

ETEM S.A. COMMERCIAL AND INDUSTRIAL LIGHT METAL SOCIETE ANONYME TEST REPORT

SCOPE OF WORK

ASTM E1886 AND ASTM E1996 TESTING ON E86, TRIPLE FIXED WINDOW WALL

REPORT NUMBER

J4212.01-109-44

TEST DATE(S)

06/04/19

ISSUE DATE

07/26/19

RECORD RETENTION END DATE

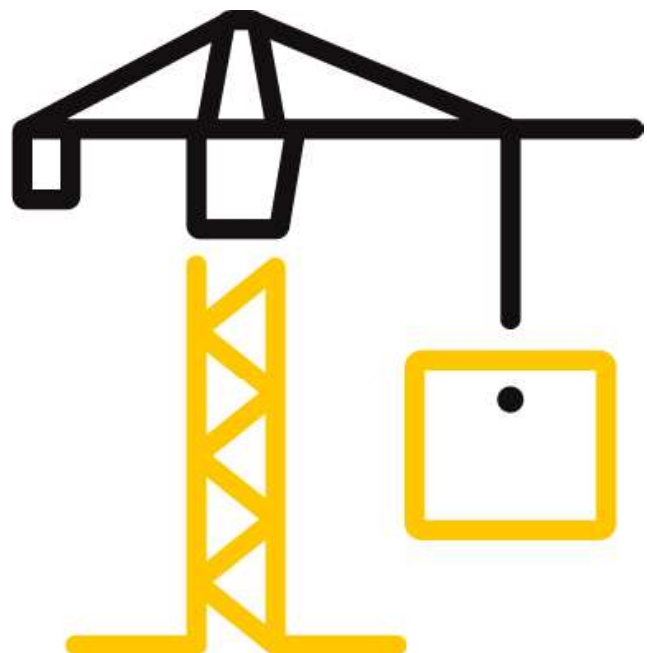
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TEST REPORT FOR ETEM S.A. COMMERCIAL AND INDUSTRIAL LIGHT METAL SOCIETE ANONYME

Report No.: J4212.01-109-44

Date: 07/26/19

REPORT ISSUED TO

CUSTOMER FULL NAME

1-4, Iroon Polytechniou street
Magoula, 19018
GREECE

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by ETEM S.A. Commercial and Industrial Light Metal Societe Anonyme to perform testing in accordance with ASTM E1886 and ASTM E1996 on their E86, Triple Fixed Window Wall Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at 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.

SECTION 2


SUMMARY OF TEST RESULTS

Product Type: Triple Fixed Window Wall

Series/Model: E86

TITLE	RESULTS
±2880 Pa (±60.15 psf) Design Pressure	Met performance requirements
Missile Impacts	Missile Level D Wind Zone 3

For INTERTEK B&C:

COMPLETED BY:	Robert J. Beatty	REVIEWED BY:	Timothy J. McGill
TITLE:	Technician – Product Testing	TITLE:	Manager – Product Testing
SIGNATURE:	 Digitally Signed by: Robert Beatty	SIGNATURE:	 Digitally Signed by: Timothy J. McGill
DATE:	07/26/19	DATE:	07/26/19

RJB:wml

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**SECTION 8
TEST RESULTS**

The temperature during testing was 21°C (69°F). The results are tabulated as follows:

ASTM E1886, LARGE MISSILE IMPACT

Conditioning Temperature: 21°C (69°F)

Missile Weight: 4091 g (9.02 lbs)

Missile Length: 2.5 m (8' 1")

Muzzle Distance from Test Specimen: 5.2 m (17')

Test Specimen #1: Orientation within ±5° of horizontal

IMPACT	#1
MISSILE VELOCITY	15.1 m/s (49.7 fps)
IMPACT AREA	Center of glazing
OBSERVATIONS	Missile hit target area
RESULTS	Pass

Test Specimen #2: Orientation within ±5° of horizontal

IMPACT	#1
MISSILE VELOCITY	15.1 m/s (49.6 fps)
IMPACT AREA	Bottom left corner of glazing
OBSERVATIONS	Missile hit target area
RESULTS	Pass

Test Specimen #3: Orientation within ±5° of horizontal

IMPACT	#1
MISSILE VELOCITY	15.3 m/s (50.1 fps)
IMPACT AREA	Top right corner of glazing
OBSERVATIONS	Missile hit target area
RESULTS	Pass

Note: See Intertek B&C Sketch #1 for impact locations.

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ASTM E1886, AIR PRESSURE CYCLING

Test Specimen #1, #2 and #3:

Design Pressure: ±2880 Pa (±60.15 psf)

Positive Pressure

PRESSURE RANGE Pa (psf)	NUMBER OF CYCLES	AVERAGE CYCLE TIME (seconds)	OBSERVATIONS
576 to 1440 (12.03 to 30.08)	3500	2.54	No additional damage
0 to 1728 (0.0 to 36.09)	300	3.34	No additional damage
1440 to 2304 (30.08 to 48.12)	600	2.64	No additional damage
864 to 2880 (18.05 to 60.15)	100	3.80	No additional damage

Negative Pressure

PRESSURE RANGE Pa (psf)	NUMBER OF CYCLES	AVERAGE CYCLE TIME (seconds)	OBSERVATIONS
864 to 2880 (18.05 to 60.15)	50	3.11	No additional damage
1440 to 2304 (30.08 to 48.12)	1050	2.72	No additional damage
0 to 1728 (0.0 to 36.09)	50	2.98	No additional damage
576 to 1440 (12.03 to 30.08)	3350	2.56	No additional damage

Result: Pass

Note: Test Specimens #1, #2 and #3 were mullled together and cycled in a common chamber.

SECTION 9

CONCLUSION

The specimen(s) tested met the performance requirements set forth in the referenced test procedures for a ±2880 Pa (±60.15 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 3. The specimens met the requirements of Section 7 of ASTM E1996.