

Test Report No. AJFS1704001661RS Date: MAY.17, 2017 Page 1 of 14

JIANGSU TIE MAO GLASS CO., LTD.

NO.128, CHANGJIANG WEST ROAD, HAI'AN COUNTY, JIANGSU PROVINCE

The following sample(s) was / were submitted and identified on behalf of the client as: **Sample Description:** EPOXY TOOLING BOARD

Test Requested: Selected test(s) as requested by applicant

Test Results: -- See attached sheet --

Test Period:

Sample Receiving Date Test Performing Date : APR.17, 2017 : APR.17, 2017 TO APR.28, 2017

Signed for and on behalf of SGS-CSTC Co., Ltd. Anji Branch

Allen Zou Technical Manager



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Summary of Results:

Sample A (DQ470)

No.	Test Item	Test Method	Result	Conclusion
1*	Mean Coefficient of Linear Thermal Expansion	ISO 11359-1:2014 & ISO 11359-2:1999 Method A	46×10⁻ ⁶ K⁻¹	/
2*	Compressive Strength	ISO 604:2002	94.5MPa	/
3*	Deflection Temperature under Load	ISO 75-1:2013 & ISO 75-2:2013 Method A	66 ℃	/
4*	Density	ISO 1183-1:2012 Method A	1.673g/cm ³	/
5*	Flexural Strength	ISO 178:2010/Amd.1:2013 Method A and client's requirement	61.5MPa	/
6*	Shore Hardness	ISO 868:2003	D/15:86	/

Sample B (HUNTSMAN BM5166)

No.	Test Item	Test Method	Result	Conclusion
1*	Mean Coefficient of Linear Thermal Expansion	ISO 11359-1:2014 & ISO 11359-2:1999 Method A	63×10⁻ ⁶ K⁻¹	/
2*	Compressive Strength	ISO 604:2002	101MPa	/
3*	Deflection Temperature under Load	ISO 75-1:2013 & ISO 75-2:2013 Method A	67 ℃	/
4*	Density	ISO 1183-1:2012 Method A	1.674g/cm ³	/
5*	Flexural Strength	ISO 178:2010/Amd.1:2013 Method A and client's requirement	63.6MPa	/
6*	Shore Hardness	ISO 868:2003	D/15:86	/

Note: Pass : Meet the requirements;

Fail : Does not meet the requirements;

/: Not Apply to the judgment.

To be continued...



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Sample A (DQ470)

1. Test Item: Mean Coefficient of Linear Thermal Expansion*

Sample Description: Plastic part

Test Method: ISO 11359-1:2014 & ISO 11359-2:1999 Method A

Test Condition:

Specimen: 9.94mm×4.93mm×6.17mm

Rate of temperature: 5°C/min

Load: 4kPa

Flow rate(N₂): 50ml/min

Test temperature: 0° C ~ 50° C

Test mode: Compression

Test direction: Length

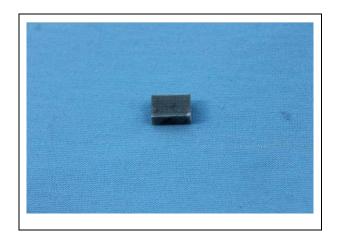
Number of specimens tested: 1

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

Test Result:

Test Item	Test Result
Mean Coefficient of Linear Thermal Expansion	46×10 ⁻⁶ K ⁻¹

Test Photo:



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2. Test Item: Compressive Strength*

Sample Description: Plastic part

Test Method: ISO 604:2002

Test Condition:

Specimen: 9.95mm×9.94mm×6.18mm

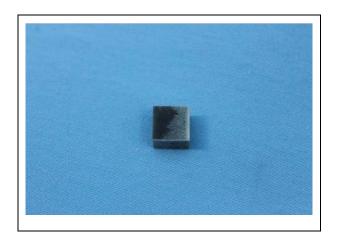
Testing speed: 5mm/min

Lab Environmental Condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result
Compressive Strength	94.5MPa

Test Photo:



To be continued...

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3. Test Item: Deflection Temperature under Load*

Sample Description: Plastic part

Test Method: ISO 75-1:2013 & ISO 75-2:2013 Method A

Test Condition:

Specimen: 80 mm × 9.98 mm × 6.01 mm

Heat-transfer media: Silicone oil

T_f1.8

Rate of temperature:120 °C/h

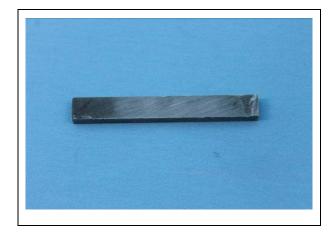
Span: 64 mm

Lab Environmental Condition : 23 ± 2 °C, 50 ± 5 % RH

Test Result:

Test Item	Test Result
Deflection Temperature under Load	66 ℃

Test Photo:



To be continued...



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4. Test Item: Density*

Sample Description: Plastic part

Test Method: ISO 1183-1:2012 Method A

Test Condition:

Absolute alcohol,(23±0.5)°C

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

Test Result:

Test Item	Test Result
Density	1.673g/cm ³

Note: Test specimens were cut from the sample.

Test Photo:



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5. Test Item: Flexural Strength*

Sample Description: Plastic part

Test Method: ISO 178:2010/Amd.1:2013 Method A and client's requirement

Test Condition:

Specimen: 80mm×9.97mm×6.08mm

Testing speed: 2mm/min

Span: 64mm

Lab Environmental Condition : 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result
Flexural Strength	61.5MPa

Test Photo:



To be continued...



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6. Test Item: Shore Hardness*

Sample Description: Plastic part

Test Method: ISO 868:2003

Test Condition:

Specimen thickness:5.99mm

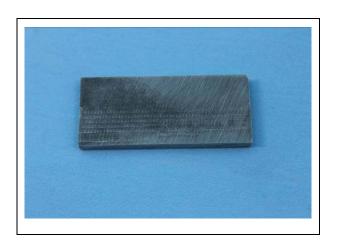
Lab Environmental Condition:(23±2)°C,(50±5)%RH

Test Result:

Test Item	Test Result
Shore Hardness	D/15:86

Note: D/15:X Indicated that D is the type of durometer; 15 s is the reading time; X is the hardness value.

Test Photo:



To be continued...

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Sample B (HUNTSMAN BM5166)

1. Test Item: Mean Coefficient of Linear Thermal Expansion*

Sample Description: Plastic part

Test Method: ISO 11359-1:2014 & ISO 11359-2:1999 Method A

Test Condition:

Specimen: 9.91mm×6.08mm×5.02mm

Rate of temperature: 5° C/min

Load: 4kPa

Flow rate(N₂): 50ml/min

Test temperature: 0° C ~ 50° C

Test mode: Compression

Test direction: Length

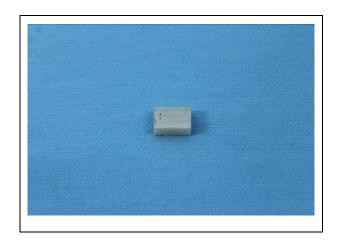
Number of specimens tested: 1

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

Test Result:

Test Item	Test Result
Mean Coefficient of Linear Thermal Expansion	63×10 ⁻⁶ K⁻¹

Test Photo:



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2. Test Item: Compressive Strength*

Sample Description: Plastic part

Test Method: ISO 604:2002

Test Condition:

Specimen: 9.95mm×10.01mm×6.06mm

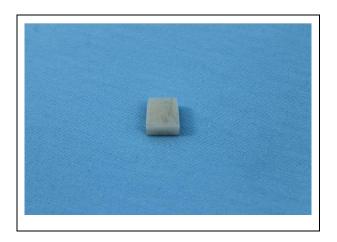
Testing speed: 5mm/min

Lab Environmental Condition : 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result
Compressive Strength	101MPa

Test Photo:



To be continued...

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3. Test Item: Deflection Temperature under Load*

Sample Description: Plastic part

Test Method: ISO 75-1:2013 & ISO 75-2:2013 Method A

Test Condition:

Specimen: 80 mm × 9.86 mm × 5.14 mm

Heat-transfer media: Silicone oil

T_f1.8

Rate of temperature:120 °C/h

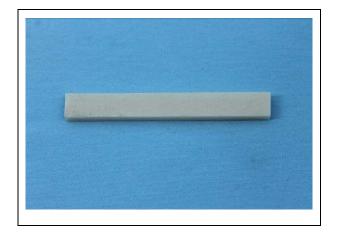
Span: 64 mm

Lab Environmental Condition: 23 ± 2 °C, 50 ± 5 % RH

Test Result:

Test Item	Test Result
Deflection Temperature under Load	67 ℃

Test Photo:



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4. Test Item: Density*

Sample Description: Plastic part

Test Method: ISO 1183-1:2012 Method A

Test Condition:

Absolute alcohol,(23±0.5)°C

Lab Environmental Condition 23±2)°C,(50±5)%RH

Test Result:

Test Item	Test Result
Density	1.674g/cm ³

Note: Test specimens were cut from the sample.

Test Photo:



To be continued...



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5. Test Item: Flexural Strength*

Sample Description: Plastic part

Test Method: ISO 178:2010/Amd.1:2013 Method A and client's requirement

Test Condition:

Specimen: 80mm×9.94mm×5.62mm

Testing speed: 2mm/min

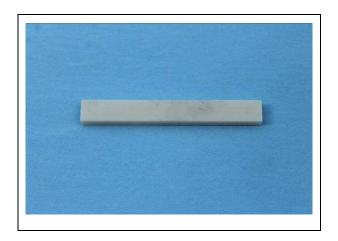
Span: 64mm

Lab Environmental Condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result
Flexural Strength	63.6MPa

Test Photo:



To be continued...

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6. Test Item: Shore Hardness*

Sample Description: Plastic part

Test Method: ISO 868:2003

Test Condition:

Specimen thickness: 5.62mm

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

Test Result:

Test Item	Test Result
Shore Hardness	D/15:86

Note: D/15:X Indicated that D is the type of durometer; 15 s is the reading time; X is the hardness value.

Test Photo:



Remark: *--The test was performed by SGS internal laboratory.

End of Report



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