ISO quality system certification
CE certification

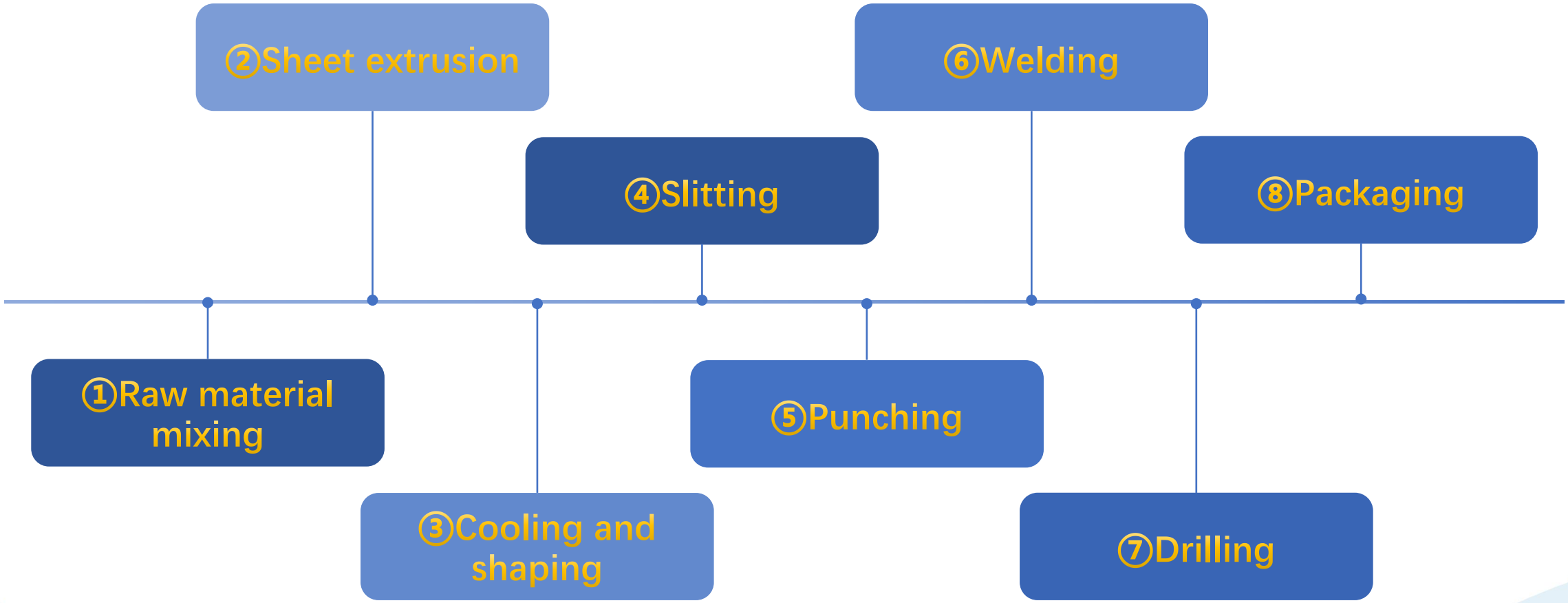
GEOLEED adheres to the business philosophy of "technological innovation, quality-oriented" and is committed to providing high-quality, high-performance geocell products and overall solutions to global customers.

Email: info@geoleed.com
Website:www.geoleed.com

Address:Tai'an City, Shandong Province, China
Address:Sakai Ward, Sakai City, Osaka, Japan

WhatsApp

Geocell production process of GEOLEED



① Raw material mixing

01

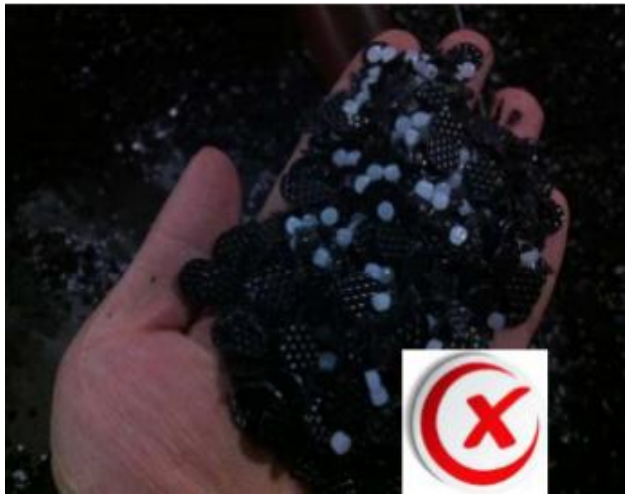
If no special requirements for raw material,
100% virgin HDPE will be used to produce
ASTM standard Geocell. If customer need
GB standard Geocell, we will produce as your request.

02

Additives are subject to the order
requirements, generally: carbon black (black) or color
masterbatch (other colors) light
stabilizers, antioxidants, and so on.

03

Mixing requirements: raw and auxiliary
materials are prepared strictly according to
the formulation requirements, and mixing time should be at
least 3-5 minutes to ensure
uniform mixing of raw and auxiliary materials.



Raw material Testing Report

Sept 2015

Product Data Sheet

Polyethylene Borstar® FB1370

ENHANCED POLYETHYLENE

DESCRIPTION

Borstar®FB1370 is produced using the proprietary **Borstar®** Bimodal Technology resulting in easy extrusion with superior mechanical properties. Film/Sheet made from the product exhibits excellent impact strength and stiffness balance combined with excellent yield, Tensile strength and bubble stability resulting excellent processability on Blown/Cast extrusion machines. Toughness is retained at low temperature. The film has good seal strength and superior ESCR properties.

Borstar®FB1370 contains antioxidant.

APPLICATIONS

- Geomembrane
- Mono layer & co-extrusion films
- Wide width films
- Pond Liners

SPECIAL FEATURES

- Easy processability
- Excellent mechanical properties balance
- Good seal properties
- Excellent bubble stability
- Superior ESCR

PHYSICAL PROPERTIES

Property	Typical Value	Unit	Test Method
Density	938	Kg/m³	ASTM D792
Melt Flow Rate MFR (190 °C/2.16 kg)	0.12	g/10min	ASTM D1238
Melt Flow Rate MFR (190 °C/5.0 kg)	0.50	g/10min	ASTM D1238
Melt Flow Rate MFR (190 °C/21 kg)	13	g/10min	ASTM D1238
ESCR – 10% Igepal / F50	>5000	Hours	ASTM D 1693
Melting Temp.	129	°C	ISO 11357/03
Vicat Softening Temperature A50 (10 N)	113	°C	ISO 306

*Data should not be used for specification work

Borouge Pte Ltd 1 George Street | #18-01 | Singapore 049145
Tel +65 6275 4100 | Fax +65 6377 1233 | www.borouge.com
Borouge is part of the ADNOC and Borealis group of companies
Company Registration Number 199801755H

Polyethylene Borstar® FB1370

FILM PROPERTIES

Property		Typical Value	Unit	Test Method
Tensile Strength at Break	MD/TD	65/50	MPa	ISO 527-3
Elongation at Break	MD/TD	400/650	%	ISO 527-3
Tensile Strength at Yield	TD	20	MPa	ISO 527-3
Tensile Modulus	MD/TD	550/650	MPa	ASTM D 882
Coefficient of Friction		0.35	-	ASTM D 1894
Dart Drop		300	g	ASTM D 1709/A
Tear resistance	MD/TD	1/7	N	ASTM D 1922

*Data should not be used for specification work
**The film properties are dependent on extrusion conditions.
Blown Film properties: 40µm, BUR=3:1, FLH=4DD, Die gap 1.2mm

PROCESSING GUIDELINES

Borstar®FB1370 can be processed easily on Blown / Cast sheet equipment designed for polyethylene extrusion. The balance of draw down properties and bubble stability is superior to conventional LLDPE. Thickness of 15µm to >2500µm can be processed with good bubble stability. The product is well suited for co-extrusion.

Recommended melt temperature is 190 - 210°C.

FOOD CONTACT REGULATIONS

Borstar®FB1370 fulfils the food contact regulations in most countries. If required, contact your Borouge representative for a certificate.

STORAGE

The product should be stored in dry conditions at temperatures below 50°C and protected from UV-light. Improper storage can initiate degradation, which results in odour generation and colour changes and can have negative effects on the physical properties of this product.

More information on storage can be found in Safety Information Sheet for this product.

Borouge Pte Ltd 1 George Street | #18-01 | Singapore 049145
Tel +65 6275 4100 | Fax +65 6377 1233 | www.borouge.com
Borouge is part of the ADNOC and Borealis group of companies
Company Registration Number 199801755H

Polyethylene Borstar® FB1370

SAFETY

The product is not classified as a hazardous mixture.

Dust and fines from the product carry a risk of dust explosion. All equipment should be properly earthed. Inhalation of dust should be avoided as it may cause irritation of the respiratory system. Small amounts of fumes are generated during processing of the product. Proper ventilation is therefore required.

A Safety Information Sheet is available on request. Please contact your Borouge representative for more details on various aspects of safety, recovery and disposal of the product.

RECYCLING

The product is suitable for recycling using modern methods of shredding and cleaning. In-house production waste should be kept clean to facilitate direct recycling.

RELATED DOCUMENTS

Most datasheets and statements are available on Borouge website www.borouge.com. If more information is required, please contact a Borouge representative for information.

DISCLAIMER

The product(s) mentioned herein are not intended to be used for medical, pharmaceutical or healthcare applications and we do not support their use for such applications.

Borouge Pte Ltd 1 George Street | #18-01 | Singapore 049145
Tel +65 6275 4100 | Fax +65 6377 1233 | www.borouge.com
Borouge is part of the ADNOC and Borealis group of companies
Company Registration Number 199801755H

② Sheet extrusion

After the person in charge complete equipment comission, confirm production,every 2 hours should do a comprehensive inspection and fill the testing form and process record sheet during the normal production process.

Record of Tensile Testing for Welding Points in Geogrid Cells							
PRODUCT MODEL:				First inspection of the product:			
				Welding point tension			
Required value				Inspector			
				Detection time			
Production process inspection							
Welding point tension				Welding point tension			
Inspector				Inspector			
Detection time				Detection time			

※ Sheet size deviation range

Sheet height control range:
±1%

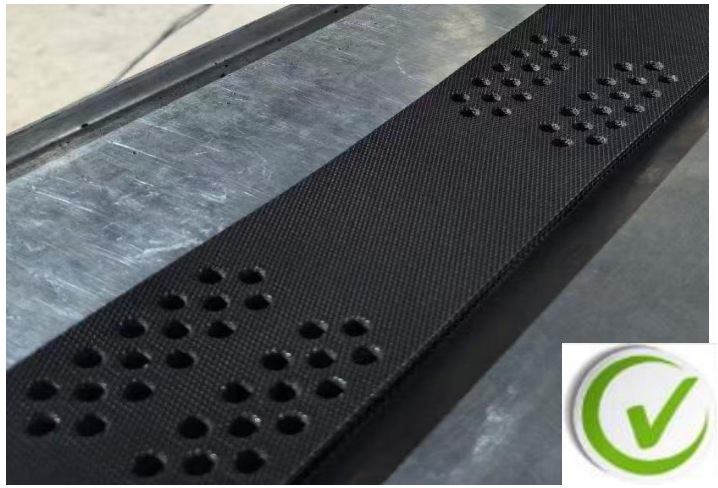
Sheet thickness control range:
±5%

Will follow the order if you have special requirements.

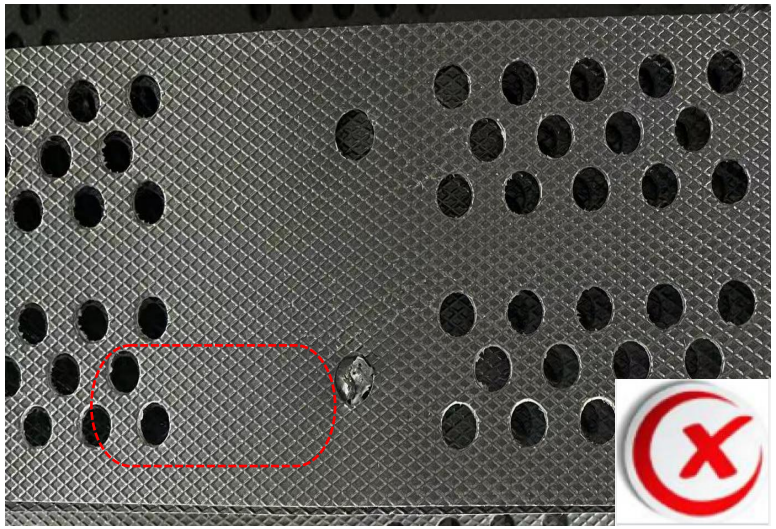
Appearance

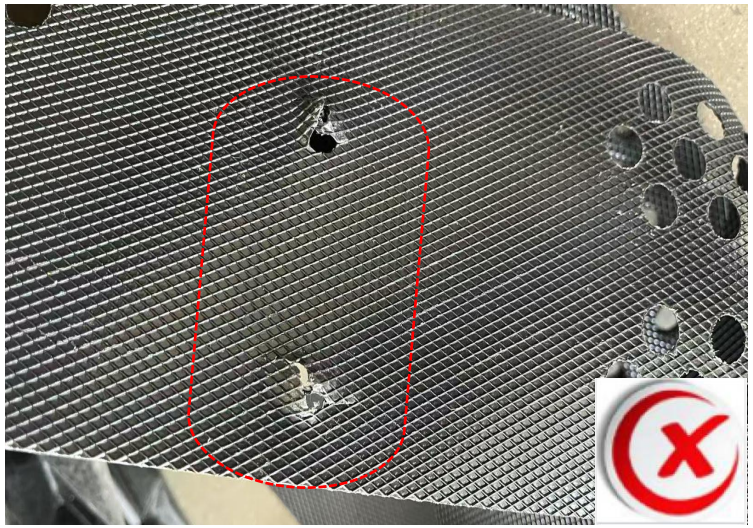
No scratches on the surface, no bubbles, no damage and other problems affecting the appearance of the sheet.

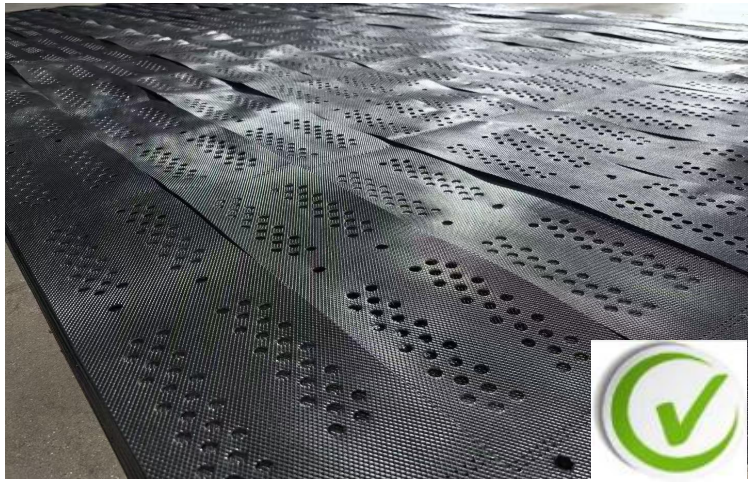
③ Perforating



Perforate Orderliness







Smooth

Perforated sheet is evenly cut to keep the length of each sheet the same.

01

Sheet is send to welding area after perforated, arching serious, perforated not orderliness, damaged sheets need to be individually picked and handle in time.

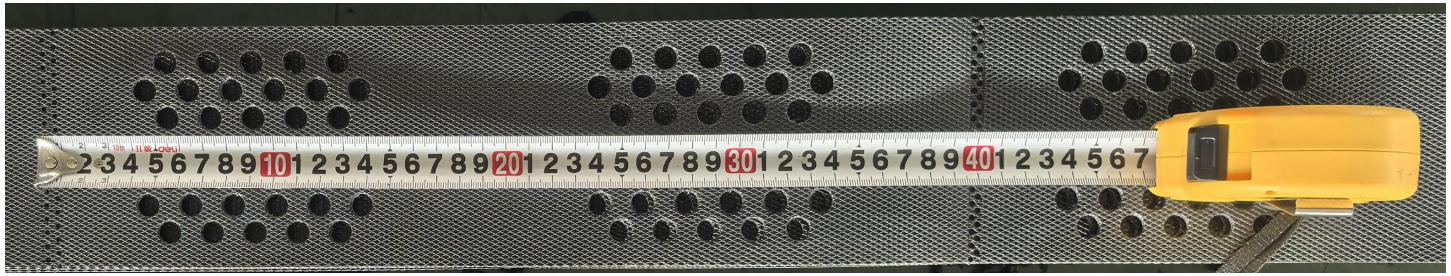
02

If any sheet can't up to the standard, we will stop the production to find the reason immediately, and test all the goods be produced around that time, any unqualified sheets will not be shipped.

03

④ Welding

★ The welding distance



Welding distance control range： ± 2%

Product Quality Testing

SGS

TEST REPORT

No. : QDIN2502000289PL01-1_EN

Date : 2025-05-26

Page: 1 of 5

CUSTOMER NAME: GEOGREEN ENGINEERING MATERIALS CO., LTD.

ADDRESS: TAI'AN DEVELOPMENT ZONE, SHANDONG PROVINCE

Sample Name : Geocell

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client. **********

Date of Receipt : 2025-02-24

Testing Period : 2025-02-24 ~ 2025-03-03

Test result(s) : For further details, please refer to the following page(s) (Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.,

Kayla Chu

Authorized signatory

SGS

TEST REPORT

No. : QDIN2502000289PL01-1_EN

Date : 2025-05-26

Page: 2 of 5

Summary of Results:

No.	Test Item	Test Method	Result	Conclusion
1	Geocell Dimension	GB/T 19274-2003 Section 7.5	See result	Pass
2	Tensile Stress at Yield	GB/T 19274-2003 Section 7.7	21.6MPa	Pass
3	Weld Tensile Strength	GB/T 19274-2003 Section 7.8	180N/cm	Pass

Note: Pass : Meet the requirements;
Fail : Does not meet the requirements;
N/A : Not Apply to the judgment.

Original Sample Photo:

SGS

TEST REPORT

No. : QDIN2502000289PL01-1_EN

Date : 2025-05-26

Page: 3 of 5

1. Test Item: Geocell Dimension

Sample Description: See photo

Test Method: GB/T 19274-2003 Section 7.5

Lab Environmental Condition: (23±2)℃, (50±5)%RH

Test Result:

Test Item	Test Result	Client's Requirement	Conclusion
Weld Distance of Geocell	404mm	(400±15)mm	Pass
Sheet highness of Geocell	100mm	(100±1)mm	Pass
Sheet Thickness of Geocell	1.24mm	≥1.1mm	Pass

Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Tape Measure	3m	POL-PL-E022	2025-02-05	2026-02-04
Digital Micrometer	0~25mm	POL-PL-E038	2024-04-09	2025-04-08
Straight Steel Ruler	DL8030	POL-PL-E056	2024-10-10	2025-10-09

SGS

TEST REPORT

No. : QDIN2502000289PL01-1_EN

Date : 2025-05-26

Page: 4 of 5

2. Test Item: Tensile Stress at Yield

Sample Description: See photo

Test Method: GB/T 19274-2003 Section 7.7

Test Condition:

Specimen thickness: 1.26mm

Testing speed: 50mm/min

Grip separation: 80mm

Lab Environmental Condition: (23±2)℃, (50±5)%RH

Test Result:

Test Item	Test Result	Client's Requirement	Conclusion
Tensile Stress at Yield	21.6MPa	≥20MPa	Pass

Note: Test specimens were cut from the sample.

Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Universal Material Testing Machine	Z010	POL-PL-E005	2024-07-22	2025-07-21

SGS

TEST REPORT

No. : QDIN2502000289PL01-1_EN

Date : 2025-05-26

Page: 5 of 5

3. Test Item: Weld Tensile Strength

Sample Description: See photo

Test Method: GB/T 19274-2003 Section 7.8

Test Condition:

Specimen width: 100mm

Testing speed: 50mm/min

Grip length: 100mm

Lab Environmental Condition: (23±2)℃, (50±5)%RH

Test Result:

Test Item	Test Result	Client's Requirement	Conclusion
Weld Tensile Strength	180N/cm	≥100N/cm	Pass

Note: Test specimens were cut from the sample.

Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Universal Material Testing Machine	3367	POL-PL-E027	2024-05-28	2025-05-27

Appendix Information:

1. This Report supersedes the Report No. QDIN2502000289PL01, dated: 2025-03-03, issued by SGS, original report will be invalid from today.
2. The test report updated customer name and address.

********End of report********

The content of the product test report includes: bursting strength, vertical permeabength in the warp and weft directions, and tearing strength in the wility coefficient, tensile strarp and weft directions.

TRI Test report

7-day suspension: Creep performance test or solder joint tensile strength durability test.

The ESCR ≥ 5000H indicates the ability of polyethylene materials to resist brittle cracking when subjected to tensile stress and in contact with surfactants.

TRI ENVIRONMENTAL — TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

Jan 21st, 2026

GAI-LAP
Initial: GVZ/ Steve Xi #: 79
DATE: 01/21/2026

Yan Tao
Geoleed Engineering Materials Co., Ltd 泰安瑞丰工程材料有限公司
Workshop 1, New material R&D and Production Project, No. 3777,
Longteng Road, Beijipo Sub-District Office,
Gaoxin District, Tai 'an, Shandong

Re: PARTIAL LABORATORY TEST REPORT 中期实验室检测报告

Dear Mr. Yan:

Thank you for consulting TRI Suzhou for your material testing needs.
感谢选用 TRI 苏州实验室为您检测材料
Enclosed is the ***partial*** laboratory report for the **Conformance** testing of **one (1) Geocell sample**.
附上一份 1 个土工格室样品的最终符合性实验室检测报告

PROJECT NAME 项目名称: Geocell Testing — DATE REPORTED 报告日期: **Jan 21st, 2026**

REFERENCE TRI JOB NO.涉及工作编号: SCH25251

DATE RECEIVED 接收日期: Aug 28th, 2025

SAMPLE(S) SENT BY 送样人: Geoleed Engineering Materials Co., Ltd 泰安瑞丰工程材料有限公司

SAMPLE IDENTIFICATIONS 样品信息:

SAMPLE ID 样品 ID	*TRI CONTROL NUMBER 受控编号*
Geocell	13441

TESTS REQUIRED / PERFORMED 检测要求/检毕:

TEST METHOD 检测方法	*DESCRIPTION 描述*
1. ASTM D5199	Thickness 厚度
2. ASTM D5994	Core Thickness 核心厚度
3. ASTM D1505	Density 密度
4. EN 12224	UV Resistance 抗紫外老化
5. ISO 13438	Oxidation Resistance 抗氧化性能
6. ISO 527	Tensile Property 拉伸性能
7. ASTM D5885	HPOIT 高压氧化诱导
8. ASTM D1603	Carbon Black Content 炭黑含量
9. ASTM D751	Seam Shear Strength 剪切强度
10. ISO 13426-1	Peeling Strength 剥离强度
11. ASTM D1693	ESCR 耐环境应力开裂

TEST RESULTS 检测结果: The test results are summarized in the attached Table(s) 1. 检测结果参见附表 1.

Note: The general conditioning and testing of material samples identified in this report were performed within the range of the laboratory environmental conditions; i.e. 21±2℃ and 65±5RH. Otherwise, the actual environmental conditions are indicated in the respective test method reported.
注意：本报告中所提及的材料样本的一般性处理和测试均在实验室环境条件下进行，即温度 21±2℃，相对湿度 65±5%。否则，实际环境条件会在相应的测试方法报告中予以说明。

Respectfully,此致

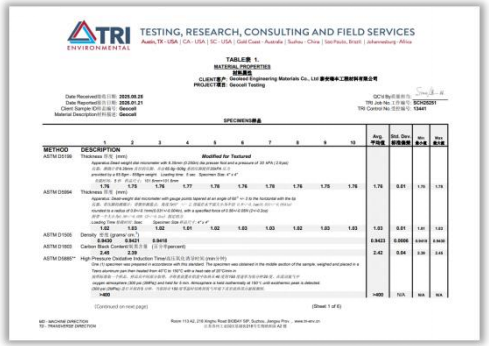
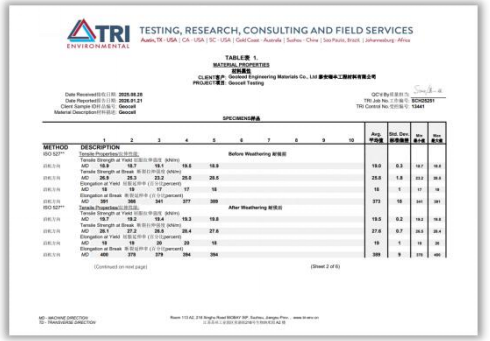
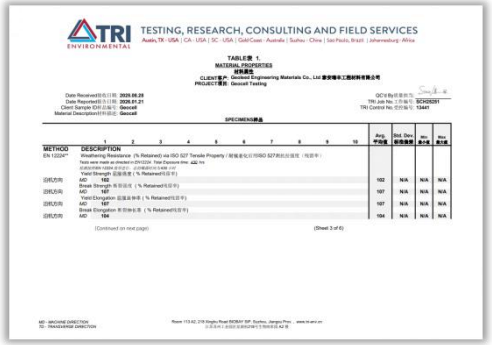
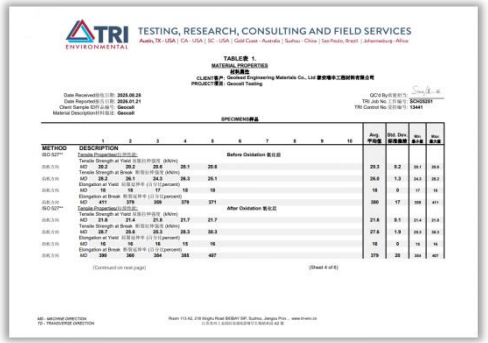
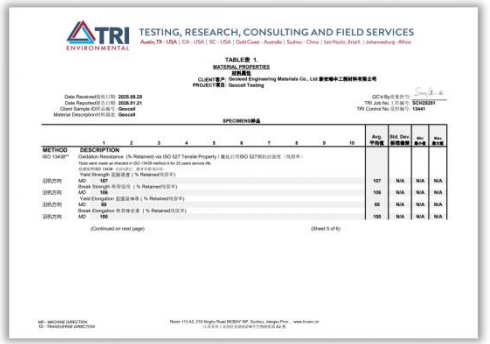
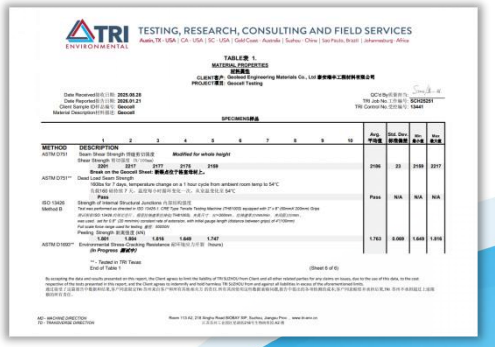
TRI Geosynthetic Testing and Services (Suzhou) Co., Ltd.
苏州飓尔埃土工材料检测服务有限公司

Steve Xi
Quality Assurance

Chad Blackwell
General Manager

Signatures are on file

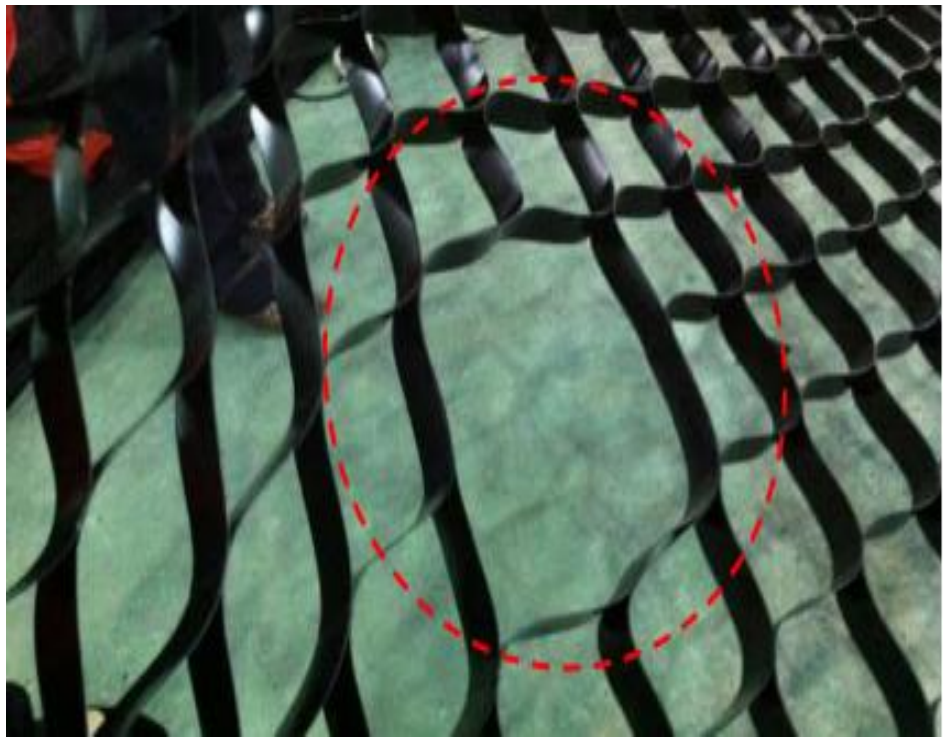
Room 113 A2, 218 Xinghu Road BIOBAY SIP, Suzhou, Jiangsu Prov., www.tri-env.cn
江苏苏州工业园区星湖街 218 号生物纳米园 A2 楼 113 室

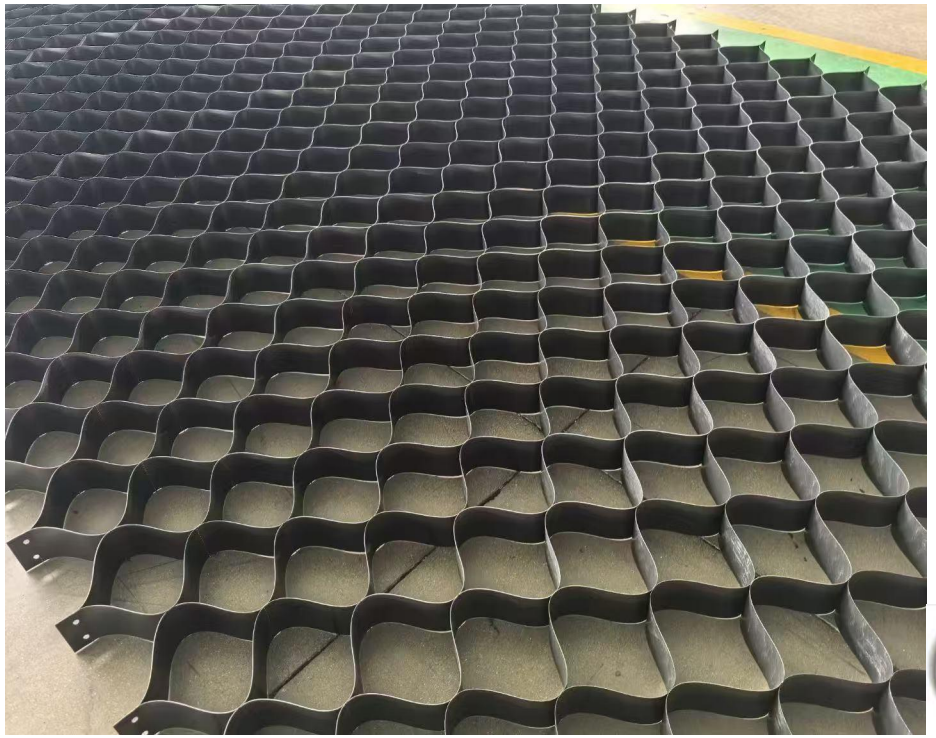







Quality Problem Case

Leak welding 、 Faulty welding

All panels must be 100% manually expanded to check if any leak welding,faultyy welding, welding distance error, sheet dislocation.

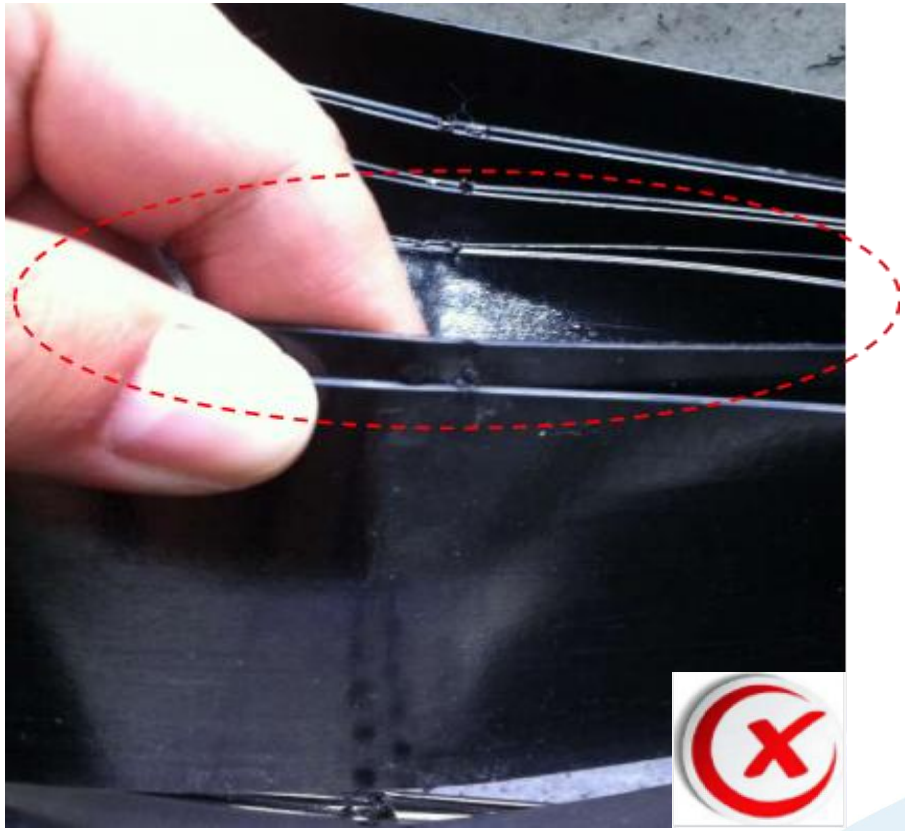




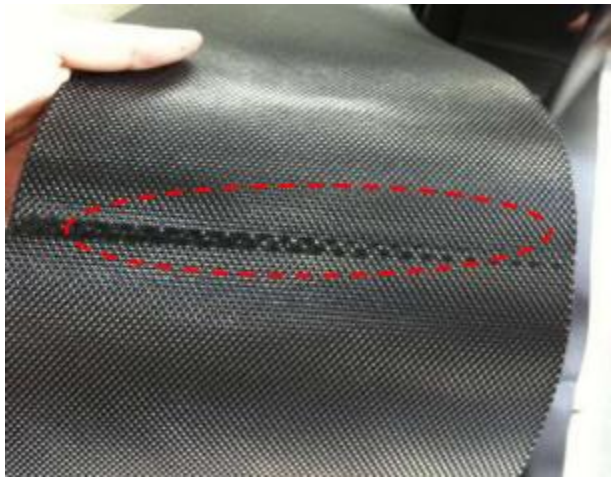
Quality Problem Case

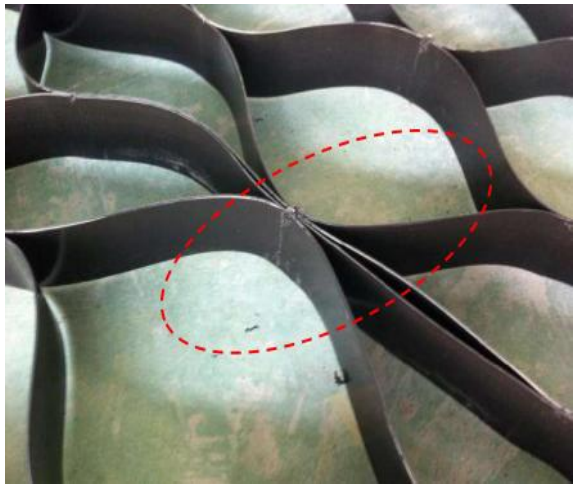
Sheet Dislocation

Sheet must not be misaligned during welding, range: ⩽ 0.5 mm



Quality Problem Case





Other quality problem of welding

Welding Failure

Handling suggestions：

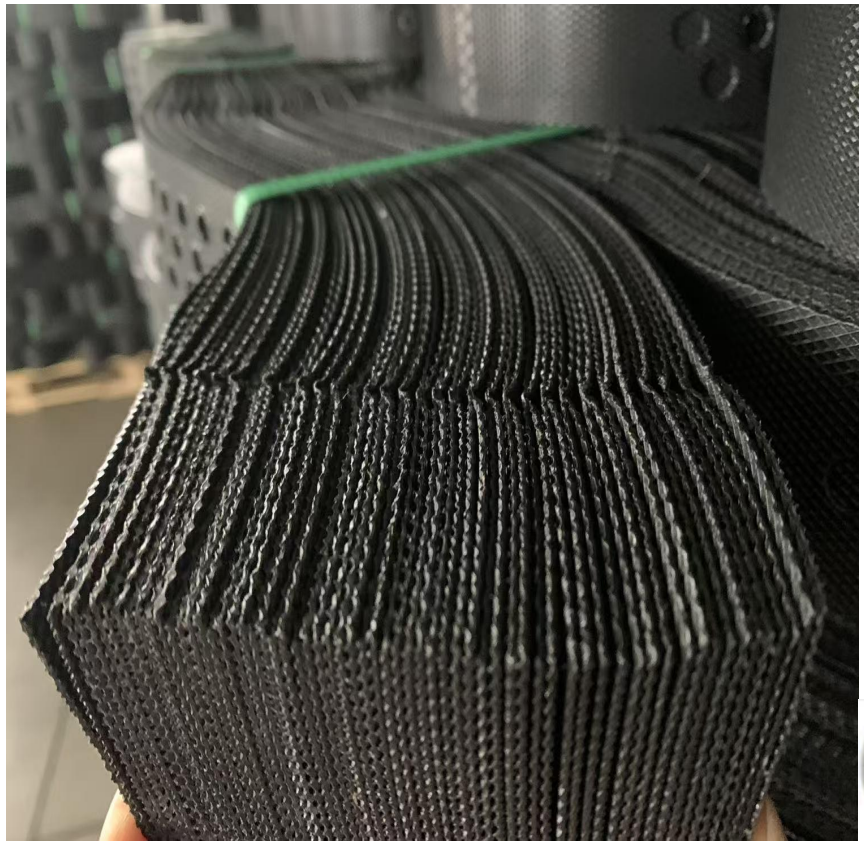
a. Adjust welder pressure and time.

b. Strength quality test and deal with it immediately.

⑤ Trimming

Trimming need to make sure the surface level off, clean, no residue.

Not too short or too long, generally 5 cm.



⑥ Packing

★ Label

Label according to customer's requirement, usually attached at the top.

Clean Surface

Keep the surface clean.

Packing

Packing with pallets to avoid damage and easy for transporting.