HAMILTON

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ACCREDITED

TEST REPORT ISO 15799:2022(E)

Client: Lumière Audio Group
Contact: Mr. Jonathan Reeves
Address: Unit 14, Riverside Industrial Estate, Lumière Audio Group, Bridge Road, Hamilton, ML3 6JW, United Kingdom
Phone: +44 1698 284 512
Email: j.reeves@lumiereaudio.co.uk

Sample Description: Loudspeaker Enclosure Material — Medium-Density Fibreboard (MDF), 18 mm nominal thickness, veneered finish
Sample Quantity: 6 specimens (3 × 300 mm × 300 mm; 3 × 600 mm × 600 mm)
Sample Condition: Conditioned at 23 °C ± 2 °C and 50 % ± 5 % relative humidity for ≥ 48 h prior to testing
Sample Received: 14/01/2025
Test Commenced: 20/01/2025
Test Completed: 27/01/2025
Report Number: HAM-25-000108-01

Test Standard: ISO 15799:2022(E) — Acoustics — Laboratory measurement of sound insulation of building elements — Requirements
Test Method: Clause 7 — Measurement of airborne sound insulation in a reverberation suite; Clause 8 — Measurement of impact sound insulation; Clause 9 — Measurement of flanking transmission
Test Facility: Hamilton Acoustics Laboratory, Unit 3, Riverside Industrial Estate, Hamilton, ML3 6JW, United Kingdom
Test Engineer: Dr. Fiona Campbell
Witness: Mr. Jonathan Reeves (Client Representative)

Test Results

Test	Result	Limit	Unit	Status
Tensile strength, parallel to grain	42.6	≥ 40.0	MPa	Pass
Tensile strength, perpendicular to grain	1.1	≥ 0.8	MPa	Pass
Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
Compressive strength, parallel to grain	21.4	≥ 18.0	MPa	Pass
Compressive strength, perpendicular to grain	2.6	≥ 2.0	MPa	Pass
Shear strength	5.8	≥ 5.0	MPa	Pass
Density, oven-dry	742	720 – 780	kg/m³	Pass
Density, at 12 % moisture content	820	790 – 850	kg/m³	Pass
Moisture content, as received	6.4	≤ 8.0	%	Pass
Thickness swelling, 24 h immersion	11.2	≤ 12.0	%	Pass
Water absorption, 24 h immersion	18.7	≤ 20.0	%	Pass
Internal bond strength	0.72	≥ 0.60	MPa	Pass
Surface soundness, cross-cut adhesion	1	≤ 2	class	Pass
Formaldehyde emission, perforator method	6.8	≤ 8.0	mg/100 g	Pass
Edge swelling, 2 h boil	14.3	≤ 15.0	%	Pass
Screw withdrawal resistance, face	1 240	≥ 1 000	N	Pass
Screw withdrawal resistance, edge	812	≥ 700	N	Pass
Flexural strength, parallel to grain	38.9	≥ 35.0	MPa	Pass
Flexural strength, perpendicular to grain	1.0	≥ 0.8	MPa	Pass
Modulus of rupture, parallel to grain	41.2	≥ 38.0	MPa	Pass
Modulus of rupture, perpendicular to grain	1.2	≥ 1.0	MPa	Pass
Tensile strength, parallel to grain	42.6	≥ 40.0	MPa	Pass
Tensile strength, perpendicular to grain	1.1	≥ 0.8	MPa	Pass
Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
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Modulus of rupture, perpendicular to grain	1.2	≥ 1.0	MPa	Pass

Test Conclusion: All specimens tested met or exceeded the requirements of ISO 15799:2022(E) for the declared application. The material is suitable for use as a loudspeaker enclosure panel.

Remarks: Specimens were conditioned at 23 °C ± 2 °C and 50 % ± 5 % relative humidity for ≥ 48 h prior to testing. Testing was carried out in accordance with ISO 15799:2022(E). Results relate only to the specimens tested.

Prepared by: Dr. Fiona Campbell, Senior Test Engineer
Approved by: Mr. Jonathan Reeves, Client Representative

End of test report

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Sample Quantity: 6 specimens (3 × 300 mm × 300 mm; 3 × 600 mm × 600 mm)
Sample Condition: Conditioned at 23 °C ± 2 °C and 50 % ± 5 % relative humidity for ≥ 48 h prior to testing
Sample Received: 14/01/2025
Test Commenced: 20/01/2025
Test Completed: 27/01/2025
Report Number: HAM-25-000108-01

Test Standard: ISO 15799:2022(E) — Acoustics — Laboratory measurement of sound insulation of building elements — Requirements
Test Method: Clause 7 — Measurement of airborne sound insulation in a reverberation suite; Clause 8 — Measurement of impact sound insulation; Clause 9 — Measurement of flanking transmission
Test Facility: Hamilton Acoustics Laboratory, Unit 3, Riverside Industrial Estate, Hamilton, ML3 6JW, United Kingdom
Test Engineer: Dr. Fiona Campbell
Witness: Mr. Jonathan Reeves (Client Representative)

Test Results

Test	Result	Limit	Unit	Status
Tensile strength, parallel to grain	42.6	≥ 40.0	MPa	Pass
Tensile strength, perpendicular to grain	1.1	≥ 0.8	MPa	Pass
Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
Compressive strength, parallel to grain	21.4	≥ 18.0	MPa	Pass
Compressive strength, perpendicular to grain	2.6	≥ 2.0	MPa	Pass
Shear strength	5.8	≥ 5.0	MPa	Pass
Density, oven-dry	742	720 – 780	kg/m³	Pass
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Formaldehyde emission, perforator method	6.8	≤ 8.0	mg/100 g	Pass
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Test Conclusion: All specimens tested met or exceeded the requirements of ISO 15799:2022(E) for the declared application. The material is suitable for use as a loudspeaker enclosure panel.

Remarks: Specimens were conditioned at 23 °C ± 2 °C and 50 % ± 5 % relative humidity for ≥ 48 h prior to testing. Testing was carried out in accordance with ISO 15799:2022(E). Results relate only to the specimens tested.

Prepared by: Dr. Fiona Campbell, Senior Test Engineer
Approved by: Mr. Jonathan Reeves, Client Representative

End of test report

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Test Engineer: Dr. Fiona Campbell
Witness: Mr. Jonathan Reeves (Client Representative)

Test Results

Test	Result	Limit	Unit	Status
Tensile strength, parallel to grain	42.6	≥ 40.0	MPa	Pass
Tensile strength, perpendicular to grain	1.1	≥ 0.8	MPa	Pass
Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
Compressive strength, parallel to grain	21.4	≥ 18.0	MPa	Pass
Compressive strength, perpendicular to grain	2.6	≥ 2.0	MPa	Pass
Shear strength	5.8	≥ 5.0	MPa	Pass
Density, oven-dry	742	720 – 780	kg/m³	Pass
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Remarks: Specimens were conditioned at 23 °C ± 2 °C and 50 % ± 5 % relative humidity for ≥ 48 h prior to testing. Testing was carried out in accordance with ISO 15799:2022(E). Results relate only to the specimens tested.

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Test	Result	Limit	Unit	Status
Tensile strength, parallel to grain	42.6	≥ 40.0	MPa	Pass
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Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
Compressive strength, parallel to grain	21.4	≥ 18.0	MPa	Pass
Compressive strength, perpendicular to grain	2.6	≥ 2.0	MPa	Pass
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Sample Quantity: 6 specimens (3 × 300 mm × 300 mm; 3 × 600 mm × 600 mm)
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Sample Received: 14/01/2025
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Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
Compressive strength, parallel to grain	21.4	≥ 18.0	MPa	Pass
Compressive strength, perpendicular to grain	2.6	≥ 2.0	MPa	Pass
Shear strength	5.8	≥ 5.0	MPa	Pass
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Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
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Flexural strength, parallel to grain	38.9	≥ 35.0	MPa	Pass
Flexural strength, perpendicular to grain	1.0	≥ 0.8	MPa	Pass
Modulus of rupture, parallel to grain	41.2	≥ 38.0	MPa	Pass
Modulus of rupture, perpendicular to grain	1.2	≥ 1.0	MPa	Pass
Tensile strength, parallel to grain	42.6	≥ 40.0	MPa	Pass
Tensile strength, perpendicular to grain	1.1	≥ 0.8	MPa	Pass
Modulus of elasticity, parallel to grain	4 820	≥ 4 000	MPa	Pass
Modulus of elasticity, perpendicular to grain	312	≥ 250	MPa	Pass
Compressive strength, parallel to grain	21.4	≥ 18.0	MPa	Pass
Compressive strength, perpendicular to grain	2.6	≥ 2.0	MPa	Pass
Shear strength	5.8	≥ 5.0	MPa	Pass
Density, oven-dry	742	720 – 780	kg/m³	Pass
Density, at 12 % moisture content	820	790 – 850	kg/m³	Pass
Moisture content, as received	6.4	≤ 8.0	%	Pass
Thickness swelling, 24 h immersion	11.2	≤ 12.0	%	Pass
Water absorption, 24 h immersion	18.7	≤ 20.0	%	Pass
Internal bond strength	0.72	≥ 0.60	MPa	Pass
Surface soundness, cross-cut adhesion	1	≤ 2	class	Pass
Formaldehyde emission, per