測試報告
Test Report

台灣化學纖維股份有限公司
 FORMOSA CHEMICALS & FIBRE CORPORATION
台北市敦化北路201號
201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

以下測試樣品係由申請廠商所提供之樣品(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.)

送樣廠商(Sample Submitted By) : 台灣化學纖維股份有限公司 (FORMOSA CHEMICALS & FIBRE CORPORATION)
樣品名稱(Sample Description) : ACRYLONITRILE/ACRYLATE/STYRENE COPOLYMERS (丙烯腈/丙烯酸酯/苯乙烯共聚合樹脂)
樣品型號(Style/Item No.) : TAIRILAC WE8300
收件日期(Sample Receiving Date) : 2016/10/27
測試期間(Testing Period) : 2016/10/27 TO 2016/11/02

測試需求(Test Requested) : 依椐客戶指定，參考RoHS2011/65/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.)

測試方法(Test Method) : 請見下頁 (Please refer to next pages).
測試結果(Test Results) : 請見下頁 (Please refer to next pages).
結論(Conclusion) : 根據客戶所提供之樣品，其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP的測試結果符合RoHS指令暨(EU) 2015/863之限值要求。(Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.)
### 测试报告 (Test Report)

**台湾化學纖維股份有限公司**

FORMOSA CHEMICALS & FIBRE CORPORATION

台北市敦化北路201號
201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

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**测试结果 (Test Results)**

<table>
<thead>
<tr>
<th>测试项目 (Test Items)</th>
<th>单位 (Unit)</th>
<th>测试方法 (Method)</th>
<th>方法侦测极限值 (MDL)</th>
<th>结果 (Result)</th>
<th>限值 (Limit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>铅 / Lead (Pb)</td>
<td>mg/kg</td>
<td>参考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.</td>
<td>2 n.d.</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>铅 / Lead (Pb)</td>
<td>mg/kg</td>
<td>参考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.</td>
<td>2 n.d.</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>铜 / Mercury (Hg)</td>
<td>mg/kg</td>
<td>参考 IEC 62321-4 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.</td>
<td>2 n.d.</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>六价铬 / Hexavalent Chromium Cr(VI)</td>
<td>mg/kg</td>
<td>参考 IEC 62321 (2008), 以UV-VIS检测. / With reference to IEC 62321 (2008) and performed by UV-VIS.</td>
<td>2 n.d.</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>邻苯二甲酸丁苯酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)</td>
<td>mg/kg</td>
<td>参考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.</td>
<td>50 n.d.</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>邻苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)</td>
<td>mg/kg</td>
<td>参考 IEC 62321-8/CD (2013), 以氣相層析儀/質譜儀檢測. / Analysis was performed by GC/MS.</td>
<td>50 n.d.</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>邻苯二甲酸二异丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)</td>
<td>mg/kg</td>
<td>参考 IEC 62321-8/CD (2013), 以氣相層析儀/質譜儀檢測. / Analysis was performed by GC/MS.</td>
<td>50 n.d.</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>邻苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7)</td>
<td>mg/kg</td>
<td>参考 IEC 62321 (2008), 以UV-VIS检测. / With reference to IEC 62321 (2008) and performed by UV-VIS.</td>
<td>50 n.d.</td>
<td>1000</td>
<td></td>
</tr>
</tbody>
</table>

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Member of the SGS Group
測試項目 (Test Items) | 單位 (Unit) | 測試方法 (Method) | 方法偵測極限值 (MDL) | 結果 (Result) | 限值 (Limit) |
---|---|---|---|---|---|
多溴聯苯總和 / Sum of PBBs | mg/kg | 參考 IEC 62321-6 (2015)，以氣相層析/質譜儀檢測。 / With reference to IEC 62321-6 (2015) and performed by GC/MS. | - | n.d. | 1000 |
一溴聯苯 / Monobromobiphenyl | 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. | - |
多溴聯苯醚總和 / Sum of PBDEs | mg/kg | | - | n.d. | 1000 |
一溴聯苯醚 / Monobromodiphenyl ether | 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. | - |

備註(Note):
1. mg/kg = ppm: 0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
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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：王志瑋 / Technician: JR Wang
測試負責人：張啟興 / Supervisor: Troy Chang

### 樣品材質 / Sample Material

- 鋼, 銅, 鋁, 銅 / Steel, copper, aluminum, solder
- 玻璃 / Glass
- 金, 鈀, 侖, 陶瓷 / Gold, platinum, palladium, ceramic
- 銀 / Silver
- 塑膠 / Plastic
- 其他 / Others

### 消化酸液種類 / Digestion Acid

- 王水, 硝酸, 盐酸, 無機酸, 水 / Aqua regia, HNO₃, HCl, HF, H₂O₂
- 三氧化樞酸, 碳酸, 水 / H₃PO₄, Na₂CO₃, H₂O
- 硫酸, 水 / H₂SO₄, H₂O

### 過濾 / Filtration

1) 管熔融法 / Alkalil Fusion
2) 鹽酸溶解 / HCl to dissolve

### 可感應耦合電漿原子發射光譜儀 / ICP-AES

測試樣品重量 / Sample Measurement

- 鉛, 鉛, 電 / Pb, Pb, Cd
- 水 Hg

### 重金屬流程圖 / Analytical flow chart of Heavy Metal (Note**)

(1) 對於非金屬材料加入鹼性消化液，加熱至 90~95℃萃取 / For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.

(2) 對於金屬材料加入純水，加熱至沸騰萃取 / For metallic material, add pure water and heat to boiling.
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測試報告
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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 测试人员：涂雅苓 / Technician: Yaling Tu
- 测试负责人：张啟興 / Supervisor: Troy Chang

初次测试程序 / First testing process
選擇性篩檢程序 / Optional screen process
確認程序 / Confirmation process

Sample / 樣品
↓
Sample pretreatment / 樣品前處理
↓
Screen analysis / 初篩分析
↓
Sample extraction / 樣品萃取/ Soxhlet method 索式萃取法
↓
Concentrate/Dilute Extracted solution / 萃取液濃縮/稀釋
↓
Filter / 萃取液過濾
↓
Analysis by GC/MS / 氣相層析質譜儀分析
↓
Issue Report / 撰打報告

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

- 测试人员：徐毓明 / Technician: Andy Shu
- 测试负责人：张啟興 / Supervisor: Troy Chang

【测试方法/Test method: IEC 62321-8】

1. 样品前处理/分样 / Sample pretreatment/separation
2. 样品以 THF 四氢呋喃溶解萃取 / Sample dissolved/extracted by THF
3. 萃取液稀释 / Dilute Extracted solution
4. 气相层析质谱仪分析 / Analysis was performed by GC/MS
5. 数据 / Data
測試報告
Test Report

號碼(No.) : CE/2016/A4779  日期(Date) : 2016/11/02

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

** 報告結尾 (End of Report) **

*照片中有箭頭標示，則表示為實際檢測之樣品/部位。*

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