

# TEKNOWARE INTERIOR PANELS

Sustainable and lightweight interior solutions made from durable high-pressure laminate (HPL) for buses, coaches and commercial vehicles.

From the moment the passenger boards the vehicle, they will appreciate the cosy atmosphere created by the stylish, functional and high-quality interior that sets the right tone for a smooth travel experience. Choosing sustainable and lightweight solutions can significantly lower the life cycle costs of a vehicle and reduces energy consumption by keeping the vehicle's weight low while still allowing it to carry more passengers. Teknoware products are not only lightweight and stylish but also built to last.

HPL is a durable material made up of layers of kraft paper coated with phenolic resin and a decorative layer, which are tightly bonded using high pressure and heat, resulting in a sturdy material that can withstand scratches, impacts, moisture, and stains. Designers appreciate HPL for its versatility, as it comes in various colours, patterns, and finishes. HPL is commonly used in buses and coaches for a variety of purposes, including ceilings, sidewalls, partitions, coving, and ducting. It's also a popular choice for interior applications because of its ability to mimic the appearance of wood, metal, or stone. Teknoware interior solutions utilise HPL in different forms: as a flat sheet with customer specific perforations and shapes, or vacuum formed into curved shapes.

Our technical expertise in lighting technologies and interior solutions enables us to create customised solutions where lighting and panels are seamlessly integrated and tailored to your needs. Thanks to our flexible production chain, we can deliver solutions and accessories to you from any one of our production sites, no matter the size of your order. Our in-house design and manufacturing keep costs low and eliminate compatibility issues and complex installations.

## FACTS IN BRIEF



FOR AUTOMOTIVES



SUSTAINABLE



DURABLE



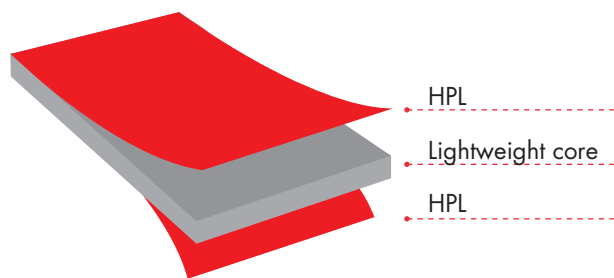
LIGHTWEIGHT



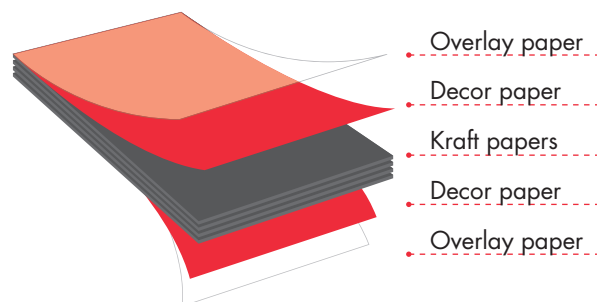
TAILOR MADE

## Lightweight HPL

Lightweight panel is made with one layer of HPL bonded to both sides of a lightweight core.



## Compact HPL



### Panel information

Laminate thickness	0.7 mm ( $\pm 0.1$ mm)
Adhesive type	Two-component epoxy adhesive system
Weight	2.41 kg/m <sup>2</sup> ( $\pm 10$ g)
	<ul style="list-style-type: none"> <li>HPL can be used to form two-dimensional shapes. 3D shapes are not possible.</li> <li>Core material foamboard with a closed-cell polyurethane foam</li> </ul>

### Panel dimensions

Thickness	4.5 mm, ( $\pm 0.75$ mm)
Max. panel length	3000 mm, ( $\pm 3$ mm)
Max. panel width	1250 mm ( $\pm 1.25$ mm)
Min. radius on 90° bend	50 mm (+5/-0)
Min. radius on 120° bend	40 mm (+5/-0)
Min. length of flat between rads	55 mm (+5/-0)

- Different variations can be made by adding extra HPL layers

### Panel characteristics

Surface finish	Matt finish as standard, more options available on request
Colour	Solid colour as standard, more options available on request

- Possible to paint panel edges black

### Panel features

- HPL tested according to EN438 and ISO 4586 for resistance to surface wear, boiling water, dry heat, impact, cracking, scratching, stains, colour change in artificial light, cigarette burns and steam
- HPL performance standards: UNECE R118, FMVSS 302, BS EN 438, ISO 4586, GREENGUARD

### Panel information

Laminate thickness	2, 2.5, 3, 4, 5, 6, 8 mm ( $> \pm 0.2$ mm)
Adhesive type	Two-component epoxy adhesive system
Weight	1.35 kg/m <sup>2</sup> (per 1 mm)
	<ul style="list-style-type: none"> <li>HPL can be used to form two-dimensional shapes. 3D shapes are not possible.</li> </ul>

### Panel dimensions

Max. panel length	3000 mm ( $\pm 3$ mm)
Max. panel width	1250 mm ( $\pm 1.25$ mm)
Min. radius on 90° bend	15 mm (+5/-0)
Min. radius on 120° bend	15 mm (+5/-0)
Min. length of flat between rads	Contact Teknoware for confirmation

- Various designs can be made by using different thicknesses

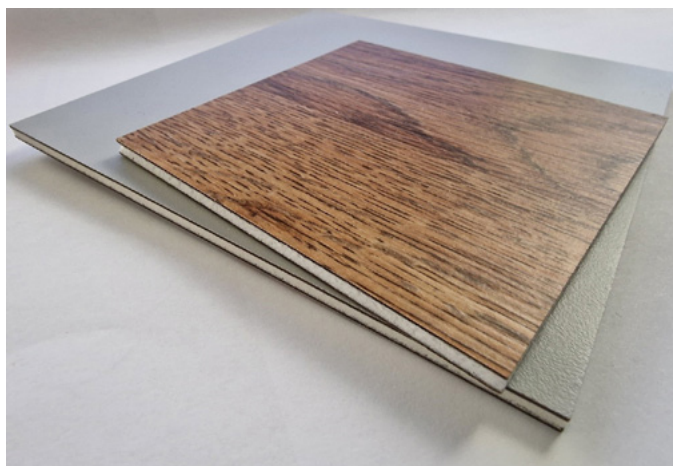
### Panel characteristics

Surface finish	Matt finish as standard, more options available on request
Colour	Solid colour as standard, more options available on request
Colour of the edge	Dark brown

- Possible to round the edges

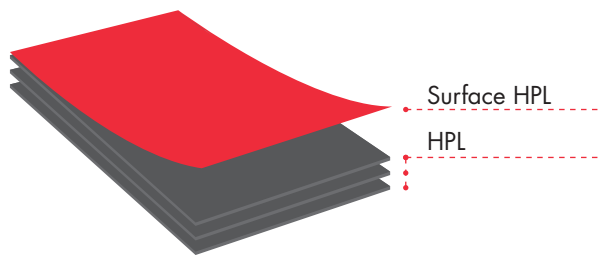
### Panel features

- HPL tested according to EN 438 and ISO 4586 for resistance to surface wear, boiling water, dry heat, impact, cracking, scratching, stains, colour change in artificial light, cigarette burns and steam
- HPL performance standards: UNECE R118, FMVSS 302, BS EN 438, ISO 4586, GREENGUARD

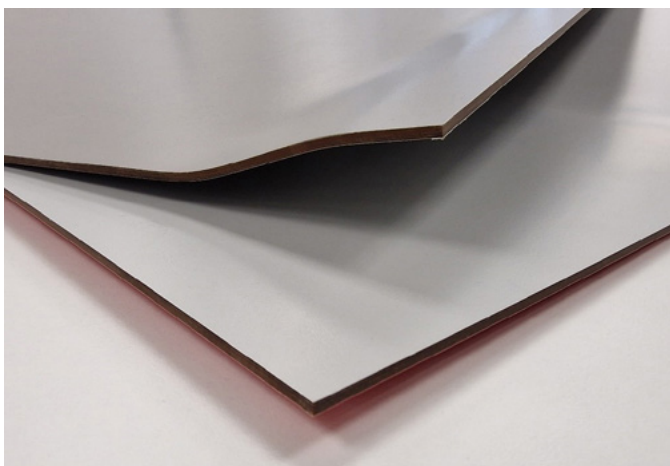


# Formed HPL

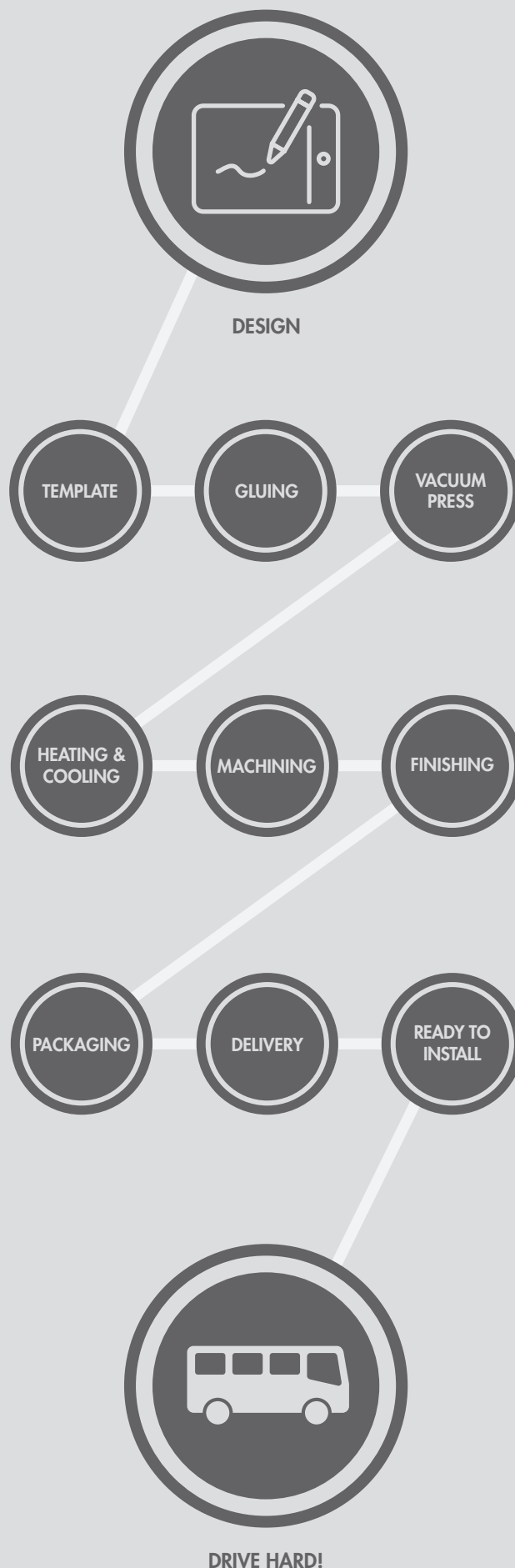
Formed panel is made with three or four layers of HPL bonded together.



Panel information	
Laminate thickness	0.7 mm ( $\pm 0.1$ mm)
Adhesive type	Two-component epoxy adhesive system
Weight	4.40 kg/m <sup>2</sup> (on 4-ply / 2.8 mm)
	<ul style="list-style-type: none"> <li>HPL can be used to form two-dimensional shapes. 3D shapes are not possible.</li> </ul>
Panel dimensions	
Thickness	3-ply: 2.1 mm ( $\pm 0.75$ mm) 4-ply: 2.8 mm ( $\pm 0.75$ mm)
Max. panel length	3000 mm ( $\pm 3$ mm)
Max. panel width	1250 mm ( $\pm 1.25$ mm)
Min. radius on 90° bend	75 mm (+5/-0)
Min. radius on 120° bend	60 mm (+5/-0)
Min. length of flat between rads	65 mm (+5/-0)
	<ul style="list-style-type: none"> <li>Different variations can be made by adding or removing HPL layers</li> </ul>
Panel characteristics	
Surface finish	Matt finish as standard, more options available on request
Colour	Solid colour as standard, more options available on request
Colour of the edge	Dark brown
Panel features	
	<ul style="list-style-type: none"> <li>HPL tested according to EN 438 and ISO 4586 for resistance to surface wear, boiling water, dry heat, impact, cracking, scratching, stains, colour change in artificial light, cigarette burns and steam</li> <li>HPL performance standards: UNECE R118, FMVSS 302 BS EN 438, ISO 4586, GREENGUARD</li> </ul>



## PROCESS



# Sustainability in Teknoware

Teknoware was founded in the town of Lahti in Finland in 1972 and remains a family-owned business to this day. The founder, Kalervo Virtanen, envisioned an international company that would be built on its customer focus, knowledge, technological competence, and strong values.

The world population, the resources we consume and waste we produce are constantly increasing, while the Earth's ability to provide the natural resources we need through the ecosystem is in decline. This is increasing pressure in many ways in our everyday work and personal lives.

In response to these challenges, Teknoware has implemented a Sustainability Management System (SMS) throughout our global operations, working towards relieving the pressure on natural resources, greenhouse gas emissions, pollution and the social well-being of our employees and communities, building upon all the hard work already implemented across our global organization in areas such as human rights, environmental and health and safety practices.

Our SMS is focused, measurable and transparent. It aims to relieve pressures to allow us to strengthen our business practices, while engaging customers and employees to improve growth, productivity, efficiency and securing the long-term future of Teknoware in a competitive industry. Successful implementation of the SMS and policy requires all stakeholders involvement: managers, employees, customers and suppliers, so let's make this journey successful, together, starting now.

**Kai Kauto**  
CEO, Teknoware

## Sustainability Management System — Our Key Performance Indicators

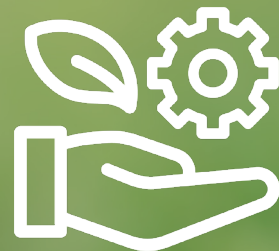
To understand the current state and how to make improvements, we have set Key Performance Indicators (KPI) for environmental, social and economic sustainability to Teknoware worldwide.



**Environmental sustainability**  
Understanding and reducing all waste and reusing power at Teknoware sites.



**Social sustainability**  
Human rights, diversity in the workforce and employee well-being.



**Economic sustainability**  
Development and understanding for reusing and recycle materials.

## Certificates



## Code of Conduct

The Teknoware Code of Conduct sets out the principles and requirements of behaviour that is expected of employees, suppliers and stakeholders:

- Compliance with the law
- Prohibition of corruption and bribery
- Respect for the basic rights of employees
- Prohibition of child labour
- Health and safety of employees
- Environmental protection