Test Report

Hao Tung Chemicals & Fibre Corporation

台北市敦化北路201號

樣品型號 (Style/Item No.) : POLYCARBONATE

樣品名稱 (Sample Description) : TAIRILITE AC385X

收件日期 (Sample Receiving Date) : 2020/05/25

測試期間 (Testing Period) : 2020/05/25 to 2020/05/29

測試需求 (Test Requested) : 本試驗係根據RoHS 2011/65/EU Annex II及其修訂指令 (EU) 2015/863對鉛、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).)

結論 (Conclusion) : 請參閱下一頁 (Please refer to following pages).

請參考下一頁 (Please refer to following pages).

Troy Chang / Manager of
Chemical Laboratory - Taipei

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司

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## Test Results

### Test Items

<table>
<thead>
<tr>
<th>Substance</th>
<th>Unit</th>
<th>Test Method</th>
<th>MDL</th>
<th>Result (Limit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>mg/kg</td>
<td>参考 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.</td>
<td>2 n.d.</td>
<td>100</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>mg/kg</td>
<td>参考 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-OES.</td>
<td>2 n.d.</td>
<td>1000</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>mg/kg</td>
<td>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.</td>
<td>8 n.d.</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Sum of PBBs

<table>
<thead>
<tr>
<th>Substance</th>
<th>Unit</th>
<th>Test Method</th>
<th>MDL</th>
<th>Result (Limit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monobromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tetrabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Nonabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td>mg/kg</td>
<td>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 GC/MS.</td>
<td>5 n.d.</td>
<td>-</td>
</tr>
</tbody>
</table>
### 测试项目 (Test Items)

<table>
<thead>
<tr>
<th>测试项目 (Test Items)</th>
<th>单位 (Unit)</th>
<th>测试方法 (Method)</th>
<th>MDL</th>
<th>结果 (Result)</th>
<th>限值 (Limit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>多溴联苯醚总和 / Sum of PBDEs</td>
<td>mg/kg</td>
<td>参考IEC 62321-6 (2015), 以气相层析/质谱仪检测. / With reference to IEC 62321-6 (2015) and performed by GC/MS.</td>
<td>-</td>
<td>n.d.</td>
<td>1000</td>
</tr>
<tr>
<td>一溴联苯醚 / Monobromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>二溴联苯醚 / Dibromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>三溴联苯醚 / Tribromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>四溴联苯醚 / Tetrabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>五溴联苯醚 / Pentabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>六溴联苯醚 / Hexabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>七溴联苯醚 / Heptabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>八溴联苯醚 / Octabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>九溴联苯醚 / Nonabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>十溴联苯醚 / Decabromodiphenyl ether</td>
<td>mg/kg</td>
<td>-</td>
<td>5</td>
<td>n.d.</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 62321-8 (2017), 以气相层析/质谱仪检测. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.</td>
<td>50</td>
<td>n.d.</td>
<td>1000</td>
</tr>
<tr>
<td>邻苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)</td>
<td>mg/kg</td>
<td>-</td>
<td>50</td>
<td>n.d.</td>
<td>1000</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>-</td>
<td>50</td>
<td>n.d.</td>
<td>1000</td>
</tr>
<tr>
<td>邻苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)</td>
<td>mg/kg</td>
<td>-</td>
<td>50</td>
<td>n.d.</td>
<td>1000</td>
</tr>
</tbody>
</table>

### 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 (未检出)
4. "-" = Not Regulated (無規格值)
5. 符合性結果之判定係以測試結果與限值做比較。/ The statement of compliance conformity is based on comparison of testing results and limits.
These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)

1.剪裁、製備樣品 / Cutting, Preparation
2.測試樣品重量 / Sample Measurement
3.非金屬 / Non-metal
4.金屬 / Metal
5.消化 Pb/Cd/Cu/Hg
6.ABS/PC/PVC
7.其他材料/Others
8.溶液 / Solution
9.濾液 / Filtrate
10.60℃條件下超音波消化 / Digesting at 60℃ by ultrasonication
11.在150~160℃條件下消化 / Digesting at 150~160℃
12.取水層 / Separating to get aqueous phase
13.沸水萃取 / Boiling water extraction
14.冷卻後通過樣品 / Cool, filter digestate through filter
15.加入發色劑顯色 / Add diphenylcarbazide for color development
16.由UV-VIS, 視測樣品溶液在540 nm的
17.吸收度 / Measure the absorbance at 540 nm by UV-VIS

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Member of the SGS Group

測試報告
Test Report

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台灣化學纖維股份有限公司
FORMOSA CHEMICALS & FIBRE CORPORATION
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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

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

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

GC/MS / 氣相層析質譜儀
可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】

1. 样品前處理/分樣 / Sample pretreatment/separation
2. 样品以 THF 四氫呋喃溶液萃取 / Sample dissolved/extracted by THF
3. 萃取液稀釋 / Dilute Extracted solution
4. 氣相層析質譜儀分析 / Analysis was performed by GC/MS

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测试报告
Test Report

台灣化學纖維股份有限公司
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號碼(No.)：CE/2020/54359 日期(Date)：2020/05/29  頁數(Page)：7 of 7

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

CE/2020/54359

** 報告結尾 (End of Report) **