

測試報告(SVHC)

Test Report

號碼(No.): CR/2009/70012

日期(Date): 2009/07/28

頁數 : 1 of 14

孕龍科技股份有限公司

ZEROPLUS

台北縣中和市建八路121號3樓

3F., NO. 121, JIAN BA RD., CHUNG HO CITY, TAIPEI HSIEN, R. O. C.



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as) :

樣品名稱(Sample Description) : 邏輯分析儀 (LOGIC ANALYZER)
樣品型號(Style/Item No.) : LAP-C
收件日期(Sample Receiving) : 2009/07/17
測試期間(Testing Period) : 2009/07/17 TO 2009/07/28

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測試需求(Test Requested) : 15項高關注物質(SVHC)篩檢以及額外的"環十二烷"是依客戶特定要求. / Fifteen (15) Substances of Very High Concern (SVHC) screening in addition of cyclododecane by specific client's request.
高關注物質(SVHC)候選清單是根據歐洲化學總署(ECHA)於2008年10月28日，就關於REACH之 Regulation (EC) No 1907/2006的公告。/ SVHC candidate list based on the publication by European Chemicals Agency (ECHA) on 2008 October 28, regarding Regulation (EC) No 1907/2006 concerning the REACH.

測試方法(Test Method) : 請見下一頁 (Please refer to next pages).

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

總結(Summary) : 根據指定規範和分析技術，送測樣品在現今報告限值下，15項高關注物質(SVHC)的濃度均小於0.1% (According to the specified scope and analytical technique, concentrations of all 15 SVHC are <0.1% in the submitted sample(s)).

Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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**測試樣品(Test Sample):** 邏輯分析儀 (LOGIC ANALYZER)**測試方法:**

參照SGS內部方法RSTS-EE-SVHC-002. 由感應耦合電漿原子發射光譜儀, 紫外光可見光譜儀, 氣相層析儀質譜儀和氣相層析儀/火焰光度偵測器進行分析。(SGS In-House method-RSTS-EE-SVHC-002. Analyzed by ICP-AES, UV-VIS, GC/MS and GC/FPD.)

備註:

- 15項SVHC化學分析, 依歐洲化學總署(ECHA)於2008年10月28日所公佈的清單, 藉由現有的分析技術進行篩檢。這清單是由ECHA所評估且未來可受更改。(The chemical analysis of 15 SVHC is performed by means of currently available analytical techniques against the list published by ECHA on 2008 October 28. This list is under evaluation by ECHA and may subject to change in the future.)

請參照(refer to) http://echa.europa.eu/consultations/authorisation/svhc/svhc_cons_en.asp

- 根據Regulation (EC) No 1907/2006 中第7條款第2項之規定, 如果物質合乎第57條款之標準以及可依據第59(1)條之規定鑑別, 且同時符合下列兩項狀況, 任何成品之製造人和進口人應向歐洲化學總署(ECHA)通報:

- (a) 成品中所含物質每年超過1公噸。
- (b) 依重量百分比計算, 物質濃度超過0.1%。

In accordance with Regulation (EC) No 1907/2006, any producer or importer of articles shall notify ECHA, in accordance with paragraph 2 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation,

if (a) the substance is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance is present in those articles above a concentration of 0.1% weight by weight (w/w).

- Regulation (EC) No 1907/2006中第 33 條要求成品供應商, 其成品所含物質符合第57條款的標準並依照第59(1)條款確定其濃度大於0.1wt%, 應提供成品接受者充份可取得資訊, 以確保成品的安全使用(至少包括物質的名稱)。

Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

- 倘若SVHC超過限值, 建議客戶確認含有該SVHC的零件, 並要求實驗室進一步的定量分析而取得SVHC的確切濃度。

If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

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測試結果 (Test Results)

物質名稱 (Substance Name)	單位 (Unit)	成品濃度 (Concentration)	報告 極限值 (RL)	分類 (Classification)
二氯化鈷 / Cobalt dichloride (CAS No.: 007646-79-9)	%	n.d.	0.005	致癌物質 類別 2 (Carcinogen Category 2)
五氧化二砷 / Diarsenic pentaoxide*** (CAS No.: 001303-28-2)	%	n.d.	-	致癌物質 類別 1 (Carcinogen Category 1)
三氧化二砷 / Diarsenic trioxide*** (CAS No.: 001327-53-3)	%	n.d.	-	致癌物質 類別 1 (Carcinogen Category 1)
三乙基砷酸鹽 / Triethyl arsenate*** (CAS No.: 015606-95-8)	%	n.d.	-	致癌物質 類別 1 (Carcinogen Category 1)
砷酸氫鉛 / Lead hydrogen arsenate*** (CAS No.: 007784-40-9)	%	n.d.	-	致癌物質 類別 1; 對生殖系統有害 類別1 (Carcinogen Category 1; Toxic to Reproduction Category 1)
重鉻酸鈉 / Sodium dichromate*** (CAS No.: 010588-01-9(*))	%	n.d.	-	致癌物質 類別2; 導致基因突變 類別2; 對生殖系統有害 類別2 (Carcinogen Category 2; Mutagen Category 2; Toxic to Reproduction Category 2)
蔥 / Anthracene (CAS No.: 000120-12-7)	%	n.d.	0.005	PBT
4,4' - 二氨基二苯甲烷 / 4,4' - Diaminodiphenylmethane (CAS No.: 000101-77-9)	%	n.d.	0.005	致癌物質 類別 2 (Carcinogen Category 2)
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 000084-74-2)	%	n.d.	0.005	對生殖系統有害 類別2 (Toxic to Reproduction Category 2)
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 000085-68-7)	%	n.d.	0.005	對生殖系統有害 類別2 (Toxic to Reproduction Category 2)
鄰苯二甲酸二 (2-乙基己基) 酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 000117-81-7)	%	0.006	0.005	對生殖系統有害 類別2 (Toxic to Reproduction Category 2)

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物質名稱 (Substance Name)	單位 (Unit)	成品濃度 (Concentration)	報告 極限值 (RL)	分類 (Classification)
二甲苯麝香 / 5-tert-butyl-2,4,6-trinitro-m-xylene (Musk Xylene) (CAS No.: 000081-15-2)	%	n.d.	0.005	vPvB
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.: 025637-99-4 and 003194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	%	n.d.	0.005	PBT
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 085535-84-8)	%	n.d.	0.01	PBT
三丁基錫氧化物 / Bis(tributyltin)oxide*** (CAS No.: 000056-35-9)	%	n.d.	-	PBT

除歐洲化學總署(ECHA)於2008年10月28日所公告的SVHC範圍外, 客户要求以下額外的篩檢(Additional screening by client's request outside the scope of SVHC as published by ECHA on 2008 October 28):

物質名稱 (Substance Name)	單位 (Unit)	成品濃度 (Concentration)	報告 極限值 (RL)	分類 (Classification)
環十二烷 / Cyclododecane (CAS No.: 000294-62-2)	%	n.d.	0.005	PBT

備註(Note):

1. mg/kg = ppm; 0.1wt% = 1000ppm
2. n.d.= not detected = below Reporting Limit / 未檢出
3. RL = Reporting Limit / 報告極限值
4. 列於附錄A中之分類定義是根據67/548/EE以及Regulation (EC) No 1907/2006 (Definition of classification is listed in Appendix A of this report in accordance with 67/548/EEC and Regulation (EC) No 1907/2006)。
5. "-" = Not Regulated (無規格值)
6. 各測試單元的濃度及重量請參閱附錄C. / Please refer to Appendix C to find the concentration and the weight of each tested unit.

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7. (*): 重鉻酸鈉二水合物(CAS No.: 007789-12-0)含量 = 重鉻酸鈉含量 × 1.1374
(conc. of Sodium dichromate dihydrate = conc. of sodium dichromate × 1.1374)

8. ***: 該物質是由"三丁基錫"或各別元素(例如: 砷、鉛或六價鉻)之測試結果計算得知。

The substance was calculated by the test results of Tributyl Tin or element
(Ex. Arsenic, Lead or Cr(VI) respectively).

$$AX = A \times F$$

AX	A	F
五氧化二砷 / Diarsenic pentaoxide	砷 / Arsenic	1.5339
三氧化二砷 / Diarsenic trioxide		1.3203
三乙基砷酸鹽 / Triethyl arsenate		3.0179
砷酸氫鉛 / Lead hydrogen arsenate		4.6332
重鉻酸鈉 / Sodium dichromate	六價鉻 / Hexavalent Chromium Cr(VI)	1.6753
三丁基錫氧化物 / Bis(tributyltin)oxide	三丁基錫 / Tributyl Tin (TBT)	2.5192
		1.0276

"砷酸氫鉛"之濃度是取砷及鉛兩者各別換算出砷酸氫鉛濃度, 並取其之最小值做為最後出報告之依據。

(Regarding lead hydrogen arsenate lead and arsenic are tested and used for the calculation of the separated concentration of lead hydrogen arsenate. The final concentration of lead hydrogen arsenate for the report uses the minimum value of above-mentioned two concentration of lead hydrogen arsenate.)

測試結果如下(The test result is given as):

物質名稱 (Substance Name)	單位 (Unit)	成品濃度 (Concentration)	報告 極限值 (RL)
砷 / Arsenic (As)	%	n.d.	0.005
鉛 / Lead (Pb)	%	n.d.	0.005
六價鉻 / Hexavalent Chromium Cr(VI)	%	n.d.	0.005
三丁基錫 / Tributyl Tin (TBT)	%	n.d.	0.005

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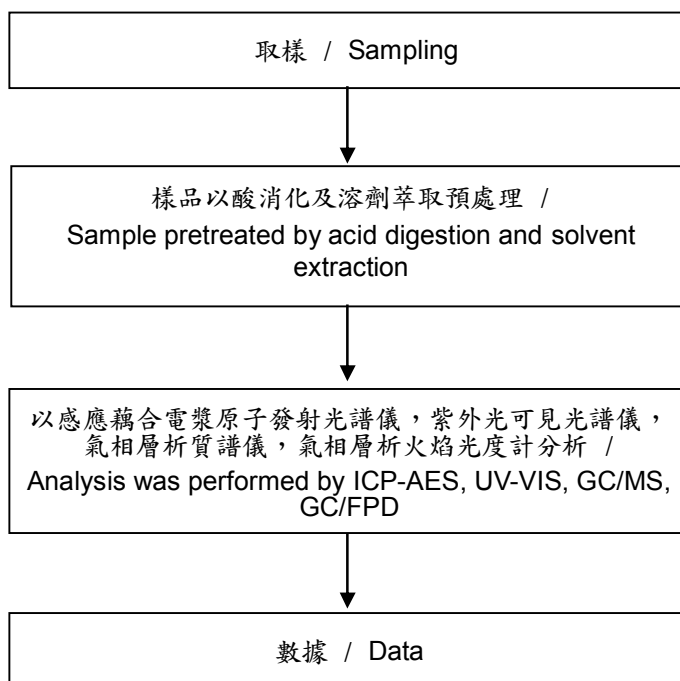
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SVHC 分析流程圖 / Analytical flow chart of SVHC



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【附錄 (Appendix) A】

分類 (Classification)	67/548/EEC以及Regulation (EC) No 1907/2006下的定義 (Definition under 67/548/EEC and Regulation (EC) No 1907/2006)
致癌物質 類別1 (Carcinogen Category 1):	已知會對人類致癌的物質。有足夠的證據證明人體暴露於該物質和癌症發展之間有相互的關聯性 (Substances known to be carcinogenic to man. There is sufficient evidence to establish a causal association between human exposure to a substance and the development of cancer)。
致癌物質 類別 2 (Carcinogen Category 2):	應被視為可能對人體會導致致癌的物質。有足夠的證據強力推論人體暴露於該物質可能導致癌症發展，上述基於下列研究所得之結果 (Substances which should be regarded as if they are carcinogenic to man. There is sufficient evidence to provide a strong presumption that human exposure to a substance may result in the development of cancer. Generally on the basis of): <ul style="list-style-type: none"> - 適當的長期動物實驗 (appropriate long-term animal studies)。 - 其他相關資訊 (other relevant information)。
導致基因突變 類別1 (Mutagen Category 1):	已知會對人類導致基因突變的物質。有足夠的證據證明人體暴露於該物質和遺傳基因損害之間有相互的關聯性 (Substances known to be mutagenic to man. There is sufficient evidence to establish a causal association between human exposure to a substance and heritable genetic damage)。
導致基因突變 類別2 (Mutagen Category 2):	應被視為是否對人體會導致基因突變的物質。有足夠的證據強力推論人體暴露於該物質可能導致遺傳基因損害，上述基於下列研究所得之結果 (Substances which should be regarded as if they are mutagenic to man. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in the development of heritable genetic damage, generally on the basis of): <ul style="list-style-type: none"> - 適當的長期動物實驗 (appropriate animal studies)。 - 其他相關資訊 (other relevant information)。
對生殖系統有害 類別1 (Toxic to Reproduction Category 1):	已知會損害人體生殖能力的物質。有足夠的證據證明人體暴露於該物質和生殖能力削弱之間有相互的關聯性 (Substances known to impair fertility in humans. There is sufficient evidence to establish a causal relationship between human exposure to the substance and impaired fertility)。 已知會在人體引起毒性的物質。有足夠的證據證明人體暴露於該物質和其後產生之毒性對後代造成影響有相互之關聯性 (Substances known to cause developmental toxicity in humans. There is sufficient evidence to establish a causal relationship between human exposure to the substance and subsequent developmental toxic effects in the progeny)。

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分類 (Classification)	67/548/EEC以及Regulation (EC) No 1907/2006下的定義 (Definition under 67/548/EEC and Regulation (EC) No 1907/2006)
<p>對生殖系統有害 類別2 (Toxic to Reproduction Category 2) :</p>	<p>應被視為可能會損害人體生殖能力的物質。有足夠的證據證明人體暴露於該物質可能導致損害人體生殖能力的有力推論，上述基於下列研究所得之結果 (Substances which should be regarded as if they impair fertility in humans. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in impaired fertility on the basis of) :</p> <ul style="list-style-type: none"> - 缺少毒性作用的生殖能力削弱動物實驗中的明顯證據，或在同使用量下其他毒性作用但不是其他毒性作用的輔助非特定結果的生殖能力削弱證據 (clear evidence in animal studies of impaired fertility in the absence of toxic effects, or, evidence of impaired fertility occurring at around the same dose levels as other toxic effects but which is not a secondary nonspecific consequence of the other toxic effects) - 其他相關資訊 (other relevant information) <p>應被視為可能在人體引起毒性發展的物質有足夠的證據提供人體暴露於該物質可能引起毒性發展的有力推論，整體而言是基於 (Substances which should be regarded as if they cause developmental toxicity to humans. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in developmental toxicity, generally on the basis of) :</p> <ul style="list-style-type: none"> - 在適當動物實驗研究所進行缺乏顯著母體毒性徵象或在同使用量下其他毒性作用但不是其他毒性作用的輔助非特定結果的生殖能力削弱證據觀察，所得到之明顯結果 (clear results in appropriate animal studies where effects have been observed in the absence of signs of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not a secondary non-specific consequence of the other toxic effects)。 - 其他相關資訊 (other relevant information)
<p>PBT & vPvB:</p>	<p>長期生物蓄積性及毒性毒質 (PBT) 或高持久性和高生物蓄積性 (vPvB) 的物質造成化學安全管理上特別挑戰。這些物質在環境中無法用一個 "安全" 濃度建立足夠的可靠度。 / Substances which are persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) pose a particular challenge to the chemicals safety management. For these substances a "safe" concentration in the environment cannot be established with sufficient reliability.</p>

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【附錄 (Appendix) B】

SVHC 調查表(SURVEY FORM)			
公司名稱(Company Name): 孕龍科技股份有限公司 (ZEROPLUS)			
樣品名稱(Product Name): 邏輯分析儀 (LOGIC ANALYZER)			
產品/取樣重量(Product/Sampling weight): 234.4 g			
報告號碼(Report No.): CR/2009/70012			
物質鑑定(Substance identification)			
物質名稱 (Substance name)	成品濃度 (Concentration) (%)	重量 (weight) (mg)	安全資訊的提供, 根據Article 33 (providing information about safe use according to Article 33 is necessary)
二氧化鈷 / Cobalt dichloride	n.d.	N/A	No
五氧化二砷 / Diarsenic pentaoxide	n.d.	N/A	No
三氧化二砷 / Diarsenic trioxide	n.d.	N/A	No
三乙基砷酸鹽 / Triethyl arsenate	n.d.	N/A	No
砷酸氫鉛 / Lead hydrogen arsenate	n.d.	N/A	No
重鉻酸鈉 / Sodium dichromate	n.d.	N/A	No
蒽 / Anthracene	n.d.	N/A	No
4,4' - 二氨基二苯甲烷 / 4,4' - Diaminodiphenylmethane	n.d.	N/A	No
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate)	n.d.	N/A	No
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate)	n.d.	N/A	No
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate)	0.006	14.064	No
二甲苯麝香 / 5-tert-butyl-2,4,6-trinitro- m-xylene (Musk Xylene)	n.d.	N/A	No
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)	n.d.	N/A	No
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	n.d.	N/A	No
三丁基錫氧化物 / Bis(tributyltin)oxide	n.d.	N/A	No

備註(Note): N/A = 不適用 (Non-Available)

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【附錄 (Appendix) C】

測試單元(Tested Unit)No.1: 金屬 (METAL) (重量Weight: 37.7g)

物質名稱 (Substance Name)	濃度 (Concentration) (%)	報告 極限值 (RL)	樣品圖 (Sample Picture)
二氯化鈷 / Cobalt dichloride	n.d.	0.005	
砷 / Arsenic (As)	n.d.	0.005	
五氧化二砷 / Diarsenic pentaoxide	n.d.	-	
三氧化二砷 / Diarsenic trioxide	n.d.	-	
三乙基砷酸鹽 / Triethyl arsenate	n.d.	-	
鉛 / Lead (Pb)	n.d.	0.005	
砷酸氫鉛 / Lead hydrogen arsenate	n.d.	-	
六價鉻 / Hexavalent Chromium Cr(VI)	n.d.	0.005	
重鉻酸鈉 / Sodium dichromate	n.d.	-	

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測試單元(Tested Unit)No.2: 塑膠 (PLASTIC) (重量Weight: 135.2g)

物質名稱 (Substance Name)	濃度 (Concentration) (%)	報告 極限值 (RL)	樣品圖 (Sample Picture)
二氯化鈷 / Cobalt dichloride	n.d.	0.005	
砷 / Arsenic (As)	n.d.	0.005	
五氧化二砷 / Diarsenic pentaoxide	n.d.	-	
三氧化二砷 / Diarsenic trioxide	n.d.	-	
三乙基砷酸鹽 / Triethyl arsenate	n.d.	-	
鉛 / Lead (Pb)	n.d.	0.005	
砷酸氫鉛 / Lead hydrogen arsenate	n.d.	-	
六價鉻 / Hexavalent Chromium Cr(VI)	n.d.	0.005	
重鉻酸鈉 / Sodium dichromate	n.d.	-	
蒽 / Anthracene	n.d.	0.005	
4,4' - 二氨基二苯甲烷 / 4,4' - Diaminodiphenylmethane	n.d.	0.005	
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate)	n.d.	0.005	
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate)	n.d.	0.005	
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate)	0.0104	0.005	
二甲苯麝香 / 5-tert-butyl-2,4,6-trinitro- m-xylene (Musk Xylene)	n.d.	0.005	
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)	n.d.	0.005	
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	n.d.	0.01	
三丁基錫 / Tributyl Tin (TBT)	n.d.	0.005	
三丁基錫氧化物 / Bis(tributyltin)oxide	n.d.	-	
環十二烷 / Cyclododecane	n.d.	0.005	

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測試單元(Tested Unit)No.3: 電路板,複合材料(PCBA)(重量Weight: 61.5g)

物質名稱 (Substance Name)	濃度 (Concentration) (%)	報告 極限值 (RL)	樣品圖 (Sample Picture)
二氯化鈷 / Cobalt dichloride	n.d.	0.005	
砷 / Arsenic (As)	n.d.	0.005	
五氧化二砷 / Diarsenic pentaoxide	n.d.	-	
三氧化二砷 / Diarsenic trioxide	n.d.	-	
三乙基砷酸鹽 / Triethyl arsenate	n.d.	-	
鉛 / Lead (Pb)	n.d.	0.005	
砷酸氫鉛 / Lead hydrogen arsenate	n.d.	-	
六價鉻 / Hexavalent Chromium Cr(VI)	n.d.	0.005	
重鉻酸鈉 / Sodium dichromate	n.d.	-	
蒽 / Anthracene	n.d.	0.005	
4,4' - 二氨基二苯甲烷 / 4,4' - Diaminodiphenylmethane	n.d.	0.005	
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate)	n.d.	0.005	
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate)	n.d.	0.005	
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate)	n.d.	0.005	
二甲苯麝香 / 5-tert-butyl-2,4,6-trinitro- m-xylene (Musk Xylene)	n.d.	0.005	
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)	n.d.	0.005	
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	n.d.	0.01	
三丁基錫 / Tributyl Tin (TBT)	n.d.	0.005	
三丁基錫氧化物 / Bis(tributyltin)oxide	n.d.	-	
環十二烷 / Cyclododecane	n.d.	0.005	

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備註:

1. 整個成品的平均濃度可以依據下列公式被計算得之. (The average concentration of a whole article can be calculated per the following formula.)

$$C_{Average\ of\ Article} = \frac{\sum_{i=1}^n (C_i * W_i)}{\sum_{i=1}^n (W_i)}$$

C_i : 單一SVHC測項在各測試單元中的濃度 (Concentration of a SVHC item in each tested unit)

W_i : 各測試單元的重量 (Weight of each tested unit)

$C_{Average\ of\ Article}$: 整個成品的平均濃度 (Average concentration of a whole article)

** 報告結尾(End of Report) **

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