TEST REPORT

CUSTOMER NAME: FUJIAN HUAQING ELECTRONIC MATERIAL TECHNOLOGY CO.,LTD

ADDRESS: WULI INDUSTRY ZONE, JINJIANG CITY, FUJIAN PROVINCE, CHINA

Sample Name	:	Aluminum nitride ceramic substrate
Material	:	Aluminium nitride

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.	:	XMIN2604000968ML01_EN, KV-26-02933A, GZMR260401063501
Sample Source	:	Customer-delivered
Date of Receipt	:	2026-04-02
Testing Period	:	2026-04-02 ~ 2026-04-24
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 and on behalf of
SGS-CSTC Standards Technical Services Co.,Ltd. Xiamen Branch

Bryan Hong Authorized signatory

Scan to see the report
XMIN2604000625CM01
Verification:
check.sgsonline.com.cn

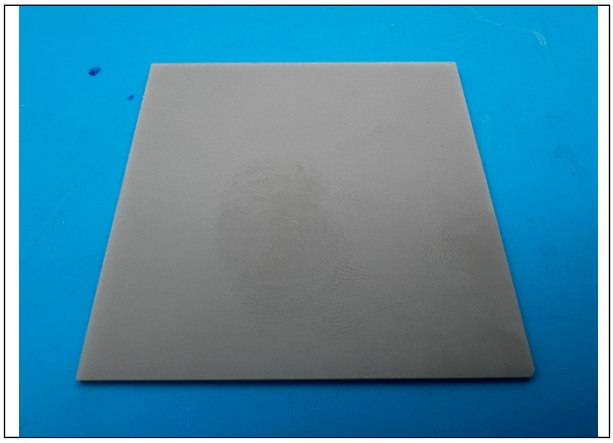
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

Summary of Results:

No.	Test Item	Test Method	Result
1	Bulk Density	Refer to ISO 10545-3:2018	3.35 g/cm^3
2	Linear Thermal Expansion*	ASTM E831-25	See result
3	Volume Resistance & Volume Resistivity*	GB/T 31838.2-2019	See result
4	Dielectric Breakdown Voltage & Electric Strength*	GB/T 1408.1-2016	See result
5	Flexural Strength*	GB/T 6569-2006 and client's requirement	472MPa
6	Thermal Conductivity*	ISO 22007-2:2015	187.9 W/(m·K)
7	Vickers Hardness Test	GB/T 4340.1-2024, GB/T 16534-2009	See Result

Note: * test project/method was carried out by subcontractors.

Original Sample Photo:



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1. Test Item: Bulk Density

Sample Description: See photo

Test Method: Refer to ISO 10545-3:2018

Test Condition:

Specimen: 50mm×50mm×1mm, 5pcs

Test Result:

Specimen No.	1	2	3	4	5
Bulk Density (g/cm^3)	3.35	3.35	3.34	3.35	3.35
Bulk Density value (g/cm^3)	3.35				

2. Test Item: Linear Thermal Expansion

Sample Description: See photo

Test Method: ASTM E831-25

Test Condition:

Specimen: 10.00mm×9.99mm×1.03mm

Load: 50mN

Flow Rate(N_2): 50mL/min

Temperature Range: 23℃~600℃

Test Mode: Compression mode

Rate of temperature:5 ℃/min

Test direction: Side length direction

Number of specimens tested:3

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

Test Result:

Sample A1

Test Item	Test Result	
Mean Coefficient of Linear Thermal Expansion	23℃~400℃	4.8 μm/(m·°C)
	23℃~600℃	5.2 μm/(m·°C)

SGS-CSTC Standards Technical Services Co., Ltd. Xiamen Branch Commercial Inspection Laboratory 检验检测专用章 Inspection & Testing Services

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

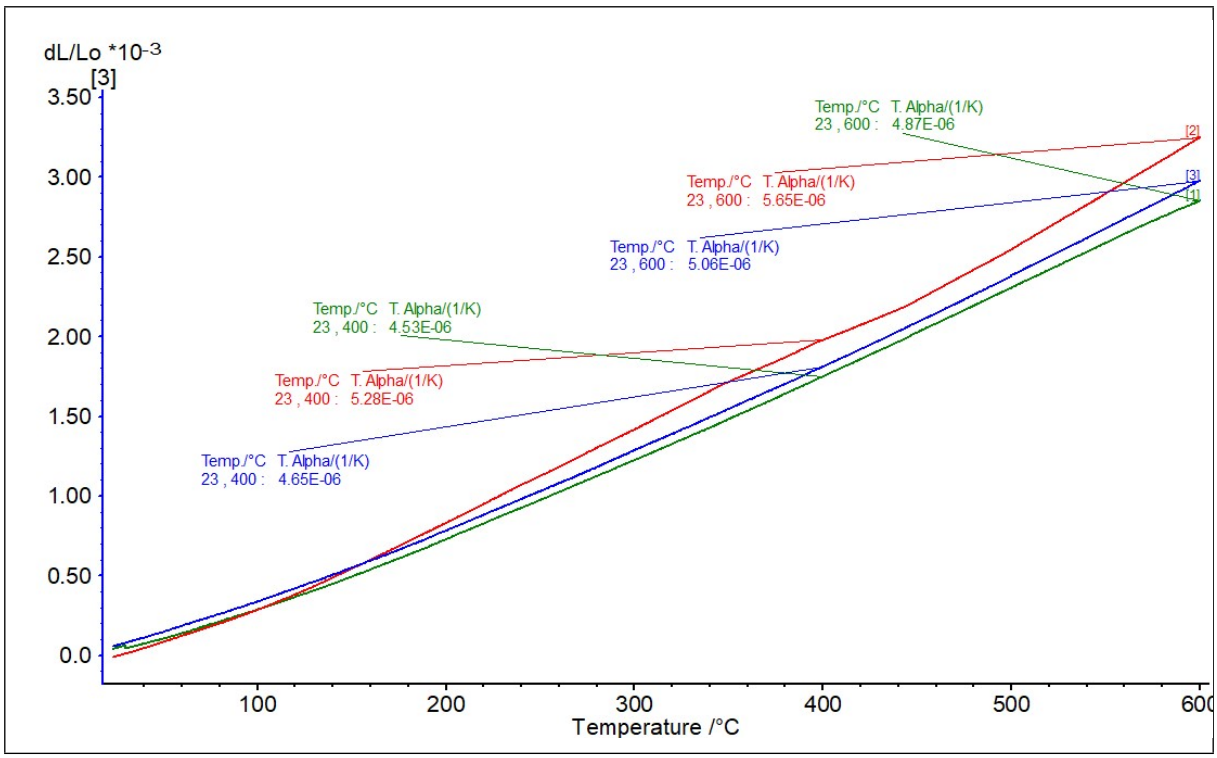
No.31 Xianghong Road, Xiang'An Torch Industrial Zone, Xiamen, Fujian Province, China 361101 t (86-592) 5765857 www.sgsgroup.com.cn

中国·福建·厦门·火炬（翔安）产业区翔虹路31号 邮编：361101 t (86-592) 5765857 sgs.china@sgs.com

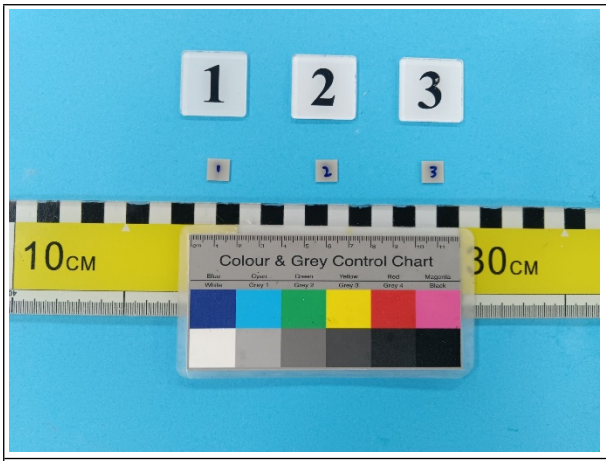
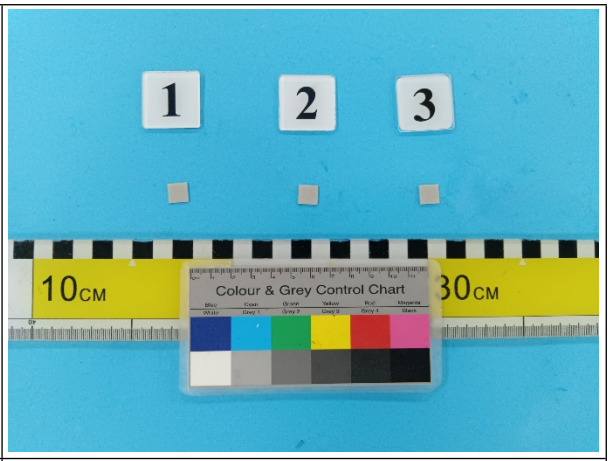
Member of the SGS Group (SGS SA)

Curve:

Sample A1



Test Photo:

	
Before Test-Sample A1	After Test-Sample A1

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

3. Test Item: Volume Resistance & Volume Resistivity

Sample Description: See photo

Test Method: GB/T 31838.2-2019

Test Condition:

Precondition: (23±2) °C, (50±5) %RH, 96 h

Test electrode: D_1=50 mm, D_2=70 mm

Test voltage: 100Vdc

Test duration: 1 min

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

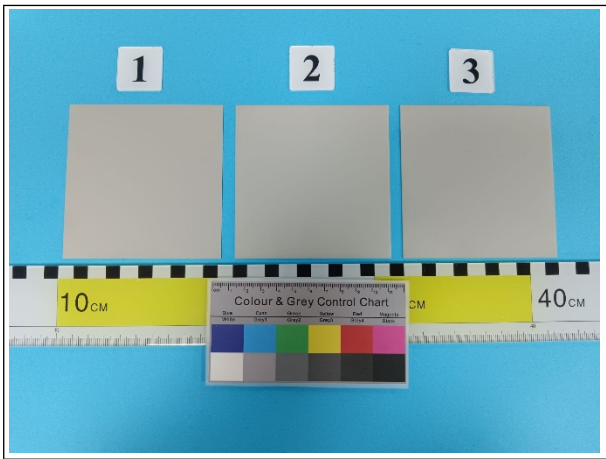
Test Result:

Sample A1

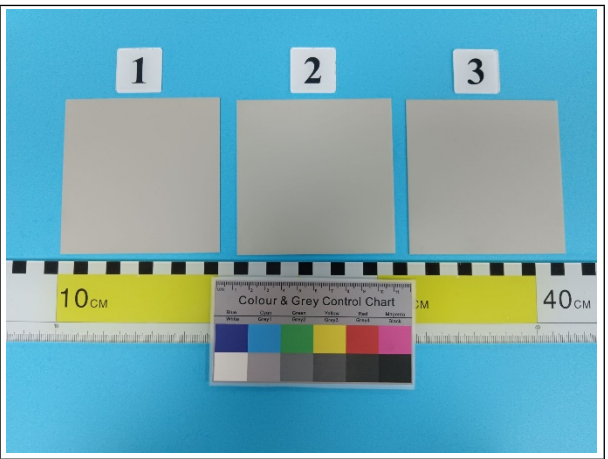
Specimen	Thickness, mm	Volume Resistance, Ω	Volume Resistivity, Ω·cm
1	1.01	4.49E+11	1.26E+14
2	1.00	6.54E+10	1.85E+13
3	1.00	3.91E+11	1.10E+14
Median	/	3.91E+11	1.10E+14

Note: E+n refers to 10^n, for example, 1.00E+03 is equivalent to 1.00×10^3.

Test Photo:



Before Test-Sample A1



After Test-Sample A1

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

4. Test Item: Dielectric Breakdown Voltage & Electric Strength

Sample Description: See photo

Test Method: GB/T 1408.1-2016

Test Condition:

Precondition: (23±2) °C, (50±5) %RH, 24 h

Surround Medium: Transformer oil at (23±2) ℃

Test Electrode: Unequal electrodes (upper electrode Ø25 mm, lower electrode Ø75 mm)

Voltage Type: AC 50 Hz

Mode of Increase of Voltage: Rapid-rise, 1500V/s

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

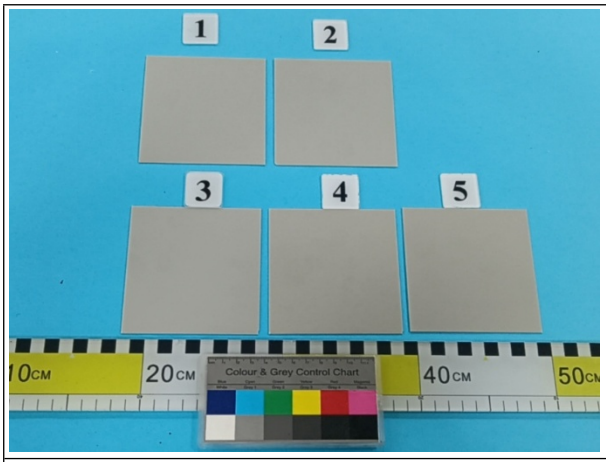
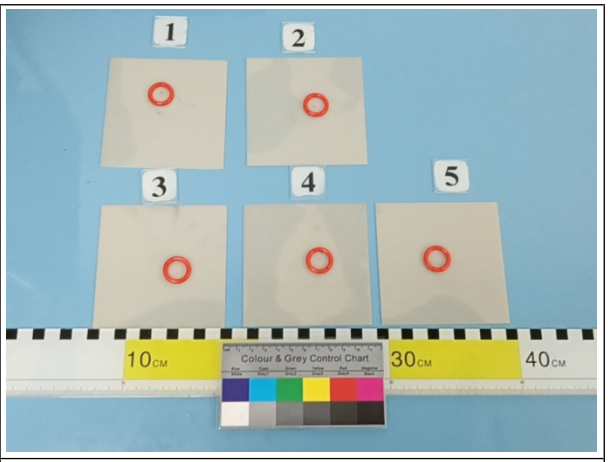
Test Result:

Sample A1

Specimen	Thickness, mm	Dielectric Breakdown Voltage, kV	Electric Strength, kV/mm
1	1.01	18.15	17.97
2	1.00	19.28	19.28
3	1.00	17.91	17.91
4	1.00	18.05	18.05
5	1.00	18.58	18.58
Median	/	18.15	18.05

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

Test Photo:

	
Before Test-Sample A1	After Test-Sample A1

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.31 Xianghong Road, Xiang'An Torch Industrial Zone, Xiamen, Fujian Province, China 361101 t (86-592) 5765857 www.sgsgroup.com.cn

中国·福建·厦门·火炬（翔安）产业区翔虹路31号 邮编：361101 t (86-592) 5765857 sgs.china@sgs.com

Member of the SGS Group (SGS SA)

5. Test Item: Flexural Strength

Sample Description: See photo

Test Method: GB/T 6569-2006 and client's requirement

Client's Requirement: Specimen: 50 mm × 4.01 mm × 0.504 mm; Pressure head diameter 4.8mm; Support diameter 1mm

Test Condition:

Specimen: 50 mm × 4.01 mm × 0.504 mm

Test Speed: 0.5 mm/min

Span: 30 mm

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

Test Result:

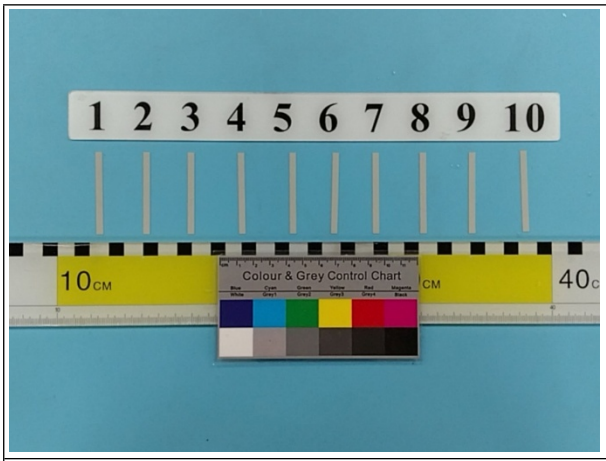
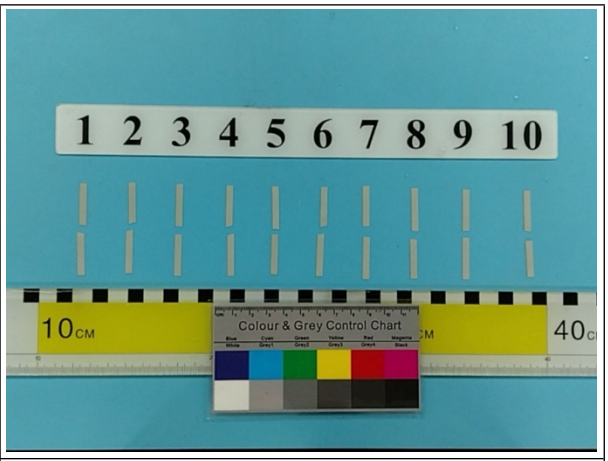
Sample A2

Test Item	Test Result
Flexural Strength	472MPa

Original data:

Specimen	1	2	3	4	5	6	7	8	9	10
Flexural Strength, MPa	478.6	495.7	464.4	489.2	445.0	476.4	478.7	472.8	480.0	440.3

Test Photo:

	
Before Test-Sample A2	After Test-Sample A2

检验检测专用章 Inspection & Testing Services

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.31 Xianghong Road, Xiang'An Torch Industrial Zone, Xiamen, Fujian Province, China 361101 t (86-592) 5765857 www.sgsgroup.com.cn

中国·福建·厦门·火炬（翔安）产业区翔虹路31号 邮编：361101 t (86-592) 5765857 sgs.china@sgs.com

6. Test Item: Thermal Conductivity

Sample Description: See photo

Test Method: ISO 22007-2:2015

Test Condition:

Sensor Type: C8563 (radius 9.868 mm)

Heating Power: 2 W

Measurement Time: 1 sec.

Test Temp.: (23 ± 2) ℃

Laboratory environment: Ambient Temperature：(23 ± 2) ℃, Relative Humidity：(50 ± 5) %

Test Result:

Test Item	Test Result
Thermal Conductivity	187.9 W/(m·K)

7. Test Item: Vickers Hardness Test

Sample Description: See photo

Test Method: GB/T 4340.1-2024, GB/T 16534-2009

Sample	Test position	Result, HV49.03N（GPa）			
		1	2	3	Average
001	Surface	10.14	10.15	10.15	10.15

Note: GPa refers to table 1 in GB/T 16534-2009 HV (GPa) =0.001854F/d^2.

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

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.31 Xianghong Road, Xiang'An Torch Industrial Zone, Xiamen, Fujian Province, China 361101 t (86-592) 5765857 www.sgsgroup.com.cn
中国·福建·厦门·火炬（翔安）产业区翔虹路31号 邮编：361101 t (86-592) 5765857 sgs.china@sgs.com
Member of the SGS Group (SGS SA)