



Report No. TC.19.01.000620

Date of Issue 02/15/2019

Applicant: Qingdao Grandsea Boat Co., LTD.

Applicant address: Room 218 #22 Xianshan Rd Chengyang District Qingdao China

Description of the test subject:

Sample	Description	Photo
001	<p>Sample No.: 1580-01</p> <p>Sample Description: 15.8m Crew Boat superstructure FRP Side Plate</p> <p>Style No.: HD-1580</p> <p>End use: on Crew Boat HD-1580</p> <p>Buyer: MILLENNIUM SHIPPING AND TRADING SAC</p> <p>Manufacturer: Qingdao Grandsea Boat Co., LTD.</p> <p>Country of origin: China</p> <p>Goods to be exported to: Peru</p>	

Receipt Date of Sample: 01/29/2019

Date of Testing: From 01/29/2019 to 02/15/2019

Sample submitted: The sample(s) was (were) submitted by applicant and identified.

Conclusion:

Test Items			Conclusion
No.	Items	Standard	
1	Tensile Properties	ISO 527-4:1997	See test results
2	Compressive Properties	ISO 604:2002	See test results
3	Shear Strength	ISO 14130:1998	See test results
4	Flexural Properties	ISO 14125:1998	See test results
5	Glass Fibre Content	ISO 1172:1999	See test results

Note: (1) General Terms & Conditions as mentioned overleaf,(2)The results relate only to the items tested,(3)The test report shall not be reproduced except in full without the written approval of the company. (4) Samples are tested as received.



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Test Results

1. ISO 527-4:1997 Plastics -- Determination of tensile properties -- Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites

Test speed: 2mm/min

Sample No.	Tensile Strength (MPa)	Tensile Modulus (MPa)
1	425	2.25×10^4
2	411	1.89×10^4
3	446	2.28×10^4
4	431	2.19×10^4
5	452	2.27×10^4
Average	433	2.18×10^4
Evaluation	/	/

2. ISO 604:2002 Plastics -- Determination of compressive properties

Test speed: 1mm/min

Sample No.	Compressive Strength (MPa)	Compression Modulus (MPa)
1	359	1.86×10^4
2	420	1.82×10^4
3	457	1.86×10^4
4	423	2.01×10^4
5	389	1.79×10^4
Average	410	1.87×10^4
Evaluation	/	/

3. ISO 14130:1998 Fibre reinforced plastic composites - Determination of apparent interlaminar shear strength by short beam-method

Test speed: 1mm/min

Sample No.	Shear Strength (MPa)	Shear Modulus (MPa)
1	25.8	9.62×10^3
2	28.6	9.64×10^3

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3	27.8	9.87×10^3
4	26.9	9.47×10^3
5	28.2	9.36×10^3
Average	27.5	9.59×10^3
Evaluation	/	/

Remark: There is no shear modulus parameter in the standard. This value is derived from the instrument and only for reference.

4. ISO 14125:1998 Fibre-reinforced plastic composites -- Determination of flexural properties

Test speed: 2mm/min

Sample No.	Bending Strength (MPa)	Bending Modulus (MPa)
1	374	3.14×10^3
2	399	3.20×10^3
3	412	3.37×10^3
4	358	3.22×10^3
5	388	2.65×10^3
Average	386	3.12×10^3
Evaluation	/	/

5. ISO 1172:1999 Textile-glass-reinforced plastics - Prepregs, moulding compounds and laminates – Determination of the textile – glass and mineral – filler content- Calcination methods

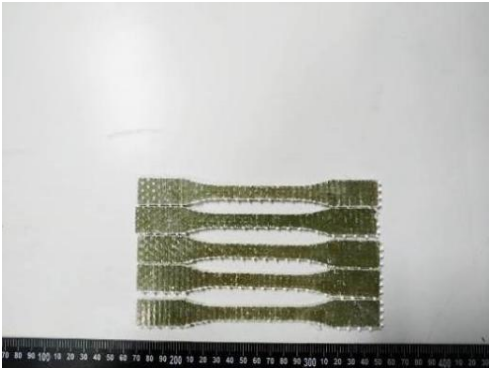
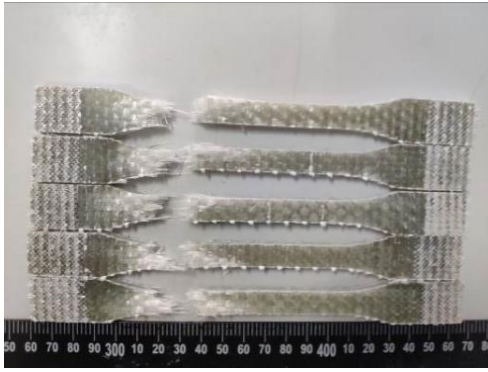

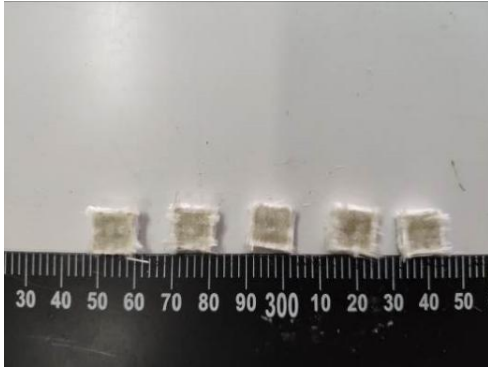
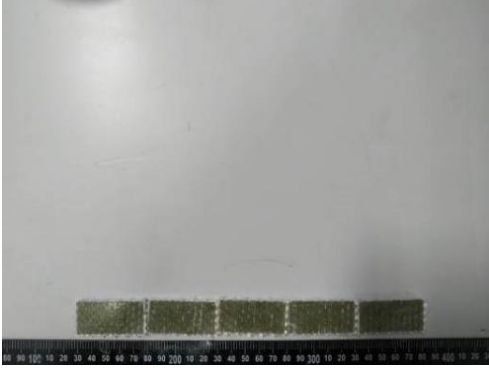
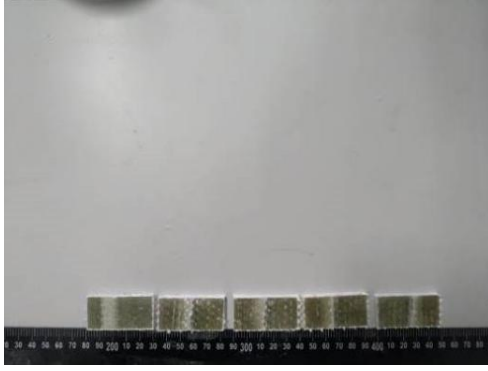
Sample No.	Glass Fibre Content (%)	Average (%)	Evaluation
1	67.8	68.8	/
2	69.1		
3	69.4		

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Test Photos

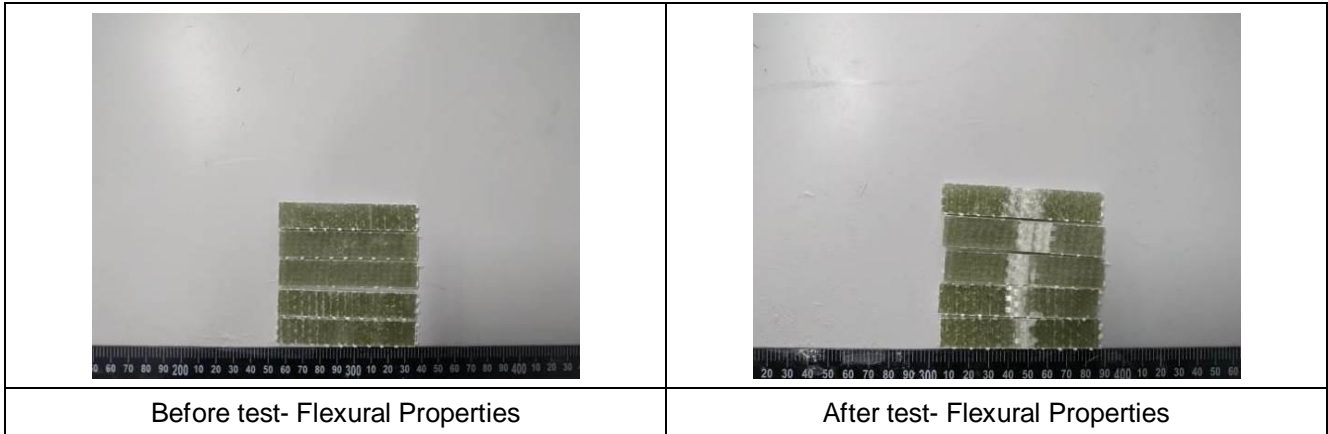
	
<p>Before test- Tensile Properties</p>	<p>After test- Tensile Properties</p>
	
<p>Before test- Compressive Properties</p>	<p>After test- Compressive Properties</p>
	
<p>Before test- Shear Strength</p>	<p>After test- Shear Strength</p>

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Changzhou Jinbiao Railway Transportation Technical Service Co., Ltd.

Drafted by:

Lynn liu

Approved by:

Shen hui

-End of Report-

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