)	類(Category 1) 第2類(Category 2)			第3類(Category 3)		
項目 (Parameter)	意圖放入嘴內的材料 或玩具會與皮膚有所 接觸(超過30秒). (Material indented to be put in the mouth or toys with intended skin	foreseeable contact to skin for		可預見與皮膚接觸短於30秒(短期與皮膚接觸),以及不屬於第1類或第2類的材料. (Materials not falling under category 1 or 2 with foreseeable contact to skin for less than 30 seconds (short-term skin contact).)			
	contact (longer than 30 s).)	列於2009/48/EC 之玩具(Toy under 2009/48/EC)	列於德國產品安全 法之其他產品 (Other products under ProdSG)	列於2009/48/EC 之玩具(Toy under 2009/48/EC)	列於德國產品安全 法之其他產品 (Other products under ProdSG)		
Naphthalene	< 1	<	< 2	<	10		
Acenaphthylene							
Acenaphthene							
Fluorene							
Phenanthrene	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum		
Anthracene							
Fluoranthene							
Pyrene							
Benzo[a]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Chrysene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Benzo[b]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Benzo[j]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Benzo[k]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Benzo[a]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Benzo[e]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Indeno[1, 2, 3-c, d] pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Dibenzo[a,h]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
Benzo[g, h, i]perylene	< 0.2	< 0.2	< 0.5	< 0.5	< 1		
18項PAH總濃度 (Sum of 18 PAH)	< 1	< 5	< 10	< 20	< 50		

單位(Unit):mg/kg



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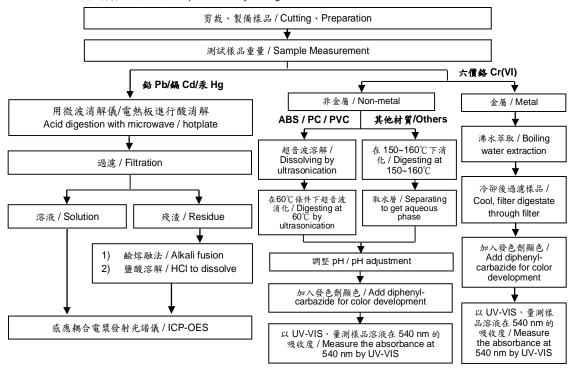
NO. 346 HO-HSING ROAD, CHUNAN IND. PARK, CHUNAN, MIAO-LI HSIEN, TAIWAN 35048 R. O. C.

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)

- 測試人員:陳恩臻 / Technician: Rita Chen
- 測試負責人:張啟興 / Supervisor: Troy Chang





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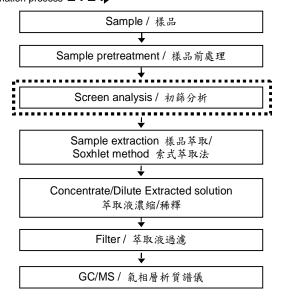
NO. 346 HO-HSING ROAD, CHUNAN IND. PARK, CHUNAN, MIAO-LI HSIEN, TAIWAN 35048 R. O. C.

多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

測試人員:涂雅苓 / Technician: Yaling Tu

測試負責人:張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process -確認程序 / Confirmation process - - - - →





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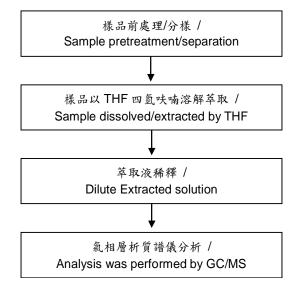
NO. 346 HO-HSING ROAD, CHUNAN IND. PARK, CHUNAN, MIAO-LI HSIEN, TAIWAN 35048 R. O. C.

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

測試人員:涂雅苓 / Technician: Yaling Tu

測試負責人:張啟興 / Supervisor: Troy Chang

【測試方法/Test method: IEC 62321-8】





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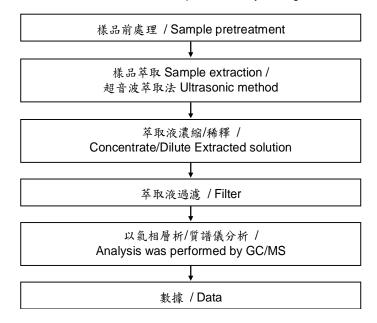
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六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD

測試人員:涂雅苓 / Technician: Yaling Tu 測試負責人:張啟興 / Supervisor: Troy Chang





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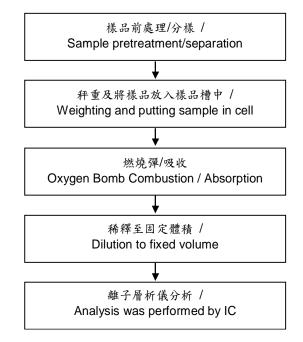
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鹵素分析流程圖 / Analytical flow chart - Halogen

測試人員: 陳恩臻 / Technician: Rita Chen

測試負責人:張啟興 / Supervisor: Troy Chang





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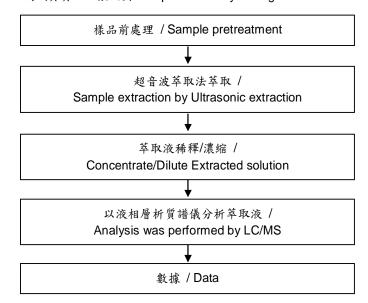
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全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

■ 測試人員:涂雅苓 / Technician: Yaling Tu 測試負責人:張啟興 / Supervisor: Troy Chang





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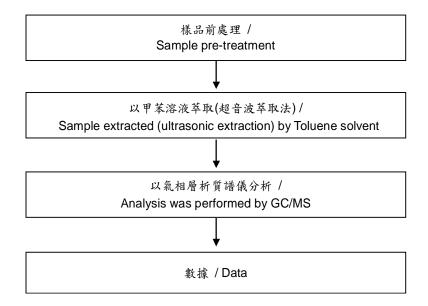
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多環芳香烴分析流程圖 / Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)

測試人員:涂雅苓 / Technician: Yaling Tu 測試負責人:張啟興 / Supervisor: Troy Chang





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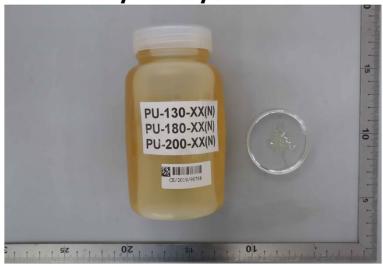
Test Report

東協化工股份有限公司 TONG HSIEH CHEMICAL INDUSTRIAL CO., LTD. 苗栗縣竹南鎮和興路346號

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* 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.)

CE/2019/90768



** 報告結尾 (End of Report) **