

# JINCHENG MAGNESIUM MATRIX TEST REPORT

## SCOPE OF WORK

ASTM E119 TESTING ON A 10 × 10 FT. LOAD-BEARING MAGNESIUM OXIDE OXYFULFATE (MOS) SHEATHING ON A STEEL WALL ASSEMBLY

## REPORT NUMBER

G104892487SAT-001 R0

## TEST DATE(S)

02/16/22

## ISSUE DATE

02/28/22

## [REVISED DATE]

N/A

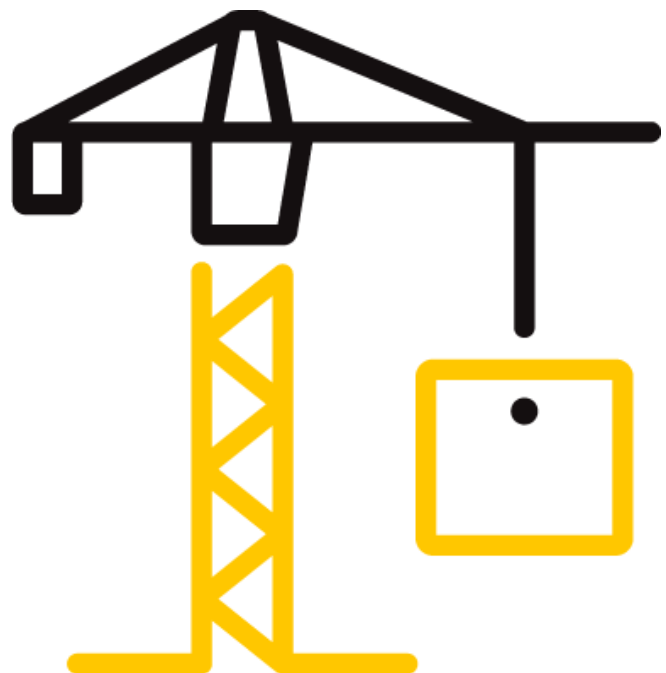
## PAGES

43

## DOCUMENT CONTROL NUMBER

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## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

### REPORT ISSUED TO

**JINCHENG MAGNESIUM MATRIX INTERNATIONAL TRADE CO., LTD.**

3/4/5 Suite of Wang Zhuang, Yao Wang Town

Tai Xing, 225400 Jiangsu

CHINA

### SECTION 1

#### SCOPE

Intertek Testing Services NA Ltd. dba Intertek Building & Construction (B&C) was contracted by Jincheng Magnesium Matrix International Trade Co., LTD., 3/4/5 Suite of Wang Zhuang, Yao Wang Town, Tai Xing, 225400 Jiangsu, to perform testing in accordance with ASTM E119, *Standard Fire Test Method for Fire Tests of Building Construction and Materials*, on their MagMatrix magnesium oxide oxysulfate (MOS) structural sheathing board product on a steel-framed assembly. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at Intertek test facility in Elmendorf, Texas.


Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

### SECTION 2


#### SUMMARY OF TEST RESULTS

The MOS board assembly described within this test report met a fire endurance period of **120 minutes** with no passage of flames to the unexposed side, and with a maximum unexposed temperature of **201 °F**.

For INTERTEK B&C:

|                      |   |
|----------------------|---|
| <b>COMPLETED BY:</b> | Emmanuel Ogoe   |
| <b>TITLE:</b>        | Project Engineer  |
| <b>SIGNATURE:</b>    |  |
| <b>DATE:</b>         | 02/24/22  |

AAA:bbb

|                     |   |
|---------------------|---|
| <b>REVIEWED BY:</b> | Abel de Hoyos   |
| <b>TITLE:</b>       | Senior Project Manager –<br>Fire Resistance   |
| <b>SIGNATURE:</b>   |  |
| <b>DATE:</b>        | 02/28/22  |

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### SECTION 3

#### TEST METHOD(S)

The specimen was evaluated in accordance with the following:

**ASTM E119-20**, *Standard Fire Test Method for Fire Tests of Building Construction and Materials*

**CAN/ULC S101-14**, *Standard Methods of Fire Endurance Tests of Building Construction and Materials*

### SECTION 4

#### MATERIAL SOURCE/INSTALLATION

Test samples were provided by the client. The results outlined in this report apply to the sample as received. The specimens were witnessed during production and tagged prior to shipment on 10/11/21, (Reference Intertek B&C Test Specimen Selection Report No. 210310002SHF, dated 10/11/21).

The test samples were received by the test facility on 12/27/21 and assigned sample ID SAT2112271512-001. Installation of the MOS board assembly and supporting construction was performed by Intertek B&C.

### SECTION 5

#### EQUIPMENT

| ASSET #   | DESCRIPTION       | MODEL       | CAL DUE DATE |
|-----------|-------------------|-------------|--------------|
| 99LE004   | DAQ Unit          | Yokogawa    | 04/15/22     |
| 10361068  | Thermo/Hygrometer | Omega       | 08/05/22     |
| 170199540 | Stopwatch         | Fisherbrand | 02/24/22     |
| ASH400-1  | Pressure Gauge    | Ashcroft    | 03/01/22     |

### SECTION 6

#### LIST OF OFFICIAL OBSERVERS

| NAME       | COMPANY   |
|------------|---|
| David Zhao | MagMatrix (Remote witnessing via Microsoft Teams)           |
| Anna Wang  | MagMatrix (Remote witnessing via Microsoft Teams)           |
| Tong Zhou  | MagMatrix (Remote witnessing via Microsoft Teams)           |
| Deg Priest | Priest & Associates (Remote witnessing via Microsoft Teams) |

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### OBSERVERS CONT.

|               |                     |
|---------------|---------------------|
| Howard Stacey | Priest & Associates |
| Abel de Hoyos | Intertek B&C        |
| Andres Olmos  | Intertek B&C        |
| Emmanuel Ogoe | Intertek B&C        |

## SECTION 7

### TEST PROCEDURE

The ASTM E119 standard measures the fire-resistance performance by quantifying the temperature rise on the unexposed face of the building element when the exposed side is subjected to the standardized ASTM E119 Time vs. Temperature curve.

The unexposed surface of wall assembly was instrumented with a total of nine (9), 24 GA. Type K, fiberglass jacketed thermocouples (TCs) as per Section 7.3 of ASTM E119-20c<sup>1</sup>. Four (4) Type K thermocouples were also installed on the first side of the metal studs, located near the center of the studs. Ten (10) Furnace Probes as described in Section 7.2 of ASTM E119-20c<sup>1</sup> were utilized to read furnace temperatures. The output of the thermocouples and the furnace probes were monitored by a 100-channel Yokogawa, Inc., Darwin Data Acquisition Unit. The computer was programmed to save data every 30 seconds. Following the test, the files were imported into MS Excel for tabular and graphical display.

The application of loading the wall was conducted per CAN/ULC S101-14 section 12.3. The specimen was tested as a load-bearing assembly with a 19,440 lb superimposed load applied in four increments of 25% before the fire exposure, allowing for stabilization of deflection after each increment. The full superimposed load was applied for 30 minutes before the start of the fire test, and during the duration of the fire exposure and hose stream test.

When the indicated resistance period is  $\frac{1}{2}$  h or over, determined by the average or maximum temperature rise on the unexposed or maximum temperature rise on the unexposed surface or within the test specimen, or by failure under load, a correction shall be applied for variation of the furnace exposure from that prescribed, where it will affect the classification, by multiplying the indicated period by two thirds of the difference in area between the curve of average furnace temperature and the standard curve for the first three fourths of the period and dividing the product by the area between the standard curve and a base line of 68°F for the same part of the indicated period, the latter area increased by 54°F\*h (3240°F\*min) to compensate for the thermal lag of the furnace thermocouples during the first part of the test. For fire exposure in the test higher than the standard, the indicated resistance period shall be increased by the amount of the correction and be similarly decreased for fire exposure below standard.

The correction can be expressed by the following equation:

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$$C = \frac{2I(A - AS)}{3(AS + L)}$$

where:

**C** = correction in the same units as **I**,

**I** = indicated fire-resistance period,

**A** = area under the curve of indicated average furnace temperature for the first three fourths of the indicated period,

**AS** = area under the standard furnace curve for the same part of the indicated period, and

**L** = lag correction in the same units as **A** and **AS** (54°F\*h or 30°C\*h (3240°F\*min or 1800°C\*min))

| VARIABLE         | DESCRIPTION  | VALUE      | UNITS          |
|------------------|--|------------|----------------|
| <b>C</b>         | Correction Factor  | -72        | seconds        |
| <b>I</b>         | Indicated FR Period  | 122        | minutes        |
| <b>A</b>         | Area under Indicated FR Period for first 3/4 of test period                | 133302     | °F*min         |
| <b>As</b>        | Area under Standard E119 Time vs. Temp. Curve for first 3/4 of test period | 135357     | °F*min         |
| <b>L</b>         | Lag Correction   | 3240       | °F*min         |
| <b>FR Period</b> | <b>Fire-Resistance Period</b>  | <b>120</b> | <b>minutes</b> |

## SECTION 8

### TEST CALCULATIONS

From the AISI Manual, Cold-Formed Steel Design, 2002 edition, Table III-5 provides a nominal axial strength,  $P_n$ , for a 10-ft long 350S162-33, 33-ksi, continuously braced by the wall sheathing, of 4.765 kips. This value for the 10-ft stud was interpolated between the 8-ft and 11-ft studs. Applying a strength reduction factor  $\phi = 0.85$  and a conservative load factor  $\alpha = 1.25$ , the axial load applied for the test becomes

$$P_s = \frac{\phi P_n}{\alpha} = \frac{(0.85) 4.765 \text{ kips}}{1.25} = 3.240 \frac{\text{kips}}{\text{stud}} = 3240 \frac{\text{lb}}{\text{stud}}$$

Therefore, total assembly load =  $6 * 3240 \frac{\text{lb}}{\text{stud}} = 19,440 \text{ lb}$

The overall load to be applied to the wall assembly is calculated based on six studs, and equals 19,440 lb.

The following equation was used to calculate the required hydraulic pressure:

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 $\text{Pressure in Hydraulic line (psi)} = \text{Total Force (lbs.)} / (18.665 \text{ in}^2 \times \text{No. of Actuators})$  $\text{Total Force (lbs.)} = W(\text{bar}) + W(\text{blocks}) + \text{Desired Load per No. of studs} + \text{sample weight}$ 

Desired Load per Stud = 3240 lbs./stud

No. of studs: 6

Weight of Load Bar: 2096 lbs.

Weight of Bottom &amp; Side Blocks: 1196 lbs.

No. of Actuators used: 4

Estimated Sample Weight: 1312 lbs. (Mag board + steel framing)

Hydraulic pressure: 322 psi

**SECTION 9****TEST SPECIMEN DESCRIPTION****Framing**

3-1/2 in. x 10 ft. long, 20 GA steel studs spaced 24 in. on center (o.c.). Studs attached to top and bottom 3-1/2 in. x 10 ft. long 20 GA track with 1/2 in. long self-tapping panhead screws. Lateral support was installed as 16 GA steel bracing extending the 10 ft. width of the framing. 4 in. wide x 10 ft. long, 20GA steel backing plate was installed 24 inches oc from the top and bottom of the frame on both sides. The backing plate was installed using 1/2 in. long self-tapping panhead screws.

**Insulation**

3 in. thick x 24 in. wide x 48 in. long, 4 pcf Rockwool™ Cavityrock® was friction-fit installed within the stud cavities. The ends of the batts were staggered to avoid continuous joints.

**Wall Covering**

Two layers of 12mm x 1220mm (4ft) wide x 2440mm (8ft.) long MagMatrix sheathing was installed vertically onto the frame. The base layer of board was attached to the framing with 1-1/8 in. long Type S-12 self-drilling bugle head screws at 12 in. o.c. at the perimeter and field. The face layer of board was attached to the framing with 1-5/8 in. long Type S-12 screws at 12 in. o.c., staggered 6 in. from the base layer fasteners. Edge screws at the vertical joints were located 1/2 in. from the board edge, perimeter screws were located 3/4 in. from the outside edges, and screws along the horizontal joints were located 1 in. from the board ends.

**SECTION 10****TEST RESULTS**

The test was initiated on February 16, 2022. The ambient temperature at the start of the test was 79.5 °F and the humidity was 51.0 %R.H.

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Observations made during the test are listed below:

| FIRE-RESISTANCE TEST OBSERVATIONS |   |
|-----------------------------------|---|
| Time (Min:Sec)                    | Observations  |
| -                                 | Test assembly loaded per CAN/ULC S101 in 25% increments                               |
| 00:00                             | Test started at 4:09 pm   |
| 04:47                             | Steaming from upper-left corner   |
| 05:58                             | Steaming between brick and wall (top section)   |
| 09:30                             | Steaming/smoking upper section  |
| 14:10                             | Lower section of wall steaming  |
| 18:42                             | VFD shut off/disconnect blower tripped  |
| 21:59                             | VFD back on   |
| 31:10                             | Slight discoloration on bottom section of wall  |
| 34:23                             | Pop heard near upper-left corner  |
| 42:00                             | Small pop heard   |
| 60:15                             | Slight discoloration on upper section left corner (seam between left and right panel) |
| 61:45                             | Increase in lower section discoloration   |
| 81:57                             | Slight warping on middle section of wall  |
| 90:34                             | Popping noises heard – upper section of wall  |
| 95:54                             | Middle panel edge popped out slightly (upper-right section)                           |
| 114:49                            | Pop heard; edge on middle panel sticking out  |
| 122:09                            | End of fire test  |

## SECTION 11 CONCLUSION

Thermocouples located on the specimen's unexposed surface did not exceed the temperature limit during the test and no passage of hot gases for flames occurred. During the hose stream exposure, no projections of water through the unexposed face occurred. Based on the results obtained, the 10-ft × 10-ft MOS board assembly, installed onto steel framing, described herein **met** the requirements of ASTM E119-20 and CAN/ULC S101, for a rating of **120 minutes (2-hrs)**.



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### SECTION 12

### PHOTOGRAPHS



Photo No. 1  
Stud wall with insulation installed

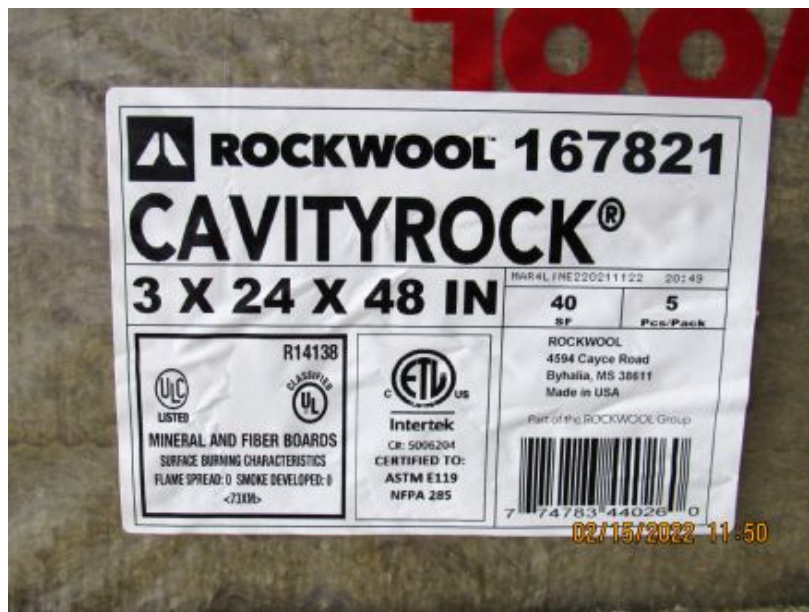


Photo No. 2  
Insulation used in assembly



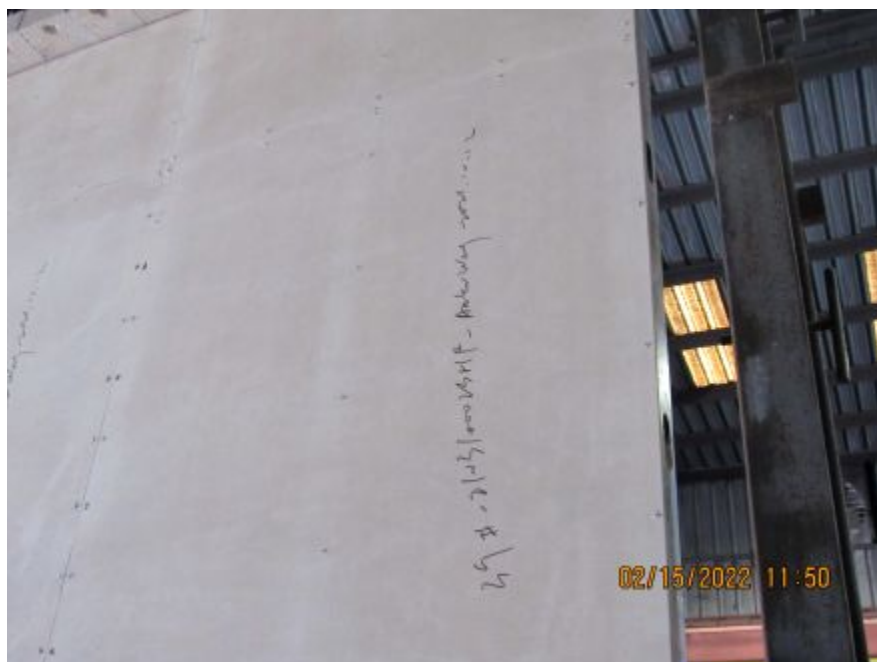
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**Photo No. 3**  
**Magnesium board installed**



**Photo No. 4**  
**Inspection marking**

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**Photo No. 5**  
**Test Setup**



**Photo No. 6**  
**Hydraulic line pressure**

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**Photo No. 7**  
**Start of Fire test**



**Photo No. 8**  
**Steam from top of wall**

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**Photo No. 9**  
**Discoloration on bottom of boards**



**Photo No. 10**  
**Discoloration on joints**



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**Photo No. 11**  
**Wall popping out at joint**



**Photo No. 12**  
**Wall popping out at joint continued**

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**Photo No. 13**  
**Wall deflecting inward**



**Photo No. 14**  
**End of fire exposure**

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**Photo No. 15**  
**Exposed side post-fire exposure**



**Photo No. 16**  
**Start of Hose stream test**



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**Photo No. 17**  
**Mag board removed**



**Photo No. 18**  
**Exposed side - End of hose stream**

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**Photo No. 19**  
**Unexposed side – End of hose stream**



**Photo No. 20**  
**Unexposed side post-test**

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### SECTION 13

#### DATA (GRAPHS AND TABULAR)

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Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | E119 Std<br>Average<br>(°F) | Furnace<br>Average<br>(°F) | Integration<br>of Furnace<br>Average<br>(°F•min) | Integration<br>of E119 Std<br>Average<br>(°F•min) | Error<br>(%) |
|---------------|-----------------------------|----------------------------|--|---|--------------|
| 0             | 68                          | 116                        | 0  | 0   | 0.00         |
| 0.5           | 161                         | 116                        | 24   | 23  | 28.25        |
| 1             | 254                         | 120                        | 49   | 93  | -42.19       |
| 1.5           | 348                         | 132                        | 78   | 210   | -60.93       |
| 2             | 441                         | 162                        | 118  | 373   | -68.18       |
| 2.5           | 534                         | 228                        | 182  | 583   | -69.67       |
| 3             | 627                         | 330                        | 287  | 839   | -67.20       |
| 3.5           | 720                         | 457                        | 450  | 1142  | -62.24       |
| 4             | 814                         | 586                        | 677  | 1491  | -56.20       |
| 4.5           | 907                         | 705                        | 966  | 1887  | -50.23       |
| 5             | 1000                        | 784                        | 1304   | 2330  | -44.95       |
| 5.5           | 1030                        | 906                        | 1693   | 2804  | -40.32       |
| 6             | 1060                        | 981                        | 2130   | 3292  | -36.19       |
| 6.5           | 1090                        | 1041                       | 2602   | 3796  | -32.22       |
| 7             | 1120                        | 1091                       | 3101   | 4314  | -28.78       |
| 7.5           | 1150                        | 1133                       | 3623   | 4848  | -25.83       |
| 8             | 1180                        | 1168                       | 4164   | 5396  | -23.30       |
| 8.5           | 1210                        | 1198                       | 4722   | 5960  | -21.17       |
| 9             | 1240                        | 1223                       | 5293   | 6538  | -19.38       |
| 9.5           | 1270                        | 1246                       | 5876   | 7132  | -17.88       |
| 10            | 1300                        | 1266                       | 6470   | 7740  | -16.64       |
| 10.5          | 1317                        | 1285                       | 7074   | 8360  | -15.60       |
| 11            | 1328                        | 1302                       | 7686   | 8988  | -14.67       |
| 11.5          | 1337                        | 1320                       | 8308   | 9620  | -13.82       |
| 12            | 1347                        | 1336                       | 8938   | 10257   | -13.03       |
| 12.5          | 1356                        | 1351                       | 9576   | 10898   | -12.29       |
| 13            | 1364                        | 1366                       | 10221  | 11545   | -11.61       |
| 13.5          | 1373                        | 1381                       | 10874  | 12195   | -10.97       |
| 14            | 1381                        | 1395                       | 11534  | 12849   | -10.37       |
| 14.5          | 1388                        | 1407                       | 12200  | 13507   | -9.80        |
| 15            | 1396                        | 1420                       | 12873  | 14170   | -9.27        |
| 15.5          | 1403                        | 1431                       | 13552  | 14835   | -8.76        |
| 16            | 1410                        | 1442                       | 14236  | 15505   | -8.29        |
| 16.5          | 1417                        | 1453                       | 14926  | 16177   | -7.84        |
| 17            | 1424                        | 1463                       | 15621  | 16854   | -7.41        |
| 17.5          | 1430                        | 1472                       | 16320  | 17533   | -7.00        |
| 18            | 1436                        | 1482                       | 17025  | 18215   | -6.62        |
| 18.5          | 1442                        | 1492                       | 17734  | 18901   | -6.25        |
| 19            | 1448                        | 1464                       | 18439  | 19590   | -5.92        |
| 19.5          | 1454                        | 1386                       | 19117  | 20281   | -5.74        |
| 20            | 1459                        | 1312                       | 19758  | 20975   | -5.77        |
| 20.5          | 1465                        | 1242                       | 20363  | 21672   | -5.98        |
| 21            | 1470                        | 1179                       | 20934  | 22372   | -6.34        |
| 21.5          | 1475                        | 1122                       | 21475  | 23074   | -6.82        |
| 22            | 1480                        | 1069                       | 21989  | 23779   | -7.40        |
| 22.5          | 1485                        | 1063                       | 22488  | 24487   | -8.05        |
| 23            | 1490                        | 1111                       | 22997  | 25196   | -8.64        |
| 23.5          | 1495                        | 1182                       | 23536  | 25909   | -9.10        |
| 24            | 1499                        | 1252                       | 24111  | 26623   | -9.41        |
| 24.5          | 1504                        | 1313                       | 24718  | 27340   | -9.59        |
| 25            | 1508                        | 1364                       | 25353  | 28059   | -9.65        |
| 25.5          | 1513                        | 1405                       | 26011  | 28781   | -9.64        |
| 26            | 1517                        | 1439                       | 26688  | 29504   | -9.57        |
| 26.5          | 1521                        | 1465                       | 27380  | 30230   | -9.46        |
| 27            | 1525                        | 1488                       | 28085  | 30957   | -9.32        |
| 27.5          | 1529                        | 1508                       | 28800  | 31687   | -9.16        |
| 28            | 1533                        | 1524                       | 29523  | 32419   | -8.98        |
| 28.5          | 1537                        | 1537                       | 30255  | 33153   | -8.79        |
| 29            | 1541                        | 1549                       | 30992  | 33888   | -8.59        |
| 29.5          | 1545                        | 1560                       | 31735  | 34626   | -8.40        |

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Jincheng MagMatrix

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| Time<br>(min) | E119 Std<br>Average<br>(°F) | Furnace<br>Average<br>(°F) | Integration<br>of Furnace<br>Average<br>(°F•min) | Integration<br>of E119 Std<br>Average<br>(°F•min) | Error<br>(%) |
|---------------|-----------------------------|----------------------------|--|---|--------------|
| 30            | 1549                        | 1569                       | 32483  | 35365   | -8.20        |
| 30.5          | 1552                        | 1580                       | 33237  | 36106   | -8.00        |
| 31            | 1556                        | 1583                       | 33993  | 36850   | -7.80        |
| 31.5          | 1559                        | 1577                       | 34750  | 37594   | -7.61        |
| 32            | 1563                        | 1568                       | 35502  | 38341   | -7.44        |
| 32.5          | 1566                        | 1564                       | 36251  | 39089   | -7.29        |
| 33            | 1570                        | 1567                       | 37000  | 39839   | -7.15        |
| 33.5          | 1573                        | 1575                       | 37751  | 40591   | -7.00        |
| 34            | 1576                        | 1582                       | 38506  | 41344   | -6.87        |
| 34.5          | 1579                        | 1588                       | 39265  | 42099   | -6.74        |
| 35            | 1583                        | 1593                       | 40026  | 42856   | -6.61        |
| 35.5          | 1586                        | 1599                       | 40790  | 43614   | -6.48        |
| 36            | 1589                        | 1603                       | 41556  | 44373   | -6.35        |
| 36.5          | 1592                        | 1607                       | 42324  | 45135   | -6.23        |
| 37            | 1595                        | 1612                       | 43095  | 45897   | -6.11        |
| 37.5          | 1598                        | 1618                       | 43869  | 46661   | -5.99        |
| 38            | 1601                        | 1620                       | 44644  | 47427   | -5.87        |
| 38.5          | 1604                        | 1620                       | 45420  | 48194   | -5.76        |
| 39            | 1606                        | 1620                       | 46196  | 48963   | -5.65        |
| 39.5          | 1609                        | 1622                       | 46973  | 49733   | -5.55        |
| 40            | 1612                        | 1625                       | 47750  | 50504   | -5.45        |
| 40.5          | 1615                        | 1629                       | 48530  | 51277   | -5.36        |
| 41            | 1617                        | 1631                       | 49311  | 52051   | -5.27        |
| 41.5          | 1620                        | 1634                       | 50093  | 52826   | -5.17        |
| 42            | 1623                        | 1637                       | 50877  | 53603   | -5.09        |
| 42.5          | 1625                        | 1641                       | 51662  | 54381   | -5.00        |
| 43            | 1628                        | 1645                       | 52450  | 55160   | -4.91        |
| 43.5          | 1631                        | 1648                       | 53239  | 55941   | -4.83        |
| 44            | 1633                        | 1653                       | 54030  | 56723   | -4.75        |
| 44.5          | 1636                        | 1655                       | 54823  | 57506   | -4.67        |
| 45            | 1638                        | 1657                       | 55617  | 58290   | -4.59        |
| 45.5          | 1640                        | 1661                       | 56413  | 59076   | -4.51        |
| 46            | 1643                        | 1663                       | 57210  | 59863   | -4.43        |
| 46.5          | 1645                        | 1665                       | 58008  | 60651   | -4.36        |
| 47            | 1648                        | 1666                       | 58807  | 61440   | -4.29        |
| 47.5          | 1650                        | 1666                       | 59606  | 62230   | -4.22        |
| 48            | 1652                        | 1668                       | 60405  | 63022   | -4.15        |
| 48.5          | 1655                        | 1670                       | 61206  | 63815   | -4.09        |
| 49            | 1657                        | 1673                       | 62008  | 64608   | -4.02        |
| 49.5          | 1659                        | 1675                       | 62811  | 65403   | -3.96        |
| 50            | 1661                        | 1677                       | 63615  | 66199   | -3.90        |
| 50.5          | 1663                        | 1680                       | 64420  | 66997   | -3.84        |
| 51            | 1666                        | 1682                       | 65227  | 67795   | -3.79        |
| 51.5          | 1668                        | 1683                       | 66034  | 68594   | -3.73        |
| 52            | 1670                        | 1684                       | 66842  | 69394   | -3.68        |
| 52.5          | 1672                        | 1685                       | 67650  | 70196   | -3.62        |
| 53            | 1674                        | 1687                       | 68459  | 70998   | -3.57        |
| 53.5          | 1676                        | 1690                       | 69270  | 71802   | -3.52        |
| 54            | 1678                        | 1693                       | 70081  | 72607   | -3.48        |
| 54.5          | 1680                        | 1695                       | 70894  | 73412   | -3.43        |
| 55            | 1682                        | 1699                       | 71709  | 74219   | -3.38        |
| 55.5          | 1684                        | 1702                       | 72525  | 75026   | -3.33        |
| 56            | 1686                        | 1704                       | 73343  | 75835   | -3.28        |
| 56.5          | 1688                        | 1707                       | 74161  | 76645   | -3.24        |
| 57            | 1690                        | 1710                       | 74981  | 77455   | -3.19        |
| 57.5          | 1692                        | 1712                       | 75803  | 78267   | -3.15        |
| 58            | 1694                        | 1714                       | 76626  | 79079   | -3.10        |
| 58.5          | 1696                        | 1716                       | 77449  | 79893   | -3.06        |
| 59            | 1698                        | 1717                       | 78273  | 80707   | -3.01        |
| 59.5          | 1700                        | 1718                       | 79098  | 81522   | -2.97        |

## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

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Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | E119 Std<br>Average<br>(°F) | Furnace<br>Average<br>(°F) | Integration<br>of Furnace<br>Average<br>(°F•min) | Integration<br>of E119 Std<br>Average<br>(°F•min) | Error<br>(%) |
|---------------|-----------------------------|----------------------------|--|---|--------------|
| 60            | 1701                        | 1719                       | 79924  | 82338   | -2.93        |
| 60.5          | 1703                        | 1721                       | 80750  | 83156   | -2.89        |
| 61            | 1705                        | 1720                       | 81576  | 83974   | -2.85        |
| 61.5          | 1707                        | 1721                       | 82402  | 84793   | -2.82        |
| 62            | 1709                        | 1721                       | 83228  | 85612   | -2.78        |
| 62.5          | 1710                        | 1722                       | 84055  | 86433   | -2.75        |
| 63            | 1712                        | 1724                       | 84882  | 87255   | -2.72        |
| 63.5          | 1714                        | 1726                       | 85711  | 88077   | -2.68        |
| 64            | 1716                        | 1727                       | 86540  | 88901   | -2.65        |
| 64.5          | 1717                        | 1730                       | 87370  | 89725   | -2.62        |
| 65            | 1719                        | 1732                       | 88202  | 90550   | -2.59        |
| 65.5          | 1721                        | 1734                       | 89034  | 91376   | -2.56        |
| 66            | 1722                        | 1736                       | 89868  | 92203   | -2.53        |
| 66.5          | 1724                        | 1739                       | 90703  | 93030   | -2.50        |
| 67            | 1726                        | 1741                       | 91538  | 93859   | -2.47        |
| 67.5          | 1727                        | 1744                       | 92376  | 94688   | -2.44        |
| 68            | 1729                        | 1746                       | 93214  | 95518   | -2.41        |
| 68.5          | 1731                        | 1748                       | 94054  | 96349   | -2.38        |
| 69            | 1732                        | 1751                       | 94895  | 97181   | -2.35        |
| 69.5          | 1734                        | 1754                       | 95737  | 98013   | -2.32        |
| 70            | 1735                        | 1755                       | 96580  | 98847   | -2.29        |
| 70.5          | 1737                        | 1757                       | 97424  | 99681   | -2.26        |
| 71            | 1738                        | 1760                       | 98269  | 100515  | -2.23        |
| 71.5          | 1740                        | 1761                       | 99116  | 101351  | -2.20        |
| 72            | 1742                        | 1763                       | 99963  | 102187  | -2.17        |
| 72.5          | 1743                        | 1765                       | 100811   | 103025  | -2.15        |
| 73            | 1745                        | 1764                       | 101659   | 103863  | -2.12        |
| 73.5          | 1746                        | 1763                       | 102507   | 104701  | -2.09        |
| 74            | 1748                        | 1763                       | 103354   | 105541  | -2.07        |
| 74.5          | 1749                        | 1763                       | 104202   | 106381  | -2.05        |
| 75            | 1751                        | 1763                       | 105049   | 107222  | -2.02        |
| 75.5          | 1752                        | 1764                       | 105897   | 108063  | -2.00        |
| 76            | 1753                        | 1765                       | 106745   | 108906  | -1.98        |
| 76.5          | 1755                        | 1767                       | 107594   | 109749  | -1.96        |
| 77            | 1756                        | 1769                       | 108444   | 110593  | -1.94        |
| 77.5          | 1758                        | 1770                       | 109295   | 111437  | -1.92        |
| 78            | 1759                        | 1771                       | 110146   | 112282  | -1.90        |
| 78.5          | 1761                        | 1773                       | 110998   | 113128  | -1.88        |
| 79            | 1762                        | 1775                       | 111851   | 113975  | -1.86        |
| 79.5          | 1763                        | 1777                       | 112705   | 114822  | -1.84        |
| 80            | 1765                        | 1779                       | 113560   | 115670  | -1.82        |
| 80.5          | 1766                        | 1781                       | 114416   | 116519  | -1.80        |
| 81            | 1768                        | 1784                       | 115274   | 117369  | -1.78        |
| 81.5          | 1769                        | 1786                       | 116132   | 118219  | -1.76        |
| 82            | 1770                        | 1785                       | 116991   | 119069  | -1.74        |
| 82.5          | 1772                        | 1783                       | 117849   | 119921  | -1.72        |
| 83            | 1773                        | 1782                       | 118706   | 120773  | -1.71        |
| 83.5          | 1774                        | 1781                       | 119563   | 121626  | -1.69        |
| 84            | 1776                        | 1780                       | 120419   | 122479  | -1.68        |
| 84.5          | 1777                        | 1779                       | 121275   | 123333  | -1.66        |
| 85            | 1778                        | 1780                       | 122131   | 124188  | -1.65        |
| 85.5          | 1779                        | 1782                       | 122987   | 125043  | -1.64        |
| 86            | 1781                        | 1782                       | 123844   | 125899  | -1.63        |
| 86.5          | 1782                        | 1784                       | 124702   | 126756  | -1.62        |
| 87            | 1783                        | 1784                       | 125560   | 127613  | -1.60        |
| 87.5          | 1785                        | 1785                       | 126418   | 128471  | -1.59        |
| 88            | 1786                        | 1786                       | 127277   | 129330  | -1.58        |
| 88.5          | 1787                        | 1786                       | 128135   | 130189  | -1.57        |
| 89            | 1788                        | 1786                       | 128994   | 131049  | -1.56        |
| 89.5          | 1789                        | 1788                       | 129854   | 131909  | -1.55        |



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Jincheng MagMatrix

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| Time<br>(min) | E119 Std<br>Average<br>(°F) | Furnace<br>Average<br>(°F) | Integration<br>of Furnace<br>Average<br>(°F•min) | Integration<br>of E119 Std<br>Average<br>(°F•min) | Error<br>(%) |
|---------------|-----------------------------|----------------------------|--|---|--------------|
| 90            | 1791                        | 1790                       | 130714   | 132770  | -1.54        |
| 90.5          | 1792                        | 1792                       | 131576   | 133632  | -1.54        |
| 91            | 1793                        | 1794                       | 132438   | 134494  | -1.53        |
| 91.5          | 1794                        | 1795                       | 133302   | 135357  | -1.51        |
| 92            | 1796                        | 1798                       | 134166   | 136221  | -1.50        |
| 92.5          | 1797                        | 1802                       | 135032   | 137085  | -1.49        |
| 93            | 1798                        | 1805                       | 135899   | 137950  | -1.48        |
| 93.5          | 1799                        | 1807                       | 136769   | 138815  | -1.47        |
| 94            | 1800                        | 1810                       | 137639   | 139681  | -1.46        |
| 94.5          | 1801                        | 1812                       | 138510   | 140547  | -1.45        |
| 95            | 1803                        | 1813                       | 139382   | 141414  | -1.43        |
| 95.5          | 1804                        | 1813                       | 140255   | 142282  | -1.42        |
| 96            | 1805                        | 1815                       | 141128   | 143150  | -1.41        |
| 96.5          | 1806                        | 1816                       | 142002   | 144019  | -1.40        |
| 97            | 1807                        | 1817                       | 142876   | 144888  | -1.39        |
| 97.5          | 1808                        | 1819                       | 143751   | 145758  | -1.37        |
| 98            | 1809                        | 1822                       | 144628   | 146628  | -1.36        |
| 98.5          | 1811                        | 1825                       | 145505   | 147499  | -1.35        |
| 99            | 1812                        | 1827                       | 146384   | 148371  | -1.34        |
| 99.5          | 1813                        | 1828                       | 147264   | 149243  | -1.32        |
| 100           | 1814                        | 1830                       | 148144   | 150116  | -1.31        |
| 100.5         | 1815                        | 1831                       | 149025   | 150989  | -1.30        |
| 101           | 1816                        | 1834                       | 149908   | 151863  | -1.28        |
| 101.5         | 1817                        | 1836                       | 150791   | 152737  | -1.27        |
| 102           | 1818                        | 1837                       | 151676   | 153612  | -1.26        |
| 102.5         | 1819                        | 1837                       | 152560   | 154487  | -1.24        |
| 103           | 1820                        | 1835                       | 153444   | 155363  | -1.23        |
| 103.5         | 1822                        | 1833                       | 154327   | 156240  | -1.22        |
| 104           | 1823                        | 1832                       | 155209   | 157117  | -1.21        |
| 104.5         | 1824                        | 1831                       | 156091   | 157995  | -1.20        |
| 105           | 1825                        | 1830                       | 156972   | 158873  | -1.19        |
| 105.5         | 1826                        | 1831                       | 157853   | 159751  | -1.18        |
| 106           | 1827                        | 1832                       | 158735   | 160630  | -1.18        |
| 106.5         | 1828                        | 1833                       | 159617   | 161510  | -1.17        |
| 107           | 1829                        | 1835                       | 160500   | 162390  | -1.16        |
| 107.5         | 1830                        | 1837                       | 161384   | 163271  | -1.15        |
| 108           | 1831                        | 1839                       | 162269   | 164152  | -1.14        |
| 108.5         | 1832                        | 1840                       | 163155   | 165034  | -1.14        |
| 109           | 1833                        | 1842                       | 164042   | 165916  | -1.13        |
| 109.5         | 1834                        | 1843                       | 164929   | 166799  | -1.12        |
| 110           | 1835                        | 1844                       | 165816   | 167682  | -1.11        |
| 110.5         | 1836                        | 1843                       | 166704   | 168566  | -1.10        |
| 111           | 1836                        | 1844                       | 167592   | 169450  | -1.09        |
| 111.5         | 1837                        | 1845                       | 168480   | 170334  | -1.09        |
| 112           | 1838                        | 1846                       | 169369   | 171218  | -1.08        |
| 112.5         | 1838                        | 1848                       | 170258   | 172103  | -1.07        |
| 113           | 1839                        | 1848                       | 171148   | 172989  | -1.06        |
| 113.5         | 1839                        | 1847                       | 172038   | 173874  | -1.05        |
| 114           | 1840                        | 1845                       | 172927   | 174760  | -1.05        |
| 114.5         | 1841                        | 1844                       | 173815   | 175646  | -1.04        |
| 115           | 1841                        | 1844                       | 174703   | 176533  | -1.03        |
| 115.5         | 1842                        | 1844                       | 175591   | 177420  | -1.03        |
| 116           | 1843                        | 1844                       | 176479   | 178307  | -1.02        |
| 116.5         | 1843                        | 1845                       | 177368   | 179194  | -1.02        |
| 117           | 1844                        | 1845                       | 178256   | 180082  | -1.01        |
| 117.5         | 1844                        | 1846                       | 179144   | 180970  | -1.01        |
| 118           | 1845                        | 1846                       | 180033   | 181858  | -1.00        |
| 118.5         | 1846                        | 1847                       | 180923   | 182747  | -1.00        |
| 119           | 1846                        | 1847                       | 181812   | 183636  | -0.99        |
| 119.5         | 1847                        | 1848                       | 182702   | 184525  | -0.98        |



Total Quality. Assured.

16015 Shady Falls Road  
Elmendorf, Texas 78112

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Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | E119 Std<br>Average<br>(°F) | Furnace<br>Average<br>(°F) | Integration<br>of Furnace<br>Average<br>(°F•min) | Integration<br>of E119 Std<br>Average<br>(°F•min) | Error<br>(%) |
|---------------|-----------------------------|----------------------------|--|---|--------------|
| 120           | 1848                        | 1849                       | 183593   | 185415  | -0.98        |
| 120.5         | 1848                        | 1850                       | 184483   | 186305  | -0.97        |
| 121           | 1849                        | 1850                       | 185374   | 187195  | -0.97        |
| 121.5         | 1850                        | 1851                       | 186266   | 188086  | -0.96        |
| 122           | 1850                        | 1853                       | 187158   | 188977  | -0.96        |

Max

Max Allowed



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Jincheng MagMatrix

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| Time<br>(min) | Furnace<br>Probe<br>#1<br>(°F) | Furnace<br>Probe<br>#2<br>(°F) | Furnace<br>Probe<br>#3<br>(°F) | Furnace<br>Probe<br>#4<br>(°F) | Furnace<br>Probe<br>#5<br>(°F) | Furnace<br>Probe<br>#6<br>(°F) | Furnace<br>Probe<br>#7<br>(°F) | Furnace<br>Probe<br>#8<br>(°F) | Furnace<br>Probe<br>#9<br>(°F) | Furnace<br>Probe<br>#10<br>(°F) |
|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| 0             | 123                            | 110                            | 125                            | 118                            | 118                            | 107                            | 114                            | 123                            |                                | 114                             |
| 0.5           | 123                            | 110                            | 125                            | 118                            | 118                            | 108                            | 114                            | 122                            |                                | 114                             |
| 1             | 127                            | 111                            | 129                            | 124                            | 124                            | 112                            | 121                            | 125                            |                                | 117                             |
| 1.5           | 139                            | 121                            | 141                            | 139                            | 138                            | 123                            | 133                            | 136                            |                                | 125                             |
| 2             | 168                            | 151                            | 170                            | 182                            | 174                            | 148                            | 167                            | 162                            |                                | 146                             |
| 2.5           | 228                            | 221                            | 235                            | 274                            | 255                            | 202                            | 237                            | 217                            |                                | 190                             |
| 3             | 319                            | 337                            | 329                            | 401                            | 385                            | 298                            | 343                            | 307                            |                                | 267                             |
| 3.5           | 427                            | 487                            | 439                            | 544                            | 544                            | 435                            | 471                            | 428                            |                                | 363                             |
| 4             | 541                            | 635                            | 546                            | 677                            | 697                            | 581                            | 594                            | 567                            |                                | 470                             |
| 4.5           | 652                            | 767                            | 651                            | 794                            | 831                            | 713                            | 703                            | 705                            |                                | 575                             |
| 5             | 754                            | 875                            | 748                            | 890                            | 939                            | 595                            | 795                            | 826                            |                                | 668                             |
| 5.5           | 846                            | 964                            | 837                            | 972                            | 1027                           | 871                            | 874                            | 932                            |                                | 757                             |
| 6             | 919                            | 1033                           | 915                            | 1037                           | 1092                           | 177                            | 939                            | 1013                           |                                | 830                             |
| 6.5           | 986                            | 1092                           | 983                            | 1091                           | 1148                           | 158                            | 995                            | 1080                           |                                | 899                             |
| 7             | 1043                           | 1140                           | 1041                           | 1133                           | 1192                           | 107                            | 1043                           | 1136                           |                                | 957                             |
| 7.5           | 1089                           | 1178                           | 1089                           | 1170                           | 1228                           | 407                            | 1086                           | 1181                           |                                | 1007                            |
| 8             | 1129                           | 1210                           | 1131                           | 1202                           | 1258                           | 328                            | 1120                           | 1219                           |                                | 1051                            |
| 8.5           | 1162                           | 1236                           | 1165                           | 1227                           | 1283                           | 1109                           | 1151                           | 1250                           |                                | 1088                            |
| 9             | 1190                           | 1260                           | 1193                           | 1250                           | 1304                           | 944                            | 1178                           | 1275                           |                                | 1121                            |
| 9.5           | 1215                           | 1281                           | 1218                           | 1270                           | 1323                           | 275                            | 1202                           | 1299                           |                                | 1150                            |
| 10            | 1238                           | 1300                           | 1241                           | 1289                           | 1340                           | 1193                           | 1224                           | 1320                           |                                | 1177                            |
| 10.5          | 1258                           | 1319                           | 1260                           | 1303                           | 1357                           | 1182                           | 1244                           | 1336                           |                                | 1199                            |
| 11            | 1277                           | 1335                           | 1280                           | 1318                           | 1373                           | 1106                           | 1263                           | 1353                           |                                | 1220                            |
| 11.5          | 1295                           | 1352                           | 1299                           | 1335                           | 1389                           | 843                            | 1283                           | 1370                           |                                | 1241                            |
| 12            | 1313                           | 1367                           | 1316                           | 1348                           | 1403                           | 1008                           | 1301                           | 1384                           |                                | 1260                            |
| 12.5          | 1330                           | 1382                           | 1329                           | 1363                           | 1417                           | 1174                           | 1318                           | 1398                           |                                | 1279                            |
| 13            | 1346                           | 1395                           | 1345                           | 1377                           | 1430                           | 1278                           | 1336                           | 1412                           |                                | 1297                            |
| 13.5          | 1361                           | 1408                           | 1359                           | 1391                           | 1443                           | 1290                           | 1352                           | 1425                           |                                | 1313                            |
| 14            | 1376                           | 1421                           | 1374                           | 1405                           | 1455                           | 1001                           | 1367                           | 1439                           |                                | 1330                            |
| 14.5          | 1388                           | 1432                           | 1386                           | 1413                           | 1467                           | 1252                           | 1382                           | 1449                           |                                | 1346                            |
| 15            | 1402                           | 1444                           | 1399                           | 1425                           | 1478                           | 1323                           | 1396                           | 1461                           |                                | 1360                            |
| 15.5          | 1413                           | 1455                           | 1410                           | 1437                           | 1489                           | 647                            | 1407                           | 1471                           |                                | 1373                            |
| 16            | 1425                           | 1466                           | 1422                           | 1447                           | 1499                           | 1041                           | 1420                           | 1481                           |                                | 1387                            |
| 16.5          | 1435                           | 1476                           | 1432                           | 1456                           | 1509                           | 1350                           | 1432                           | 1491                           |                                | 1400                            |
| 17            | 1446                           | 1486                           | 1443                           | 1465                           | 1518                           | 1357                           | 1441                           | 1500                           |                                | 1411                            |
| 17.5          | 1456                           | 1496                           | 1454                           | 1474                           | 1526                           | 1360                           | 1450                           | 1509                           |                                | 1421                            |
| 18            | 1465                           | 1505                           | 1463                           | 1481                           | 1533                           | 579                            | 1461                           | 1516                           |                                | 1432                            |
| 18.5          | 1474                           | 1514                           | 1473                           | 1491                           | 1542                           | 1381                           | 1472                           | 1526                           |                                | 1443                            |
| 19            | 1456                           | 1481                           | 1452                           | 1455                           | 1505                           | 1362                           | 1446                           | 1504                           |                                | 1441                            |
| 19.5          | 1384                           | 1399                           | 1390                           | 1372                           | 1413                           | 1289                           | 1368                           | 1428                           |                                | 1391                            |
| 20            | 1307                           | 1322                           | 1326                           | 1297                           | 1331                           | 1170                           | 1295                           | 1353                           |                                | 1328                            |
| 20.5          | 1244                           | 1250                           | 1264                           | 1227                           | 1257                           | 1147                           | 1225                           | 1281                           |                                | 1264                            |
| 21            | 1186                           | 1185                           | 1206                           | 1163                           | 1190                           | 1083                           | 1160                           | 1216                           |                                | 1199                            |
| 21.5          | 1133                           | 1126                           | 1153                           | 1108                           | 1131                           | 1024                           | 1102                           | 1158                           |                                | 1141                            |
| 22            | 1085                           | 1071                           | 1102                           | 1054                           | 1077                           | 973                            | 1049                           | 1105                           |                                | 1086                            |
| 22.5          | 1070                           | 1061                           | 1082                           | 1057                           | 1072                           | 954                            | 1038                           | 1092                           |                                | 1057                            |
| 23            | 1111                           | 1114                           | 1111                           | 1121                           | 1135                           | 1001                           | 1087                           | 1137                           |                                | 1073                            |
| 23.5          | 1172                           | 1191                           | 1164                           | 1200                           | 1221                           | 1082                           | 1157                           | 1206                           |                                | 1119                            |
| 24            | 1235                           | 1267                           | 1223                           | 1273                           | 1302                           | 1157                           | 1227                           | 1276                           |                                | 1177                            |
| 24.5          | 1292                           | 1333                           | 1282                           | 1332                           | 1368                           | 1214                           | 1289                           | 1338                           |                                | 1235                            |
| 25            | 1342                           | 1385                           | 1332                           | 1377                           | 1422                           | 1254                           | 1342                           | 1391                           |                                | 1287                            |
| 25.5          | 1383                           | 1428                           | 1375                           | 1417                           | 1463                           | 1297                           | 1386                           | 1433                           |                                | 1333                            |
| 26            | 1419                           | 1461                           | 1410                           | 1449                           | 1497                           | 1331                           | 1418                           | 1469                           |                                | 1370                            |
| 26.5          | 1447                           | 1488                           | 1438                           | 1475                           | 1522                           | 1358                           | 1444                           | 1497                           |                                | 1402                            |
| 27            | 1470                           | 1510                           | 1462                           | 1493                           | 1542                           | 1376                           | 1469                           | 1520                           |                                | 1429                            |
| 27.5          | 1489                           | 1528                           | 1483                           | 1509                           | 1561                           | 1394                           | 1491                           | 1539                           |                                | 1453                            |
| 28            | 1506                           | 1544                           | 1500                           | 1526                           | 1575                           | 1409                           | 1506                           | 1555                           |                                | 1473                            |
| 28.5          | 1521                           | 1557                           | 1515                           | 1539                           | 1587                           | 1420                           | 1519                           | 1569                           |                                | 1489                            |
| 29            | 1533                           | 1567                           | 1527                           | 1549                           | 1597                           | 1431                           | 1532                           | 1579                           |                                | 1503                            |
| 29.5          | 1544                           | 1579                           | 1539                           | 1561                           | 1607                           | 1443                           | 1544                           | 1590                           |                                | 1517                            |

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Date: 02/28/22

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| Time<br>(min) | Furnace<br>Probe<br>#1<br>(°F) | Furnace<br>Probe<br>#2<br>(°F) | Furnace<br>Probe<br>#3<br>(°F) | Furnace<br>Probe<br>#4<br>(°F) | Furnace<br>Probe<br>#5<br>(°F) | Furnace<br>Probe<br>#6<br>(°F) | Furnace<br>Probe<br>#7<br>(°F) | Furnace<br>Probe<br>#8<br>(°F) | Furnace<br>Probe<br>#9<br>(°F) | Furnace<br>Probe<br>#10<br>(°F) |
|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| 30            | 1554                           | 1587                           | 1549                           | 1569                           | 1615                           | 1450                           | 1553                           | 1598                           |                                | 1528                            |
| 30.5          | 1566                           | 1598                           | 1560                           | 1580                           | 1625                           | 1461                           | 1565                           | 1609                           |                                | 1539                            |
| 31            | 1572                           | 1601                           | 1564                           | 1580                           | 1627                           | 1466                           | 1568                           | 1613                           |                                | 1547                            |
| 31.5          | 1568                           | 1595                           | 1560                           | 1572                           | 1620                           | 1460                           | 1562                           | 1608                           |                                | 1547                            |
| 32            | 1560                           | 1585                           | 1553                           | 1561                           | 1608                           | 1447                           | 1553                           | 1599                           |                                | 1541                            |
| 32.5          | 1555                           | 1581                           | 1549                           | 1557                           | 1602                           | 1377                           | 1549                           | 1595                           |                                | 1534                            |
| 33            | 1556                           | 1581                           | 1549                           | 1559                           | 1604                           | 1440                           | 1550                           | 1595                           |                                | 1398                            |
| 33.5          | 1560                           | 1586                           | 1554                           | 1564                           | 1609                           | 1445                           | 1555                           | 1598                           |                                | 673                             |
| 34            | 1566                           | 1592                           | 1560                           | 1571                           | 1617                           | 1451                           | 1561                           | 1605                           |                                | 1339                            |
| 34.5          | 1572                           | 1597                           | 1565                           | 1578                           | 1623                           | 1456                           | 1567                           | 1612                           |                                | 623                             |
| 35            | 1577                           | 1603                           | 1571                           | 1584                           | 1628                           | 1460                           | 1573                           | 1617                           |                                | 639                             |
| 35.5          | 1583                           | 1609                           | 1577                           | 1589                           | 1633                           | 1466                           | 1578                           | 1622                           |                                | 677                             |
| 36            | 1587                           | 1613                           | 1580                           | 1592                           | 1636                           | 1470                           | 1584                           | 1626                           |                                | 806                             |
| 36.5          | 1592                           | 1617                           | 1585                           | 1596                           | 1640                           | 1473                           | 1587                           | 1629                           |                                | 1387                            |
| 37            | 1598                           | 1622                           | 1589                           | 1601                           | 1647                           | 1478                           | 1592                           | 1635                           |                                | 944                             |
| 37.5          | 1604                           | 1628                           | 1595                           | 1607                           | 1652                           | 1483                           | 1598                           | 1641                           |                                | 1080                            |
| 38            | 1606                           | 1630                           | 1597                           | 1609                           | 1653                           | 1486                           | 1599                           | 1644                           |                                | 1282                            |
| 38.5          | 1607                           | 1629                           | 1598                           | 1610                           | 1653                           | 1477                           | 1599                           | 1644                           |                                | 1351                            |
| 39            | 1608                           | 1629                           | 1599                           | 1610                           | 1653                           | 1485                           | 1599                           | 1644                           |                                | 1260                            |
| 39.5          | 1611                           | 1630                           | 1600                           | 1612                           | 1654                           | 1486                           | 1601                           | 1646                           |                                | 816                             |
| 40            | 1613                           | 1633                           | 1603                           | 1615                           | 1658                           | 1489                           | 1605                           | 1649                           |                                | 1005                            |
| 40.5          | 1617                           | 1636                           | 1607                           | 1619                           | 1663                           | 1492                           | 1609                           | 1651                           |                                | 1240                            |
| 41            | 1620                           | 1639                           | 1610                           | 1618                           | 1665                           | 1494                           | 1615                           | 1653                           |                                | 467                             |
| 41.5          | 1623                           | 1641                           | 1612                           | 1622                           | 1667                           | 1497                           | 1617                           | 1656                           |                                | 430                             |
| 42            | 1625                           | 1645                           | 1616                           | 1625                           | 1669                           | 1498                           | 1620                           | 1659                           |                                | 1276                            |
| 42.5          | 1630                           | 1648                           | 1620                           | 1629                           | 1674                           | 1501                           | 1622                           | 1662                           |                                | 1216                            |
| 43            | 1634                           | 1652                           | 1623                           | 1635                           | 1677                           | 1504                           | 1625                           | 1667                           |                                | 1275                            |
| 43.5          | 1637                           | 1655                           | 1627                           | 1638                           | 1682                           | 1508                           | 1628                           | 1671                           |                                | 1045                            |
| 44            | 1642                           | 1659                           | 1632                           | 1643                           | 1685                           | 1512                           | 1632                           | 1676                           |                                | 1361                            |
| 44.5          | 1645                           | 1660                           | 1634                           | 1645                           | 1688                           | 1513                           | 1635                           | 1678                           |                                | 1026                            |
| 45            | 1647                           | 1663                           | 1637                           | 1648                           | 1688                           | 1515                           | 1638                           | 1681                           |                                | 942                             |
| 45.5          | 1650                           | 1666                           | 1640                           | 1651                           | 1693                           | 1519                           | 1642                           | 1683                           |                                | 581                             |
| 46            | 1653                           | 1668                           | 1643                           | 1653                           | 1696                           | 1521                           | 1644                           | 1686                           |                                | 1051                            |
| 46.5          | 1655                           | 1671                           | 1645                           | 1654                           | 1697                           | 1522                           | 1647                           | 1687                           |                                | 953                             |
| 47            | 1656                           | 1670                           | 1646                           | 1655                           | 1696                           | 1522                           | 1648                           | 1688                           |                                | 663                             |
| 47.5          | 1656                           | 1670                           | 1647                           | 1657                           | 1697                           | 1522                           | 1649                           | 1689                           |                                | 961                             |
| 48            | 1658                           | 1672                           | 1649                           | 1659                           | 1698                           | 1523                           | 1651                           | 1691                           |                                | 1054                            |
| 48.5          | 1660                           | 1674                           | 1651                           | 1661                           | 1701                           | 1526                           | 1653                           | 1693                           |                                | 863                             |
| 49            | 1663                           | 1676                           | 1654                           | 1663                           | 1703                           | 1527                           | 1656                           | 1696                           |                                | 1182                            |
| 49.5          | 1665                           | 1679                           | 1655                           | 1665                           | 1705                           | 1529                           | 1658                           | 1698                           |                                | 605                             |
| 50            | 1668                           | 1681                           | 1658                           | 1668                           | 1707                           | 1531                           | 1660                           | 1700                           |                                | 646                             |
| 50.5          | 1670                           | 1683                           | 1661                           | 1670                           | 1709                           | 1533                           | 1662                           | 1703                           |                                | 960                             |
| 51            | 1673                           | 1684                           | 1664                           | 1673                           | 1711                           | 1534                           | 1663                           | 1705                           |                                | 856                             |
| 51.5          | 1673                           | 1686                           | 1665                           | 1673                           | 1712                           | 1535                           | 1665                           | 1706                           |                                | 1616                            |
| 52            | 1675                           | 1687                           | 1666                           | 1674                           | 1713                           | 1537                           | 1667                           | 1707                           |                                | 1102                            |
| 52.5          | 1677                           | 1688                           | 1668                           | 1675                           | 1714                           | 1538                           | 1668                           | 1708                           |                                | 1268                            |
| 53            | 1678                           | 1689                           | 1669                           | 1678                           | 1716                           | 1539                           | 1670                           | 1710                           |                                | 1100                            |
| 53.5          | 1682                           | 1692                           | 1672                           | 1681                           | 1720                           | 1543                           | 1672                           | 1714                           |                                | 955                             |
| 54            | 1685                           | 1694                           | 1675                           | 1684                           | 1721                           | 1545                           | 1675                           | 1717                           |                                | 806                             |
| 54.5          | 1686                           | 1696                           | 1677                           | 1686                           | 1724                           | 1547                           | 1678                           | 1719                           |                                | 522                             |
| 55            | 1690                           | 1699                           | 1680                           | 1690                           | 1728                           | 1550                           | 1681                           | 1722                           |                                | 1480                            |
| 55.5          | 1693                           | 1704                           | 1683                           | 1693                           | 1731                           | 1553                           | 1685                           | 1726                           |                                | 1302                            |
| 56            | 1696                           | 1705                           | 1686                           | 1694                           | 1733                           | 1555                           | 1687                           | 1727                           |                                | 740                             |
| 56.5          | 1699                           | 1708                           | 1688                           | 1697                           | 1735                           | 1556                           | 1690                           | 1729                           |                                | 1614                            |
| 57            | 1702                           | 1712                           | 1692                           | 1701                           | 1739                           | 1560                           | 1694                           | 1733                           |                                | 1243                            |
| 57.5          | 1705                           | 1713                           | 1694                           | 1703                           | 1741                           | 1562                           | 1695                           | 1735                           |                                | 1239                            |
| 58            | 1706                           | 1715                           | 1696                           | 1704                           | 1743                           | 1563                           | 1697                           | 1736                           |                                | 477                             |
| 58.5          | 1708                           | 1717                           | 1699                           | 1706                           | 1744                           | 1564                           | 1700                           | 1738                           |                                | 1147                            |
| 59            | 1709                           | 1717                           | 1700                           | 1707                           | 1746                           | 1564                           | 1701                           | 1739                           |                                | 1338                            |
| 59.5          | 1710                           | 1718                           | 1701                           | 1709                           | 1746                           | 1564                           | 1702                           | 1741                           |                                | 856                             |

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|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| 60            | 1712                           | 1720                           | 1703                           | 1710                           | 1747                           | 1565                           | 1702                           | 1742                           |                                | 636                             |
| 60.5          | 1714                           | 1721                           | 1703                           | 1711                           | 1748                           | 1557                           | 1704                           | 1743                           |                                | 333                             |
| 61            | 1713                           | 1721                           | 1704                           | 1710                           | 1747                           | 1566                           | 1704                           | 1743                           |                                | 954                             |
| 61.5          | 1714                           | 1722                           | 1705                           | 1710                           | 1747                           | 1566                           | 1704                           | 1743                           |                                | 378                             |
| 62            | 1714                           | 1722                           | 1705                           | 1710                           | 1748                           | 1568                           | 1705                           | 1743                           |                                | 1203                            |
| 62.5          | 1715                           | 1723                           | 1706                           | 1711                           | 1749                           | 1568                           | 1705                           | 1743                           |                                | 1694                            |
| 63            | 1717                           | 1724                           | 1708                           | 1713                           | 1751                           | 1569                           | 1707                           | 1745                           |                                | 1153                            |
| 63.5          | 1719                           | 1726                           | 1710                           | 1716                           | 1752                           | 1571                           | 1709                           | 1747                           |                                | 1222                            |
| 64            | 1720                           | 1728                           | 1711                           | 1717                           | 1755                           | 1572                           | 1712                           | 1749                           |                                | 339                             |
| 64.5          | 1722                           | 1730                           | 1714                           | 1720                           | 1757                           | 1574                           | 1714                           | 1751                           |                                | 1131                            |
| 65            | 1724                           | 1732                           | 1716                           | 1722                           | 1759                           | 1576                           | 1716                           | 1754                           |                                | 378                             |
| 65.5          | 1727                           | 1734                           | 1718                           | 1724                           | 1762                           | 1579                           | 1718                           | 1756                           |                                | 1237                            |
| 66            | 1730                           | 1736                           | 1720                           | 1727                           | 1763                           | 1580                           | 1721                           | 1758                           |                                | 362                             |
| 66.5          | 1732                           | 1738                           | 1722                           | 1729                           | 1765                           | 1582                           | 1724                           | 1761                           |                                | 358                             |
| 67            | 1734                           | 1740                           | 1725                           | 1731                           | 1768                           | 1585                           | 1724                           | 1764                           |                                | 680                             |
| 67.5          | 1737                           | 1743                           | 1728                           | 1734                           | 1771                           | 1587                           | 1727                           | 1766                           |                                | 396                             |
| 68            | 1740                           | 1746                           | 1730                           | 1736                           | 1774                           | 1590                           | 1730                           | 1769                           |                                | 581                             |
| 68.5          | 1742                           | 1747                           | 1732                           | 1739                           | 1775                           | 1592                           | 1733                           | 1771                           |                                | 318                             |
| 69            | 1745                           | 1749                           | 1735                           | 1741                           | 1779                           | 1594                           | 1735                           | 1773                           |                                | 1087                            |
| 69.5          | 1747                           | 1752                           | 1738                           | 1743                           | 1781                           | 1597                           | 1738                           | 1776                           |                                | 1062                            |
| 70            | 1749                           | 1754                           | 1740                           | 1746                           | 1781                           | 1598                           | 1740                           | 1778                           |                                | 784                             |
| 70.5          | 1750                           | 1755                           | 1743                           | 1748                           | 1783                           | 1599                           | 1742                           | 1779                           |                                | 738                             |
| 71            | 1753                           | 1757                           | 1745                           | 1751                           | 1785                           | 1602                           | 1744                           | 1782                           |                                | 1386                            |
| 71.5          | 1755                           | 1760                           | 1746                           | 1752                           | 1787                           | 1603                           | 1745                           | 1784                           |                                | 585                             |
| 72            | 1757                           | 1762                           | 1748                           | 1754                           | 1789                           | 1606                           | 1748                           | 1786                           |                                | 581                             |
| 72.5          | 1759                           | 1763                           | 1749                           | 1755                           | 1791                           | 1606                           | 1749                           | 1787                           |                                | 637                             |
| 73            | 1759                           | 1763                           | 1749                           | 1753                           | 1790                           | 1606                           | 1749                           | 1786                           |                                | 834                             |
| 73.5          | 1758                           | 1761                           | 1748                           | 1753                           | 1790                           | 1604                           | 1748                           | 1785                           |                                | 768                             |
| 74            | 1757                           | 1760                           | 1749                           | 1753                           | 1788                           | 1603                           | 1748                           | 1785                           |                                | 851                             |
| 74.5          | 1757                           | 1761                           | 1748                           | 1752                           | 1788                           | 1603                           | 1748                           | 1785                           |                                | 950                             |
| 75            | 1758                           | 1761                           | 1748                           | 1752                           | 1789                           | 1603                           | 1749                           | 1785                           |                                | 765                             |
| 75.5          | 1759                           | 1762                           | 1750                           | 1754                           | 1789                           | 1604                           | 1749                           | 1785                           |                                | 1665                            |
| 76            | 1760                           | 1762                           | 1750                           | 1755                           | 1790                           | 1605                           | 1750                           | 1787                           |                                | 1717                            |
| 76.5          | 1762                           | 1764                           | 1752                           | 1756                           | 1792                           | 1606                           | 1752                           | 1789                           |                                | 1348                            |
| 77            | 1764                           | 1765                           | 1754                           | 1758                           | 1794                           | 1608                           | 1754                           | 1791                           |                                | 1079                            |
| 77.5          | 1766                           | 1767                           | 1755                           | 1760                           | 1796                           | 1609                           | 1756                           | 1792                           |                                | 740                             |
| 78            | 1766                           | 1768                           | 1756                           | 1759                           | 1797                           | 1611                           | 1758                           | 1793                           |                                | 1744                            |
| 78.5          | 1768                           | 1769                           | 1759                           | 1762                           | 1798                           | 1613                           | 1760                           | 1795                           |                                | 1723                            |
| 79            | 1770                           | 1770                           | 1761                           | 1765                           | 1800                           | 1614                           | 1761                           | 1798                           |                                | 1664                            |
| 79.5          | 1772                           | 1773                           | 1763                           | 1768                           | 1802                           | 1615                           | 1764                           | 1800                           |                                | 1312                            |
| 80            | 1774                           | 1774                           | 1764                           | 1770                           | 1803                           | 1617                           | 1764                           | 1802                           |                                | 1515                            |
| 80.5          | 1776                           | 1776                           | 1767                           | 1774                           | 1806                           | 1619                           | 1767                           | 1804                           |                                | 1655                            |
| 81            | 1779                           | 1779                           | 1770                           | 1776                           | 1809                           | 1621                           | 1770                           | 1807                           |                                | 1270                            |
| 81.5          | 1781                           | 1781                           | 1771                           | 1776                           | 1811                           | 1622                           | 1771                           | 1808                           |                                | 1687                            |
| 82            | 1781                           | 1780                           | 1772                           | 1776                           | 1810                           | 1622                           | 1771                           | 1808                           |                                | 1706                            |
| 82.5          | 1779                           | 1778                           | 1770                           | 1774                           | 1808                           | 1619                           | 1769                           | 1806                           |                                | 1050                            |
| 83            | 1777                           | 1776                           | 1769                           | 1772                           | 1806                           | 1617                           | 1767                           | 1804                           |                                | 992                             |
| 83.5          | 1776                           | 1775                           | 1767                           | 1771                           | 1805                           | 1616                           | 1767                           | 1803                           |                                | 1734                            |
| 84            | 1777                           | 1775                           | 1767                           | 1770                           | 1804                           | 1615                           | 1766                           | 1803                           |                                | 1338                            |
| 84.5          | 1775                           | 1774                           | 1767                           | 1770                           | 1803                           | 1614                           | 1765                           | 1802                           |                                | 1707                            |
| 85            | 1776                           | 1774                           | 1768                           | 1771                           | 1804                           | 1615                           | 1765                           | 1802                           |                                | 1751                            |
| 85.5          | 1777                           | 1775                           | 1770                           | 1773                           | 1806                           | 1616                           | 1767                           | 1804                           |                                | 1754                            |
| 86            | 1778                           | 1776                           | 1771                           | 1773                           | 1806                           | 1617                           | 1768                           | 1805                           |                                | 1738                            |
| 86.5          | 1780                           | 1778                           | 1772                           | 1774                           | 1808                           | 1618                           | 1770                           | 1806                           |                                | 1757                            |
| 87            | 1779                           | 1778                           | 1771                           | 1773                           | 1808                           | 1618                           | 1771                           | 1806                           |                                | 1722                            |
| 87.5          | 1781                           | 1779                           | 1772                           | 1774                           | 1810                           | 1618                           | 1771                           | 1806                           |                                | 1683                            |
| 88            | 1782                           | 1779                           | 1773                           | 1776                           | 1811                           | 1619                           | 1772                           | 1807                           |                                | 1701                            |
| 88.5          | 1782                           | 1779                           | 1774                           | 1776                           | 1809                           | 1619                           | 1772                           | 1808                           |                                | 1575                            |
| 89            | 1782                           | 1779                           | 1774                           | 1776                           | 1810                           | 1618                           | 1772                           | 1808                           |                                | 1315                            |
| 89.5          | 1784                           | 1781                           | 1775                           | 1778                           | 1811                           | 1621                           | 1774                           | 1810                           |                                | 1748                            |

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|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| 90            | 1786                           | 1783                           | 1777                           | 1781                           | 1814                           | 1623                           | 1776                           | 1812                           |                                | 1744                            |
| 90.5          | 1788                           | 1785                           | 1779                           | 1783                           | 1817                           | 1625                           | 1779                           | 1814                           |                                | 1664                            |
| 91            | 1790                           | 1787                           | 1781                           | 1785                           | 1819                           | 1626                           | 1781                           | 1816                           |                                | 1741                            |
| 91.5          | 1791                           | 1788                           | 1783                           | 1787                           | 1820                           | 1627                           | 1782                           | 1817                           |                                | 1762                            |
| 92            | 1794                           | 1790                           | 1786                           | 1790                           | 1822                           | 1630                           | 1785                           | 1820                           |                                | 1768                            |
| 92.5          | 1797                           | 1794                           | 1789                           | 1793                           | 1826                           | 1633                           | 1788                           | 1824                           |                                | 1328                            |
| 93            | 1801                           | 1797                           | 1792                           | 1796                           | 1829                           | 1636                           | 1792                           | 1827                           |                                | 520                             |
| 93.5          | 1803                           | 1800                           | 1794                           | 1799                           | 1832                           | 1639                           | 1794                           | 1830                           |                                | 1760                            |
| 94            | 1806                           | 1802                           | 1797                           | 1801                           | 1834                           | 1641                           | 1796                           | 1832                           |                                | 1071                            |
| 94.5          | 1808                           | 1804                           | 1799                           | 1803                           | 1836                           | 1642                           | 1798                           | 1834                           |                                | 1446                            |
| 95            | 1808                           | 1805                           | 1801                           | 1804                           | 1837                           | 1643                           | 1800                           | 1835                           |                                | 1737                            |
| 95.5          | 1809                           | 1806                           | 1802                           | 1804                           | 1837                           | 1643                           | 1800                           | 1836                           |                                | 1169                            |
| 96            | 1811                           | 1807                           | 1802                           | 1806                           | 1838                           | 1646                           | 1801                           | 1837                           |                                | 1681                            |
| 96.5          | 1812                           | 1809                           | 1803                           | 1808                           | 1840                           | 1647                           | 1803                           | 1839                           |                                | 1494                            |
| 97            | 1814                           | 1810                           | 1805                           | 1808                           | 1841                           | 1648                           | 1803                           | 1841                           |                                | 1746                            |
| 97.5          | 1815                           | 1812                           | 1806                           | 1811                           | 1843                           | 1649                           | 1806                           | 1842                           |                                | 1718                            |
| 98            | 1818                           | 1815                           | 1810                           | 1814                           | 1847                           | 1651                           | 1808                           | 1845                           |                                | 1762                            |
| 98.5          | 1821                           | 1817                           | 1812                           | 1816                           | 1849                           | 1654                           | 1811                           | 1847                           |                                | 1798                            |
| 99            | 1823                           | 1819                           | 1814                           | 1818                           | 1850                           | 1656                           | 1813                           | 1849                           |                                | 1505                            |
| 99.5          | 1824                           | 1820                           | 1816                           | 1819                           | 1851                           | 1657                           | 1814                           | 1850                           |                                | 1760                            |
| 100           | 1826                           | 1822                           | 1817                           | 1820                           | 1854                           | 1659                           | 1817                           | 1852                           |                                | 1771                            |
| 100.5         | 1827                           | 1823                           | 1820                           | 1822                           | 1855                           | 1661                           | 1818                           | 1853                           |                                | 921                             |
| 101           | 1830                           | 1826                           | 1823                           | 1826                           | 1857                           | 1663                           | 1821                           | 1856                           |                                | 1368                            |
| 101.5         | 1832                           | 1828                           | 1825                           | 1828                           | 1860                           | 1665                           | 1823                           | 1858                           |                                | 1801                            |
| 102           | 1833                           | 1828                           | 1826                           | 1829                           | 1860                           | 1665                           | 1824                           | 1860                           |                                | 1476                            |
| 102.5         | 1833                           | 1828                           | 1825                           | 1828                           | 1860                           | 1665                           | 1824                           | 1860                           |                                | 1752                            |
| 103           | 1832                           | 1826                           | 1823                           | 1825                           | 1858                           | 1663                           | 1822                           | 1857                           |                                | 1807                            |
| 103.5         | 1830                           | 1823                           | 1822                           | 1823                           | 1856                           | 1661                           | 1821                           | 1856                           |                                | 1681                            |
| 104           | 1829                           | 1821                           | 1821                           | 1822                           | 1854                           | 1660                           | 1819                           | 1855                           |                                | 1803                            |
| 104.5         | 1828                           | 1821                           | 1819                           | 1820                           | 1854                           | 1658                           | 1819                           | 1853                           |                                | 1721                            |
| 105           | 1827                           | 1820                           | 1819                           | 1820                           | 1853                           | 1658                           | 1818                           | 1852                           |                                | 1805                            |
| 105.5         | 1828                           | 1821                           | 1820                           | 1821                           | 1853                           | 1659                           | 1818                           | 1853                           |                                | 1796                            |
| 106           | 1830                           | 1822                           | 1822                           | 1824                           | 1854                           | 1660                           | 1820                           | 1855                           |                                | 1786                            |
| 106.5         | 1831                           | 1823                           | 1822                           | 1825                           | 1855                           | 1661                           | 1821                           | 1856                           |                                | 1809                            |
| 107           | 1833                           | 1825                           | 1824                           | 1827                           | 1857                           | 1662                           | 1822                           | 1858                           |                                | 1487                            |
| 107.5         | 1834                           | 1827                           | 1826                           | 1829                           | 1859                           | 1663                           | 1825                           | 1860                           |                                | 1803                            |
| 108           | 1836                           | 1828                           | 1828                           | 1831                           | 1862                           | 1665                           | 1826                           | 1862                           |                                | 901                             |
| 108.5         | 1837                           | 1830                           | 1830                           | 1832                           | 1863                           | 1667                           | 1827                           | 1863                           |                                | 1555                            |
| 109           | 1839                           | 1830                           | 1831                           | 1833                           | 1865                           | 1668                           | 1829                           | 1864                           |                                | 1221                            |
| 109.5         | 1840                           | 1832                           | 1831                           | 1834                           | 1866                           | 1669                           | 1830                           | 1866                           |                                | 1626                            |
| 110           | 1841                           | 1832                           | 1833                           | 1835                           | 1866                           | 1670                           | 1831                           | 1867                           |                                | 1601                            |
| 110.5         | 1841                           | 1832                           | 1833                           | 1835                           | 1865                           | 1669                           | 1831                           | 1867                           |                                | 1806                            |
| 111           | 1841                           | 1833                           | 1834                           | 1836                           | 1866                           | 1670                           | 1832                           | 1867                           |                                | 1818                            |
| 111.5         | 1842                           | 1833                           | 1834                           | 1837                           | 1868                           | 1670                           | 1833                           | 1868                           |                                | 1810                            |
| 112           | 1843                           | 1834                           | 1836                           | 1838                           | 1869                           | 1671                           | 1834                           | 1869                           |                                | 1772                            |
| 112.5         | 1845                           | 1836                           | 1838                           | 1840                           | 1870                           | 1673                           | 1835                           | 1870                           |                                | 1424                            |
| 113           | 1846                           | 1837                           | 1838                           | 1840                           | 1871                           | 1673                           | 1836                           | 1870                           |                                | 1662                            |
| 113.5         | 1844                           | 1835                           | 1837                           | 1837                           | 1870                           | 1671                           | 1835                           | 1869                           |                                | 609                             |
| 114           | 1843                           | 1833                           | 1834                           | 1836                           | 1868                           | 1643                           | 1833                           | 1867                           |                                | 1743                            |
| 114.5         | 1842                           | 1833                           | 1834                           | 1836                           | 1866                           | 1669                           | 1832                           | 1867                           |                                | 1583                            |
| 115           | 1841                           | 1833                           | 1834                           | 1835                           | 1866                           | 1668                           | 1833                           | 1867                           |                                | 1818                            |
| 115.5         | 1842                           | 1833                           | 1833                           | 1835                           | 1866                           | 1669                           | 1833                           | 1866                           |                                | 1823                            |
| 116           | 1842                           | 1833                           | 1833                           | 1835                           | 1866                           | 1669                           | 1833                           | 1866                           |                                | 1657                            |
| 116.5         | 1842                           | 1833                           | 1834                           | 1836                           | 1867                           | 1669                           | 1833                           | 1867                           |                                | 1534                            |
| 117           | 1842                           | 1833                           | 1834                           | 1836                           | 1867                           | 1659                           | 1833                           | 1867                           |                                | 1168                            |
| 117.5         | 1843                           | 1835                           | 1835                           | 1837                           | 1867                           | 1669                           | 1834                           | 1868                           |                                | 1737                            |
| 118           | 1844                           | 1835                           | 1836                           | 1838                           | 1868                           | 1667                           | 1835                           | 1868                           |                                | 1505                            |
| 118.5         | 1844                           | 1835                           | 1836                           | 1839                           | 1869                           | 1670                           | 1835                           | 1869                           |                                | 1305                            |
| 119           | 1845                           | 1836                           | 1837                           | 1840                           | 1869                           | 1671                           | 1836                           | 1869                           |                                | 853                             |
| 119.5         | 1846                           | 1837                           | 1837                           | 1840                           | 1870                           | 1672                           | 1837                           | 1871                           |                                | 1796                            |



Total Quality. Assured.

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## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | Furnace<br>Probe<br>#1<br>(°F) | Furnace<br>Probe<br>#2<br>(°F) | Furnace<br>Probe<br>#3<br>(°F) | Furnace<br>Probe<br>#4<br>(°F) | Furnace<br>Probe<br>#5<br>(°F) | Furnace<br>Probe<br>#6<br>(°F) | Furnace<br>Probe<br>#7<br>(°F) | Furnace<br>Probe<br>#8<br>(°F) | Furnace<br>Probe<br>#9<br>(°F) | Furnace<br>Probe<br>#10<br>(°F) |
|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| 120           | 1847                           | 1838                           | 1838                           | 1841                           | 1871                           | 1609                           | 1838                           | 1872                           |                                | 1826                            |
| 120.5         | 1848                           | 1839                           | 1839                           | 1842                           | 1871                           | 1674                           | 1838                           | 1873                           |                                | 1771                            |
| 121           | 1848                           | 1840                           | 1840                           | 1842                           | 1871                           | 1673                           | 1839                           | 1873                           |                                | 1709                            |
| 121.5         | 1849                           | 1841                           | 1840                           | 1841                           | 1874                           | 1674                           | 1840                           | 1873                           |                                | 1371                            |
| 122           | 1850                           | 1843                           | 1842                           | 1844                           | 1875                           | 1676                           | 1841                           | 1875                           |                                | 1056                            |

Max

Max Allowed

## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | Unexposed<br>Side<br>TC #1<br>(°F) | Unexposed<br>Side<br>TC #2<br>(°F) | Unexposed<br>Side<br>TC #3<br>(°F) | Unexposed<br>Side<br>TC #4<br>(°F) | Unexposed<br>Side<br>TC #5<br>(°F) | Unexposed<br>Side<br>TC #6<br>(°F) | Unexposed<br>Side<br>TC #7<br>(°F) | Unexposed<br>Side<br>TC #8<br>(°F) | Unexposed<br>Side<br>TC #9<br>(°F) | Unexposed<br>Side<br>Average<br>(°F) |
|---------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 0             | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 0.5           | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 1             | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 1.5           | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 2             | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 2.5           | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 3             | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 3.5           | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 4             | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 75                                 | 76                                   |
| 4.5           | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 76                                   |
| 5             | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 76                                 | 76                                 | 75                                 | 75                                 | 76                                   |
| 5.5           | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 6             | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 6.5           | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 7             | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 75                                 | 75                                 | 76                                   |
| 7.5           | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 8             | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 8.5           | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 9             | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 9.5           | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 10            | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 10.5          | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 11            | 77                                 | 77                                 | 76                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 11.5          | 77                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 12            | 77                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 12.5          | 77                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 76                                   |
| 13            | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 13.5          | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 14            | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 14.5          | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 15            | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 15.5          | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 16            | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 75                                 | 77                                   |
| 16.5          | 78                                 | 78                                 | 77                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 76                                 | 77                                   |
| 17            | 78                                 | 77                                 | 77                                 | 78                                 | 77                                 | 77                                 | 77                                 | 76                                 | 76                                 | 77                                   |
| 17.5          | 78                                 | 78                                 | 77                                 | 78                                 | 77                                 | 78                                 | 77                                 | 76                                 | 76                                 | 77                                   |
| 18            | 78                                 | 78                                 | 77                                 | 78                                 | 77                                 | 78                                 | 77                                 | 76                                 | 76                                 | 77                                   |
| 18.5          | 78                                 | 78                                 | 77                                 | 78                                 | 78                                 | 79                                 | 78                                 | 77                                 | 76                                 | 78                                   |
| 19            | 78                                 | 78                                 | 77                                 | 79                                 | 78                                 | 79                                 | 78                                 | 77                                 | 76                                 | 78                                   |
| 19.5          | 79                                 | 78                                 | 77                                 | 79                                 | 78                                 | 80                                 | 79                                 | 77                                 | 76                                 | 78                                   |
| 20            | 79                                 | 78                                 | 78                                 | 80                                 | 78                                 | 81                                 | 79                                 | 77                                 | 77                                 | 79                                   |
| 20.5          | 79                                 | 78                                 | 78                                 | 81                                 | 79                                 | 82                                 | 80                                 | 78                                 | 77                                 | 79                                   |
| 21            | 80                                 | 78                                 | 78                                 | 81                                 | 79                                 | 84                                 | 80                                 | 78                                 | 78                                 | 80                                   |
| 21.5          | 80                                 | 78                                 | 78                                 | 82                                 | 79                                 | 85                                 | 81                                 | 79                                 | 79                                 | 80                                   |
| 22            | 81                                 | 79                                 | 79                                 | 83                                 | 80                                 | 86                                 | 82                                 | 79                                 | 79                                 | 81                                   |
| 22.5          | 82                                 | 79                                 | 79                                 | 84                                 | 81                                 | 87                                 | 83                                 | 80                                 | 80                                 | 82                                   |
| 23            | 83                                 | 79                                 | 80                                 | 85                                 | 81                                 | 88                                 | 84                                 | 81                                 | 81                                 | 82                                   |
| 23.5          | 83                                 | 80                                 | 80                                 | 86                                 | 82                                 | 89                                 | 84                                 | 81                                 | 82                                 | 83                                   |
| 24            | 84                                 | 80                                 | 80                                 | 87                                 | 82                                 | 91                                 | 85                                 | 82                                 | 82                                 | 84                                   |
| 24.5          | 85                                 | 80                                 | 81                                 | 88                                 | 83                                 | 92                                 | 86                                 | 83                                 | 84                                 | 85                                   |
| 25            | 86                                 | 81                                 | 81                                 | 89                                 | 84                                 | 93                                 | 87                                 | 84                                 | 84                                 | 85                                   |
| 25.5          | 87                                 | 81                                 | 81                                 | 90                                 | 84                                 | 94                                 | 88                                 | 84                                 | 85                                 | 86                                   |
| 26            | 88                                 | 81                                 | 82                                 | 92                                 | 85                                 | 96                                 | 89                                 | 85                                 | 86                                 | 87                                   |
| 26.5          | 88                                 | 82                                 | 83                                 | 93                                 | 86                                 | 97                                 | 90                                 | 86                                 | 87                                 | 88                                   |
| 27            | 89                                 | 83                                 | 83                                 | 95                                 | 87                                 | 99                                 | 91                                 | 88                                 | 89                                 | 89                                   |
| 27.5          | 90                                 | 83                                 | 84                                 | 97                                 | 88                                 | 100                                | 93                                 | 89                                 | 90                                 | 90                                   |
| 28            | 92                                 | 84                                 | 84                                 | 98                                 | 89                                 | 102                                | 94                                 | 91                                 | 92                                 | 92                                   |
| 28.5          | 93                                 | 84                                 | 85                                 | 100                                | 91                                 | 104                                | 96                                 | 92                                 | 94                                 | 93                                   |
| 29            | 93                                 | 85                                 | 86                                 | 102                                | 92                                 | 106                                | 98                                 | 94                                 | 95                                 | 95                                   |
| 29.5          | 95                                 | 86                                 | 87                                 | 104                                | 94                                 | 108                                | 99                                 | 96                                 | 98                                 | 96                                   |



## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

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Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | Unexposed<br>Side<br>TC #1<br>(°F) | Unexposed<br>Side<br>TC #2<br>(°F) | Unexposed<br>Side<br>TC #3<br>(°F) | Unexposed<br>Side<br>TC #4<br>(°F) | Unexposed<br>Side<br>TC #5<br>(°F) | Unexposed<br>Side<br>TC #6<br>(°F) | Unexposed<br>Side<br>TC #7<br>(°F) | Unexposed<br>Side<br>TC #8<br>(°F) | Unexposed<br>Side<br>TC #9<br>(°F) | Unexposed<br>Side<br>Average<br>(°F) |
|---------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 30            | 96                                 | 87                                 | 88                                 | 106                                | 95                                 | 109                                | 101                                | 98                                 | 100                                | 98                                   |
| 30.5          | 97                                 | 88                                 | 89                                 | 107                                | 97                                 | 112                                | 103                                | 100                                | 102                                | 99                                   |
| 31            | 99                                 | 89                                 | 90                                 | 109                                | 99                                 | 114                                | 105                                | 103                                | 104                                | 101                                  |
| 31.5          | 100                                | 90                                 | 92                                 | 111                                | 101                                | 116                                | 106                                | 105                                | 106                                | 103                                  |
| 32            | 101                                | 92                                 | 93                                 | 113                                | 103                                | 118                                | 108                                | 107                                | 108                                | 105                                  |
| 32.5          | 103                                | 93                                 | 94                                 | 115                                | 105                                | 120                                | 110                                | 109                                | 110                                | 107                                  |
| 33            | 104                                | 94                                 | 96                                 | 117                                | 107                                | 122                                | 112                                | 112                                | 112                                | 108                                  |
| 33.5          | 106                                | 96                                 | 98                                 | 118                                | 109                                | 124                                | 113                                | 114                                | 115                                | 110                                  |
| 34            | 107                                | 97                                 | 99                                 | 120                                | 111                                | 126                                | 115                                | 116                                | 117                                | 112                                  |
| 34.5          | 110                                | 99                                 | 101                                | 122                                | 113                                | 128                                | 117                                | 118                                | 119                                | 114                                  |
| 35            | 113                                | 100                                | 103                                | 123                                | 114                                | 130                                | 118                                | 120                                | 121                                | 116                                  |
| 35.5          | 117                                | 102                                | 105                                | 125                                | 116                                | 132                                | 120                                | 122                                | 123                                | 118                                  |
| 36            | 123                                | 103                                | 107                                | 126                                | 118                                | 134                                | 122                                | 124                                | 125                                | 120                                  |
| 36.5          | 130                                | 105                                | 109                                | 128                                | 120                                | 136                                | 123                                | 126                                | 127                                | 123                                  |
| 37            | 137                                | 107                                | 112                                | 129                                | 121                                | 138                                | 125                                | 128                                | 129                                | 125                                  |
| 37.5          | 143                                | 108                                | 114                                | 131                                | 123                                | 139                                | 126                                | 130                                | 131                                | 127                                  |
| 38            | 148                                | 110                                | 115                                | 132                                | 125                                | 141                                | 128                                | 132                                | 133                                | 129                                  |
| 38.5          | 153                                | 112                                | 118                                | 134                                | 126                                | 142                                | 129                                | 133                                | 135                                | 131                                  |
| 39            | 158                                | 114                                | 120                                | 135                                | 128                                | 144                                | 130                                | 135                                | 136                                | 133                                  |
| 39.5          | 162                                | 116                                | 121                                | 136                                | 129                                | 145                                | 132                                | 136                                | 138                                | 135                                  |
| 40            | 165                                | 120                                | 123                                | 137                                | 131                                | 147                                | 133                                | 138                                | 139                                | 137                                  |
| 40.5          | 168                                | 123                                | 125                                | 138                                | 132                                | 148                                | 134                                | 139                                | 141                                | 139                                  |
| 41            | 170                                | 127                                | 127                                | 139                                | 133                                | 149                                | 135                                | 141                                | 142                                | 140                                  |
| 41.5          | 172                                | 130                                | 128                                | 140                                | 134                                | 150                                | 136                                | 142                                | 143                                | 142                                  |
| 42            | 174                                | 134                                | 130                                | 141                                | 136                                | 151                                | 137                                | 143                                | 145                                | 143                                  |
| 42.5          | 176                                | 138                                | 131                                | 142                                | 137                                | 153                                | 138                                | 144                                | 146                                | 145                                  |
| 43            | 177                                | 141                                | 133                                | 143                                | 138                                | 153                                | 139                                | 145                                | 147                                | 146                                  |
| 43.5          | 178                                | 144                                | 134                                | 144                                | 139                                | 154                                | 140                                | 146                                | 147                                | 147                                  |
| 44            | 179                                | 147                                | 135                                | 145                                | 140                                | 155                                | 141                                | 147                                | 149                                | 149                                  |
| 44.5          | 179                                | 150                                | 137                                | 146                                | 141                                | 156                                | 142                                | 148                                | 149                                | 150                                  |
| 45            | 180                                | 153                                | 138                                | 147                                | 142                                | 157                                | 143                                | 149                                | 151                                | 151                                  |
| 45.5          | 181                                | 155                                | 139                                | 148                                | 143                                | 158                                | 144                                | 150                                | 151                                | 152                                  |
| 46            | 181                                | 157                                | 140                                | 148                                | 144                                | 158                                | 145                                | 151                                | 152                                | 153                                  |
| 46.5          | 182                                | 158                                | 142                                | 149                                | 145                                | 159                                | 145                                | 151                                | 153                                | 154                                  |
| 47            | 182                                | 160                                | 143                                | 150                                | 146                                | 160                                | 146                                | 152                                | 153                                | 155                                  |
| 47.5          | 183                                | 161                                | 144                                | 150                                | 146                                | 160                                | 147                                | 153                                | 154                                | 155                                  |
| 48            | 183                                | 162                                | 145                                | 151                                | 147                                | 161                                | 147                                | 153                                | 155                                | 156                                  |
| 48.5          | 183                                | 164                                | 146                                | 152                                | 148                                | 162                                | 148                                | 154                                | 155                                | 157                                  |
| 49            | 184                                | 165                                | 147                                | 152                                | 149                                | 162                                | 149                                | 155                                | 156                                | 158                                  |
| 49.5          | 184                                | 165                                | 148                                | 153                                | 149                                | 163                                | 149                                | 155                                | 157                                | 158                                  |
| 50            | 184                                | 166                                | 148                                | 153                                | 150                                | 163                                | 150                                | 155                                | 157                                | 158                                  |
| 50.5          | 184                                | 167                                | 149                                | 154                                | 151                                | 164                                | 150                                | 156                                | 158                                | 159                                  |
| 51            | 185                                | 168                                | 150                                | 155                                | 151                                | 164                                | 151                                | 157                                | 158                                | 160                                  |
| 51.5          | 185                                | 168                                | 151                                | 155                                | 152                                | 165                                | 152                                | 157                                | 159                                | 160                                  |
| 52            | 185                                | 169                                | 152                                | 155                                | 153                                | 165                                | 152                                | 158                                | 159                                | 161                                  |
| 52.5          | 185                                | 170                                | 152                                | 156                                | 153                                | 166                                | 153                                | 158                                | 160                                | 161                                  |
| 53            | 186                                | 170                                | 153                                | 157                                | 154                                | 166                                | 153                                | 159                                | 160                                | 162                                  |
| 53.5          | 186                                | 171                                | 154                                | 157                                | 154                                | 167                                | 154                                | 159                                | 161                                | 163                                  |
| 54            | 186                                | 171                                | 155                                | 158                                | 155                                | 167                                | 155                                | 160                                | 161                                | 163                                  |
| 54.5          | 186                                | 172                                | 155                                | 158                                | 155                                | 167                                | 155                                | 160                                | 162                                | 163                                  |
| 55            | 186                                | 172                                | 156                                | 158                                | 156                                | 168                                | 155                                | 160                                | 162                                | 164                                  |
| 55.5          | 186                                | 173                                | 156                                | 159                                | 157                                | 168                                | 156                                | 161                                | 163                                | 164                                  |
| 56            | 186                                | 173                                | 157                                | 159                                | 157                                | 169                                | 156                                | 161                                | 163                                | 165                                  |
| 56.5          | 186                                | 173                                | 158                                | 160                                | 158                                | 169                                | 157                                | 161                                | 163                                | 165                                  |
| 57            | 186                                | 174                                | 158                                | 160                                | 158                                | 169                                | 157                                | 162                                | 164                                | 165                                  |
| 57.5          | 186                                | 174                                | 159                                | 160                                | 159                                | 170                                | 157                                | 162                                | 164                                | 166                                  |
| 58            | 186                                | 174                                | 159                                | 161                                | 159                                | 170                                | 158                                | 162                                | 164                                | 166                                  |
| 58.5          | 186                                | 175                                | 159                                | 161                                | 159                                | 170                                | 158                                | 162                                | 164                                | 166                                  |
| 59            | 186                                | 175                                | 160                                | 161                                | 160                                | 170                                | 158                                | 163                                | 165                                | 166                                  |
| 59.5          | 186                                | 175                                | 160                                | 162                                | 160                                | 171                                | 159                                | 163                                | 165                                | 167                                  |



## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | Unexposed<br>Side<br>TC #1<br>(°F) | Unexposed<br>Side<br>TC #2<br>(°F) | Unexposed<br>Side<br>TC #3<br>(°F) | Unexposed<br>Side<br>TC #4<br>(°F) | Unexposed<br>Side<br>TC #5<br>(°F) | Unexposed<br>Side<br>TC #6<br>(°F) | Unexposed<br>Side<br>TC #7<br>(°F) | Unexposed<br>Side<br>TC #8<br>(°F) | Unexposed<br>Side<br>TC #9<br>(°F) | Unexposed<br>Side<br>Average<br>(°F) |
|---------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 60            | 186                                | 176                                | 161                                | 162                                | 161                                | 171                                | 159                                | 163                                | 165                                | 167                                  |
| 60.5          | 186                                | 176                                | 161                                | 162                                | 161                                | 171                                | 160                                | 163                                | 165                                | 167                                  |
| 61            | 187                                | 176                                | 162                                | 163                                | 162                                | 171                                | 160                                | 163                                | 166                                | 168                                  |
| 61.5          | 187                                | 176                                | 162                                | 163                                | 162                                | 172                                | 160                                | 164                                | 166                                | 168                                  |
| 62            | 187                                | 177                                | 163                                | 163                                | 162                                | 172                                | 160                                | 164                                | 166                                | 168                                  |
| 62.5          | 187                                | 177                                | 163                                | 163                                | 163                                | 172                                | 161                                | 164                                | 166                                | 168                                  |
| 63            | 187                                | 177                                | 163                                | 164                                | 163                                | 172                                | 161                                | 164                                | 166                                | 169                                  |
| 63.5          | 187                                | 177                                | 163                                | 164                                | 163                                | 172                                | 161                                | 164                                | 167                                | 169                                  |
| 64            | 187                                | 177                                | 164                                | 164                                | 163                                | 173                                | 162                                | 164                                | 167                                | 169                                  |
| 64.5          | 187                                | 177                                | 164                                | 164                                | 164                                | 173                                | 162                                | 165                                | 167                                | 169                                  |
| 65            | 187                                | 178                                | 165                                | 165                                | 164                                | 173                                | 162                                | 165                                | 167                                | 170                                  |
| 65.5          | 186                                | 177                                | 165                                | 165                                | 164                                | 173                                | 162                                | 165                                | 167                                | 169                                  |
| 66            | 186                                | 177                                | 165                                | 165                                | 165                                | 173                                | 162                                | 165                                | 168                                | 170                                  |
| 66.5          | 186                                | 177                                | 165                                | 165                                | 165                                | 173                                | 162                                | 165                                | 168                                | 170                                  |
| 67            | 186                                | 178                                | 165                                | 165                                | 165                                | 174                                | 163                                | 165                                | 168                                | 170                                  |
| 67.5          | 186                                | 177                                | 166                                | 166                                | 165                                | 174                                | 163                                | 165                                | 168                                | 170                                  |
| 68            | 186                                | 177                                | 166                                | 166                                | 166                                | 174                                | 163                                | 165                                | 168                                | 170                                  |
| 68.5          | 186                                | 177                                | 166                                | 166                                | 166                                | 174                                | 163                                | 165                                | 168                                | 170                                  |
| 69            | 185                                | 177                                | 166                                | 166                                | 166                                | 174                                | 163                                | 165                                | 168                                | 170                                  |
| 69.5          | 185                                | 177                                | 167                                | 167                                | 166                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 70            | 185                                | 177                                | 167                                | 167                                | 166                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 70.5          | 185                                | 177                                | 167                                | 167                                | 167                                | 174                                | 164                                | 165                                | 169                                | 171                                  |
| 71            | 184                                | 177                                | 167                                | 167                                | 167                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 71.5          | 184                                | 176                                | 167                                | 167                                | 167                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 72            | 184                                | 176                                | 167                                | 167                                | 167                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 72.5          | 183                                | 176                                | 167                                | 168                                | 167                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 73            | 183                                | 176                                | 167                                | 168                                | 167                                | 174                                | 164                                | 165                                | 169                                | 170                                  |
| 73.5          | 183                                | 176                                | 167                                | 168                                | 167                                | 174                                | 165                                | 165                                | 169                                | 170                                  |
| 74            | 183                                | 175                                | 167                                | 168                                | 167                                | 174                                | 165                                | 166                                | 169                                | 170                                  |
| 74.5          | 182                                | 175                                | 167                                | 168                                | 167                                | 174                                | 165                                | 165                                | 169                                | 170                                  |
| 75            | 182                                | 175                                | 167                                | 168                                | 167                                | 174                                | 165                                | 165                                | 169                                | 170                                  |
| 75.5          | 182                                | 174                                | 167                                | 169                                | 167                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 76            | 182                                | 174                                | 167                                | 169                                | 168                                | 174                                | 165                                | 166                                | 170                                | 171                                  |
| 76.5          | 182                                | 174                                | 167                                | 169                                | 167                                | 174                                | 165                                | 165                                | 170                                | 170                                  |
| 77            | 181                                | 174                                | 167                                | 169                                | 167                                | 174                                | 165                                | 165                                | 170                                | 170                                  |
| 77.5          | 181                                | 173                                | 167                                | 170                                | 167                                | 174                                | 165                                | 165                                | 170                                | 170                                  |
| 78            | 181                                | 173                                | 166                                | 170                                | 168                                | 174                                | 165                                | 165                                | 170                                | 170                                  |
| 78.5          | 181                                | 173                                | 166                                | 170                                | 168                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 79            | 181                                | 173                                | 166                                | 170                                | 168                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 79.5          | 182                                | 172                                | 166                                | 171                                | 168                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 80            | 182                                | 172                                | 166                                | 171                                | 168                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 80.5          | 182                                | 172                                | 166                                | 171                                | 168                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 81            | 182                                | 172                                | 166                                | 171                                | 168                                | 174                                | 165                                | 166                                | 170                                | 170                                  |
| 81.5          | 182                                | 172                                | 166                                | 172                                | 168                                | 175                                | 165                                | 166                                | 171                                | 171                                  |
| 82            | 182                                | 171                                | 166                                | 172                                | 168                                | 175                                | 165                                | 166                                | 171                                | 171                                  |
| 82.5          | 183                                | 171                                | 166                                | 173                                | 168                                | 175                                | 165                                | 166                                | 171                                | 171                                  |
| 83            | 183                                | 171                                | 167                                | 173                                | 169                                | 176                                | 165                                | 166                                | 171                                | 171                                  |
| 83.5          | 183                                | 171                                | 167                                | 174                                | 169                                | 176                                | 165                                | 167                                | 171                                | 171                                  |
| 84            | 184                                | 171                                | 167                                | 174                                | 169                                | 176                                | 166                                | 167                                | 172                                | 172                                  |
| 84.5          | 184                                | 171                                | 168                                | 174                                | 170                                | 177                                | 166                                | 167                                | 172                                | 172                                  |
| 85            | 184                                | 171                                | 168                                | 175                                | 170                                | 177                                | 166                                | 167                                | 172                                | 172                                  |
| 85.5          | 184                                | 172                                | 168                                | 176                                | 170                                | 177                                | 166                                | 168                                | 173                                | 173                                  |
| 86            | 185                                | 172                                | 168                                | 176                                | 171                                | 178                                | 167                                | 168                                | 173                                | 173                                  |
| 86.5          | 185                                | 172                                | 169                                | 177                                | 171                                | 178                                | 167                                | 168                                | 173                                | 173                                  |
| 87            | 185                                | 172                                | 169                                | 177                                | 171                                | 179                                | 167                                | 168                                | 174                                | 174                                  |
| 87.5          | 185                                | 172                                | 169                                | 178                                | 172                                | 179                                | 167                                | 169                                | 174                                | 174                                  |
| 88            | 186                                | 172                                | 170                                | 178                                | 172                                | 179                                | 168                                | 169                                | 174                                | 174                                  |
| 88.5          | 186                                | 172                                | 170                                | 179                                | 172                                | 180                                | 168                                | 169                                | 175                                | 175                                  |
| 89            | 186                                | 173                                | 170                                | 179                                | 173                                | 180                                | 168                                | 170                                | 175                                | 175                                  |
| 89.5          | 186                                | 173                                | 171                                | 180                                | 173                                | 180                                | 168                                | 170                                | 176                                | 175                                  |

## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | Unexposed<br>Side<br>TC #1<br>(°F) | Unexposed<br>Side<br>TC #2<br>(°F) | Unexposed<br>Side<br>TC #3<br>(°F) | Unexposed<br>Side<br>TC #4<br>(°F) | Unexposed<br>Side<br>TC #5<br>(°F) | Unexposed<br>Side<br>TC #6<br>(°F) | Unexposed<br>Side<br>TC #7<br>(°F) | Unexposed<br>Side<br>TC #8<br>(°F) | Unexposed<br>Side<br>TC #9<br>(°F) | Unexposed<br>Side<br>Average<br>(°F) |
|---------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 90            | 187                                | 173                                | 171                                | 181                                | 174                                | 181                                | 169                                | 171                                | 176                                | 176                                  |
| 90.5          | 187                                | 173                                | 171                                | 181                                | 174                                | 181                                | 169                                | 171                                | 176                                | 176                                  |
| 91            | 187                                | 174                                | 172                                | 182                                | 174                                | 182                                | 169                                | 171                                | 177                                | 176                                  |
| 91.5          | 187                                | 174                                | 173                                | 182                                | 175                                | 182                                | 170                                | 172                                | 177                                | 177                                  |
| 92            | 188                                | 174                                | 173                                | 183                                | 175                                | 183                                | 170                                | 172                                | 178                                | 177                                  |
| 92.5          | 188                                | 174                                | 174                                | 184                                | 176                                | 183                                | 171                                | 172                                | 178                                | 178                                  |
| 93            | 188                                | 175                                | 174                                | 184                                | 176                                | 184                                | 171                                | 173                                | 179                                | 178                                  |
| 93.5          | 188                                | 175                                | 174                                | 185                                | 177                                | 184                                | 171                                | 173                                | 179                                | 178                                  |
| 94            | 189                                | 175                                | 175                                | 186                                | 177                                | 185                                | 172                                | 174                                | 180                                | 179                                  |
| 94.5          | 189                                | 176                                | 176                                | 187                                | 178                                | 185                                | 172                                | 174                                | 180                                | 180                                  |
| 95            | 189                                | 176                                | 176                                | 188                                | 178                                | 186                                | 173                                | 175                                | 181                                | 180                                  |
| 95.5          | 189                                | 176                                | 177                                | 189                                | 179                                | 186                                | 173                                | 175                                | 181                                | 181                                  |
| 96            | 190                                | 177                                | 177                                | 190                                | 179                                | 187                                | 174                                | 176                                | 182                                | 181                                  |
| 96.5          | 190                                | 177                                | 178                                | 191                                | 179                                | 187                                | 174                                | 176                                | 183                                | 182                                  |
| 97            | 190                                | 177                                | 178                                | 192                                | 180                                | 187                                | 174                                | 177                                | 183                                | 182                                  |
| 97.5          | 190                                | 178                                | 179                                | 193                                | 180                                | 188                                | 175                                | 177                                | 184                                | 183                                  |
| 98            | 190                                | 178                                | 179                                | 193                                | 181                                | 189                                | 176                                | 178                                | 184                                | 183                                  |
| 98.5          | 190                                | 178                                | 180                                | 194                                | 181                                | 189                                | 176                                | 178                                | 185                                | 183                                  |
| 99            | 190                                | 179                                | 180                                | 194                                | 182                                | 189                                | 176                                | 179                                | 185                                | 184                                  |
| 99.5          | 191                                | 179                                | 181                                | 195                                | 182                                | 190                                | 177                                | 179                                | 186                                | 184                                  |
| 100           | 191                                | 180                                | 181                                | 195                                | 183                                | 190                                | 177                                | 179                                | 187                                | 185                                  |
| 100.5         | 191                                | 180                                | 182                                | 195                                | 183                                | 191                                | 178                                | 180                                | 187                                | 185                                  |
| 101           | 192                                | 181                                | 182                                | 196                                | 184                                | 191                                | 178                                | 181                                | 188                                | 186                                  |
| 101.5         | 192                                | 181                                | 183                                | 196                                | 184                                | 192                                | 179                                | 181                                | 189                                | 186                                  |
| 102           | 192                                | 182                                | 183                                | 196                                | 185                                | 192                                | 179                                | 181                                | 190                                | 187                                  |
| 102.5         | 193                                | 183                                | 184                                | 196                                | 186                                | 193                                | 180                                | 182                                | 190                                | 187                                  |
| 103           | 193                                | 183                                | 184                                | 196                                | 186                                | 193                                | 180                                | 182                                | 191                                | 188                                  |
| 103.5         | 193                                | 184                                | 185                                | 196                                | 187                                | 194                                | 181                                | 183                                | 192                                | 188                                  |
| 104           | 194                                | 184                                | 185                                | 197                                | 187                                | 194                                | 182                                | 183                                | 192                                | 189                                  |
| 104.5         | 194                                | 185                                | 186                                | 197                                | 188                                | 194                                | 182                                | 184                                | 193                                | 189                                  |
| 105           | 194                                | 185                                | 186                                | 197                                | 188                                | 195                                | 182                                | 184                                | 193                                | 189                                  |
| 105.5         | 195                                | 186                                | 187                                | 197                                | 189                                | 195                                | 183                                | 185                                | 194                                | 190                                  |
| 106           | 195                                | 187                                | 187                                | 197                                | 189                                | 195                                | 184                                | 185                                | 194                                | 190                                  |
| 106.5         | 195                                | 187                                | 187                                | 197                                | 190                                | 195                                | 184                                | 186                                | 194                                | 191                                  |
| 107           | 196                                | 188                                | 188                                | 197                                | 191                                | 196                                | 185                                | 186                                | 195                                | 191                                  |
| 107.5         | 196                                | 188                                | 188                                | 197                                | 191                                | 196                                | 185                                | 187                                | 195                                | 191                                  |
| 108           | 196                                | 189                                | 189                                | 197                                | 192                                | 196                                | 186                                | 187                                | 195                                | 192                                  |
| 108.5         | 196                                | 189                                | 189                                | 197                                | 192                                | 196                                | 186                                | 188                                | 195                                | 192                                  |
| 109           | 197                                | 190                                | 190                                | 197                                | 193                                | 196                                | 187                                | 188                                | 195                                | 193                                  |
| 109.5         | 197                                | 190                                | 190                                | 197                                | 193                                | 196                                | 187                                | 189                                | 195                                | 193                                  |
| 110           | 197                                | 191                                | 191                                | 197                                | 194                                | 196                                | 188                                | 189                                | 196                                | 193                                  |
| 110.5         | 197                                | 192                                | 191                                | 197                                | 194                                | 196                                | 188                                | 189                                | 196                                | 193                                  |
| 111           | 197                                | 192                                | 192                                | 197                                | 194                                | 197                                | 189                                | 190                                | 196                                | 194                                  |
| 111.5         | 197                                | 192                                | 192                                | 197                                | 195                                | 197                                | 189                                | 190                                | 196                                | 194                                  |
| 112           | 197                                | 193                                | 192                                | 197                                | 195                                | 197                                | 189                                | 191                                | 196                                | 194                                  |
| 112.5         | 197                                | 193                                | 193                                | 197                                | 195                                | 197                                | 189                                | 191                                | 196                                | 194                                  |
| 113           | 197                                | 194                                | 193                                | 197                                | 195                                | 197                                | 190                                | 191                                | 196                                | 194                                  |
| 113.5         | 197                                | 194                                | 193                                | 197                                | 196                                | 198                                | 190                                | 191                                | 197                                | 195                                  |
| 114           | 197                                | 195                                | 194                                | 197                                | 196                                | 198                                | 190                                | 192                                | 197                                | 195                                  |
| 114.5         | 197                                | 195                                | 194                                | 197                                | 196                                | 198                                | 190                                | 192                                | 197                                | 195                                  |
| 115           | 197                                | 195                                | 194                                | 197                                | 196                                | 199                                | 190                                | 192                                | 197                                | 195                                  |
| 115.5         | 197                                | 195                                | 195                                | 197                                | 196                                | 199                                | 190                                | 192                                | 197                                | 195                                  |
| 116           | 197                                | 196                                | 195                                | 197                                | 196                                | 199                                | 190                                | 192                                | 198                                | 196                                  |
| 116.5         | 197                                | 196                                | 195                                | 197                                | 196                                | 199                                | 190                                | 192                                | 198                                | 196                                  |
| 117           | 197                                | 196                                | 195                                | 197                                | 196                                | 199                                | 190                                | 192                                | 198                                | 196                                  |
| 117.5         | 197                                | 196                                | 196                                | 197                                | 197                                | 200                                | 190                                | 192                                | 198                                | 196                                  |
| 118           | 197                                | 196                                | 196                                | 198                                | 197                                | 200                                | 190                                | 192                                | 198                                | 196                                  |
| 118.5         | 197                                | 196                                | 196                                | 198                                | 197                                | 200                                | 190                                | 192                                | 198                                | 196                                  |
| 119           | 197                                | 197                                | 197                                | 198                                | 197                                | 200                                | 190                                | 192                                | 199                                | 196                                  |
| 119.5         | 197                                | 197                                | 197                                | 198                                | 197                                | 200                                | 190                                | 193                                | 199                                | 196                                  |



Total Quality. Assured.

16015 Shady Falls Road  
Elmendorf, Texas 78112

Telephone: 210-635-8100  
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## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Time<br>(min) | Unexposed<br>Side<br>TC #1<br>(°F) | Unexposed<br>Side<br>TC #2<br>(°F) | Unexposed<br>Side<br>TC #3<br>(°F) | Unexposed<br>Side<br>TC #4<br>(°F) | Unexposed<br>Side<br>TC #5<br>(°F) | Unexposed<br>Side<br>TC #6<br>(°F) | Unexposed<br>Side<br>TC #7<br>(°F) | Unexposed<br>Side<br>TC #8<br>(°F) | Unexposed<br>Side<br>TC #9<br>(°F) | Unexposed<br>Side<br>Average<br>(°F) |
|---------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 120           | 197                                | 197                                | 197                                | 198                                | 197                                | 201                                | 190                                | 193                                | 199                                | 197                                  |
| 120.5         | 197                                | 197                                | 197                                | 198                                | 197                                | 201                                | 190                                | 193                                | 199                                | 197                                  |
| 121           | 197                                | 197                                | 198                                | 198                                | 197                                | 201                                | 190                                | 193                                | 199                                | 197                                  |
| 121.5         | 197                                | 197                                | 198                                | 198                                | 197                                | 201                                | 190                                | 193                                | 199                                | 197                                  |
| 122           | 197                                | 197                                | 198                                | 199                                | 197                                | 201                                | 190                                | 193                                | 199                                | 197                                  |
| Max           | 197                                | 197                                | 198                                | 199                                | 197                                | 201                                | 190                                | 193                                | 199                                | 197                                  |
| Max Allowed   | 402                                | 402                                | 401                                | 401                                | 401                                | 401                                | 400                                | 400                                | 400                                | 326                                  |



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Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Finish (internal) TCs |                |                |                |                |             |
|-----------------------|----------------|----------------|----------------|----------------|-------------|
| Time<br>(min)         | TC #10<br>(°F) | TC #11<br>(°F) | TC #12<br>(°F) | TC #13<br>(°F) | Avg<br>(°F) |
| 0                     | 77             | 80             | 78             | 78             | 78          |
| 0.5                   | 77             | 80             | 78             | 78             | 78          |
| 1                     | 77             | 80             | 78             | 78             | 78          |
| 1.5                   | 77             | 80             | 78             | 78             | 78          |
| 2                     | 77             | 80             | 78             | 78             | 78          |
| 2.5                   | 77             | 80             | 78             | 78             | 78          |
| 3                     | 77             | 80             | 79             | 79             | 79          |
| 3.5                   | 77             | 80             | 79             | 79             | 79          |
| 4                     | 77             | 80             | 79             | 79             | 79          |
| 4.5                   | 78             | 80             | 79             | 79             | 79          |
| 5                     | 78             | 80             | 79             | 79             | 79          |
| 5.5                   | 78             | 81             | 79             | 79             | 79          |
| 6                     | 78             | 81             | 79             | 79             | 79          |
| 6.5                   | 78             | 81             | 80             | 79             | 80          |
| 7                     | 78             | 81             | 80             | 80             | 80          |
| 7.5                   | 79             | 82             | 80             | 80             | 80          |
| 8                     | 79             | 82             | 81             | 80             | 81          |
| 8.5                   | 80             | 83             | 81             | 81             | 81          |
| 9                     | 80             | 84             | 82             | 81             | 82          |
| 9.5                   | 82             | 85             | 83             | 82             | 83          |
| 10                    | 97             | 86             | 85             | 83             | 88          |
| 10.5                  | 115            | 88             | 87             | 84             | 94          |
| 11                    | 128            | 91             | 89             | 85             | 98          |
| 11.5                  | 142            | 93             | 91             | 86             | 103         |
| 12                    | 155            | 96             | 94             | 87             | 108         |
| 12.5                  | 158            | 100            | 97             | 88             | 111         |
| 13                    | 163            | 104            | 102            | 90             | 115         |
| 13.5                  | 170            | 108            | 108            | 91             | 119         |
| 14                    | 176            | 114            | 115            | 94             | 125         |
| 14.5                  | 180            | 119            | 124            | 97             | 130         |
| 15                    | 183            | 124            | 132            | 100            | 135         |
| 15.5                  | 187            | 129            | 140            | 105            | 140         |
| 16                    | 189            | 134            | 149            | 109            | 145         |
| 16.5                  | 193            | 139            | 156            | 113            | 150         |
| 17                    | 195            | 143            | 162            | 118            | 155         |
| 17.5                  | 197            | 148            | 167            | 120            | 158         |
| 18                    | 199            | 152            | 171            | 123            | 161         |
| 18.5                  | 200            | 157            | 172            | 131            | 165         |
| 19                    | 198            | 153            | 161            | 135            | 162         |
| 19.5                  | 197            | 150            | 154            | 133            | 159         |
| 20                    | 196            | 149            | 150            | 129            | 156         |
| 20.5                  | 195            | 149            | 147            | 132            | 156         |
| 21                    | 195            | 149            | 146            | 138            | 157         |
| 21.5                  | 195            | 149            | 145            | 139            | 157         |
| 22                    | 196            | 153            | 154            | 141            | 161         |
| 22.5                  | 197            | 161            | 166            | 144            | 167         |
| 23                    | 198            | 170            | 174            | 148            | 173         |
| 23.5                  | 198            | 174            | 173            | 154            | 175         |
| 24                    | 199            | 177            | 178            | 159            | 178         |
| 24.5                  | 200            | 178            | 183            | 163            | 181         |
| 25                    | 202            | 183            | 188            | 170            | 186         |
| 25.5                  | 207            | 185            | 192            | 176            | 190         |
| 26                    | 210            | 190            | 197            | 179            | 194         |
| 26.5                  | 217            | 197            | 201            | 182            | 199         |
| 27                    | 218            | 203            | 200            | 184            | 201         |
| 27.5                  | 218            | 208            | 207            | 185            | 205         |
| 28                    | 219            | 210            | 212            | 187            | 207         |
| 28.5                  | 218            | 211            | 214            | 189            | 208         |
| 29                    | 218            | 213            | 216            | 191            | 210         |
| 29.5                  | 220            | 215            | 218            | 195            | 212         |

## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

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Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Finish (internal) TCs |                |                |                |                |             |
|-----------------------|----------------|----------------|----------------|----------------|-------------|
| Time<br>(min)         | TC #10<br>(°F) | TC #11<br>(°F) | TC #12<br>(°F) | TC #13<br>(°F) | Avg<br>(°F) |
| 30                    | 220            | 217            | 216            | 196            | 212         |
| 30.5                  | 218            | 218            | 216            | 198            | 213         |
| 31                    | 218            | 222            | 218            | 200            | 215         |
| 31.5                  | 218            | 228            | 218            | 202            | 217         |
| 32                    | 218            | 232            | 220            | 205            | 219         |
| 32.5                  | 222            | 231            | 221            | 207            | 220         |
| 33                    | 225            | 231            | 222            | 208            | 222         |
| 33.5                  | 225            | 230            | 221            | 210            | 222         |
| 34                    | 225            | 228            | 221            | 211            | 221         |
| 34.5                  | 223            | 226            | 220            | 213            | 221         |
| 35                    | 224            | 224            | 220            | 213            | 220         |
| 35.5                  | 224            | 223            | 219            | 213            | 220         |
| 36                    | 223            | 220            | 219            | 213            | 219         |
| 36.5                  | 223            | 219            | 219            | 213            | 219         |
| 37                    | 223            | 217            | 219            | 212            | 218         |
| 37.5                  | 223            | 216            | 219            | 212            | 218         |
| 38                    | 222            | 216            | 219            | 211            | 217         |
| 38.5                  | 222            | 216            | 218            | 211            | 217         |
| 39                    | 222            | 215            | 217            | 210            | 216         |
| 39.5                  | 221            | 214            | 217            | 210            | 216         |
| 40                    | 221            | 215            | 217            | 210            | 216         |
| 40.5                  | 221            | 215            | 218            | 210            | 216         |
| 41                    | 221            | 215            | 218            | 210            | 216         |
| 41.5                  | 220            | 215            | 218            | 209            | 216         |
| 42                    | 221            | 216            | 219            | 209            | 216         |
| 42.5                  | 221            | 218            | 220            | 209            | 217         |
| 43                    | 221            | 218            | 220            | 210            | 217         |
| 43.5                  | 221            | 219            | 222            | 210            | 218         |
| 44                    | 222            | 219            | 222            | 215            | 220         |
| 44.5                  | 222            | 220            | 223            | 213            | 220         |
| 45                    | 225            | 221            | 225            | 214            | 221         |
| 45.5                  | 234            | 223            | 226            | 217            | 225         |
| 46                    | 242            | 225            | 230            | 218            | 229         |
| 46.5                  | 248            | 230            | 230            | 218            | 232         |
| 47                    | 255            | 232            | 232            | 218            | 234         |
| 47.5                  | 262            | 235            | 232            | 218            | 237         |
| 48                    | 269            | 236            | 233            | 218            | 239         |
| 48.5                  | 274            | 237            | 237            | 218            | 242         |
| 49                    | 280            | 239            | 241            | 218            | 245         |
| 49.5                  | 285            | 243            | 243            | 218            | 247         |
| 50                    | 289            | 251            | 245            | 218            | 251         |
| 50.5                  | 293            | 259            | 249            | 218            | 255         |
| 51                    | 297            | 267            | 251            | 219            | 259         |
| 51.5                  | 301            | 274            | 253            | 219            | 262         |
| 52                    | 305            | 279            | 256            | 218            | 265         |
| 52.5                  | 308            | 283            | 259            | 219            | 267         |
| 53                    | 312            | 286            | 261            | 219            | 270         |
| 53.5                  | 314            | 289            | 264            | 220            | 272         |
| 54                    | 318            | 292            | 267            | 221            | 275         |
| 54.5                  | 321            | 296            | 270            | 221            | 277         |
| 55                    | 324            | 298            | 272            | 222            | 279         |
| 55.5                  | 326            | 302            | 274            | 223            | 281         |
| 56                    | 330            | 306            | 277            | 226            | 285         |
| 56.5                  | 332            | 308            | 279            | 227            | 287         |
| 57                    | 334            | 312            | 282            | 229            | 289         |
| 57.5                  | 337            | 315            | 284            | 232            | 292         |
| 58                    | 340            | 318            | 286            | 235            | 295         |
| 58.5                  | 342            | 322            | 288            | 238            | 298         |
| 59                    | 345            | 325            | 290            | 242            | 301         |
| 59.5                  | 347            | 328            | 292            | 245            | 303         |

## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Finish (internal) TCs |                |                |                |                |             |
|-----------------------|----------------|----------------|----------------|----------------|-------------|
| Time<br>(min)         | TC #10<br>(°F) | TC #11<br>(°F) | TC #12<br>(°F) | TC #13<br>(°F) | Avg<br>(°F) |
| 60                    | 349            | 331            | 295            | 248            | 306         |
| 60.5                  | 352            | 334            | 296            | 251            | 308         |
| 61                    | 354            | 337            | 298            | 255            | 311         |
| 61.5                  | 356            | 339            | 300            | 259            | 314         |
| 62                    | 358            | 342            | 301            | 263            | 316         |
| 62.5                  | 361            | 346            | 303            | 266            | 319         |
| 63                    | 363            | 349            | 304            | 270            | 322         |
| 63.5                  | 365            | 352            | 305            | 275            | 324         |
| 64                    | 367            | 355            | 307            | 278            | 327         |
| 64.5                  | 369            | 357            | 308            | 282            | 329         |
| 65                    | 372            | 361            | 309            | 286            | 332         |
| 65.5                  | 373            | 362            | 310            | 288            | 333         |
| 66                    | 375            | 365            | 312            | 291            | 336         |
| 66.5                  | 377            | 367            | 312            | 294            | 338         |
| 67                    | 379            | 369            | 314            | 296            | 340         |
| 67.5                  | 380            | 371            | 314            | 299            | 341         |
| 68                    | 382            | 373            | 315            | 301            | 343         |
| 68.5                  | 384            | 375            | 316            | 303            | 345         |
| 69                    | 387            | 377            | 317            | 304            | 346         |
| 69.5                  | 389            | 378            | 318            | 306            | 348         |
| 70                    | 392            | 380            | 319            | 309            | 350         |
| 70.5                  | 394            | 382            | 320            | 310            | 352         |
| 71                    | 397            | 383            | 322            | 312            | 354         |
| 71.5                  | 400            | 385            | 323            | 313            | 355         |
| 72                    | 402            | 388            | 325            | 314            | 357         |
| 72.5                  | 406            | 391            | 326            | 316            | 360         |
| 73                    | 409            | 393            | 329            | 317            | 362         |
| 73.5                  | 413            | 395            | 331            | 318            | 364         |
| 74                    | 417            | 397            | 333            | 321            | 367         |
| 74.5                  | 421            | 399            | 335            | 324            | 370         |
| 75                    | 425            | 401            | 337            | 326            | 372         |
| 75.5                  | 430            | 404            | 338            | 328            | 375         |
| 76                    | 434            | 406            | 341            | 331            | 378         |
| 76.5                  | 438            | 409            | 343            | 334            | 381         |
| 77                    | 442            | 412            | 346            | 337            | 384         |
| 77.5                  | 448            | 417            | 349            | 342            | 389         |
| 78                    | 453            | 420            | 352            | 346            | 393         |
| 78.5                  | 458            | 423            | 355            | 350            | 397         |
| 79                    | 463            | 426            | 358            | 355            | 401         |
| 79.5                  | 468            | 428            | 361            | 360            | 404         |
| 80                    | 473            | 429            | 364            | 364            | 408         |
| 80.5                  | 477            | 431            | 366            | 369            | 411         |
| 81                    | 481            | 433            | 369            | 375            | 415         |
| 81.5                  | 486            | 435            | 372            | 380            | 418         |
| 82                    | 490            | 436            | 375            | 385            | 422         |
| 82.5                  | 494            | 438            | 378            | 391            | 425         |
| 83                    | 498            | 441            | 381            | 397            | 429         |
| 83.5                  | 502            | 443            | 386            | 402            | 433         |
| 84                    | 507            | 445            | 392            | 409            | 438         |
| 84.5                  | 512            | 448            | 397            | 416            | 443         |
| 85                    | 516            | 450            | 402            | 421            | 447         |
| 85.5                  | 520            | 452            | 406            | 427            | 451         |
| 86                    | 526            | 453            | 411            | 433            | 456         |
| 86.5                  | 531            | 457            | 415            | 440            | 461         |
| 87                    | 536            | 460            | 419            | 447            | 466         |
| 87.5                  | 541            | 462            | 424            | 455            | 471         |
| 88                    | 546            | 465            | 428            | 461            | 475         |
| 88.5                  | 551            | 467            | 432            | 470            | 480         |
| 89                    | 556            | 469            | 437            | 476            | 485         |
| 89.5                  | 561            | 472            | 441            | 486            | 490         |

## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

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Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

February 16, 2022

| Finish (internal) TCs |                |                |                |                |             |
|-----------------------|----------------|----------------|----------------|----------------|-------------|
| Time<br>(min)         | TC #10<br>(°F) | TC #11<br>(°F) | TC #12<br>(°F) | TC #13<br>(°F) | Avg<br>(°F) |
| 90                    | 566            | 474            | 447            | 496            | 496         |
| 90.5                  | 571            | 477            | 451            | 504            | 501         |
| 91                    | 577            | 479            | 455            | 513            | 506         |
| 91.5                  | 583            | 483            | 460            | 524            | 513         |
| 92                    | 588            | 486            | 464            | 535            | 518         |
| 92.5                  | 594            | 490            | 468            | 545            | 524         |
| 93                    | 600            | 493            | 472            | 556            | 530         |
| 93.5                  | 605            | 497            | 476            | 566            | 536         |
| 94                    | 610            | 500            | 479            | 575            | 541         |
| 94.5                  | 610            | 502            | 482            | 571            | 541         |
| 95                    | 617            | 504            | 486            | 574            | 545         |
| 95.5                  | 624            | 506            | 620            | 580            | 583         |
| 96                    | 629            | 507            | 629            | 583            | 587         |
| 96.5                  | 633            | 509            | 635            | 588            | 591         |
| 97                    | 637            | 511            | 640            | 590            | 595         |
| 97.5                  | 641            | 511            | 640            | 590            | 596         |
| 98                    | 644            | 511            | 644            | 593            | 598         |
| 98.5                  | 648            | 511            | 653            | 600            | 603         |
| 99                    | 652            | 514            | 662            | 609            | 609         |
| 99.5                  | 657            | 650            | 668            | 620            | 649         |
| 100                   | 662            | 720            | 675            | 632            | 672         |
| 100.5                 | 664            | 843            | 684            | 642            | 708         |
| 101                   | 664            | 877            | 693            | 652            | 722         |
| 101.5                 | 666            | 919            | 701            | 663            | 737         |
| 102                   | 665            | 959            | 710            | 676            | 753         |
| 102.5                 | 668            | 981            | 720            | 688            | 764         |
| 103                   | 670            | 999            | 730            | 701            | 775         |
| 103.5                 | 673            | 1013           | 739            | 713            | 785         |
| 104                   | 674            | 1025           | 746            | 725            | 793         |
| 104.5                 | 677            | 1034           | 753            | 737            | 800         |
| 105                   | 678            | 1041           | 767            | 748            | 809         |
| 105.5                 | 682            | 1049           | 779            | 761            | 818         |
| 106                   | 685            | 1058           | 769            | 772            | 821         |
| 106.5                 | 689            | 1070           | 754            | 784            | 824         |
| 107                   | 692            | 1078           | 741            | 795            | 827         |
| 107.5                 | 695            | 1084           | 729            | 806            | 829         |
| 108                   | 698            | 1087           | 720            | 815            | 830         |
| 108.5                 | 701            | 1090           | 714            | 825            | 833         |
| 109                   | 704            | 1092           | 713            | 834            | 836         |
| 109.5                 | 707            | 1094           | 713            | 841            | 839         |
| 110                   | 711            | 1094           | 714            | 851            | 843         |
| 110.5                 | 714            | 1093           | 713            | 858            | 845         |
| 111                   | 715            | 1091           | 710            | 862            | 845         |
| 111.5                 | 717            | 1090           | 706            | 866            | 845         |
| 112                   | 719            | 1089           | 702            | 866            | 844         |
| 112.5                 | 721            | 1086           | 698            | 862            | 842         |
| 113                   | 725            | 1083           | 693            | 855            | 839         |
| 113.5                 | 730            | 1081           | 690            | 854            | 839         |
| 114                   | 734            | 1078           | 687            | 859            | 840         |
| 114.5                 | 738            | 1072           | 684            | 857            | 838         |
| 115                   | 742            | 1066           | 680            | 854            | 836         |
| 115.5                 | 747            | 1061           | 679            | 844            | 833         |
| 116                   | 750            | 1052           | 678            | 838            | 830         |
| 116.5                 | 753            | 1043           | 679            | 829            | 826         |
| 117                   | 755            | 1034           | 676            | 825            | 823         |
| 117.5                 | 756            | 1024           | 677            | 820            | 819         |
| 118                   | 756            | 1017           | 677            | 811            | 815         |
| 118.5                 | 756            | 1004           | 679            | 801            | 810         |
| 119                   | 756            | 996            | 680            | 797            | 807         |
| 119.5                 | 756            | 988            | 685            | 792            | 805         |





Total Quality. Assured.

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## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

G104892487SAT-001

Jincheng MagMatrix

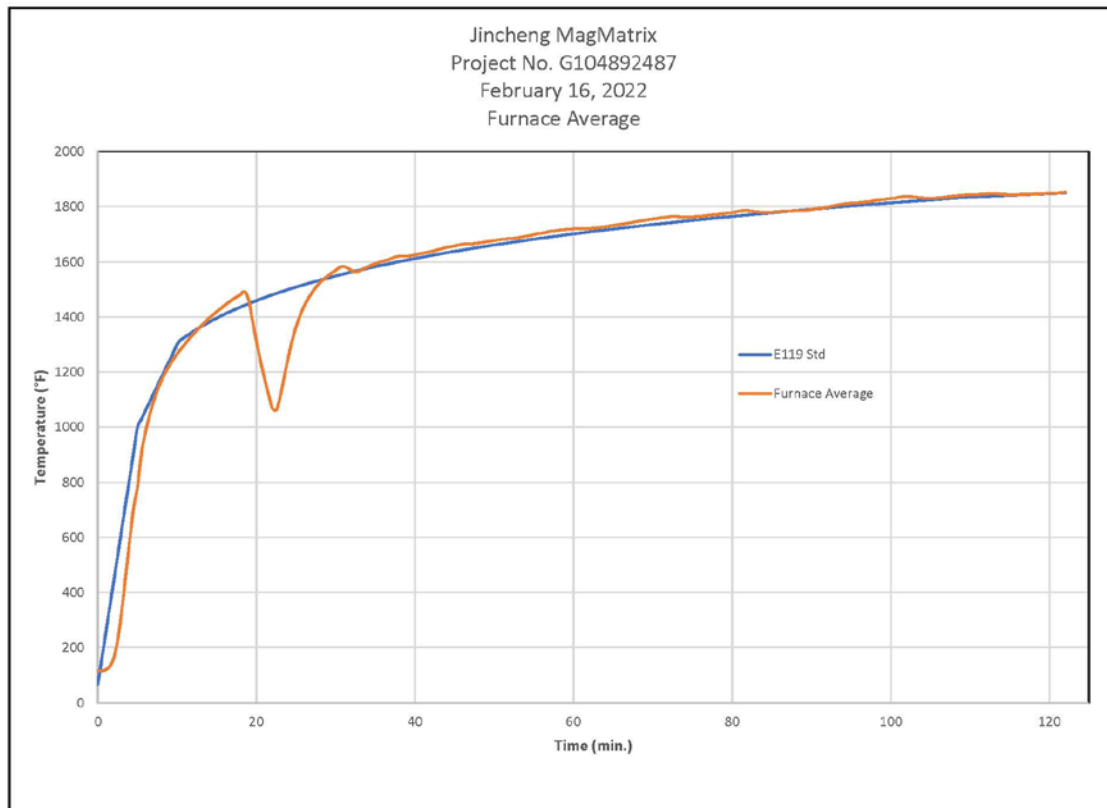
February 16, 2022

| Finish (internal) TCs |                |                |                |                |             |
|-----------------------|----------------|----------------|----------------|----------------|-------------|
| Time<br>(min)         | TC #10<br>(°F) | TC #11<br>(°F) | TC #12<br>(°F) | TC #13<br>(°F) | Avg<br>(°F) |
| 120                   | 758            | 980            | 686            | 799            | 806         |
| 120.5                 | 761            | 977            | 688            | 798            | 806         |
| 121                   | 765            | 973            | 687            | 798            | 806         |
| 121.5                 | 769            | 961            | 690            | 803            | 806         |
| 122                   | 771            | 958            | 690            | 746            | 791         |
| Max                   | 771            | 1094           | 779            | 866            |             |
| Max Allowed           |                |                |                |                |             |

**TEST REPORT FOR JINCHENG MAGNESIUM MATRIX**

Report No.: G104892487SAT-001 R0

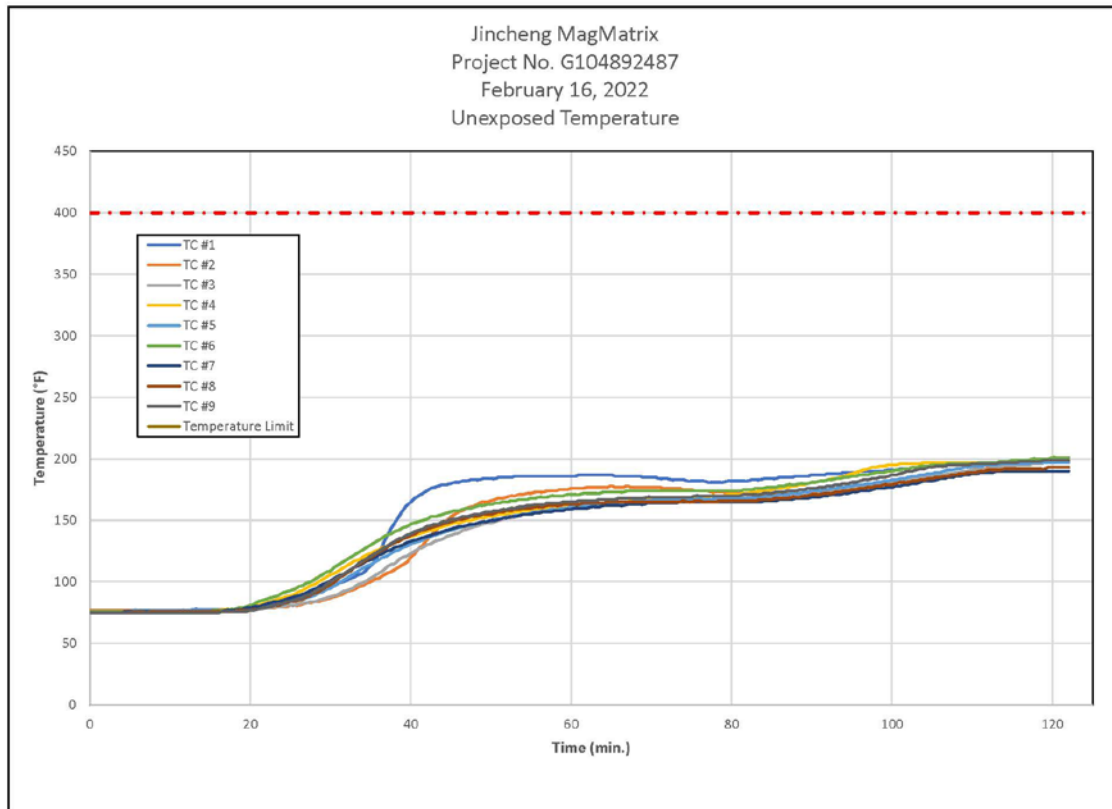
Date: 02/28/22



**TEST REPORT FOR JINCHENG MAGNESIUM MATRIX**

Report No.: G104892487SAT-001 R0

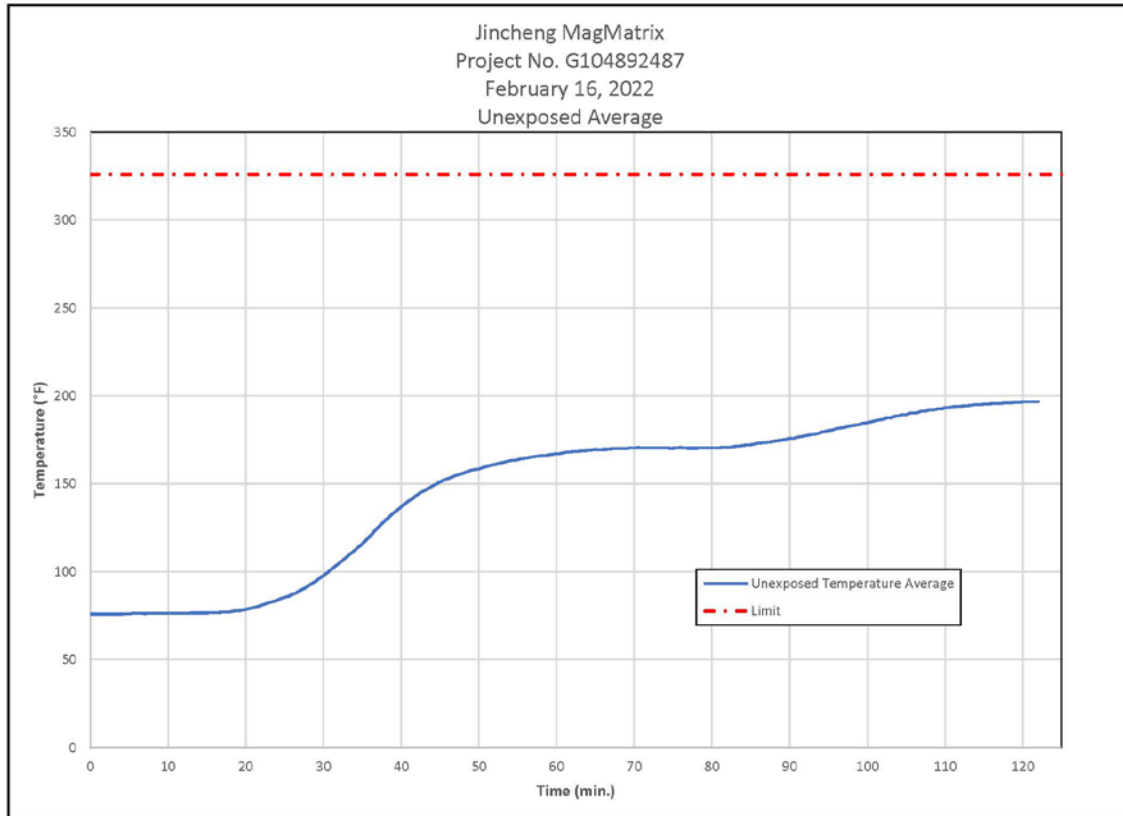
Date: 02/28/22



**TEST REPORT FOR JINCHENG MAGNESIUM MATRIX**

Report No.: G104892487SAT-001 R0

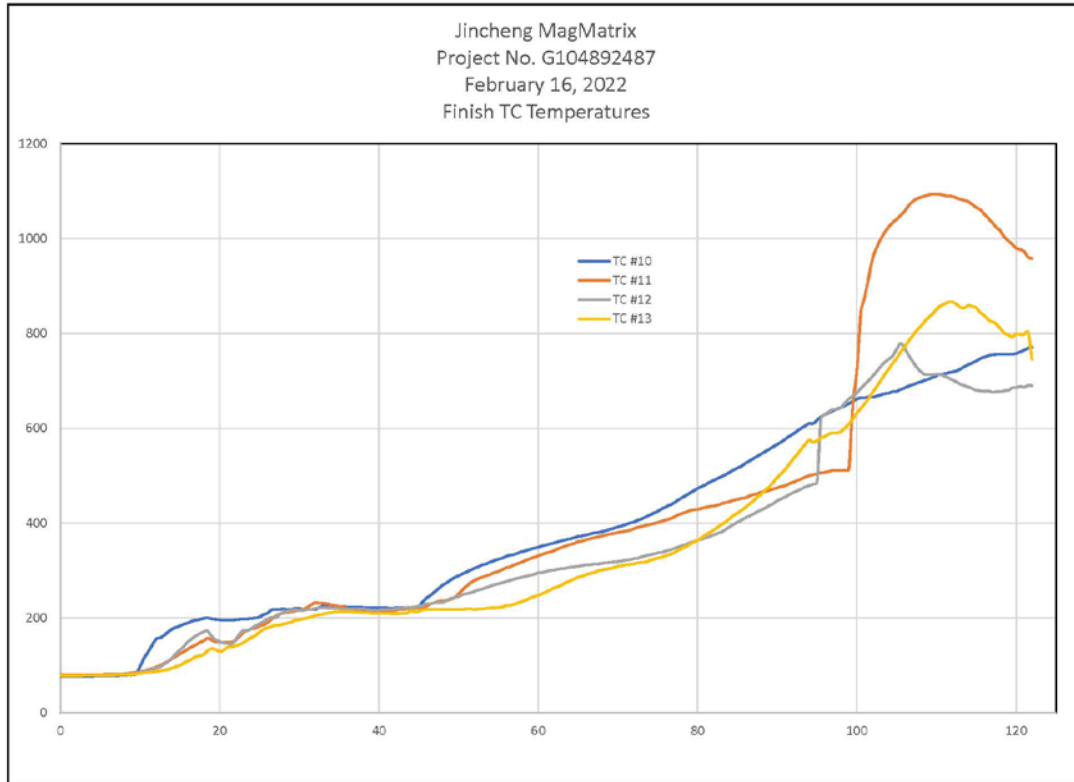
Date: 02/28/22



**TEST REPORT FOR JINCHENG MAGNESIUM MATRIX**

Report No.: G104892487SAT-001 R0

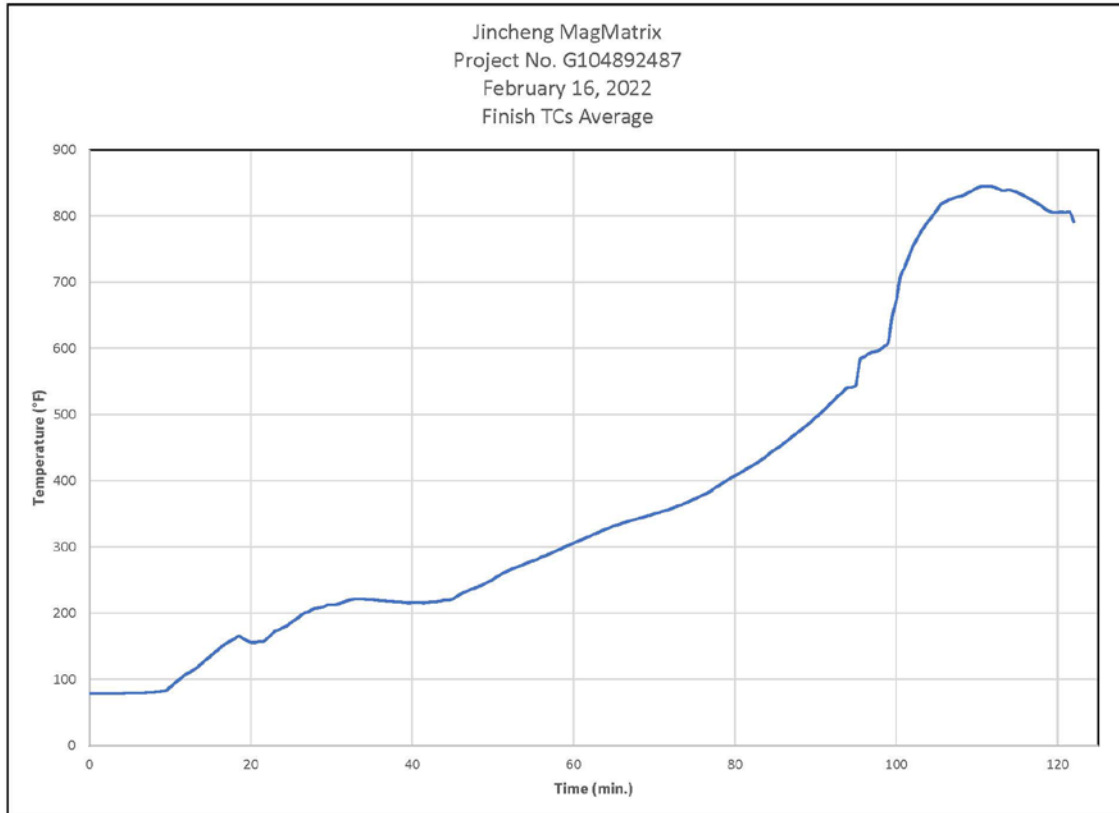
Date: 02/28/22



## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

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Total Quality. Assured.

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## TEST REPORT FOR JINCHENG MAGNESIUM MATRIX

Report No.: G104892487SAT-001 R0

Date: 02/28/22

### SECTION 14

#### REVISION LOG

| REVISION # | DATE     | SECTION | REVISION              |
|------------|----------|---------|-----------------------|
| 0          | 02/28/22 | N/A     | Original Report Issue |