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JINCHENG MAGNESIUM MATRIX (JIANGSU) INTERNATIONAL TRADE CO., LTD.

TEST REPORT

SCOPE OF WORK
ASTM E228 COEFFICIENT OF LINEAR THERMAL EXPANSION EVALUATION OF MAGMATRIX MGO FIRE RATED STRUCTURAL PANEL

REPORT NUMBER
M3469.01-106-31 R1

TEST DATES
09/07/21 - 09/28/21

ISSUE DATE **REVISION DATE**
10/14/21 11/17/21

RECORD RETENTION END DATE
09/28/25

PAGES
8

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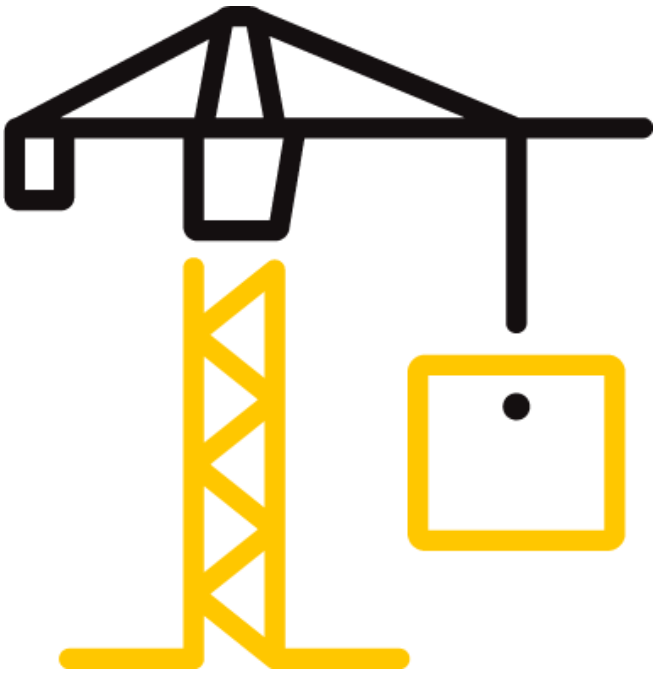

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MIAMI-DADE TEST REPORT FOR JINCHENG MAGNESIUM MATRIX (JIANGSU) INTERNATIONAL TRADE CO., LTD.

Report No.: M3469.01-106-31 R1
Date: 10/14/21 Revised Date: 11/17/21

REPORT ISSUED TO

JINCHENG MAGNESIUM MATRIX (JIANGSU) INTERNATIONAL TRADE CO., LTD.
No. 9 Daiwang Road of High Tech Industrial Zone Dongcheng
Taixing City, Jiangsu Province, China

SECTION 1

SCOPE

Product: Magmatrix MgO Fire Rated Structural Panel

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Jincheng Magnesium Matrix (JiangSu) International Trade Co., Ltd. to evaluate MagMatrix MgO Fire Rated Structural Panel in accordance with ASTM E228 to determine the Coefficient of Linear Thermal Expansion. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

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.

COMPLETED BY:	Joseph M. Brickner	**REVIEWED BY:**	Dawn M. Chaney
TITLE:	Laboratory Supervisor Materials Laboratory	**TITLE:**	Technician Team Lead Materials Laboratory
SIGNATURE:	Digitally Signed by: Joseph M. Brickner	**SIGNATURE:**	Digitally Signed by: Dawn M. Chaney
DATE:	11/17/21	**DATE:**	11/17/21

JMB:dmc/alts

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SECTION 2
TEST METHOD

The specimens were evaluated in accordance with the following:

> **ASTM E228-17**, *Standard Test Method for Linear Thermal Expansion of Solid Materials With a Push Rod Dilatometer*

SECTION 3
MATERIAL SOURCE

The materials were provided by Jincheng Magnesium Matrix (JiangSu) International Trade Co., Ltd. The following were received in good condition on 08/25/2021:

- Four 24" x 24" x 0.5" thick pieces of MagMatrix MgO Fire Rated Structural Panel

Refer to the product description photos in Section 9. The materials were tested as received with the exception of preparing the smaller test specimens from the materials. Representative materials/test specimens will be retained by Intertek B&C for a minimum of ten years from the test completion date.

SECTION 4
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Joseph M. Brickner	Intertek B&C
Dawn M. Chaney	Intertek B&C

SECTION 5
TEST PROCEDURE

All conditioning of test specimens and test conditions were at standard laboratory conditions unless otherwise reported. Refer to the test related photos in Section 9. Calibration certificates available upon request.

ASTM E228 - Coefficient of Linear Thermal Expansion
A specimen was placed in the bottom of each outer dilatometer tube with the inner tube resting on it. The dilatometer tubes were suspended in a refrigerated bath (ICN: 004215) and subjected to a cold-hot-cold series of exposure conditions from -30°C (-22°F) to 60°C (140°F). At the equilibrium of each temperature condition, a measurement was taken from digital indicators (ICNs: INT01239 and INT00194) resting on top of the inner tubes, and the CLTE determined.

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SECTION 6
TEST SPECIMEN DESCRIPTIONS

TEST PROCEDURE	NUMBER OF SPECIMENS	NOMINAL SPECIMEN DIMENSIONS	VISUAL CHARACTERISTICS
ASTM E228 - Coefficient of Linear Thermal Expansion	1 machine direction and 1 cross direction	3" x 0.5" x 0.5" thick	MagMatrix MgO Fire Rated Structural Panel

SECTION 7
TEST RESULTS

ASTM E228 - Coefficient of Linear Thermal Expansion

Specimen 1 - Machine Direction

LENGTH (mm)	77.16		
DATA POINT	#1	#2	#3
TEMPERATURE (°C)	-30.0	60.0	-30.0
GAGE READING (mm)	6.58	6.64	6.58
ΔT (°C)		90.0	-90.0
ΔL (mm)		0.0570	-0.0620
ΔL/ΔT (mm/°C)		6.33E-04	6.89E-04
CLTE (mm/mm/°C)		**8.21E-06**	**8.93E-06**
AVERAGE CLTE (mm/mm/°C)		**8.57E-06**	
AVERAGE CLTE (in/in/°F)		**4.76E-06**	
VARIABILITY CHECK (%)		8.4	

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Specimen 2 - Cross Direction

LENGTH (mm)	77.16		
DATA POINT	#1	#2	#3
TEMPERATURE (°C)	-30.0	60.0	-30.0
GAGE READING (mm)	5.47	5.53	5.47
ΔT (°C)		90.0	-90.0
ΔL (mm)		0.0600	-0.0600
ΔL/ΔT (mm/°C)		6.67E-04	6.67E-04
CLTE (mm/mm/°C)		8.64E-06	8.64E-06
AVERAGE CLTE (mm/mm/°C)		8.64E-06	
AVERAGE CLTE (in/in/°F)		**4.80E-06**	
VARIABILITY CHECK (%)		0.0	

SECTION 8
CONCLUSION

The requested test method does not contain specific performance requirements. Results are reported as obtained.

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SECTION 9
PHOTOGRAPHS

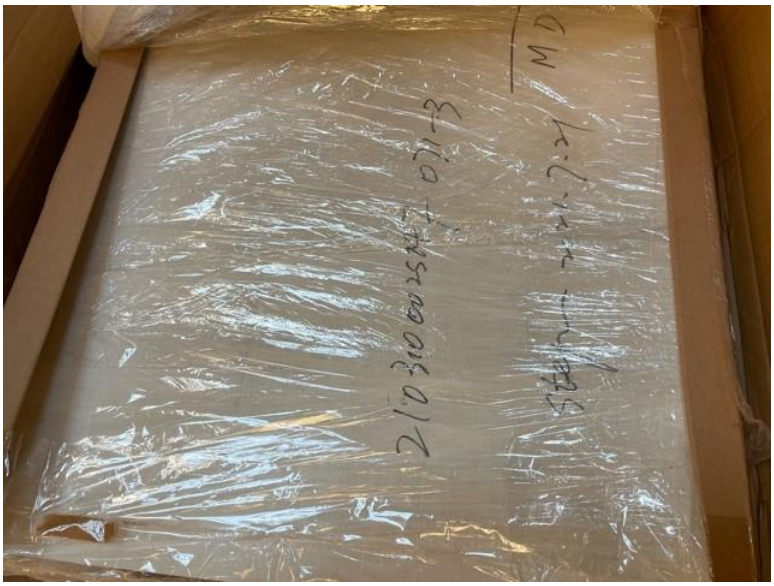

Photo No. 1
Samples, As Received

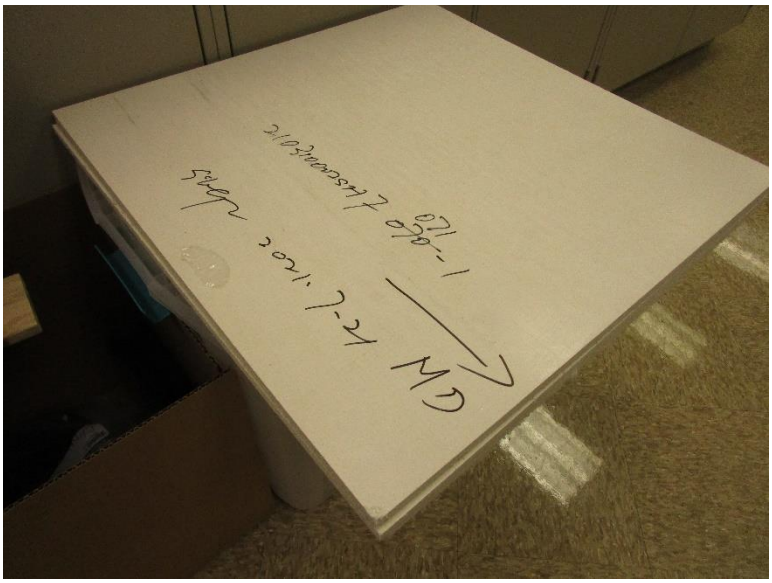

Photo No. 2
Samples, As Received

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Photo No. 3
ASTM E228 - CLTE - Equipment Detail

Photo No. 4
ASTM E228 - CLTE - Specimen Detail

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SECTION 10
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/14/21	N/A	Original Report Issue
1	11/17/21	All	Client name, address, and product name all revised