

## TEST REPORT

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Date : Dec 27, 2023  
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**CUSTOMER NAME:** Dongguan Dongquan Mould Material Co., Ltd.  
**ADDRESS:** No.10 Yihuan Road,Chiling Industrial,Dongguan City,Guangdong Province,China

**Sample Name** : Polyurethane Tooling Board DQ5120  
**Part No** : DQ5120  
**Material and Mark** : DQ5120  
**Manufacturer** : Dongguan Dongquan Mould Material Co., Ltd.  
**Manufacturer Address** : No.10 Yihuan Road,Chiling Industrial,Dongguan City,Guangdong Province,China  
**Sample Source** : Sent by client  
**Other Information** : Supplier: Dongguan Dongquan Mould Material Co., Ltd.

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.

\*\*\*\*\*

**SGS Ref No.** : GZAT2308011876NM-01  
**Date of Receipt** : Oct 17, 2023  
**Testing Start Date** : Oct 17, 2023  
**Testing End Date** : Oct 26, 2023  
**Test Result(s)** : For further details, please refer to the following page(s)

Signed for  
SGS-CSTC Standards Technical  
Services Co., Ltd. Guangzhou Branch

Kelly Lee  
Authorized signatory



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**Report Declaration:**

In the territory of the People's Republic of China, the test report without CMA logo expresses the test report shall only be used for client scientific research, teaching, internal quality control, product research and development, etc., and just for client internal reference.

**Manufacture Declaration or Comment:**

None

**Summary of Result(s):**

No.	Test Item	Test Method	Test Result	Conclusion	
1.	Apparent Density	ISO 845:2006 and client's requirement	1347.6kg/m <sup>3</sup>	N/A	
2.	Shore Hardness	ISO 868:2003	D/15:83	N/A	
3.	Mean Coefficient of Linear Thermal Expansion	ISO 11359-1:2023 & ISO 11359-2:2021 Method A	37×10 <sup>-6</sup> K <sup>-1</sup>	N/A	
4.	Deflection Temperature under Load	ISO 75-1:2020 & ISO 75-2:2013 Method A	72°C	N/A	
5.	Flexural Test	ISO 178:2019 Method A	Flexural Strength	53.2MPa	N/A
			Flexural Modulus	5270MPa	
6.	Compressive Strength	ISO 604:2002	76.0MPa	N/A	
7.	Charpy Unnotched Impact Strength	ISO 179-1:2023	4.89kJ/m <sup>2</sup> C (complete break)	N/A	
8.	Taber rotational wear	Provided by client	Loss of volume:0.2 cm <sup>3</sup>	N/A	
			Percent of loss of volume:0.6%		

Note: Pass: Meet the requirements;  
 Fail: Does not meet the requirements;  
 N/A: Not apply to the judgment or Not applicable



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1. Test Item: Apparent Density

Sample Description: Sheet

Test Method: ISO 845:2006 and client's requirement

Test Condition:

Specimen: 100mm×100mm×4.5mm

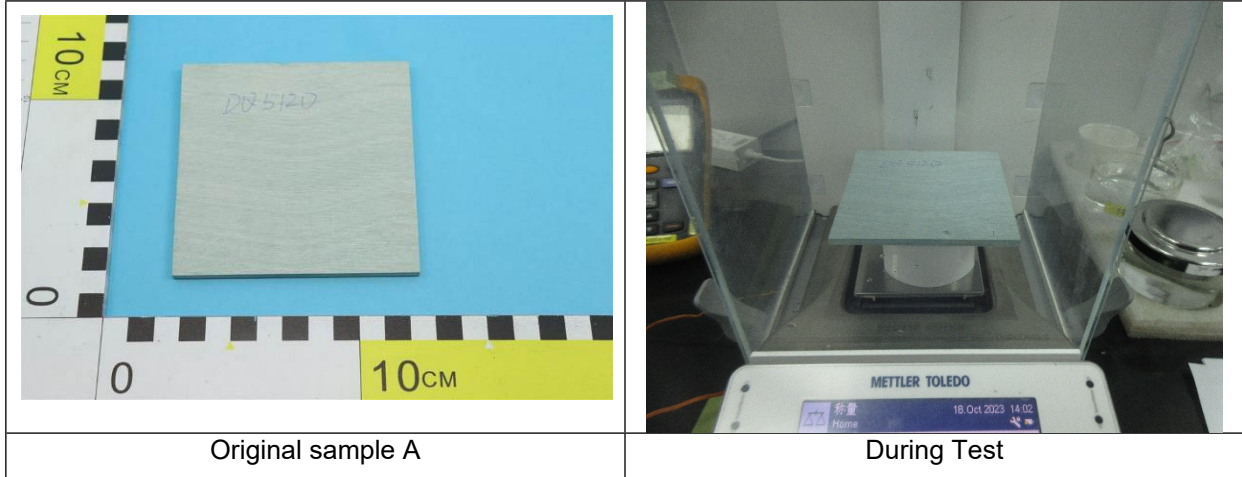
Number of Specimens tested: 4

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

Test Result:

Test Item	Test Result
Apparent Density	1347.6kg/m <sup>3</sup>

Test Photo:



Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Electron Balance	XPE204	GZMR-PL-E004-06	2023-05-15	2024-05-14
Digital Vernier Caliper	CD-20AX	GZMR-PL-E041-17	2023-01-17	2024-01-16



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2.Test Item: Shore Hardness

Sample Description: Sheet

Test Method: ISO 868:2003

Test Condition:

Specimen thickness: 4.54mm

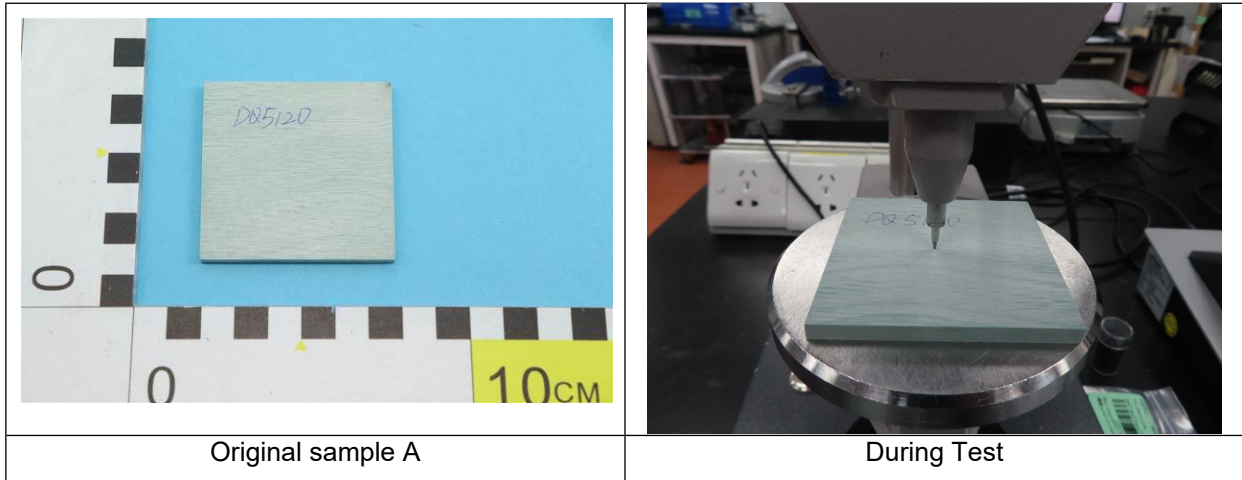
Lab Environmental Condition: (23±2)°C, (50±5)%RH

Test Result:

Test Item	Test Result
Shore Hardness	D/15:83

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

Test Photo:



Original sample A

During Test

Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Multifunction Hardness Tester	Digitest II	GZMR-PL-E156	2023-05-05	2024-05-04



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3.Test Item: Mean Coefficient of Linear Thermal Expansion

Sample Description: Bar

Test Method: ISO 11359-1:2023 & ISO 11359-2:2021 Method A

Test Condition:

Specimen: 9.75mm×4.70mm×4.52mm

Rate of temperature: 5 °C/min

Load: 50mN

Flow rate(N<sub>2</sub>): 50 ml/min

Test temperature: 0 °C~50 °C

Test mode: Compression

Test direction: Length

Number of specimens tested: 3

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

Test Result:

Test Item	Test Result
Mean Coefficient of Linear Thermal Expansion	37×10 <sup>-6</sup> K <sup>-1</sup>



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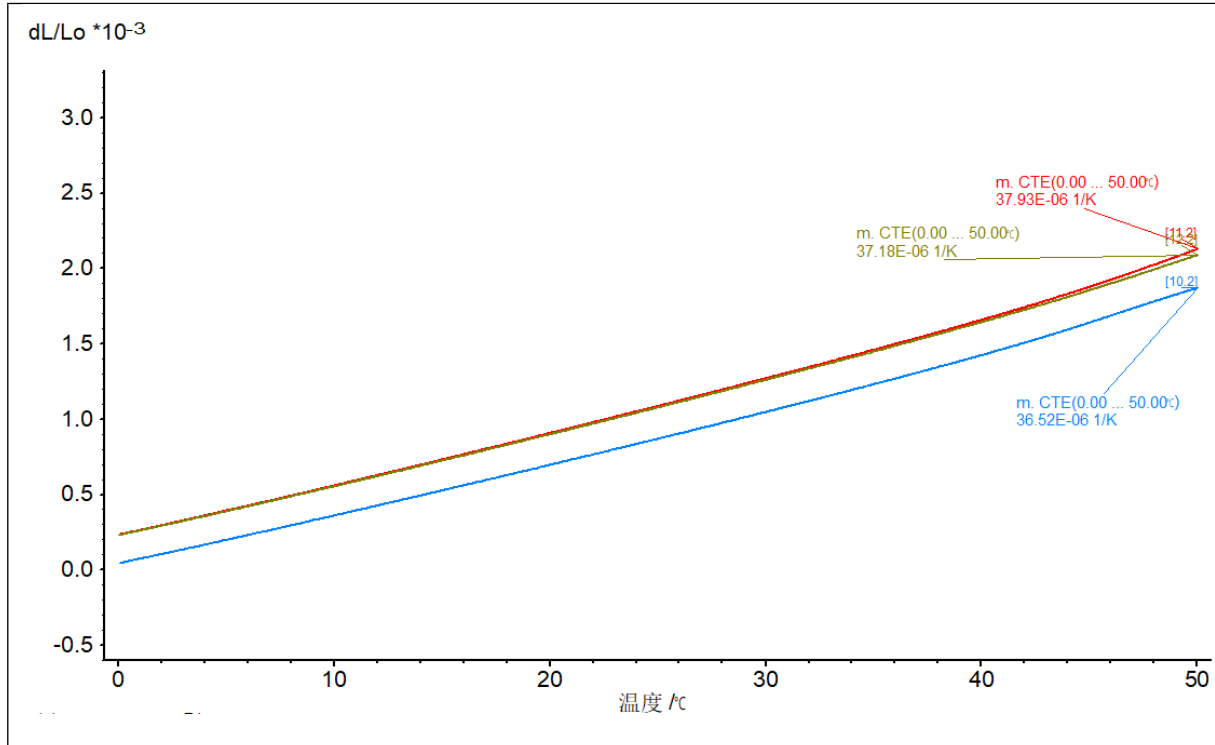
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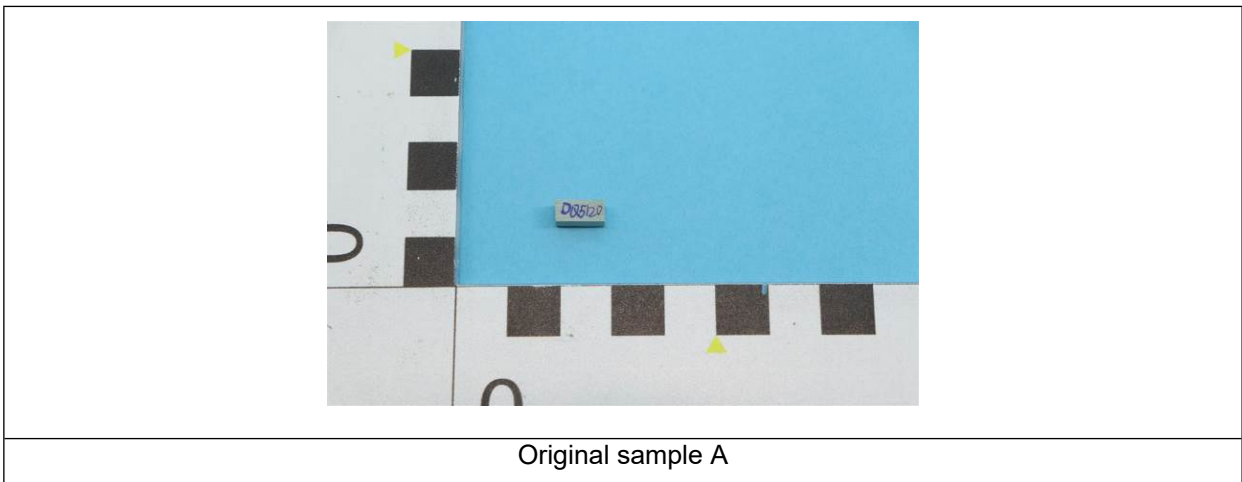
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Curve:



Test Photo:



Original sample A



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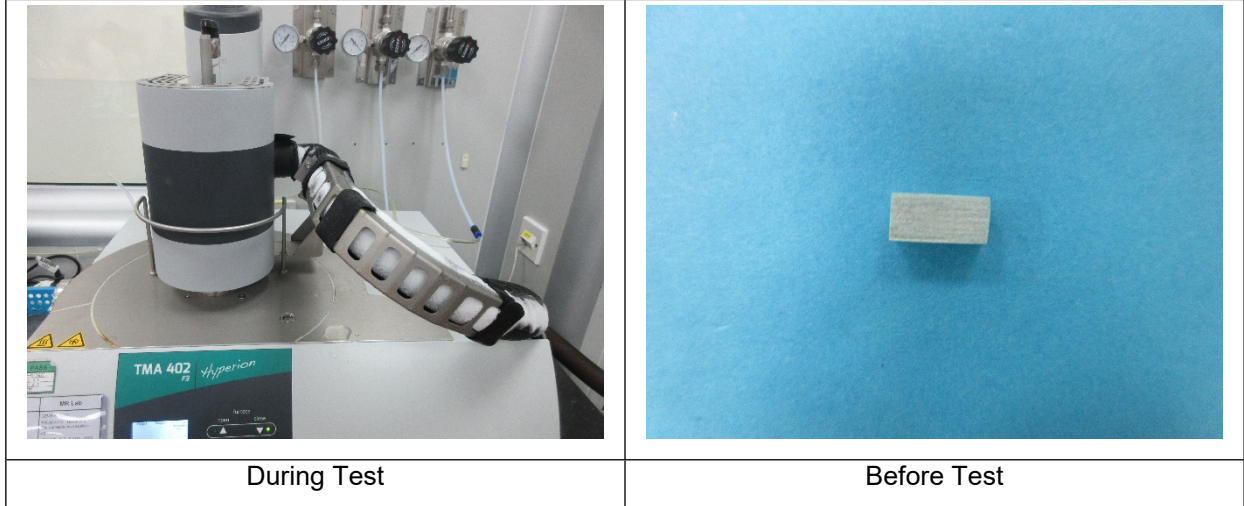
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Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Thermo Mechanical Analyzer	TMA402F3	GZMR-PL-E371	2023-06-06	2024-06-05



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4. Test Item: Deflection Temperature under Load

Sample Description: Plastic part

Test Method: ISO 75-1:2020 & ISO 75-2:2013 Method A

Test Condition:

Specimen: 80mm×9.64mm×4.46mm

Heat-transfer media: Silicone oil

T<sub>f</sub>1.8

Rate of temperature:120°C/h

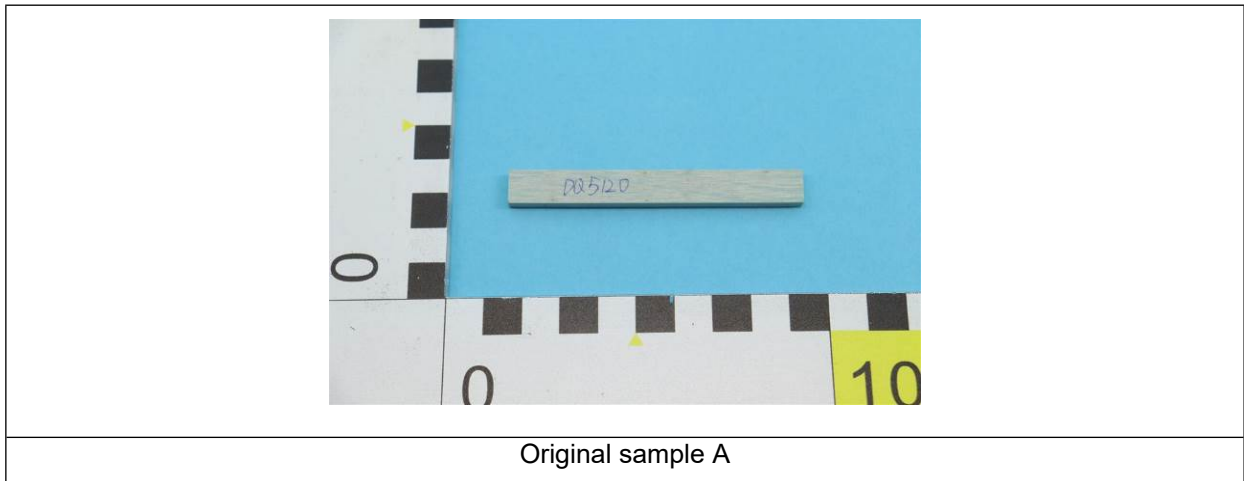
Span: 64mm

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

Test Result:

Test Item	Test Result
Deflection Temperature under Load	72°C

Test Photo:



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### Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
HDT and VICAT Tester	IC 6	GZMR-PL-E348	2023-06-21	2024-06-20



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5. Test Item: Flexural Test

Sample Description: Plastic part

Test Method: ISO 178:2019 Method A

Test Condition:

Specimen: 80mm×9.61mm×4.50mm

Testing speed: 2mm/min

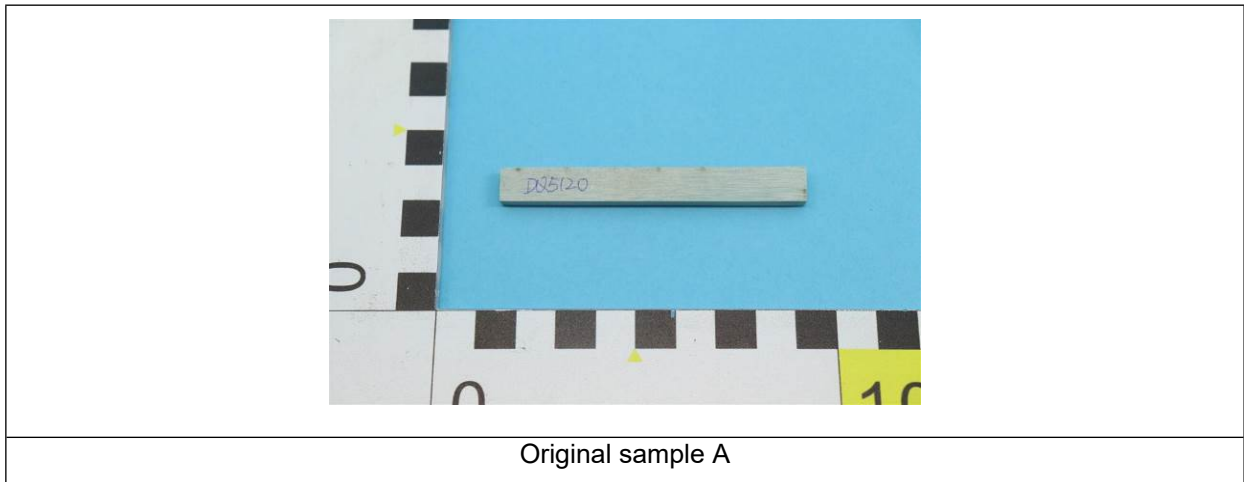
Span: 72mm

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

Test Result:

Test Item	Test Result
Flexural Strength	53.2MPa
Flexural Modulus	5270MPa

Test Photo:



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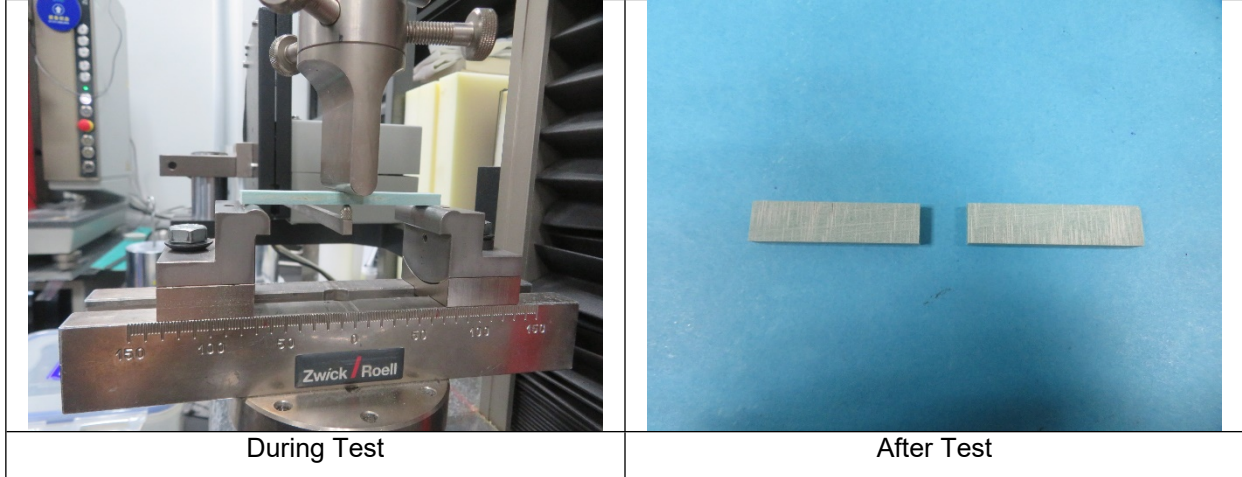
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Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Universal Testing Machine	Z1.0	GZMR-PL-E252	2022-11-15	2023-11-14



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# TEST REPORT

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6. Test Item: Compressive Strength

Sample Description: Plastic part

Test Method: ISO 604:2002

Test Condition:

Specimen: 9.70mm×9.62mm×4.56mm

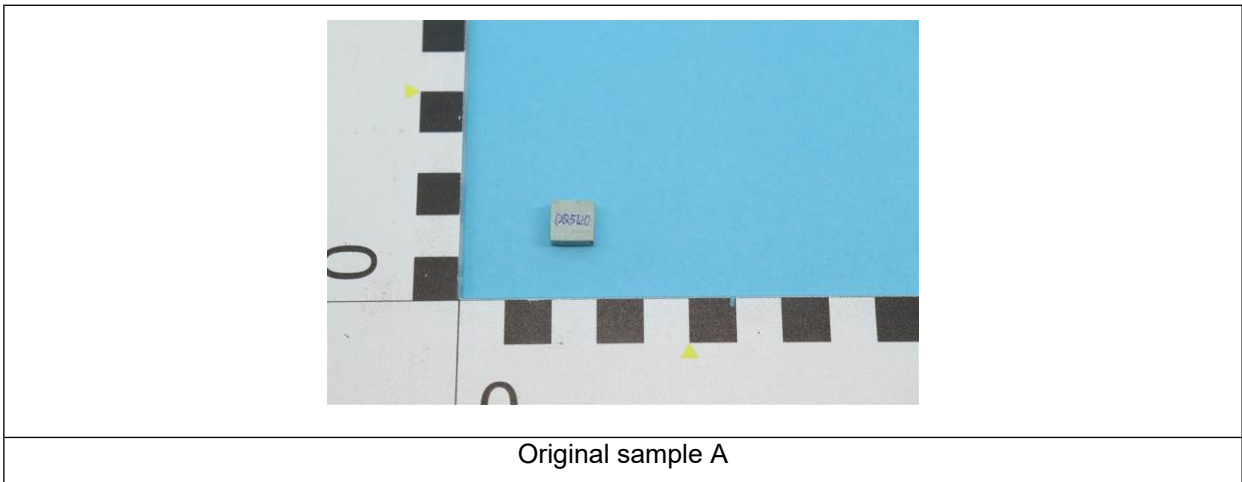
Testing speed: 5 mm/min

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

Test Result:

Test Item	Test Result
Compressive Strength	76.0MPa

Test Photo:



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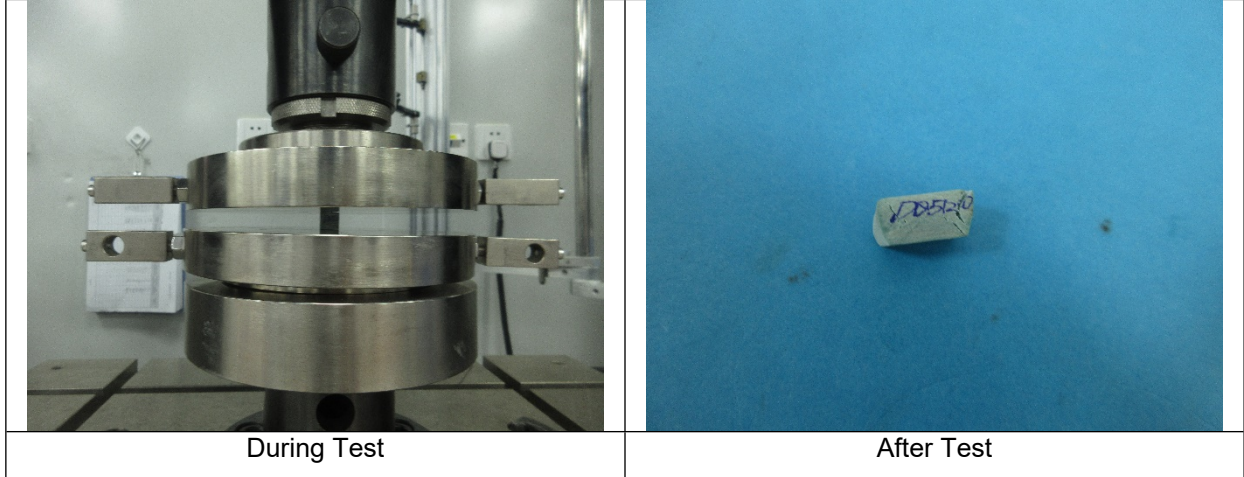
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Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Universal testing machine	E45.105	GZMR-PL-E307	2023-03-01	2024-02-29



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7. Test Item: Charpy Unnotched Impact Strength

Sample Description: Plastic part

Test Method: ISO 179-1:2023

Test Condition:

Specimen: ISO 179-1/1eU

Specimen thickness: 4.49mm

The capacity of the pendulum: 1J

Impact speed: 2.9m/s

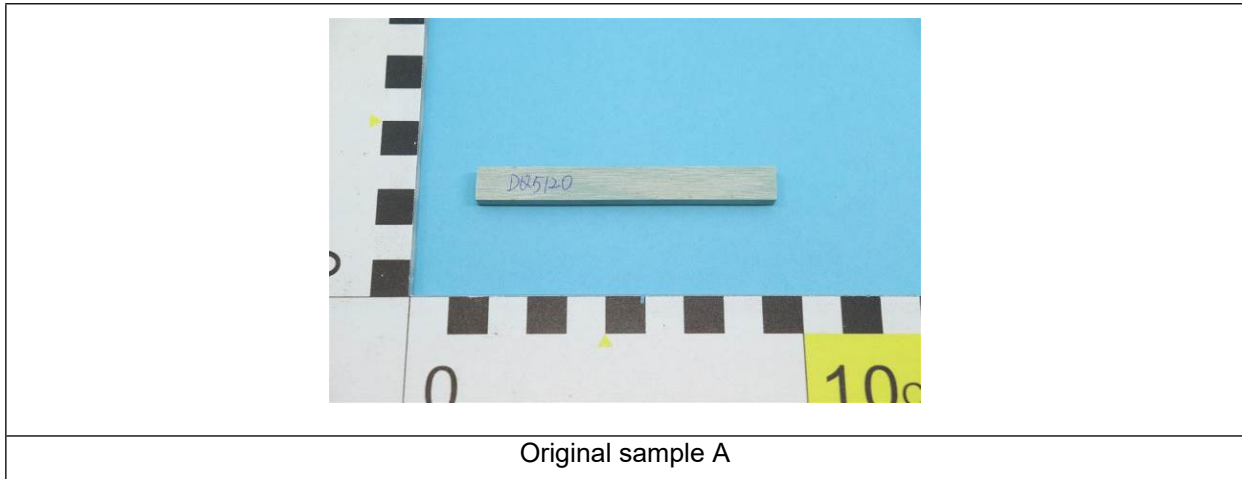
Span: 62mm

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

Test Result:

Test Item	Test Result
Charpy Unnotched Impact Strength	4.89kJ/m <sup>2</sup> C (complete break)

Test Photo:



Original sample A



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Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Impact Tester	HIT50P	GZMR-PL-E283	2023-06-26	2024-06-25



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8. Test Item: Taber rotational wear

Sample Description: Bar

Test Method: Provided by client

Test Condition:

Load: 500g/wheel (total 1000g)

Wheel: H-18

Speed: 60r/min

Cycles: 600

Test Result:

Test Item	#1	#2	#3	Average
Sample size(L×W×H),mm	100×100×4.5	100×100×4.5	100×100×4.5	/
Weight before test, g (after opening)	60.2178	60.8596	60.3355	/
Volume before test, cm <sup>3</sup> (after opening)	43.44	44.72	43.68	/
Weight after test, g	59.9033	60.5206	59.9944	/
Loss of weight, g	0.3145	0.3390	0.3411	/
Loss of volume, cm <sup>3</sup>	0.23	0.25	0.25	0.2
Percent of loss of volume (after test)	0.53%	0.56%	0.57%	0.6%

Note:

- 1.Loss of volume=Loss of mass/Density of sample.
- 2.Percent of loss of volume=Loss of volume/volume before test×100%, the results for reference only.
- 3.Density of sample was extracted from test item 1.



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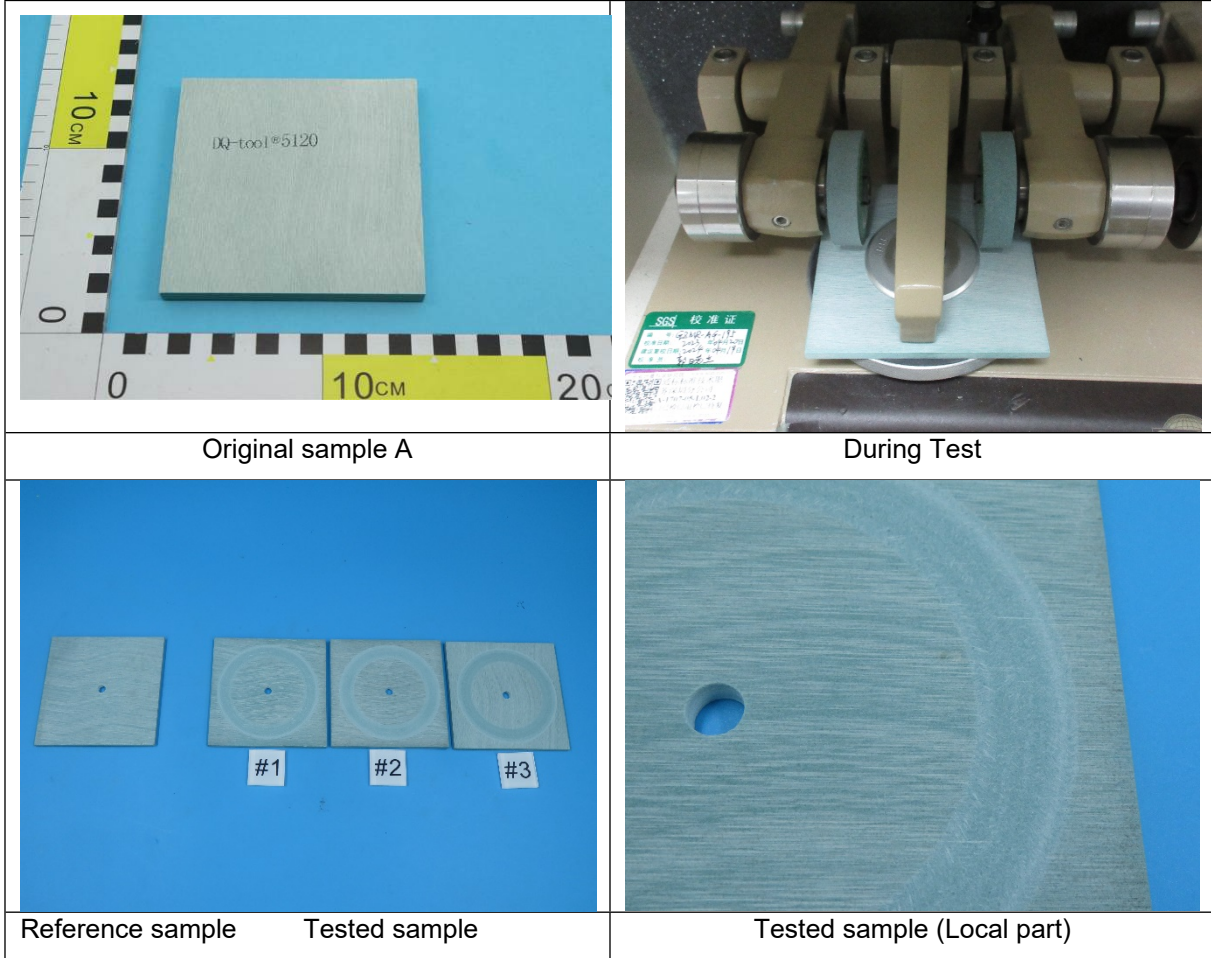
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Test Photo:



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Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Taber Abrasion Tester	5155	GZMR-AG-E195	2023-04-20	2024-04-19
Electronic balance	XPR504S/AC	GZMR-AG-E295	2023-09-13	2024-09-12
Digital Vernier Caliper	CD-20APX	GZMR-AG-E128-03	2023-05-07	2024-05-06

Appendix information:

1. This test report supersedes test report No. GZMR231003010301, the original test report is void.
2. This report updates SGS Ref. No..
3. This report updates summary of result

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



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