TEST REPORT

Report No.:UTS25030289M01 Report Date: 2025/04/01

Client : BINZHOU DOUBLE PEAKS GRAPHITE SEALING MATERIAL Co., LTD.

Address : NO.744 5TH BOHAI ROAD BINZHOU SHANDONG CHINA

The sample(s) information below is/are provided and confirmed by client:

Sample Name	:	Graphite paper
Type/Model/Batch No.	:	δ 0.761mm
Manufacturing No.	:	20250316-810
Receiving Date	:	2025/03/19

Approved by: 樊建红 授权签字人 Reviewed by: 张传水 Prepared by: 金颖

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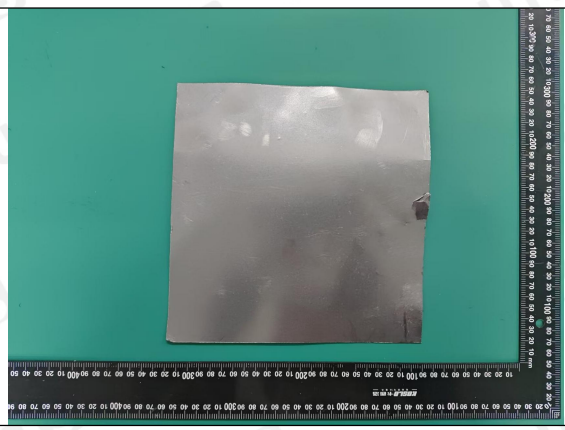
Summary of Result(s):

No.	Item(s)	Standard requirements	Detection result	Determine	Remark
1	Density	(1.1±0.05)g/cm^3	1.115g/cm^3	PASS	JB/T9141.1
2	Tensile strength	≥4.0MPa	7.06MPa	PASS	JB/T9141.2
3	Compression ratio	(35~55)%	44.1%	PASS	JB/T9141.4
	Rate of rebound	≥9%	20.4%	PASS	JB/T9141.4
4	Hot weightlessness	(450℃)≤ 1.0%	0.43%	PASS	JB/T9141.7
		(600℃)≤20%	1.18%	PASS	JB/T9141.7
5	Residue on ignition tolerance	≤2.0%	0.02%	PASS	ASTM F2168
6	Carbon content	≥98%	99.85%	PASS	ASTM F2168
7	Free chlorine	---	N.D.	---	ASTM F1277
8	Total sulfur content	≤900mg/kg	N.D.	PASS	ASTM F2168
9	Total chlorine content	＜50mg/kg	N.D.	PASS	ASTM F2168
	Total fluorine content	＜50mg/kg	N.D.	PASS	
	Bromine Content	---	N.D.	---	
10	Mercury content	---	N.D.	---	ASTM F2168



Sample status

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1、Density tolerance

1、Test Standard

JB/T9141.1

2、Test Date

2025/03/25-2025/03/26

3、Test Equipment

Test Equipment	Equipment Number	Calibration Period of Validity
Electronic Balance	CD-1-063	2025/11/20
Digital display vernier caliper	M-1-610	2025/09/13
Rubber thickness gauge	M-1-526	2025/11/20

4、Test Condition

Status adjustment : (23±2) ℃，(50±5) %RH，24 h

5、Test Result(s)

Unit：g/cm^3

1-1-A	1-1-B	1-1-C	1-1-D	1-1-E	Average	Judgment Basis	Determine
1.108	1.118	1.127	1.114	1.108	1.115	1.1±0.05	PASS

Remark：Decision limit depends on customer requirement.

……To be continued……

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2、Tensile strength

1、Test standard

JB/T9141.2

2、Test Date

2025/03/25-2025/03/26

3、Test Equipment

Test Equipment	Equipment Number	Calibration Period of Validity
Universal testing machine	M-1-005	2025/04/29
Rubber thickness gauge	M-1-526	2025/11/20

4、Test Condition

Status adjustment ：(23±2) ℃，(50±5) %RH，24 h

Speed ：5 mm/min

Gauge length ：50 mm

Sample size ：(100*20)mm

5、Test Result(s)

Unit：MPa

1-2-A	1-2-B	1-2-C	1-2-D	1-2-E	Average	Judgment Basis	Determine
7.01	7.12	7.09	7.13	6.96	7.06	≥4.0	PASS

Remark：Decision limit depends on customer requirement.

……To be continued……

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TEST REPORT

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3、Compression ratio&Rate of rebound

1、Test Standard

JB/T9141.4

2、Test Date

2025/03/25-2025/03/26

3、Test Equipment

Test Equipment	Equipment Type	Calibration Period of Validity
Universal testing machine	M-1-005	2025/04/29
Rubber thickness gauge	M-1-526	2025/11/20

4、Test Condition

Status adjustment : (23±5)℃，(50±5)%RH, 24h

Specimen size : 50*50mm

Test method : The sample was placed between the anute and the indenter, so that the load passed through the axis of the indenter, and the initial load of 22.2N (including the white weight of the indenter and the pressure rod) was applied at a uniform speed. After maintaining for 15 s, the thickness of the sample t_0 was recorded. Then, the main load of 1090N (to the total load of 1112N) was added at a constant speed within 10s. After maintaining for 60s, the thickness t_1 of the sample under the total load was recorded. After unloading the main load, the thickness t_2 of the sample under the initial load was recorded for 60s.

5、Test Result(s)

5.1 Compression ratio

Unit: %

1-3-A	1-3-B	1-3-C	1-3-D	1-3-E	Average	Judgment Basis	Determine
43.9	43.9	44.0	45.7	43.0	44.1	35~55	PASS

Remark：The prescribed limit(s) is/are according to client's requirement.

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5.2 Rate of rebound

Unit: %

1-3-A	1-3-B	1-3-C	1-3-D	1-3-E	Average	Judgment Basis	Determine
20.0	21.0	21.2	19.6	20.2	20.4	≥9	PASS

Remark：The prescribed limit(s) is/are according to client’s requirement.

4、Hot weightlessness

1、Test standard

JB/T9141.7

2、Test Date

2025/03/24-2025/03/25

3、Test Equipment

Test Equipment	Equipment Number	Calibration Period of Validity
Muffle furnace	C-1-056	2025/09/26
Electronic scales	CD-1-063	2025/11/20

4、Test Condition

Status adjustment ： (23±2) ℃，(50±5) %RH，24 h

Test method (450℃) ： ①. Place the crucible in 800℃ Muffle furnace to dry to constant weight; The sample was cut into pieces and dried in an oven at (100±2)℃, then taken out and cooled to room temperature in a dryer.

②. Weigh (1~1.2)g dried sample m_1, lay it flat in the crucible after drying, place the crucible with the sample in the Muffle furnace at (450±10)℃ for calcining for 1h, take it out and cool it for (1~2)min, move it into the dryer and cool it to room temperature, then weigh the sample m_2 again.

Test method (600℃) ： ①. Place the crucible in 800℃ Muffle furnace to dry to constant weight; The sample was cut into pieces and dried in an oven at (100±2)℃, then taken out and cooled to room temperature in a dryer.

②. Weigh (1~1.2)g dried sample m_1, lay it flat in the crucible after drying, place the crucible with the sample in the Muffle furnace at (600±10)℃ for calcining for 1h, take it out and cool it for (1~2)min, move it into the dryer and cool it to room temperature, then weigh the sample m_2 again.

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5、Test Result(s)

5.1 450℃

Unit:%

1-4-A	1-4-B	1-4-C	Average	Judgment Basis	Determine
0.43	0.42	0.43	0.43	≤1.0	PASS

Remark：Decision limit depends on customer requirement.

5.2 600℃

Unit:%

1-4-D	1-4-E	1-4-F	Average	Judgment Basis	Determine
1.15	1.23	1.17	1.18	≤20	PASS

Remark：Decision limit depends on customer requirement.

5、Residue on ignition tolerance

1、Test standard

ASTM F2168

2、Test Date

2025/03/21-2025/03/28

3、Test Equipment

Test Equipment	Equipment Number	Calibration Period of Validity
Muffle furnace	SX2-2.5-10A	2025/10/10

4、Test Condition

Status adjustment ：(23±2) ℃，(50±5) %RH，24 h

Test temperature ：950℃，1h

5、Test Result(s)

Sample No.	Unit	Result	Judgment Basis	Determine
1-5-A	%	0.02	≤2.0	PASS

Remark：Decision limit depends on customer requirement.

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6、Carbon content

1、Test standard

ASTM F2168

2、Test Date

2025/03/21-2025/03/28

3、Test Equipment

Test Equipment	Equipment Number	Calibration Period of Validity
Carbon and sulfur analyzer	CS5000	2025/04/20

4、Test Condition

Status adjustment ：(23±2) ℃，(50±5) %RH

5、Test Result(s)

Sample No.	Unit	Result	Judgment Basis	Determine
1-6-A	%	99.85	≥98	PASS

Remark：Decision limit depends on customer requirement.

7、Free chlorine

1、Test standard

ASTM F1277

2、Test Date

2025/03/21-2025/03/28

3、Test Equipment

Test Equipment	Equipment Number	Calibration Period of Validity
Automatic potential titrator	916	2025/05/25

4、Test Condition

Status adjustment ：(23±2) ℃，(50±5) %RH

Free chlorine extract ：Samples (15g) were dissolved in 90℃ in deionized water (90 mL) + 0.1%NaOH (10ml) for 4h

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5、Test Result(s)

Sample No.	Unit	Result
1-7-A	%	N.D.

Note: N.D. = not detected, less than the method detection limit, detection limit =0.01%

8.Total Sulfur Content

1. Test Standard(s)

ASTM F2168

2. Test Date(s)

2025/03/21-2025/03/24

3. Test Equipment(s)

Test Equipment	Equipment Number	Calibration Period of Validity
IC	E-1-1038	2026/11/21

4. Test Result(s)

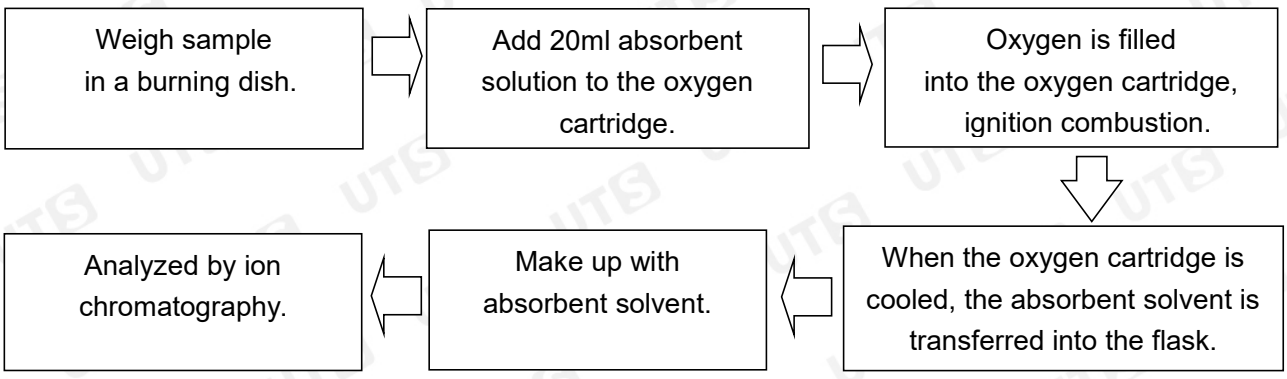
Test Item	MDL (mg/kg)	Test Result(s) (mg/kg)	Limits* (mg/kg)	Determine
Total Sulfur Content(Calculated as SO_4^{2-})	30	N.D.	≤ 900	PASS

Remark : *The Limits are based on the customer requirements.

Note : 1) N.D. = Not detected, less than MDL.
2) With reference to ASTM F2168, analysis was performed by IC.

TEST PART DESCRIPTION: Non-metal

FLOW CHART



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8. Total chlorine content, Total fluorine content, Bromine content

1. Test Standard(s)

ASTM F2168

2. Test Date(s)

2025/03/21-2025/03/24

3. Test Equipment(s)

Test Equipment	Equipment Number	Calibration Period of Validity
IC	E-1-1038	2026/11/21

4. Test Result(s)

Test Item	MDL (mg/kg)	Test Result(s) (mg/kg)	Limits* (mg/kg)	Determine
Total chlorine content,	30	N.D.	< 50	PASS
Total fluorine content	30	N.D.	< 50	PASS
Bromine content	30	N.D.	---	---

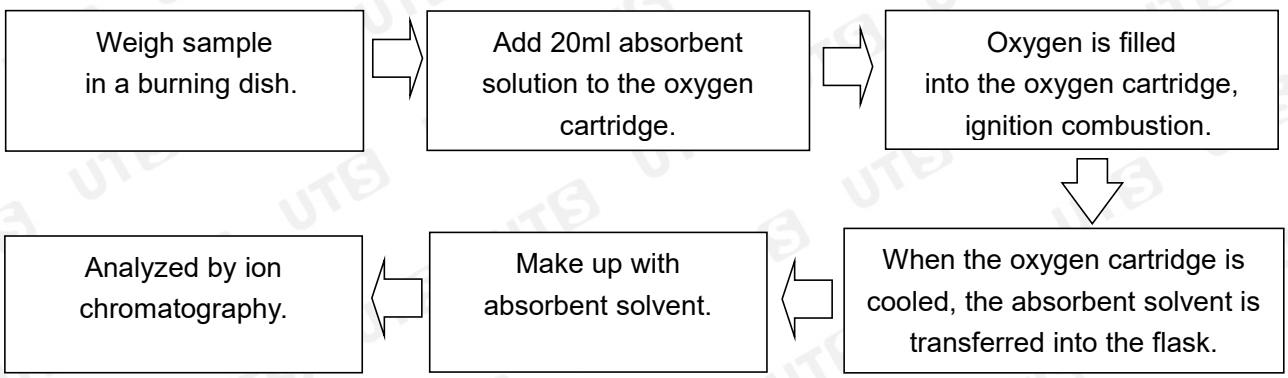
Remark : *The Limits are based on the customer requirements.

Note : 1) N.D. = Not detected, less than MDL.

2) With reference to ASTM F2168, analysis was performed by IC.

TEST PART DESCRIPTION: Non-metal

FLOW CHART



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9. Mercury content

1. Test Standard(s)

ASTM F2168

2. Test Date(s)

2025/03/25

3. Test Equipment(s)

Test Equipment	Equipment Number	Calibration Period of Validity
ICP-OES	M-1-584	2025/12/14

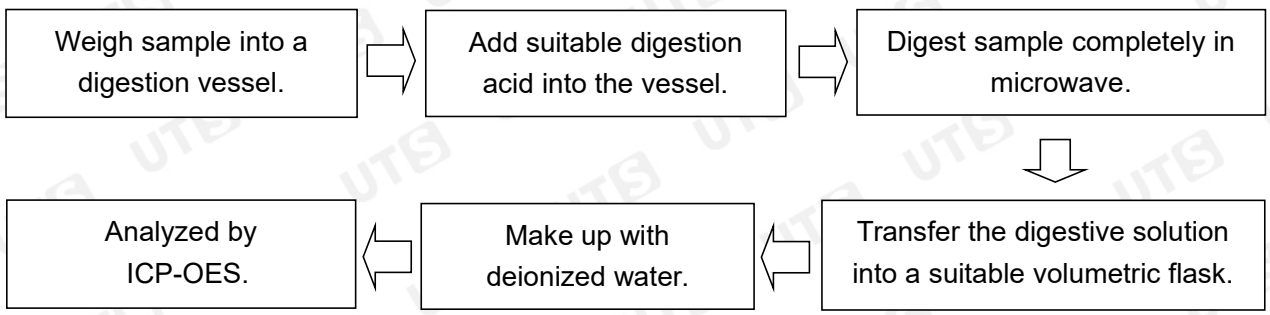
4. Test Result(s)

Test Item	MDL (mg/kg)	Test Result(s) (mg/kg)
Mercury content	10	N.D.

Note : 1) N.D. = Not detected, less than MDL.

TEST PART DESCRIPTION: Non-metal

FLOW CHART



……End of Report……

Test results in this report are only used for scientific research, teaching and internal quality control.

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