



# 測試報告 Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

頁數(Page): 1 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (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 the applicant as) :


送樣廠商(Sample Submitted By) : 德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)  
樣品名稱(Sample Name) : DESEN OF ELECTRONIC COMPONENT PLATE (德森公司電子元件的電鍍)  
樣品型號(Style/Item No.) : 錫金屬的電鍍層 (METAL LAYER ELECTROPLATED IS ABOUT PURE TIN)

收件日(Sample Receiving Date) : 06-Dec-2023  
測試期間(Testing Period) : 06-Dec-2023 to 13-Dec-2023

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) 依據客戶指定，測試鹵素-氟、氯、溴、碘。 (As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine in the submitted sample.)

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

結 論(Conclusion) : (1) 根據客戶所提供的樣品，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 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求。 (Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)

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



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



# 測試報告

## Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

頁數(Page): 2 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (R. O. C.))

### 測試部位敘述 (Test Part Description)

No.1 : 銀色碎片 (SILVER COLORED FLINDERS)

### 測試結果 (Test Results)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)	限值 (Limit)
				No.1	
鎘 (Cd) (Cadmium (Cd))	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.	100
鉛 (Pb) (Lead (Pb))		mg/kg	2	16.1	1000
汞 (Hg) (Mercury (Hg))	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.	1000
六價鉻 (Hexavalent Chromium) Cr(VI) (#2)	參考IEC 62321-7-1: 2015，以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-1: 2015, analysis was performed by UV-VIS.)	µg/cm <sup>2</sup>	0.1	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.	1000

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



# 測試報告

## Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

頁數(Page): 3 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (R. O. C.))

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)	限值 (Limit)
				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.	1000
鄰苯二甲酸丁基酯 (BBP) (Butyl benzyl phthalate (BBP))	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.	1000
鄰苯二甲酸二丁酯 (DBP) (Diethyl phthalate (DBP))		mg/kg	50	n.d.	1000
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP))		mg/kg	50	n.d.	1000
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP))		mg/kg	50	n.d.	1000
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8)	參考BS EN 14582: 2016，以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	-
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)		mg/kg	50	n.d.	-
溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2)		mg/kg	50	n.d.	-
碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)		mg/kg	50	n.d.	-

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



## 測試報告 Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

頁數(Page): 4 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (R. O. C.))

### 備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 0.1% = 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. (#2) =
  - a. 當六價鉻結果大於 $0.13 \mu\text{g}/\text{cm}^2$ ，表示樣品表層含有六價鉻。(The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than  $0.13 \mu\text{g}/\text{cm}^2$ . The sample coating is considered to contain Cr(VI).)
  - b. 當六價鉻結果為n.d. (濃度小於 $0.10 \mu\text{g}/\text{cm}^2$ )，表示表層不含六價鉻。(The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than  $0.10 \mu\text{g}/\text{cm}^2$ ). The coating is considered a non-Cr(VI) based coating)
  - c. 當六價鉻結果介於  $0.10$  及  $0.13 \mu\text{g}/\text{cm}^2$  時，無法確定塗層是否含有六價鉻。(The result between  $0.10 \mu\text{g}/\text{cm}^2$  and  $0.13 \mu\text{g}/\text{cm}^2$  is considered to be inconclusive - unavoidable coating variations may influence the determination.)
6. 除非另有說明，參照ILAC-G8:09/2019，採用簡單二元(w=0)允收規則進行符合性判定；根據此規則，符合性結果之判定係以測試結果與限值做比較。(Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.)

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

# 測試報告

## Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

頁數(Page): 5 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

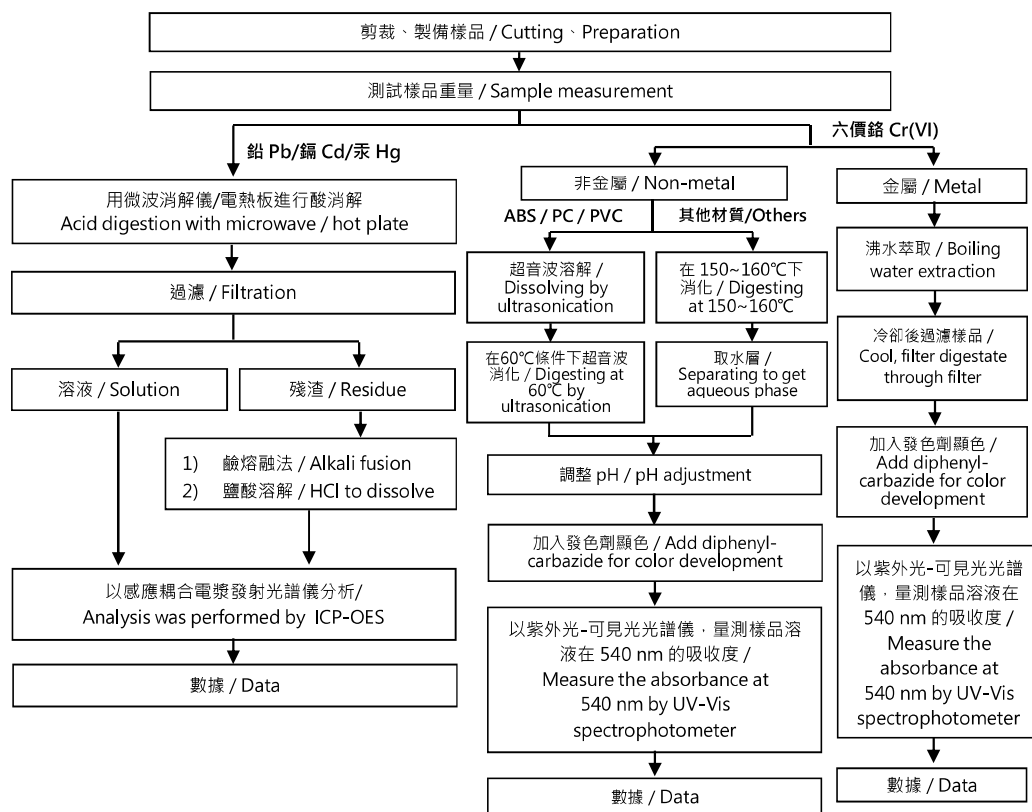
桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (R. O. C.))

### 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.

(Cr<sup>6+</sup> test method excluded)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



# 測試報告 Test Report

號碼(No.): ETR23C00965

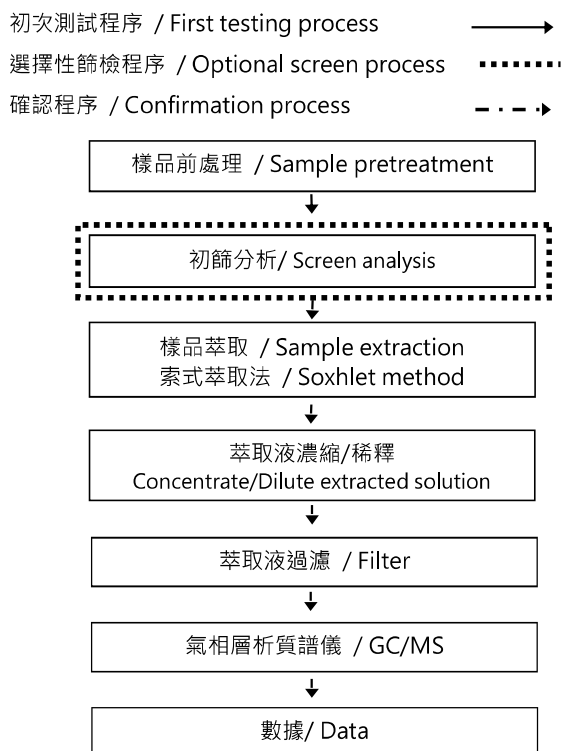
日期(Date): 13-Dec-2023

頁數(Page): 6 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (R. O. C.))

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



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



# 測試報告 Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

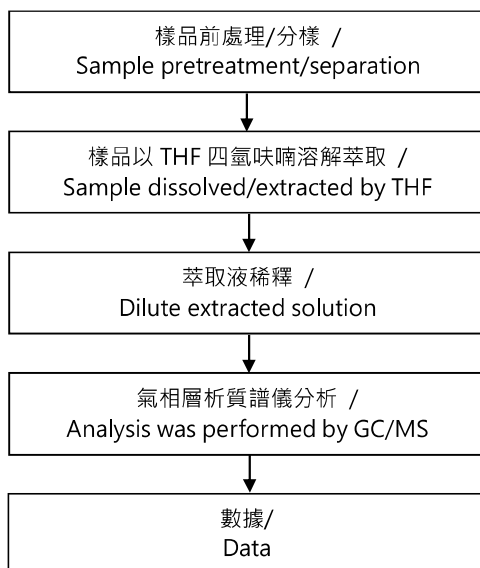
頁數(Page): 7 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, 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】



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



# 測試報告 Test Report

號碼(No.): ETR23C00965

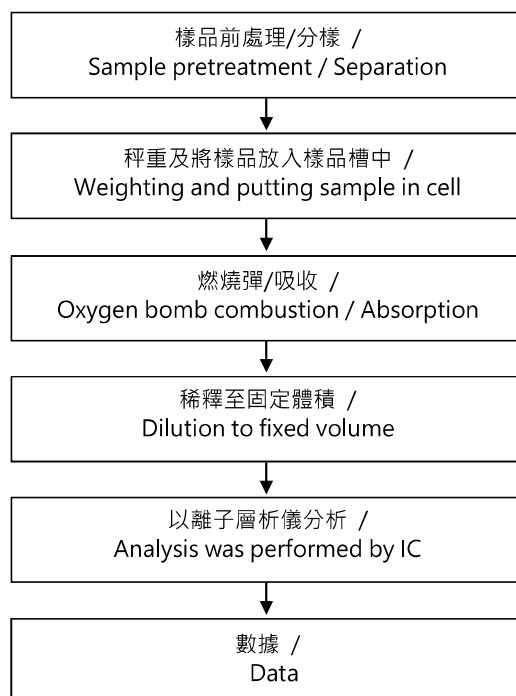
日期(Date): 13-Dec-2023

頁數(Page): 8 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, TAIWAN (R. O. C.))

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



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.





## 測試報告 Test Report

號碼(No.): ETR23C00965

日期(Date): 13-Dec-2023

頁數(Page): 9 of 9

德森興業有限公司 (DESEN ELECTROPLATE INDUSTRY CO., LTD.)

桃園市龍潭區九龍里中興路九龍段129巷175弄11號 (NO. 11, ALY. 175, LN. 129, JIULONG SEC., ZHONGXING RD., JIULONG VILLAGE, LONGTAN DISTRICT, TAOYUAN CITY 325, 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.)

### ETR23C00965



\*\* 報告結尾 (End of Report) \*\*

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com.tw/terms-of-service> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <https://www.sgs.com.tw/terms-of-service>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.