

## I Company Profile

Dalian Geo-Link Geosynthetics Co. Ltd is a globally focused company specialising in a complete range of geosynthetic products for the worldwide Civil, Transportation, Hydraulic and Environmental markets, which is located in Dalian City, China

The company was established in 2006.

Dalian is a progressive Chinese City located on the coast of North Eastern China. Dalian is a centre of education, manufacture, research and government. Dalian is strategically located close to a large international shipping port allowing world markets to be serviced efficiently and economically.

The company has purchased and installed modern manufacturing equipment for the production of their own Geosynthetic products and is committed to continuing to invest in modern equipment and personnel.

The company adopted the Chinese National Geosynthetic Standards in the initial period of formation and then quickly and successfully adopted Geosynthetic production equipment and methods to successfully manufacture products for all international standards. Our company has a commitment for excellence in product and passed the well recognized Chinese National Accreditation Service (CNAS) for laboratory accreditation in 2016. This was achieved after establishing a highly sophisticated in-house testing facility and completing staff quality training, such that every quality step could be quantified during production of the company products. Our laboratory allows our customers to have faith in the independent nature and accreditation standard of our laboratory and staff.

To ensure that our company maintains focus towards product manufacturing excellence, product quality to meet our customer demands and overall management processes of the highest standards, the company is an ISO 9001 accredited organization.

## II Quality Policy

Our Quality policy reflects the company's commitment to consistently achieving product quality; we aim to meet this commitment by making continuous improvements in all aspects of our business when required.

The company's quality policy:

- The company adheres to innovation and development-----In order to serve the needs of our customers and make the direction of future development clear, we have always been committed to the development of new products by maintaining innovation and improvement.
- Continuously improve the quality of all production processes-----For each order, we create quality plans for our customers and focus on the quality control of each production cycle to improve product quality.
- Total involvement-----Each employee has clearly defined roles and responsibilities. We have regular training to make our employees understand their responsibilities and authority clearly, so that they can be competent to ensure their implementation of each activity.
- Advance with times and forge ahead-----All production processes are completely in accordance with the ISO9001 standard, so that we can meet customer requirements.
- A high level of service to meet customer satisfaction-----we are committed to provide high quality products and services for our customers to meet their needs.

In order to achieve the quality policy, we set up the quality target and monitor the achievement of the quality objectives by using effective management.

We will continue to provide products which can satisfy our customers---this is our constant goal and focus.



### **OUR COMMITMENT IS ALWAYS**

Customer satisfaction

Highest Quality product

Transparency in all our dealings

Mutual reward between our company and our clients.

### III Production Capacity

Each of our manufacturing facilities has the most advanced production and laboratory facilities to ensure the highest quality for each product produced. We monitor and if necessary, adjust the production process parameters continuously, according to the product test results from the in-house laboratory during the production progress.

Each year, we can produce about 10,000,000m<sup>2</sup> of HDPE geocell. Our production and technical staff, have the authority to independently change manufacturing processes and ensure that the production and specification targets are met.

In conclusion, we have a mature, independent management system with skilled staff, excellent manufacturing equipment and a well equipped testing laboratory staffed by excellent technicians.

Our manufacturing facilities have been certificated by ISO9001, ISO14001, and OHSAS18000 and can meet the needs of our customers.





## IV Awards

Geo-Link is a professional enterprise specialized in the production of geotextile. With the continuous development of the company and the joint efforts of all staff, we have obtained the following qualifications.



- ◆ ISO9001-2008 Quality Management System Certification. (ISO9000)  
(Dalian Geo-Link Geosynthetics Co. Ltd. passed the audit qualification certification in 2014)  
(Dalian GeoMax synthetic Co. Ltd. passed the audit certification qualification in 2014)



- ◆ Membership of the Chinese Association of geosynthetic materials engineering(TAG)  
(Dalian Geo-Link Geosynthetics Co. Ltd. obtained the qualification in 2013 )



- ◆ ISO14001-2004 Environment Management System Certification. (ISO140001)  
(Dalian Geo-Link Geosynthetics Co. Ltd. passed the audit qualification certification in 2016)  
(Dalian GeoMax synthetic Co. Ltd. passed the audit certification qualification in 2015)  
(Dalian I.E.C Testing and Service Co., Ltd. passed the audit certification qualification in 2016)

- ◆ OHSAS-2007 Occupational Health and Safety Management System Certification. (OHSAS18001)  
(Dalian Geo-Link Geosynthetics Co. Ltd. passed the audit qualification certification in 2016)  
(Dalian GeoMax synthetic Co. Ltd. passed the audit certification qualification in 2015)  
(Dalian I.E.C Testing and Service Co., Ltd. passed the audit certification in 2016).



- ◆ Membership of the International geosynthetic society materials engineering (IGS)  
(Dalian Geo-Link Geosynthetics Co. Ltd. obtained the qualification in 2013.



- ◆ China National Accreditation Service for Conformity Assessment - Laboratory Accreditation. (CNAS)  
(Dalian I.E.C Testing and Service Co., Ltd. obtained the qualification in 2016).



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## V Quality Management

### Commitment

Geo-Link has a commitment in providing our customers with high quality products and services such that we can meet and exceed the requirements and expectations of customers.

Our company commitment to quality starts from closely evaluating all raw materials used in our products. This has been successfully achieved with the establishment of a vendor evaluation program to ensure that their commitment to quality meets those of our company. Our suppliers must meet the minimum quality requirements for all components of supply to us. This is achieved through strict written material specification requirements and test reports that demonstrate the compliance to minimum specification requirements. Audit procedures are in place that allows our company representatives to ensure that the materials supplied to our company are identified correctly, that testing has been carried out to both the relevant methods and test frequency.

Final product testing is carried out in our in-house laboratory. This laboratory has been certified by the CNAS organisation. CNAS is the laboratory accreditation authority in China with direct links through mutual accreditation programmes, with major like accreditation authorities, throughout the world. Our laboratory can test a wide range of geosynthetic products in modern well equipped premises. Our facilities allow us to test in a climate controlled environment with the ability to test across a very diverse range of test methods and test standards. Minimum test frequencies are maintained such that each shipment can be certified as conforming to the required product or specific customer specification.

Test reports are issued with full product testing details and knowledge that the results have been generated in a laboratory that has been fully inspected and formally accredited for testing equipment and calibration, operator technique and record keeping and traceability of all testing undertaken.

We regularly analyse the product testing data and where necessary will make product changes such that we can continue to improve the product quality of each panel and comply with the quality management system.

We collect and analyse the test data and will update our published data to reflect the latest product properties. Our data sheets will include test results to various international standards such as ASTM (American Society for Testing Materials); AS (Australian Standards); GB (People's Republic of China National Standards) and ISO (International Organization for Standardization).

Our customers can get the latest product information from the website of our company in a timely manner.



## VI ISO Quality Certification



**DALIAN GEO-LINK GEOSYNTHETICS CO., LTD**  
REGISTER ADDRESS: ROOM 418, NO.4, YINGCHUN STREET, SHAHEKOU DISTRICT, DALIAN CITY, LIAONING PROVINCE  
 OFFICE ADDRESS: NO.8888-1, DONGNANSHAN INDUSTRIAL PARK, YOUJIA VILLAGE, GANJINGZI DISTRICT, DALIAN CITY, LIAONING PROVINCE

*Has been assessed by Guangdong Zhongjian Certification Co., Ltd  
 in respect of their Quality Management  
 Systems and to comply with:*

**ISO9001:2008**

*Approval is hereby granted for registration providing the  
 rules and conditions relating to certification are observed at  
 all times*

**CERTIFICATION SCOPE:**

**GOODS EXPORT (INTERNATIONAL TRADE)**

(If the above scope involves pre-approval of administration permission and compulsory certification, this certificate only covers products/ services in the approved / certified scope.)

Date of Issue	Valid Until
2015-4-9	2018-4-8
Certificate Number: <b>U0015Q0157R2S</b>	
Organization Code: <b>79203057-3</b>	


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**Authorized Signature for  
 Guangdong ZhongJian Certification Co., Ltd**  
The validity of this certificate could be confirmed via official Website Of CNCA ([www.cnca.gov.cn](http://www.cnca.gov.cn))  
 Further to the certificate applicability, please enquire the certified organization: visit [www.gzcc.org.cn](http://www.gzcc.org.cn) or contact GZCC 020-66390902  
 4/F, Huojing Building, Guangzhou Dadaozhong, Guangzhou City, Guangdong Province, China (510600) Guangdong Zhongjian Certification Co., Ltd

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Lack of fulfillment of condition as set out in Condition for the Use of National Accreditation Marks by UKAS and UKAS Accredited Organizations may render this certificate invalid

MEMBER OF MULTILATERAL  
 RECOGNITION ARRANGEMENT

This certificate remains the property of Guangdong Zhongjian Certification Co., Ltd of Quality System



## VII ISO Certification

ISO 9001 Certification has been implemented by our company such that its implementation has been adopted in a practical way. This has ensured that the Quality Management Systems that are adopted by all levels of company staff and the system works to improve the business and are not just a set of procedures.

By adopting an approach that starts out to implement more efficient working practices and focuses on the business objectives of our company then a system is achieved that will help and support company staff and improve our levels of customer satisfaction.

External auditing is carried out on a regular basis with all levels of employees embracing the concept of ISO 9001.

ISO 9001 Certification has been found to save time and cost, improve efficiency and ultimately improve customer relationships.

### **Some of the benefits to our company include:**

- ◆ Providing senior management with an efficient management process
- ◆ Sets out areas of responsibility across the organization
- ◆ Mandatory if you want to tender for some public sector work
- ◆ Communicates a positive message to staff and customers
- ◆ Identifies and encourages more efficient and time saving processes
- ◆ Highlights deficiencies
- ◆ Reduces costs
- ◆ Provides continuous assessment and improvement
- ◆ Marketing opportunities

### **Some of the benefits to customers:**

- ◆ Improved quality and service
- ◆ Delivery on time
- ◆ Right first time attitude
- ◆ Fewer returned products and complaints

Independent audit demonstrates commitment to quality

## VIII Quality Control

In the whole production process, on the one hand, we take a series of rigorous, accurate and effective control measures to ensure the highest level of product quality and service effectively; on the other hand, we use leadership responsibility system to ensure product quality. We release the products only if they meet the enterprise standard, the national standard and customer requirements. Our staff is trained before working and we have regular training and examination system to ensure that everyone has the ability to meet product requirements. Our quality assurance inspectors are responsible for the daily monitoring of the product, they are in charge of testing results and timely feedback to the production department, the production department personnel will analyze the test results timely and effectively to ensure product quality.

In the production process, for each order/contract we will develop product quality plan to control the key control point of product effectively and join the second party and tripartite spot quality witness in accordance with customer requirements.

As a basis for the process to update technology operating instructions and the enterprise standard / metrics table, our product testing results will be promptly entered into the database which is closely related to production information, so that we can increase the level of technology and product quality.

Our laboratory is certified by CNAS and is checked regularly. It has the ability to provide a fair, impartial, objective and legitimate testing report, which is an important way of the quality control process. The laboratory testing equipment mainly including:

Raw material testing equipment:

1. Melt flow rate meter
2. Density meter
3. Tablet press
4. Multi-function tensile machine

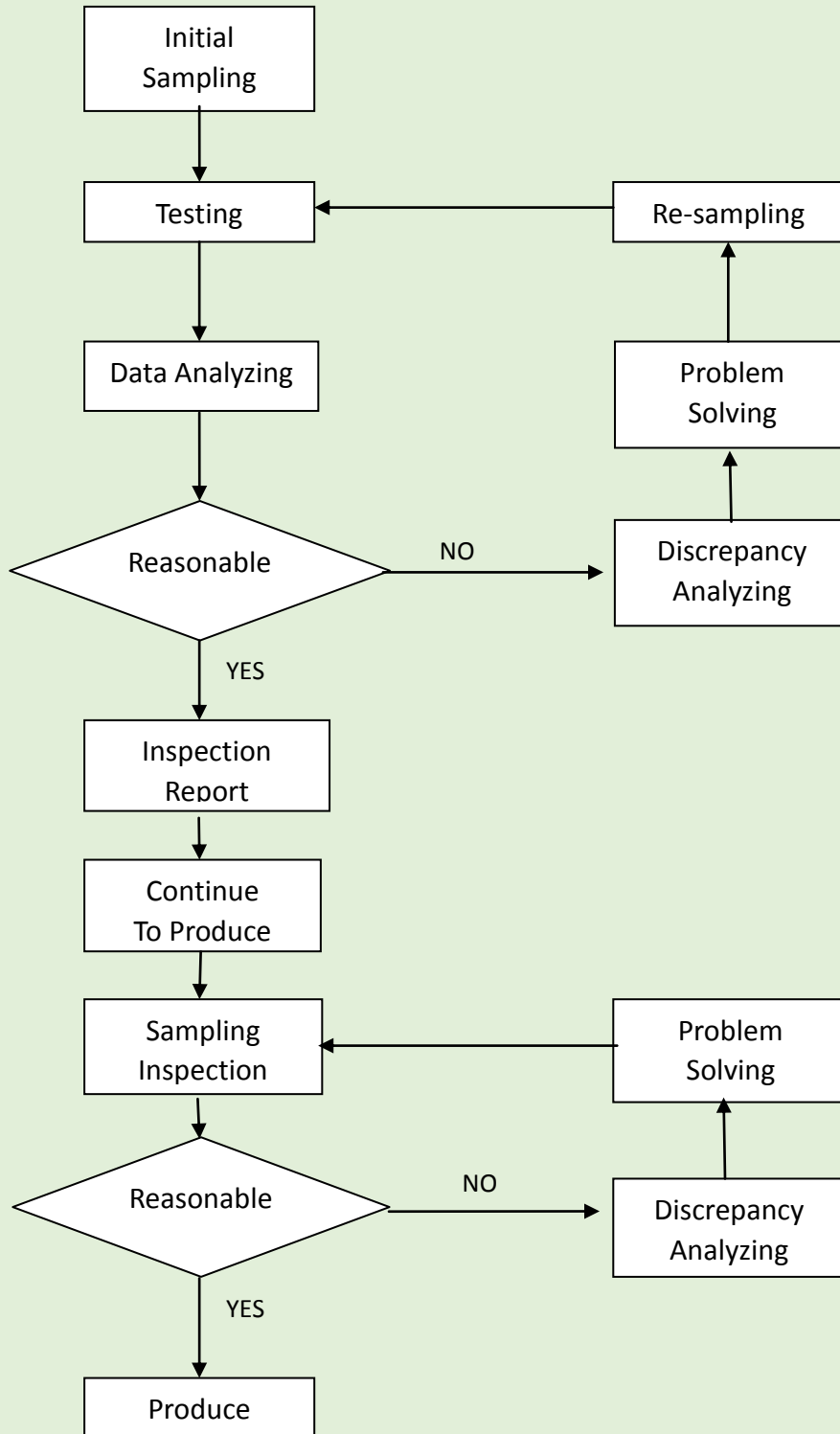
Process testing equipment:

1. Universal tensile testing machine
2. Electronic balance
3. Carbon black content tester
4. Thickness gauge
5. Oxidation induction period tester



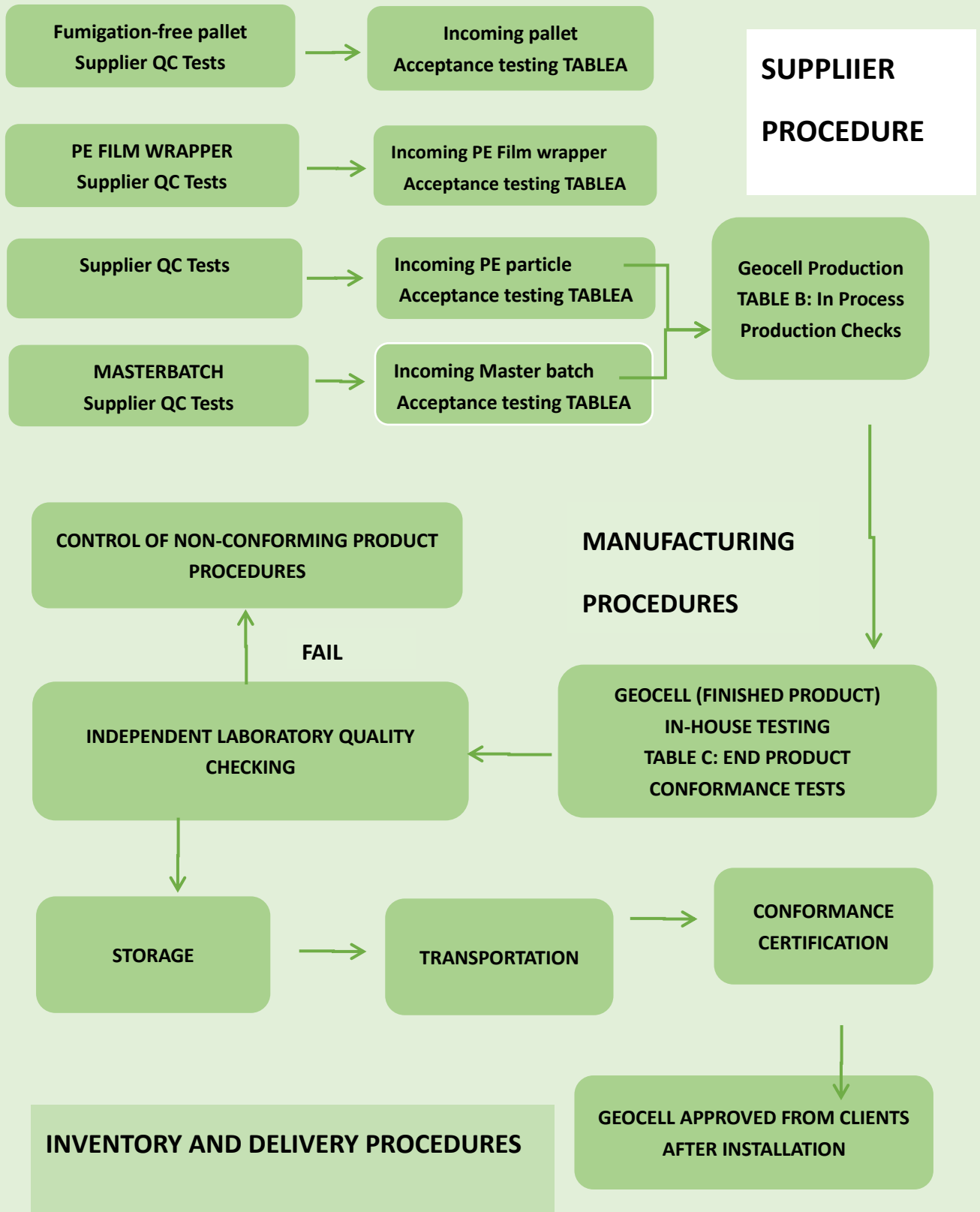


## IX FLOW CHART OF QUALITY CONTROL IN PRODUCTION PROCESS





## X GEOCELL PRODUCTION QUALITY TEST





## XI Raw Material Verification Testing

Test	Units of Measure	Test Method Description	Standard Frequency of Testing	Compliance, Supplier&/or Production Test
Density	g/cm <sup>3</sup>	ISO 1183	Once per batch	Supplier
MFR (190°C/21Kg)	dg/min	ISO 1133	Once per batch	Supplier
Tensile Modulus	Mpa	ISO 527-1	Once per batch	Supplier
Tensile Strength (MD/TD)	Mpa	ISO 527-1, 3	Once per batch	Supplier
Tensile Strain at Break (MD/TD)	%	ISO 527-1	Once per batch	Supplier
Tensile Stress at Yield	Mpa	ISO 527-1	Once per batch	Supplier
Tensile Strain at Yield	%	ISO 527-1	Once per batch	Supplier
Elmendorf Tear Strength (MD/TD)	mN	ISO 6832-2	Once per batch	Supplier
Melting Point	°C	ISO 3146	Once per batch	Supplier
Vicat Temp. (A50, 50°C/h, 10N)	°C	ISO 306	Once per batch	Supplier

**Table A**



## XII Production Process of Product Testing

Test	Test item	Units of Measure	Test Method Description	Standard Frequency of Testing	Compliance, Supplier&/or Production Test
Foreign matter	Oil	m <sup>2</sup>	In house	Whole process	Production
	Sundries	m <sup>2</sup>	In house	Whole process	Production
	Motley	m <sup>2</sup>	In house	Whole process	Production
The quality of sheet	Uniformity	% CV	In house	Whole process	Production
Dimension stability	Length	m	In house	Whole process	Production
	Width	m	In house	Whole process	Production
	Edge cutting	cm	In house	Whole process	Production
Colligation quality	Packing tightness	cm	In house	Per pallet	Production
	End face uniformity	cm	In house	Per panel	Production
	Bundle size	cm	In house	Per bundle	Production
Mass balance	Gross weight	Kg	In house	Per pallet	Production
	Net weight	Kg	In house	Per panel	Production
	Mass unit area	g/m <sup>2</sup>	In house	Per panel	Production

**Table B**



### XIII Finished Products

Test	Units of measure	Test Method Description	Standard Frequency of Testing	Compliance, Supplier&/or Production Test
Density	g/m <sup>3</sup>	ASTM D1505	Each working shift	Compliance
Thickness(smooth)	mm	ASTM D5199	Each working shift	Compliance
Thickness(Textured)	mm	ASTM D5199	Each working shift	Compliance
Carbon Black	%	ASTM D1603	Each working shift	Compliance
Seam Peel Strength	kN/m	USACE GL-86-19	Each working shift	Compliance
Tensile Strength at break	kN/m <sup>2</sup>	ASTM D638	Each working shift	Compliance
Elongation at break	%	ASTM D6693	Each working shift	Compliance
Oxidative Induction Time	min	ASTM D3895	Each working shift	Compliance

**Table C**



## **XIV Quality Assurance**

The quality assurance is to ensure product quality and stability, so as to effectively meet the market and customer needs. In order to effectively control product quality, we established systematic and strict testing standards and effective control procedures to ensure product quality. The program will be frequently reviewed, these procedures can ensure that the product process parameters are effectively controlled.

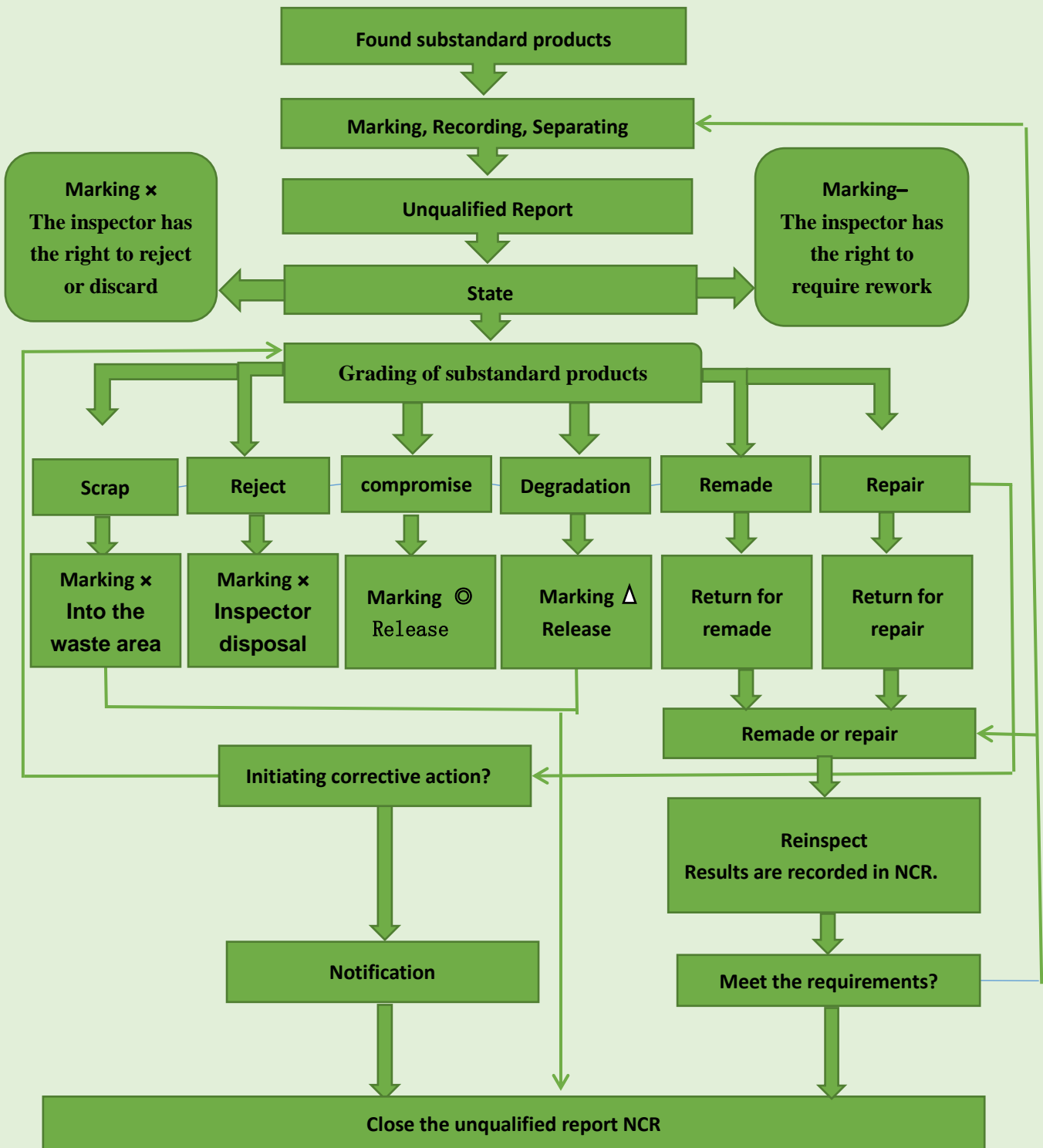
Our enterprise has passed ISO: 9001-2008 quality management system certification, it is able to satisfy customers with the products.

Our production test frequency follows the following:

<b>Product</b>	<b>Length(m)</b>	<b>Wide(m)</b>	<b>QC test Frequency</b> <b>m<sup>2</sup></b>	<b>QA test Frequency</b> <b>m<sup>2</sup></b>
G-Cell 75-330	6.1	2.44	2200	22000
G-Cell 100-330	6.1	2.44	1600	16000
G-Cell 150-330	6.1	2.44	1100	11000
G-Cell 200-330	6.1	2.44	800	8000
G-Cell 75-660	6.1	2.44	4200	42000
G-Cell 100-660	6.1	2.44	3200	32000
G-Cell 150-660	6.1	2.44	2200	22000
G-Cell 200-660	6.1	2.44	1600	16000



### XV Nonconforming Product Control Flow Chart





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## **XVI Material Safety Data Sheet**

Product: High Density Polyethylene (HDPE) Geocell

Chemical name: polyethylene terephthalate

Invasive ways: inhalation, eat, percutaneous absorption

Health hazard: the pyrolysis products can irritate the respiratory tract, non-toxic itself.

Combustion hazard: Flammable

Suitable Extinguishing:           Water Spray Fire Extinguisher  
                                                  Foam Extinguisher  
                                                  Dry Chemical Extinguisher

The special hazardous substance (may burn): CO, CO<sub>2</sub>

Personal Precautions:                   Masks

Environmental Precautions:           None

Cleaning methods:                      Medicine clean-up

### **Disposal Considerations**

Product: Emergency action: isolation leakage pollution area, restricted movement. Cut off the fire. Recommended emergency personnel wear dust mask (comprehensive cover), in general work overalls. Avoid dust, sweep, carefully placed in the bag shift to safe places. If a large number of leaks, covered with plastic cloth, canvas. Collect recycling or shipped to the disposal of waste places.

Contaminated Packaging: Contaminated packaging can be used with landfills  
Of the soil material mixed together, it can also be added by high temperature into the secondary fuel and cement, or made for renewable energy production.

Transport Information: According to the national and international shipping terms, all products are assured.

Regulatory information: According to the provisions of the European Community, the product can be produced without labels.

Additional Information: All product data is the latest, but we cannot guarantee product attribute and the equality of the law.

Contact: Roby Tan Tel: +86 13078459610





## XVII Product Description

HDPE geocell is a kind of geosynthetics by High strength HDPE raw material. It is a geosynthetic product which has anti-aging, resisting acid and alkaline, homogenous structure.

**Usage:** Make reinforcement treatment for soft soil foundation and protection of steep slope, used in highway, railway, airport, wharf, especially in weathered mountain forest, desert and swamp land etc.

### Physical and chemical properties:

Appearance:	Black
Molecular weight:	
Specific gravity:	0.945-0.946g/cm <sup>3</sup>
Boiling point / melting point:	130-145 °C
Volatile component:	0%
Vapor pressure:	Not applicable
Flash point:	No data available
Auto ignition	No data
pH (1% solution) :	No data

### Stability and reactivity:

Chemical reactivity:	No issues in solid form
Materials to avoid:	Exposure to naked flame
Prohibited content:	Strong oxidizer

### Composition:

Polyethylene terephthalate: 99%  
Color concentrate: 0.5%  
antioxidant: 0.5%

### Shipping note:

Packing should be completed, the loading should be safe when loading. It is strictly prohibited during mixed with antioxidant, etc. Transit should prevent insolate, rain, heat.

### Product exposure limits:

When the product is removed from the package, make sure it is exposed to UV light no longer than a month if inevitable.



Exposed Geocell

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## **XVIII Health Hazard Information**

### **Preventive measures:**

Ingestion: No special measures required.

Eyes: Please wear tinted glasses

Skin: Not Applicable

Inhaled: Please wear a mask

### **First aid measures:**

Ingestion: No special measures required

Eyes: If necessary flush with water. If irritation continues seek medical advice.

Inhalation: If sensitivity occurs remove person to uncontaminated area.

Hand: Please flush with water.

Skin: Please wash skin with soap and water.

Emergency contact: Roby Tan Tel: +86 15898125272

Add: No.8888-1 Southeast Industrial Zone, Youjia, Ganjingzi District, Dalian,China.

Tel: +86-(0) 411 6600 7883 Fax: +86-(0) 411 6600 7882

## **XIX Storage and Handling**

Geocell do not require special storage conditions for periods of less than 6 months. It is made of HDPE sheet and is resistant to short term UV exposure. It can retain a high proportion of its strength characteristics.

The product contains anti-UV agent, antiaging agent and antioxidant which make the inside of the product safe from UV damage and oxidative damage. Once the products is exposure outside, it should be covered properly in application process, if can't, the application process should be no more than 30 days.

Normally we use forklifts, cranes and other dedicated devices.

During the product handling and transportation process, we can take advantage of dedicated devices or field staff workforce when working.

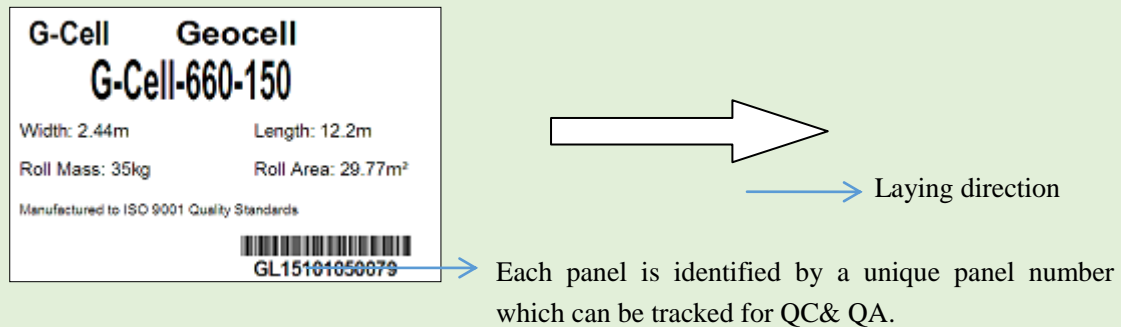


Spot-storing Geocell

## XX Marking and Packaging

Our identification standard will be implemented as site owner required. Such as: ASTM (American Society for Testing Materials), GB (People's Republic of China National Standards).

Each panel is identified by a unique panel number which can be tracked for QC&QA. The mark is not only pasted at both ends of the volume but attached to the inside of each roll. We pasted laying direction indicator for convenient and facilitative which can help users to use it better.



**G-Cell Geocell**  
**G-Cell-660-150**

Width: 2.44m      Length: 12.2m  
Roll Mass: 35kg      Roll Area: 29.77m<sup>2</sup>

Manufactured to ISO 9001 Quality Standards

GL15101050079

→ Laying direction

→ Each panel is identified by a unique panel number which can be tracked for QC& QA.

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