FLAT COMPRESSION STRENGTH TEST REPORT

GENERAL INFORMATION

Test Plan	Flat Compression Test
Test Date	2025/9/15
Test Standard	GB/T 1453-2005
Test Speed	5 mm/min
Specimen Shape	Panel
Test Area	3600 mm²
Remarks	3003 Aluminum Honeycomb | Cell Size 6 mm | Foil Thickness 0.06 mm | Face Thickness 0.8 mm

TEST RESULTS

Specimen	Length (mm)	Width (mm)	Thickness (mm)	Face Thickness (mm)	Max Force (N)	Flat Comp. Strength (MPa)	Flat Comp. Modulus (MPa)
Specimen 1	60.00	60.00	30.00	0.80	5,101.75	1.42	78.05
Specimen 2	60.00	60.00	30.00	0.80	5,048.91	1.40	77.22
Specimen 3	60.00	60.00	30.00	0.80	4,854.71	1.35	76.87
Maximum		60.00	30.00	0.80	5,101.75	1.42	78.05
Minimum		60.00	30.00	0.80	4,854.71	1.35	76.87
Average		60.00	30.00	0.80	5,001.79	1.39	77.38

NOTES

1. The flat compression strength is calculated by dividing the maximum force by the specimen test area (3600 mm²).

2. The force-displacement curves show three stages: elastic rise (used to derive the modulus), peak load, then post-peak load drop as the honeycomb cell walls buckle and fold.
3. All three specimens failed by cell-wall buckling / progressive crushing of the 3003 aluminum honeycomb core — a typical ductile failure mode. No face-to-core debonding was observed.
4. Data consistency among the three specimens is good (low scatter); the average flat compression strength is 1.39 MPa with a flat compression modulus of 77.38 MPa.

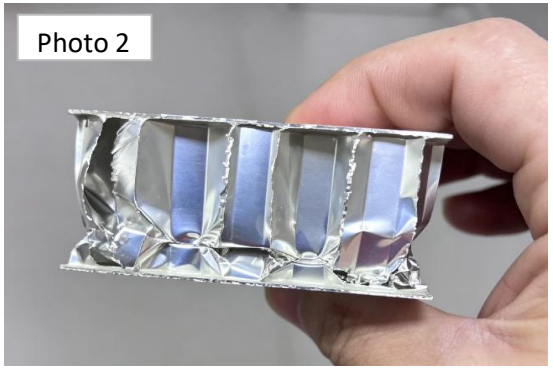
Tel: 86-13928537273 **Whatsapp: 86-13928537273** **Email: info@mthoneycomb.com** **Contact Person:Sophia**

SPECIMEN PHOTOS AFTER TEST

Visual inspection of the three specimens after flat

Photo	Specimen	Observed Deformation	Assessment
Photo 1	Specimen 1	Cell walls buckled and folded; uniform crushing over the core, panel remained bonded to core.	Normal ductile failure — core crushing, no debonding.
Photo 2	Specimen 2	Cell walls buckled and folded; uniform crushing over the core, panel remained bonded to core.	Normal ductile failure — core crushing, no debonding.
Photo 3	Specimen 3	Cell walls buckled and folded; progressive crushing of the honeycomb core.	Normal ductile failure — core crushing, no debonding.







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