

Introduction of our Sustainable Material

Less is More



國塑塑膠工業股份有限公司
Guo Su Plastic Industry CO., LTD.



Basic profile



Area
6600m²



Capacity
5500tons/year



ISO certification
ISO9001、ISO14001



Guosu's circular economy

Post-Consumer Recycled



Recycling process



**Classification
& Crushing**

washing

**Waste water
treatment**

Extrusion

QC

40tons/day

200tons/day

25tons/day



Special Facilities in process

2washing line-40tons/day



cooking



dehydration



washing



drying

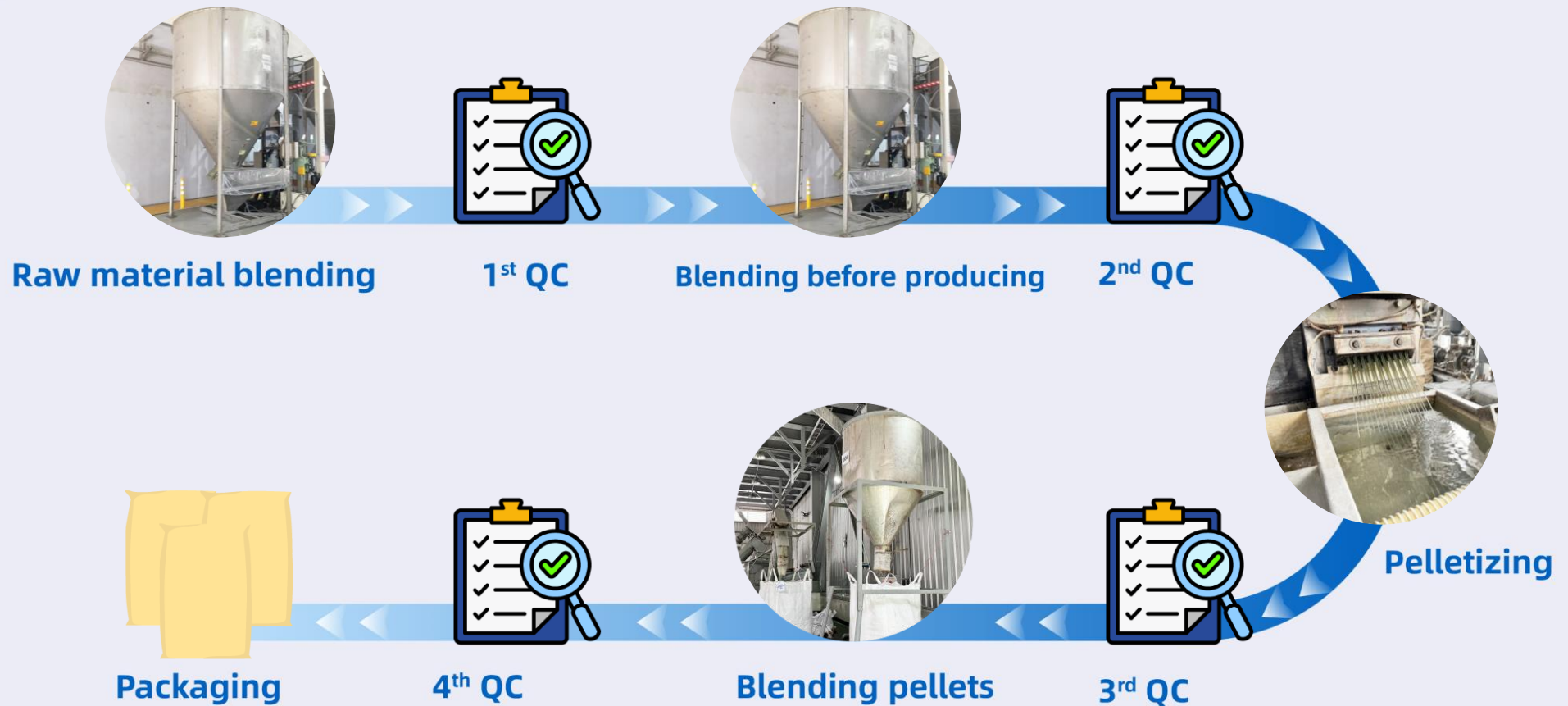
Continue to
get better
solution to
raise the PCR
PC's purity
and quality

waste water treatment facility-200tons/day



Not to let our
environment
be polluted
again by
waste water.

Multiplex quality control



QC facilities

X-ray spectroscopy



HDT instrument



Impact Testers



Melt Flow Indexers



Flame Tester



Moisture Analyzer



Color Spectrophotometer



Tensile Strength Testers



Green Certification-TUV



Guo Su Plastic' s GRS certification was approved
on September 11, 2021.

| Certificate | |  |
|--|--|---|
| Certificate no. | TA 50524232 01 | |
| License Holder: | Guo Su Plastic Industry Co., Ltd. No.85, Chenggong Street, Guantian District, Tainan City, 72046 Taiwan, R.O.C. | |
| Manufacturing Plant: | Guo Su Plastic Industry Co., Ltd. No.85, Chenggong Street, Guantian District, Tainan City, 72046 Taiwan, R.O.C. | |
| Test report no.: | ZTW1-LWH 38518918 001 | Client Reference: 0002057261/J.L. |
| Tested to: | ISO 14021:2016 | |
| Certified Product: | Postconsumer Recycled Polycarbonate (PC) | License Fee - Units |
| Type Designation: Recycled PC (KS-10, KS-15, WB-01, WB-04, CD-175, NC-15B, NC-15C), Compliance and has been verified in accordance with ISO 14021 Article 5.1 General, 7.7 Recyclable, 7.8 Recycled content. | | |
| Remark: This certificate is valid for maximum 3 years. | | |
| 1. The post consumer recycled material rate of KS-10, KS-15, WB-01, WB-04, CD-175, NC-15B, NC-15C for year 2020/7-2021/6 are 100%. | | |
| 2. For details of hazardous substance refer to test report No. 238518918a 001. | | |
| Continued on Page 02 | | |
| Licensed Test mark: | TÜV Rheinland Taiwan Ltd Signature | Date of Issue (day/mo/yr) |
|  www.tuv.com ID 1111347001 |  Dipl.-Ing. F. Stelzel | 09/11/2021 |
| TÜV Rheinland Taiwan Ltd., 11F., No 755, Sec. 4, Bade Rd., Songshan Dist., Taipei 105, Taiwan Tel: (82) 2172 7000, Fax: (82) 2172 1322 | | |

Green Certification-GRS



Guo Su Plastic's GRS certification was approved on June 25, 2023. We can issue the TC(transition certification) to our customers when selling PCR grades.

| | | |
|--|--|--|
|  | | |
| TAIWAN IDFL LABORATORY AND INSTITUTE LIMITED 8F., No. 312, Sec. 2, New Taipei Blvd., Xinzhuang Dist., New Taipei City 242032 Taiwan | | |
| SCOPE CERTIFICATE | | |
| Scope Certificate Number: IDF-23-464890 | | |
| IDFL certifies that | | |
| GUO SU PLASTIC INDUSTRY CO., LTD. | | |
| 國塑塑膠工業股份有限公司 | | |
| LICENSE NUMBER 006498 | | |
| No. 85, Chenggong St., Guantian Dist., Tainan City, 720006 Tainan, Taiwan | | |
| has been audited and found to be in conformity with the | | |
| Global Recycled Standard (GRS) (Version 4.0) | | |
| Products categories mentioned below (and further specified in the product appendix) conform with the standard(s): Processed Post-Consumer Materials (PC0035) | | |
| Process categories carried out under responsibility of the above mentioned organization for the certified products cover: Chemical Recycling (PR0004) | | |
| This certificate is valid until: 2024-06-25 | | |
| Audit criteria: Global Recycled Standard V4.0; Content Claim Standard V3.1; Textile Exchange Standards Claim Policy V1.1 | | |
| Place and Date of Issue (YYYY-MM-DD) TAIWAN IDFL LABORATORY AND INSTITUTE LIMITED, 2023-06-26 Last Updated: 2023-06-26 | Certification Body IDFL License No: CB-IDF | Standard |
|  Wilford Lieber, CEO |  |  |
| This scope certificate provides no proof that any goods delivered by its holder are Global Recycled Standard (GRS) certified. Proof of Global Recycled Standard (GRS) certification of goods delivered is provided by a valid transaction certificate (TC) or equivalent covering them. The issuing body may withdraw this certificate before it expires if the declared conformity is no longer guaranteed. To authenticate this certificate, please visit www.TextileExchange.org/Certificates | | |
| This electronically issued document is the valid original version. Scan QR Code to verify certificate. | | |
|  | | |

Green Certification-REACH SVHC and RoHS



SGS

測試報告 Test Report

國塑塑膠工業股份有限公司 (GUO SU PLASTIC INDUSTRY CO., LTD)
台南市官田區成功街85號 (NO. 85, CHENGONG ST., GUANTIAN DIST., TAINAN CITY 720006, TAIWAN)

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) : 國塑塑膠工業股份有限公司 (GUO SU PLASTIC INDUSTRY CO., LTD)
樣品名稱(Sample Name) : PC聚碳酸酯
樣品型號(Style/Item No.) : PC NC-158

收件日(Sample Receiving Date) : 23-Feb-2024
測試期間(Testing Period) : 23-Feb-2024 to 04-Mar-2024

測試需求(Test Requested) : 依據客戶指定，參考REACH之Regulation (EC) No 1907/2006的公告進行以下測試 (As specified by client, the sample(s) was/were tested with reference to Regulation (EC) No 1907/2006 concerning the REACH)
240項高關注物質篩選清單，於2024年01月23日公告 (240 Substances of Very High Concern (SVHC). Candidate list is published on January 23, 2024)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).
總結(Summary) : 根據歐洲法院對於REACH規範下成品定義的裁決以及指定範圍分析技術，送測樣品中所選擇的零組件成品的高關注物質(SVHC) 測試結果濃度均 $\leq 0.1\%$ (w/w) (According to the ruling of the Court of Justice of the European Union on the definition of an article under REACH, and the specified scope as well as analytical technique, the test results of the selected component article are $\leq 0.1\%$ (w/w) in the submitted sample(s).)

Ray Chang, Ph.D. / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
化學實驗室-高雄/Chemical Laboratory-Kaohsiung

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Member of the SGS Group



SGS

測試報告 Test Report

國塑塑膠工業股份有限公司 (GUO SU PLASTIC INDUSTRY CO., LTD)
台南市官田區成功街85號 (NO. 85, CHENGONG ST., GUANTIAN DIST., TAINAN CITY 720, 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) : 國塑塑膠工業股份有限公司 (GUO SU PLASTIC INDUSTRY CO., LTD)
樣品名稱(Sample Name) : PC聚碳酸酯
樣品型號(Style/Item No.) : PC NC-158

收件日(Sample Receiving Date) : 23-Sep-2023
測試期間(Testing Period) : 23-Sep-2023 to 02-Oct-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，測試元素：氟、氯、溴、碘、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及其修訂指令(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.)

測試結果(Test Results) :
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及其修訂指令(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.)

Ray Chang, Ph.D. / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
化學實驗室-高雄/Chemical Laboratory-Kaohsiung

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Cooperation with FCFC



Guosu plastic industry corporation signed a Joint Venture Agreement with FCFC (Formosa Chemicals & Fibre Corporation) on Dec. 22, 2021. FCFC became Guosu's shareholder who owning 49% of Guosu's shares.

It's the first case in Taiwan that virgin resin's producer to cooperate with PCR plastic's producer to build the Circular Economy.



Customers'Audit

Visiting Laboratory



Introduction treated-flakes



Visiting Pelletizing area



Green office

**Multi Function Printer
NC-15B**

**LCD TV
CD-175**

**5G ROUTER
NC-15B**

**NOTEBOOK
KS-10**

GRPC's Grade

PC KS-10

GRS Post-Consumer-Recycled PC Certification.

Application -Flame Retardant PC/ABS of TV, Notebook, 3C electronic production, Home electronics.

| 性質 PROPERTIES | | 測試條件 CONDITION | 測試方法 METHOD | 單位 UNIT | 數據 RESULT |
|------------------|-----------------------|-------------------|----------------|--------------------------|--------------|
| 熱性質 | THERMAL | | | | |
| 熔融指數 | Melt Flow Index | 300°C*1.2kg | ASTM D1238 | g/10min | 10±2 |
| 熱變形溫度 | Heat Distortion Temp. | 1.82 Mpa | ASTM D638 | °C | ≥120 |
| 機械特性 | MECHANICAL | | | | |
| 抗張強度 | Tensile Strength | 5.00 cm/min | ASTM D638 | MPa(kg/cm ²) | ≥55(560) |
| 延伸率 | Tensile Elongation | 5.00 cm/min | ASTM D638 | % | ≥50 |
| 彎曲強度 | Flexural Strength | 3.00 cm/min | ASTM D790 | MPa(kg/cm ²) | ≥80(800) |
| 彎曲彈性係數 | Flexural Modulus | 3.00 cm/min | ASTM D790 | MPa(kg/cm ²) | ≥2100(21000) |
| 衝擊強度 | IZOD Impact Strength | 3.2 mm/23°C | ASTM D256 | J/M(Kg/cm-cm) | ≥490(50) |
| 硬度 | Hardness | | ASTM D2240 | Shore D | ≥D-80 |
| 其他 | OTHER | | | | |
| 灰份 | Ash Content | 800°C | ASTM D2584 | % | ≤0.1 |
| 比重 | Specific Gravity | 23°C | ASTM D792 | g/cm ³ | 1.195±0.02 |
| 含水率 | Moisture Absorption | 23°C | ASTM D570 | % | ≤0.3 |

These are typical properties only and are not to be constructed as specification.
Users should confirm results be their own tests.



GRPC's Grade

PC WB-04

GRS Post-Consumer-Recycled PC Certification.
Application -Flame Retardant PC/ABS of TV, Notebook, 3C electronic production, Home electronics.

| 性質 PROPERTIES | | 測試條件 CONDITION | 測試方法 METHOD | 單位 UNIT | 數據 RESULT |
|------------------|-----------------------|-------------------|----------------|---------------|--------------|
| 熱性質 | THERMAL | | | | |
| 熔融指數 | Melt Flow Index | 300°C*1.2kg | ASTM D1238 | g/10min | <8 |
| 熱變形溫度 | Heat Distortion Temp. | 1.82 Mpa | ASTM D638 | °C | ≥120 |
| 機械特性 | MECHANICAL | | | | |
| 抗張強度 | Tensile Strength | 5.00 cm/min | ASTM D638 | MPa(kg/cm²) | ≥55(560) |
| 延伸率 | Tensile Elongation | 5.00 cm/min | ASTM D638 | % | ≥50 |
| 彎曲強度 | Flexural Strength | 3.00 cm/min | ASTM D790 | MPa(kg/cm²) | ≥80(800) |
| 彎曲彈性係數 | Flexural Modulus | 3.00 cm/min | ASTM D790 | MPa(kg/cm²) | ≥2100(21000) |
| 衝擊強度 | IZOD Impact Strength | 3.2 mm/23°C | ASTM D256 | J/M(Kg/cm-cm) | ≥590(60) |
| 硬度 | Hardness | | ASTM D2240 | Shore D | ≥D-80 |
| 其他 | OTHER | | | | |
| 灰份 | Ash Content | 800°C | ASTM D2584 | % | ≤0.1 |
| 比重 | Specific Gravity | 23°C | ASTM D792 | g/cm³ | 1.195±0.02 |
| 含水率 | Moisture Absorption | 23°C | ASTM D570 | % | ≤0.3 |

These are typical properties only and are not to be constructed as specification.
Users should confirm results be their own tests.



GRPC's Grade

PC CD-175

GRS Post-Consumer-Recycled PC Certification.
Application -Flame Retardant PC/ABS of TV, 3C electronic production, Home electronics.

| 性質 PROPERTIES | | 測試條件 CONDITION | 測試方法 METHOD | 單位 UNIT | 數據 RESULT |
|------------------|-----------------------|-------------------|----------------|---------------|--------------|
| 熱性質 | THERMAL | | | | |
| 熔融指數 | Melt Flow Index | 300°C*1.2kg | ASTM D1238 | g/10min | >60 |
| 熱變形溫度 | Heat Distortion Temp. | 1.82 Mpa | ASTM D638 | °C | ≥118 |
| 機械特性 | MECHANICAL | | | | |
| 抗張強度 | Tensile Strength | 5.00 cm/min | ASTM D638 | MPa(kg/cm²) | ≥49(500) |
| 延伸率 | Tensile Elongation | 5.00 cm/min | ASTM D638 | % | - |
| 彎曲強度 | Flexural Strength | 3.00 cm/min | ASTM D790 | MPa(kg/cm²) | ≥80(800) |
| 彎曲彈性係數 | Flexural Modulus | 3.00 cm/min | ASTM D790 | MPa(kg/cm²) | ≥2100(21000) |
| 衝擊強度 | IZOD Impact Strength | 3.2 mm/23°C | ASTM D256 | J/M(Kg/cm-cm) | ≥50(5) |
| 硬度 | Hardness | | ASTM D2240 | Shore D | ≥D-78 |
| 其他 | OTHER | | | | |
| 灰份 | Ash Content | 800°C | ASTM D2584 | % | ≤0.1 |
| 比重 | Specific Gravity | 23°C | ASTM D792 | g/cm³ | 1.195±0.02 |
| 含水率 | Moisture Absorption | 23°C | ASTM D570 | % | ≤0.3 |

These are typical properties only and are not to be constructed as specification.
Users should confirm results be their own tests.



GRPC's Grade

PC NC-15B

GRS Post-Consumer-Recycled PC Certification.

Application -Flame Retardant PC/ABS of TV, Notebook, Photocopier, 3C electronic production, Home electronics

| 性質 PROPERTIES | | 測試條件 CONDITION | 測試方法 METHOD | 單位 UNIT | 數據 RESULT |
|------------------|-----------------------|-------------------|----------------|--------------------------|--------------|
| 熱性質 | THERMAL | | | | |
| 熔融指數 | Melt Flow Index | 300°C*1.2kg | ASTM D1238 | g/10min | 15±2 |
| 熱變形溫度 | Heat Distortion Temp. | 1.82 Mpa | ASTM D638 | °C | ≥120 |
| 機械特性 | MECHANICAL | | | | |
| 抗張強度 | Tensile Strength | 5.00 cm/min | ASTM D638 | MPa(kg/cm ²) | ≥55(560) |
| 延伸率 | Tensile Elongation | 5.00 cm/min | ASTM D638 | % | ≥50 |
| 彎曲強度 | Flexural Strength | 3.00 cm/min | ASTM D790 | MPa(kg/cm ²) | ≥80(800) |
| 彎曲彈性係數 | Flexural Modulus | 3.00 cm/min | ASTM D790 | MPa(kg/cm ²) | ≥2100(21000) |
| 衝擊強度 | IZOD Impact Strength | 3.2 mm/23°C | ASTM D256 | J/M(Kg/cm-cm) | ≥490(50) |
| 硬度 | Hardness | | ASTM D2240 | Shore D | ≥D-80 |
| 其他 | OTHER | | | | |
| 灰份 | Ash Content | 800°C | ASTM D2584 | % | ≤0.1 |
| 比重 | Specific Gravity | 23°C | ASTM D792 | g/cm ³ | 1.195±0.02 |
| 含水率 | Moisture Absorption | 23°C | ASTM D570 | % | ≤0.3 |

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Users should confirm results be their own tests.



GRPC's Grade

PC WS-05

Modified Polycarbonate for Suitcase
GRS Post-Consumer-Recycled PC Certification.

| 性質 PROPERTIES | | 測試條件 CONDITION | 測試方法 METHOD | 單位 UNIT | 數據 RESULT |
|------------------|-----------------------|-------------------|----------------|---------------|--------------|
| 熱性質 | THERMAL | | | | |
| 熔融指數 | Melt Flow Index | 300°C*1.2kg | ASTM D1238 | g/10min | 5~8 |
| 熱變形溫度 | Heat Distortion Temp. | 1.82 Mpa | ASTM D638 | °C | ≥120 |
| 機械特性 | MECHANICAL | | | | |
| 抗張強度 | Tensile Strength | 5.00 cm/min | ASTM D638 | MPa(kg/cm²) | ≥55(560) |
| 延伸率 | Tensile Elongation | 5.00 cm/min | ASTM D638 | % | ≥50 |
| 彎曲強度 | Flexural Strength | 3.00 cm/min | ASTM D790 | MPa(kg/cm²) | ≥80(800) |
| 彎曲彈性係數 | Flexural Modulus | 3.00 cm/min | ASTM D790 | MPa(kg/cm²) | ≥2000(20500) |
| 衝擊強度 | IZOD Impact Strength | 3.2 mm/23°C | ASTM D256 | J/M(Kg/cm-cm) | ≥590(60) |
| 硬度 | Hardness | | ASTM D2240 | Shore D | ≥D-80 |
| 其他 | OTHER | | | | |
| 灰份 | Ash Content | 800°C | ASTM D2584 | % | ≤0.1 |
| 比重 | Specific Gravity | 23°C | ASTM D792 | g/cm³ | 1.195±0.02 |
| 含水率 | Moisture Absorption | 23°C | ASTM D570 | % | ≤0.3 |

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Users should confirm results be their own tests.





國塑塑膠工業股份有限公司
Guo Su Plastic Industry CO., LTD.

THANK YOU

