PANELUX

3 MM SOLID ALUMINIUM PANEL

Where quality meets design & function

PROCESSING AND TECHNICAL DATA

www.mulford.co.nz

CONTENTS

TRANSPORTATION, STORAGE AND PROTECTIVE FILM HANDLING GUIDELINES

To ensure the integrity and finish of PaneLux® pre-coated solid aluminium panels during handling, transportation, and storage, the following procedures must be observed:

Transportation and Handling

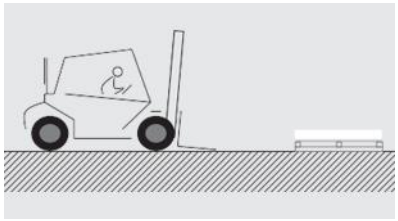
- Handle pallets with care always to prevent mechanical damage.
- Use appropriate lifting equipment to avoid impact or deformation.
- Do not drag or slide panels against each other; always lift individually.
- Panels must be carried by two persons, each holding two corners, using clean gloves to prevent surface contamination.

Inspection Upon Delivery

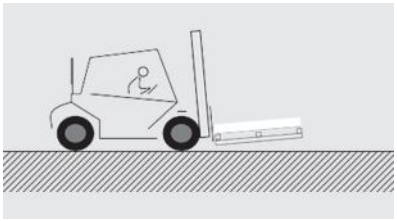
- Immediately inspect all pallets upon receipt.
- Check for signs of damage due to transport or exposure to moisture.
- If moisture is detected, panels must be thoroughly dried to prevent staining or corrosion.
- Report any damage to the transport provider immediately.

Storage Conditions

- Store pallets in a dry, enclosed area, protected from rain, humidity, and any water ingress.
- Avoid sudden temperature changes to prevent condensation forming on panel surfaces.
- Stack a maximum of three pallets of similar dimensions horizontally, placing the heaviest at the bottom.
- Do not store panels vertically.
- Do not place any objects or materials between stacked panels to prevent pressure marks or surface impressions.



Pick up the pallet, slightly raise the forks.



Pick up the pallet, do not draw or push.

Protective Film Handling Guidelines

To maintain surface integrity and ensure effective removal of the protective film, adhere to the following instructions:

- Do not store panels with the protective film applied for more than three months, as extended storage may cause the film to harden and become difficult to remove.
- Avoid exposing stored panels to direct sunlight or temperature fluctuations, as this may degrade the film's performance.
- Do not apply markers, tapes, labels, or any other adhesives to the protective film. Solvents and plasticizers can penetrate the film and damage the lacquered surface beneath.
- Avoid partially peeling the film during handling or installation. Exposed edges may accumulate dirt or contaminants, negatively affecting adhesion or appearance.

Removal Timeframe

- The protective film must be removed within 45 days of installation. Prolonged exposure to environmental conditions may make removal difficult or leave residue.

Temperature Conditions

- Do not attempt to remove the protective film at ambient temperatures below 0°C, as this may cause tearing or incomplete removal.

PANEL DIMENSIONS

Aluminium Sheet (Alloy):	3003 – H24
Total Thickness:	3 mm (tolerance ± 0.15)
Width:	1550 mm (tolerance ± 2.0)
Length:	3200 mm & 4000 mm (tolerance ± 3.0 & diagonal ± 3.0)
Weight:	8.1 kg/m2

COATING SPECIFICATIONS AND TOLERANCES

Paint System	Roller Coated
Paint Type	PVDF
Coating Thickness	≥ 26 µm
Pencil Hardness	≥ HB
Adhesive	Class 0
Acid Resistance	5% HCL for 24 hours, no observed change or blister
Alkali Resistance	5%NaOH for 24 hours, no observed change or blister
Salt Spray Resistance	5% Salt for 720 hours, no observed change or blister
Humidity Resistance	Temp 47c (±1c), humidity 96 ±2% for 3000 hours, 1 grade
Exterior Exposure	20 years for colours Black and White, other colours 15 years
Solvent Resistance	100 MEK double rubs, no observed change
Boiling Water Resistance	98c (±2c) for 2 hours
Cleaning Agent Resistance	Isopropyl Alcohol, Ethanol Absolute 46.7% no change*
Abrasive Resistance	≥ 5 L/um
Oil Resistance	No Trial

*The Cleaning and Maintenance Guide can be located here www.mulford.co.nz or call 0800 685 3673.

PANEL FIRE RESISTANCE CHARACTERISTIC

PaneLux® is a coil coated 3 mm Solid Aluminium Pabel with A1-s0, d0 classification as per BS EN 13501-1:2018 Fire Classification of Construction Products and Building Elements. Refer SGS Test Report AJFS2007005644FF dated 31st July 2020.

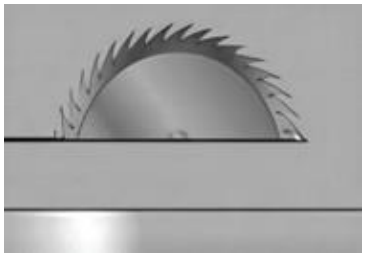
Ignitibility	Index 0	Class "A"
Heat Evolved	Index 0	Class "A"
Flame Spread	Index 0	Class "A"

PaneLux material tested in accordance to ISO5660-1:2002 Reaction to Fire Tests – Part 1 Heat Release, smoke production and mass loss rate. Satisfying NZBC C/AS2 Appendix C C7.1 Type A & B) refer BRANZ Test Report FH13948-001 issue 1 dated 8th July 2021.

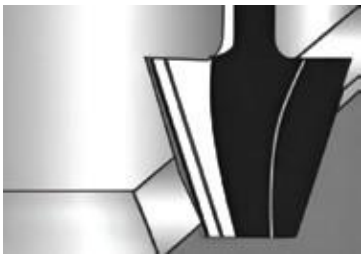
PROCESSSING METHODS

NOTE: Before starting the fabrication process, ensure the temperature of the PaneLux® panel is between 30°C to 40°C. This could be done by using electric blankets, heating films, pouring warm water onto the panel, or dipping it in the warm water bath. Failure to warm the sheets before folding could potentially risk the coating cracking along the fold.

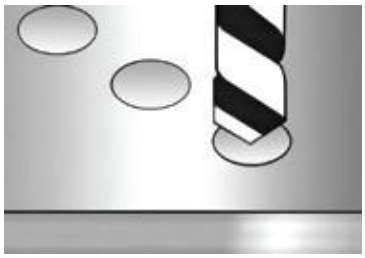
Cutting – Sawing



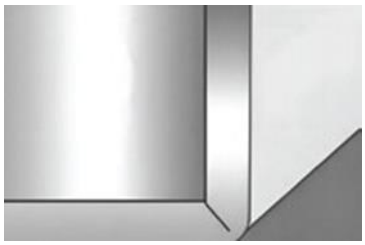
Routing



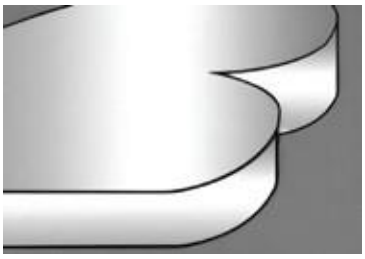
Drilling



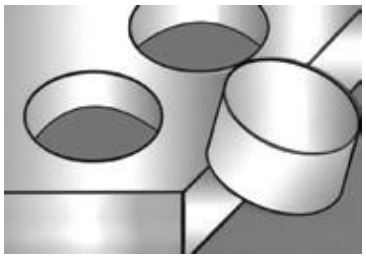
Routing and Folding



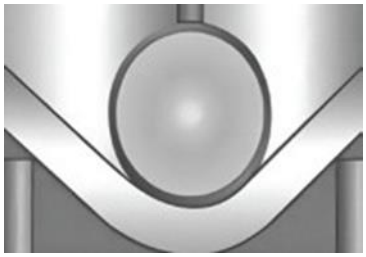
CNC Routing



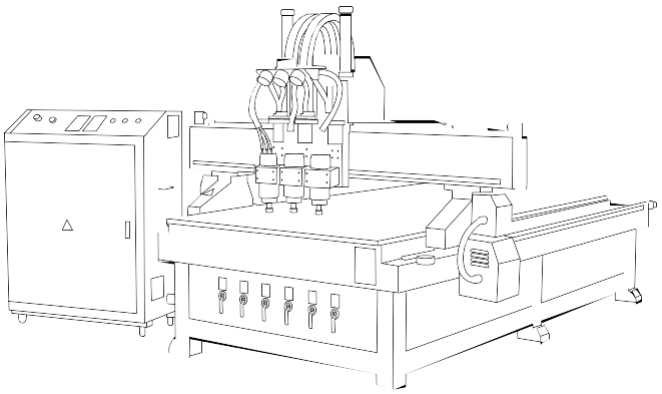
Perforation



Pressing



Rolling



CNC* is usually used for routing, grooving, drilling, and cutting PaneLux®
*CNC – Computer Numerical Control Router

PROCESSING MACHINES AND TOOLS

Parameters of CNC Router

CNC Configuration:	3-Axis Simultaneous-Motion CNC Router
Worktable Format:	Vacuum Suction with Dual Roller Compaction System
Worktable Dimensions (mm):	2000 mm (W) × 6000 mm (L)
Maximum Processing Capacity (mm):	1900 mm (Width) × 6000 mm (Length) × 50 mm (Height)
Maximum Feed Rate:	8 metres per minute
Maximum Spindle Speed:	25,000 RPM
Precision Tolerance:	±0.05 mm
Recommended Spindle Tools:	Φ6 mm Routing/Drilling Bits
Tool Material Options:	Tungsten Steel, Alloy Steel, or Diamond-Tipped Bits

Advantages

The heavy-duty machine frame ensures structural stability and eliminates vibrations, enabling high-precision machining.

- Equipped with a high-performance air-cooled spindle capable of programmable speeds up to 25,000 rpm.
- Closed-loop control of position, speed, and torque enhances processing accuracy.
- Integrated emulsifier system significantly reduces heat and noise while extending equipment life and protecting the material.
- A Z-axis brake mechanism prevents potential damage to the worktable or material in the event of an unexpected spindle drop.
- Three blade holders mounted on the gantry allow for efficient, automatic execution of complex multi-tool operations.

Note

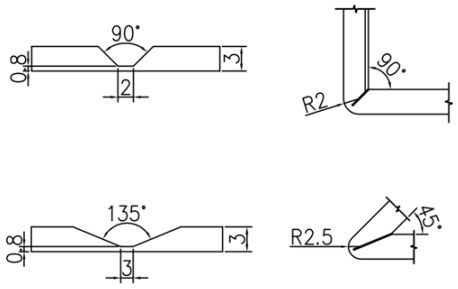
Current standards do not specify mandatory routing depths for the reverse side of solid aluminium panels. Recommended depths are based on practical application and industry experience, as outlined below:

PaneLux® 3mm Panel:

- For PVDF-coated panels, the routing depth should not exceed 2.0 mm.
- For panels with special pre-coatings, such as anodized finishes, the appropriate routing depth must be determined through testing.

Routing Process

The V Groove are routed on the rear of the PaneLux® panel to form a tray panel. V Shaped Milling Cutter – 90 and 135° bits.



- Ensure the platform is clean and free of debris to prevent damage to the PaneLux® panel surface.
- Position the PaneLux® panel on the platform and align the starting point for routing. The CNC machine will follow the predefined routing path generated from the tray panel fabrication drawings.

Drilling and Cutting

Tool: Drill Bit – Use an Extreme 2™ HSS-G metal drill bit for drilling into PaneLux® panels.

- Upon completion of the routing process, the V-shape milling cutter is automatically replaced with the drilling bit.
- Ø4.2 mm staggered holes are drilled to accommodate angle bracket fixings.
- The machine then cuts along the panel perimeter to produce a custom-sized (M2M – Made to Measure) PaneLux® panel.
- Clean both the panel and the platform using a low-pressure air blower.

For optimal performance, apply emulsifiers to minimize heat and noise while protecting both the equipment and panel surface.

Bending

PaneLux® panels can be bent using a roll bending machine.

- Both three-roll and four-roll machines are suitable for this process.
- The panel is securely clamped between two forming cheeks.
- Bending is achieved by wrapping the projecting edge around the upper clamping cheek or former, using a movable swivel bar.
- The bending radius is defined by interchangeable formers mounted on the upper clamping cheek.
- The minimum recommended bending radius is r = 400 mm.

Perforation

Perforation of PaneLux® panels can be carried out using CNC* or NCT** machines, allowing for a wide range of custom designs and patterns.

- Holes with a minimum diameter of 3 mm can be punched.
- The minimum spacing between holes, measured from edge to edge, should exceed the panel thickness to maintain structural integrity
- When using an NCT** machine, apply an emulsifier to the panel surface beforehand to protect the equipment, punching tools, and the surface coating.

*CNC – Computer Numerical Control Router
**NCT Numerical Control Turret Punch Press

Cleaning and Maintenance Guide

Visit www.mulford.co.nz or call 0800 685 3673