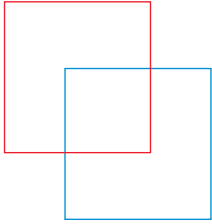

















Formica Exterior™

Laminate for Facades
and Balconies





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Formica Exterior™

– Combining Design and Function

We have been working with laminate as a facade material in demanding environments for more than 40 years. Based on the experience and expertise that entails, we have developed our new product range for exterior applications – Formica Exterior.

Formica Exterior combines excellent weather and UV resistance properties with strong scratch resistance for enhanced durability and easy handling. Formica Exterior is virtually maintenance-free and designed with easy removal of graffiti in mind.

The range extends to 45 colours and patterns ideally suited to designing exterior colour schemes that express colour traditions, current trends, and nature's own colour scale.

All colours and patterns in the range have undergone extensive testing in a climate chamber to ensure superb capacity to withstand weather and wind. Sheets of Formica Exterior installed on the same facade at the same time are guaranteed to match in colour for ten years from the date of delivery. Formica Exterior is resistant to rot and it is very difficult for mould, algae, and black spots to gain a foothold.

Formica Exterior is also meticulously tested and rated in relation to fire performance standards. The range is available in two grades, EGS and EGF, the latter with enhanced fire performance. Ratings by country are shown on the Fire Certification Table in this brochure.

The design possibilities of Formica Exterior are so extensive that the sheets are also ideal for interior applications.

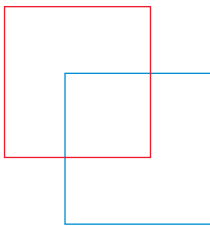
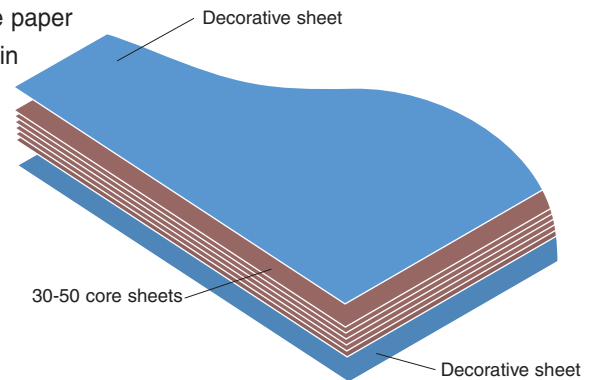
Formica Exterior – your first choice for combining design and function!



Formica has been the technical and design leader in the development of decorative surface materials ever since laminates were invented almost a century ago. The company is certified in accordance with ISO 9001:2000 and our products carry a Product Environmental Declaration.

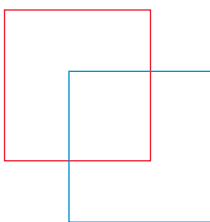
Product Description

Formica Exterior is homogeneous laminate sheet – a material made of paper and resins. The paper core layer is impregnated with phenolic resin and the decorative sheet with melamine resin. The core and decorative sheet are fused under heat and high pressure. Compact laminate is manufactured in compliance with EN 438.



The Advantages of Formica Exterior

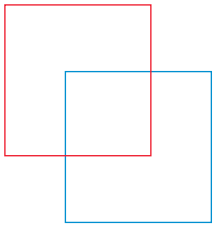
- Extensive design possibilities
- Reinforced UV protection
- Weather and moisture resistant
- Easy to clean, minimal maintenance
- Meets stringent fire performance standards
- Lightweight, dual-sided sheets
- Long lifetime
- Very good impact and scratch resistance
- Easy to machine with ordinary standard tools
- All plain colour laminates are colour-matched according to NCS*



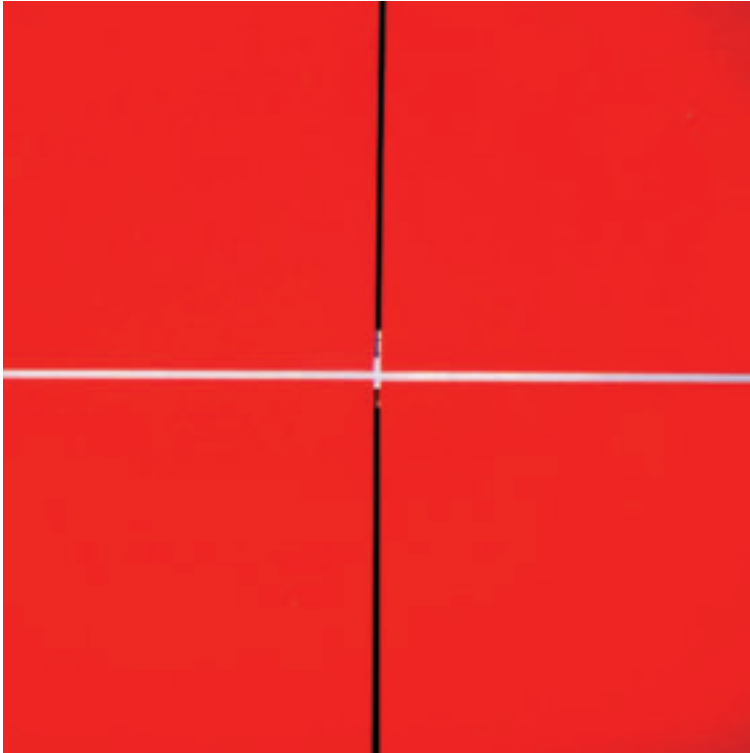
The Advantages of Partnership with Formica

- Proximity – we have our own personnel in your country
- Knowledgeable sales representatives
- Customer service
- Technical service
- Fast, reliable delivery
- Production and stock in Northern

*The NCS Colour System© is used under licence and owned by the Scandinavian Colour Institute, Stockholm.



Reference Objects featuring Formica Exterior™



Facade of Formica Exterior on a building in Lillehammer, Norway.



Office building with Formica Exterior installed as weatherboarding, Oskarshamn, Sweden.



Office building in Västervik, Sweden

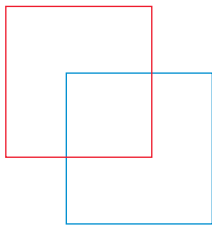


Factory and office building in Strömsnäsbruk, Sweden.



Exterior and interior applications of Formica Exterior at the Centre Leclerc in St Nazaire and Leclerc Atlantis in Nantes, France. Architect: Agence Lameynardie. Photo: N. Richez.





Certifications and Technical Data

Warranty

Formica Exterior is manufactured and shipped from our plants as specified in this brochure and as per the products descriptions in effect as of the date of delivery.

Colourfastness

Sheets of Formica Exterior installed on the same facade at the same time are guaranteed to match in colour for ten years from the date of delivery.

Mechanical Durability and Chemical Resistance

Formica Exterior is a compact laminate with very good mechanical durability and chemical resistance. The following properties are particularly noteworthy:

- Reinforced UV protection ensures that the material is virtually unaffected by prolonged outdoor exposure
- Very good scratch resistance
- Outstanding resistance to high temperatures and moisture
- Requires no edge sealing
- Resists air pollution and acid rain
- High flexural strength, impact resistance, and flexion yield good mechanical resistance
- Chemical-resistant surface
- Contact our Technical Service Dept. before removing graffiti

Certifications

Formica Exterior meets a wide range of standards and certification criteria.

As Formica Exterior is sold in many countries in Europe, we have included a complete list of certificates and quality tests for the product in this brochure. Our certifications are shown in a table on page 9, organized by country and application.

- Product quality in accordance with ISO 4586 and EN 438
- Quality control in accordance with ISO 9001:2000 – production and distribution
- Fire rating in accordance with national and EU regulations. See a table on page 9.

Specification

Formica Exterior is supplied in various grades.

The standard EGS grade corresponds to requirements for Nordic conditions.

Our EDS grade is designed for use in more extreme environments that put greater demands on exterior materials.

You are invited to contact our Technical Service on for more detailed information.

- Identified by code + thickness in mm + surface finish.
Example: K1040/4.5/UN
- Ignition point approx. 470°C.
- Mechanical and chemical properties remain unaffected at temperatures below 180°C
- Does not melt and drip when burnt
- Delivery as per Formica Exterior Product Overview

Fire Protection Grades: EGF and EDF

- Identified by code + thickness in mm + surface finish.
Example: K1040/6.0/UN
- Ignition point approx. 525°C
- Self-extinguishing if no flames develop and are maintained by another source
- Mechanical and chemical properties unaffected at temperatures below 180°C
- Does not melt and drip when burnt
- Type approval certification – see specifications on page 9
- Delivery as per Formica Exterior Product Overview

Environmental aspects

Formica's environmental policy covers all aspects of production and distribution, from raw materials to emissions from production to recycling of worn-out products.

Key Environmental Features of Formica Exterior

- The product contains
 - No asbestos
 - No organic halogens (dioxin is not formed when the product is incinerated)
 - No heavy metals
- Sheets of Formica Exterior have a high energy content and can be recycled to fuel incinerators. Complete incineration produces residual products comparable to those produced when wood is incinerated.

A product environmental declaration is available from Customer Service.

Technical Data

Property	Test Method	Unit	Test Value EGS $\geq 4,5$ mm	Test Value EGF ≥ 6 mm	Remarks
Density	ISO1183	g/cm ³	1.4	1.4	–
Tensile strength		ISO/R 527:2	MPa	>70	>60 –
Flexural strength		ISO 178	MPa	>80	>80 –
Flexural modulus		ISO 178	MPa	>10 000	>9000 –
Ball impact resistance	EN 438-2:21	cm	>150	> 180	Ball drop height
Water absorption, weight	EN 438-2:12	%	<2,5	<2,0	2h/100°C
Water absorption, thickness	EN 438-2:12	%	<2,5	<2,0	2h/100°C
Dimensional movement, long.	EN 438-2:9	%	<0,3	<0,3	RH/temp 0%/70°C
Dimensional change, lateral	EN 438-2:9	%	<0,55	<0,50	90%/40°C
Thermal conductivity	DIN 52612	W/(mxC)	Approx. 0,5	Approx. 0,5	–
Abrasion resistance	EN 438-2:10	rpm	>350	>350	–
Dry heat resistance	EN 438-2:16	180°C	*	Rating	
Cracking resistance	EN 438-2:19	Index	4*/	4*/	–
Colour stability	EN 438-2:28	Grey scale	**	-	***
Dry heat resistance	EN 438-2:29	Contrast App.	$\geq 3 \geq 4$	$\geq 3 \geq 4$	Atlas Weatherometer 3000h QUV 1500h
Stain resistance	EN 438-2:26	Index	4-5*/	4-5*/	Rating
Cleanability (Graffiti)	–	–	OK	OK	See Formica's instructions

*Best value 5 *Gloss finish 3 Other finishes 4 **No requirement ***EDS Contrast 3/1500h Appearance 4/1500h

Fire Certification for Formica Exterior

Country	Classification	Type	Thickness	Applications	Test Method	Remarks	Certificate No.
Sweden SITAC	Surface layer class 1	EGF	6,0 mm	Facades, balcony fronts, roofs, and wall cladding	SS 0248 2 (NT Fire 004)	Production control as per agreement between Swedish National Testing and Research Institute and Formica	1312/95
	Surface layer class 3	EGS	3-11,0 mm	Facades, balcony fronts, roofs, and wall cladding	SS 0248 2 (NT Fire 004)	Production control as per agreement between Swedish National Testing and Research Institute and Formica	5147/93
Denmark (ETA-Denmark A/S)	Class A	EGF	6-10,0 mm	Facades and balcony fronts	SS 0248 2 (NT Fire 004)	Production control as per agreement between Swedish National Testing and Research Institute and Formica	6.21/1332
	Class B	EGS	4,5-6,0 mm	Facades and balcony fronts	SS 0248 2 (NT Fire 004)	Production control as per agreement between Swedish National Testing and Research Institute and Formica	6.22/0391
Norway (Norwegian Certification System A/S)	Ut1	EGF	6,0 mm	Facades and balcony fronts	SS 0248 2 (NT Fire 004) ISO 5657	Production control as per agreement between Swedish National Testing and Research Institute and Formica	663
Germany Deutsches Institut für Bautechnik	B1	EGF	6,0+8,0 mm		DIN 4102-B1		Z-33.2-224
Benelux TNO	B1	*)	6,0 mm		*) Spread of flames and smoke development		00.65.6.0287/07
Euroclass approval	B-S1do	EGF	$\geq 6,0$ mm	Facades, balcony fronts, roofs, and wall cladding	SBI		P303947



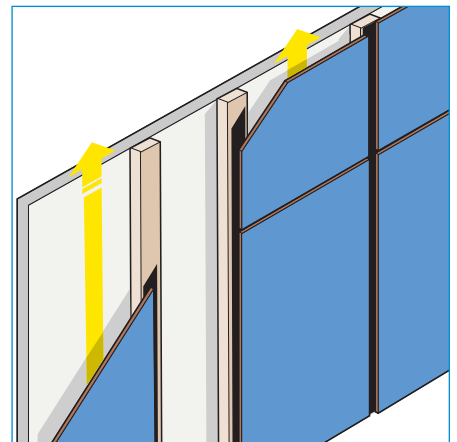
Laminate as a Facade Material

In this section, we show examples of how Formica Exterior can be installed on various types of facades. With its wide range of colours and patterns and unique material properties, Formica Exterior throws opens the doors of possibility.

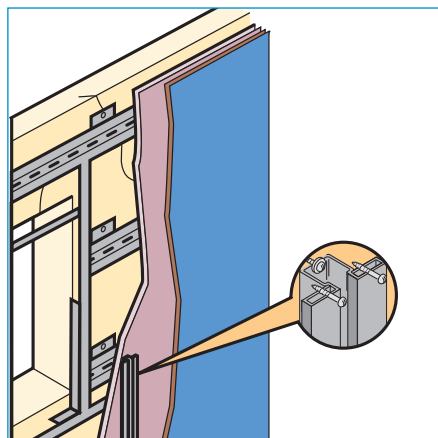
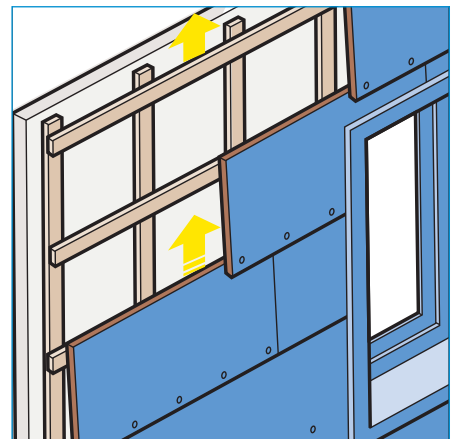
Formica Exterior can be used as a facade cladding for residential buildings, schools, offices and industrial blocks, day-care centres, warehouses, etc. The material is ideal for new construction and conversions as well as renovation and supplemental insulation projects. Formica Exterior is a self-supporting sheet of homogenous high pressure laminate that can be installed directly onto wood or metal framing, but the framing must be designed to allow an air gap between the sheets and studs to prevent moisture and mould damage.

Formica Exterior is installed using screws in pre-drilled holes. The holes must allow some movement in the material and the structure. Formica supplies screws for installation on wood or steel studs as well as extruded aluminium sections for concealed installation. Contact Technical Service for more information about concealed installation.

Vertical sheets installed over wood or steel studs.



Horizontal sheets overlapped as weatherboarding. Ensure good air circulation behind the sheets.



Metal sections combined with horizontal steel elements.



Installation of Formica Exterior™ on Building Frames

Formica Exterior can be installed using either full or cut sheets.

Full Sheets

- Suitable for large surfaces as the use of full sheets reduces the number of joints and visible installation hardware.

Sheets Cut to Size

- Allows combination of colours and sizes. Easy to install, lower sheet weight, less waste, more economical, easier to handle on the construction site.

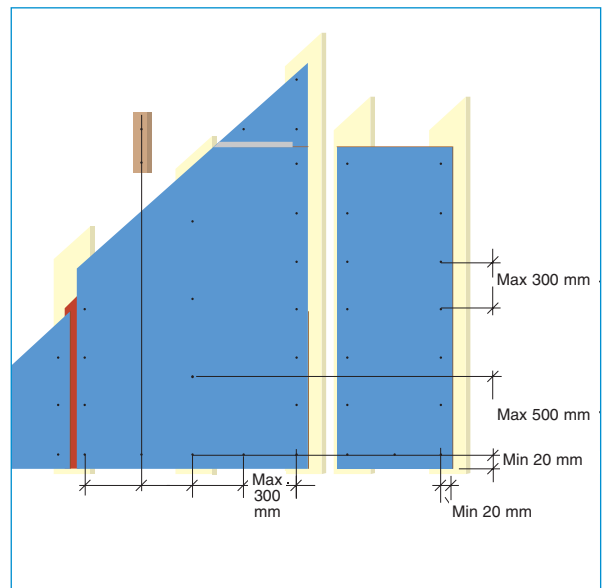
Attachment Hardware

The most common attachment hardware used for Formica Exterior:

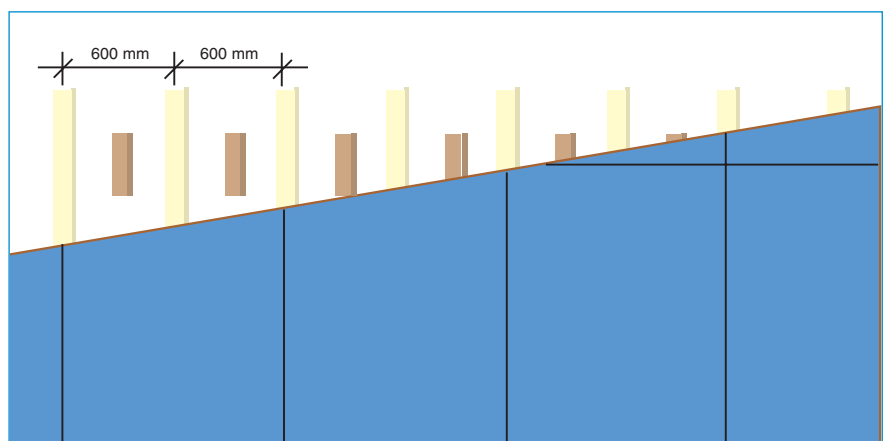
- Screws
- Rivets

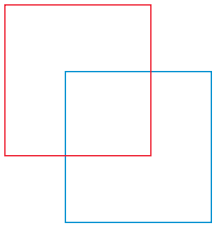
We recommend a maximum distance of 300 mm between attachment points; note that this does not take wind load or national building regulations into account.

Attachment of sheets and distance between screws.



Maximum distance between attachment points.

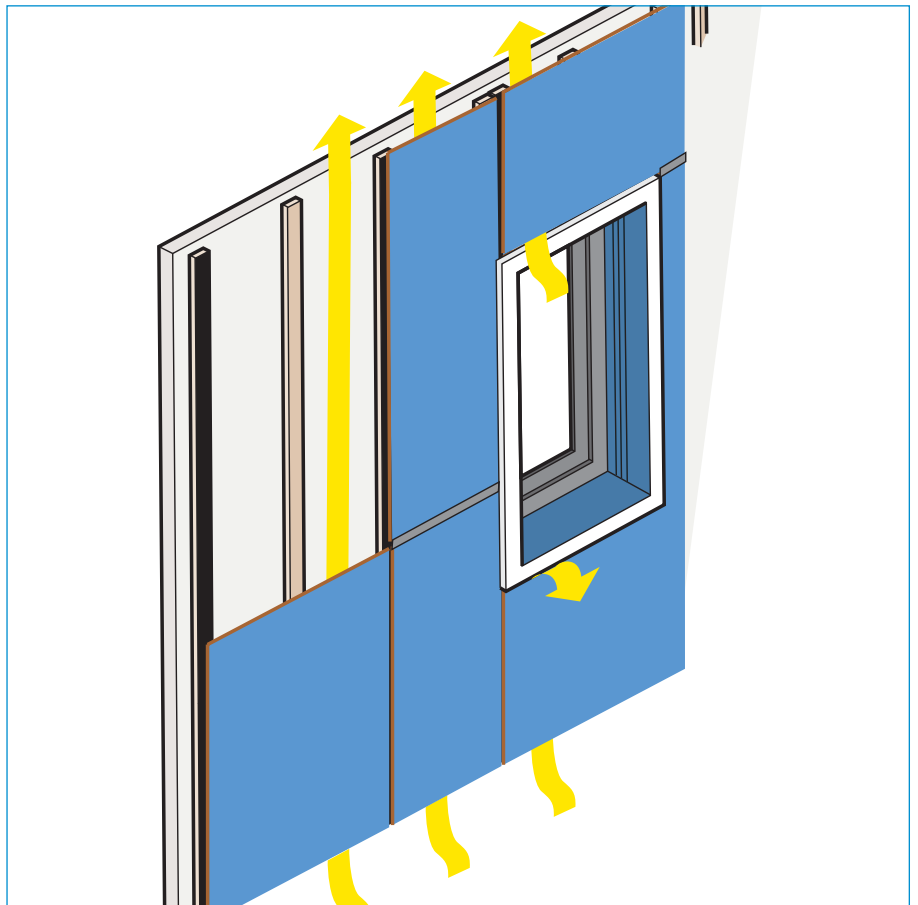


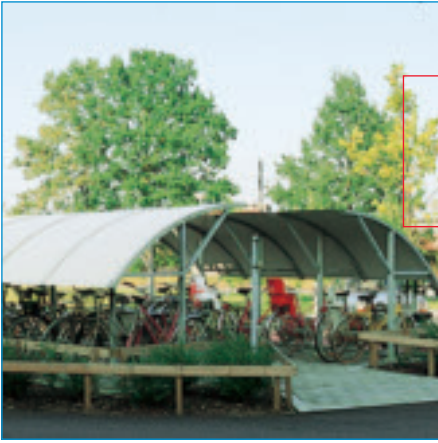


Ventilated Facades

- An air gap of at least 20 mm is required behind installed sheets to prevent tension in the material and condensation and moisture permeating the main structure.
- Openings or ventilation sections are provided at the top and bottom of the facade to permit air circulation. Make sure the air gap is not blocked next to windows, etc.
- We recommend that you cover openings with a fine metal mesh to keep insects and vermin from getting in behind the sheets.

There must always be a ventilated space of at least 20 mm behind the panel.





Working with Formica Exterior™

Working with Formica Exterior is not much different from working with other types of sheet materials. In addition to application as a flat wall cladding, Formica Exterior is postformable over minimum radii as per the table below. We do not recommend bending along more than one axis at the same time.

Recommended Minimum Bending radii:

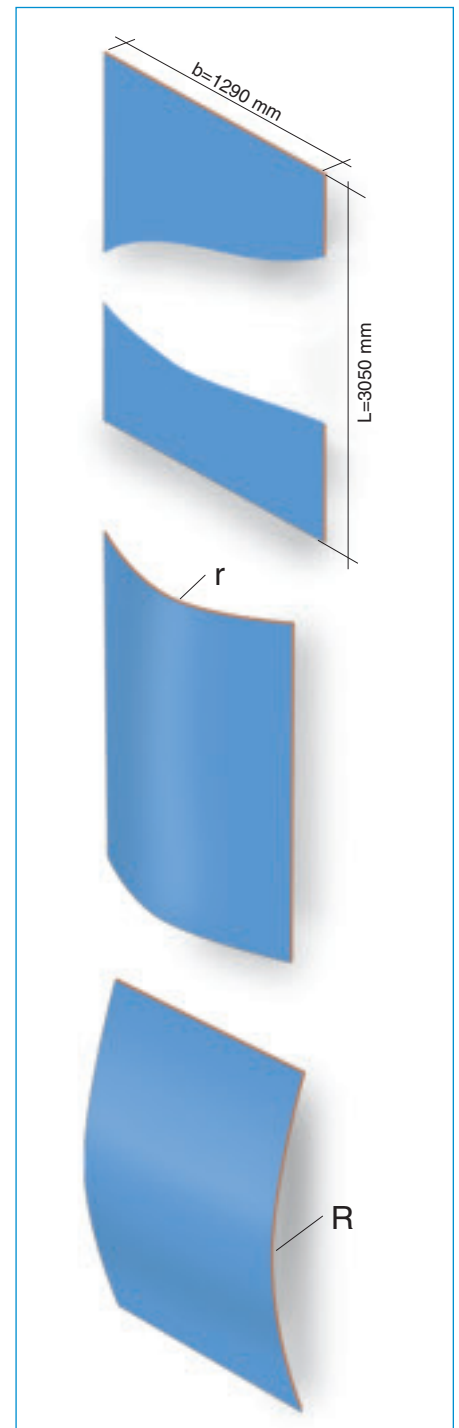
Thickness	r	R
4,5	1200	1600
6	1600	2800
8	2800	4900
10	4400	5900
12	6300	8500

All measurements in mm

R = bending radius, lengthwise

r = bending radius, crosswise

The values are based on the standard size of 3050x1290 mm.





Installation

Vertical Joints

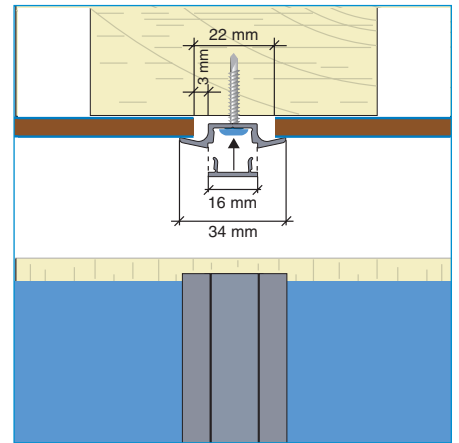
Always install Formica Exterior with a joint of at least 10 mm. Studs at the joint are covered in paper, painted sheet metal, or laminate in a matching or contrasting colour. The distance may be increased to emphasize the joint for design purposes. The joint may also be covered by a Formica joint section.

Horizontal Joints

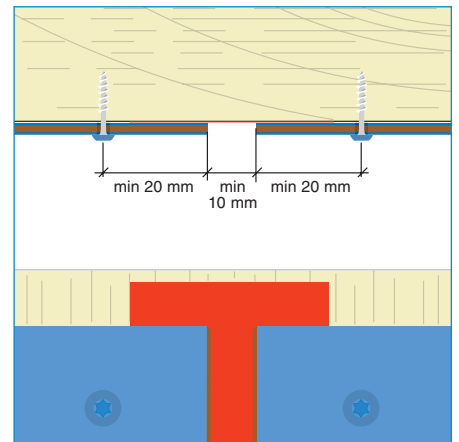
Horizontal joints in Formica Exterior must be properly sealed to prevent water from permeating the underlying material. Use an H section or Z section of painted sheet metal.

If it is necessary to splice a steel or aluminium section, use a vertical joint.

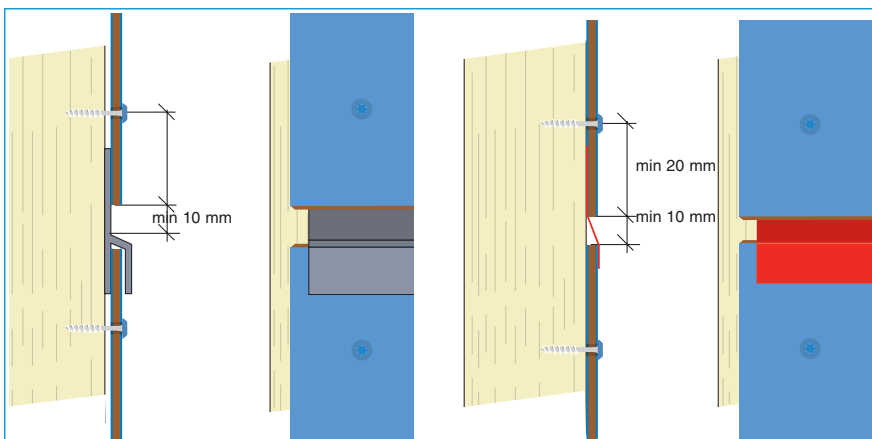
Vertical joint using a Formica joint section.



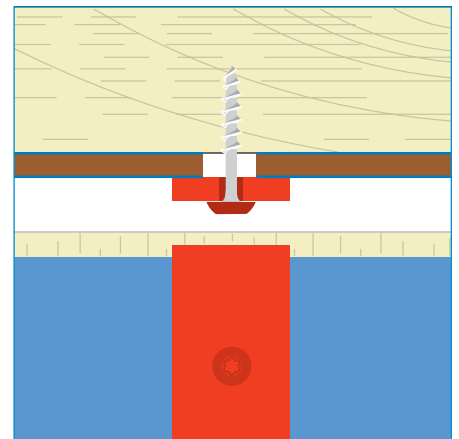
Open joint used with vertical joints.

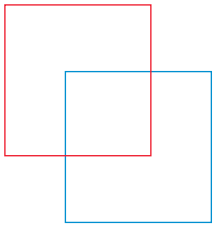


Horizontal joints with H section or painted sheet metal.



Alternative solution using laminate strip.





Installation

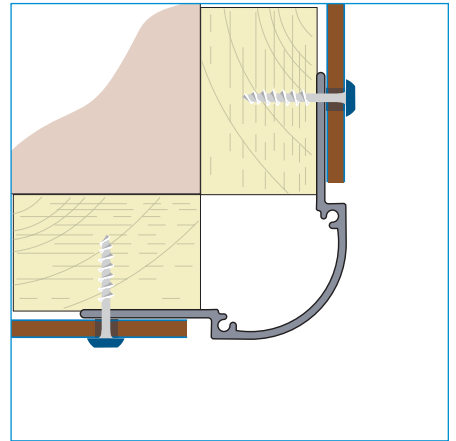
External and Internal Corners

External and internal corners are left open, with the material installed over an underlay of roofing paper or painted sheet metal. You may also use Formica corner sections – see Product Availability in the Product Overview. Protective mouldings of metal or impregnated wood may be used for corners subject to high wear.

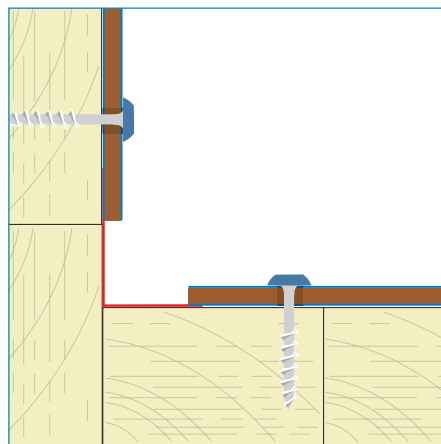
Window Joints

Air circulation must not be blocked at windows. Use Formica Exterior or painted sheet metal, depending on the depth of the window recess.

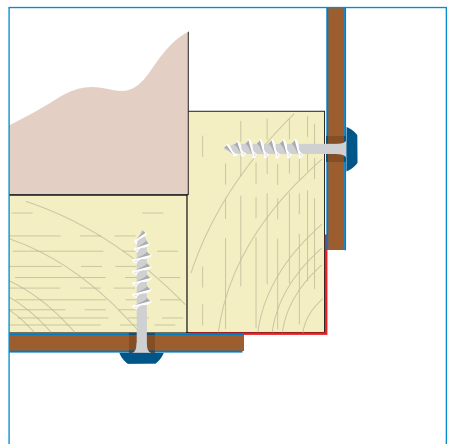
External corner with Formica external corner section.



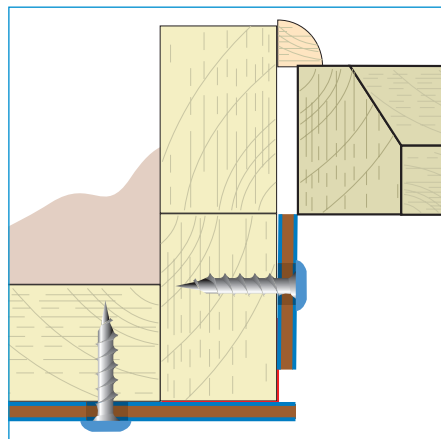
Internal corner



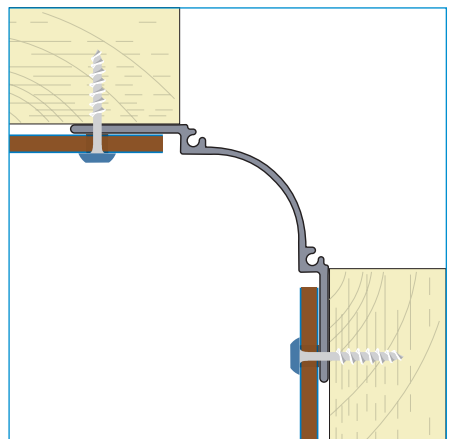
External corner



Window joints



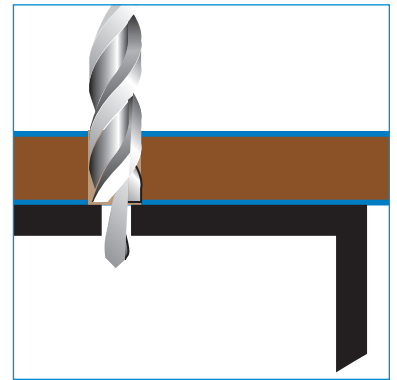
Internal corner with Formica internal corner section





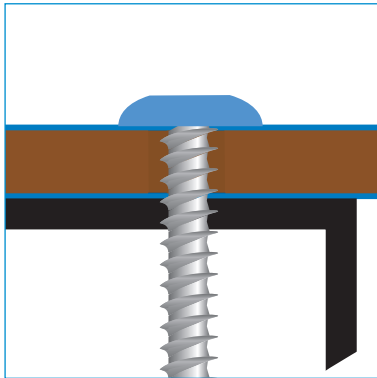
Balcony and Railing Installations

You must ensure that installation methods comply with national regulations and ordinances. Always contact local authorities for approval.

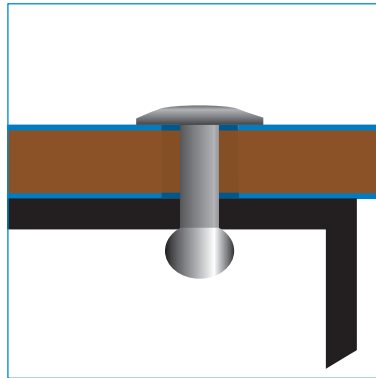


Attachment points in the laminate must be predrilled to provide room for expansion and movement in the material. A two-step drill can be used, e.g., to make larger holes in the laminate than in the framework.

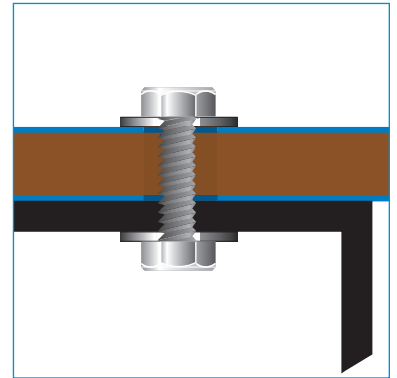
Recommended installation method using screws or rivets in the railing



Screws are commonly used for installation. Formica supplies stainless or powder-coated screws for installation on wood and stainless, white-painted screws for installation on metal.



Rivets are an alternative hardware solution. Keep in mind that rivets that are too heavy-duty (e.g., steel rivets) may damage or prevent movement in the material. Use aluminium rivets or special installation tools that allow a gap between the rivet and the sheet.

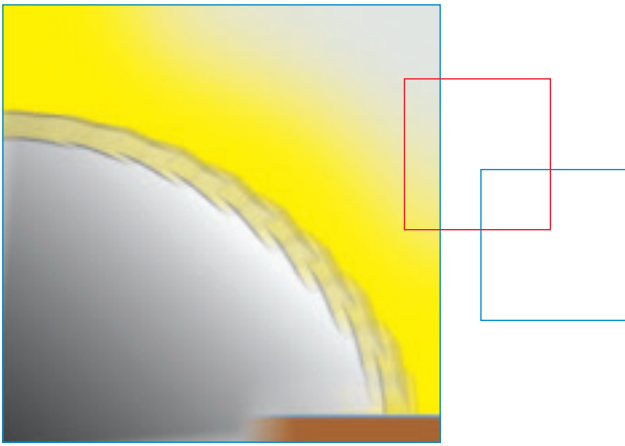


Screws and nuts are a good choice for firm attachment on extruded sheet metal sections.

Attachments

Support structure	Sheet thickness mm	Attachment hardware	Size, etc. min.	Predrilled holes diameter (mm)	Tool
Wood	4,5-8,0	Screws for installation on wood (torx)	D9-T20-4,3x28	6	Torx
Thin sheet metal sections	4,5-8,0	Screws for installation on sheet metal (torx)	D9-T20-4,2x24	6	Torx
Sheet metal sections	All	Rivets/ Screws with nuts	–	1.5 x shaft diam.	–

Note that all attachment must allow movement in the sheet.



Machining of Formica Exterior™

Machining

As Formica Exterior is a hard, impact-resistant material, tools are subject to stronger wear than they are when used to machine wood. Always use sharp saw blades made of hard metal. Worn tools can cause chipping and poor cuts.

Cutting Formica Exterior

You can either cut laminate sheets yourself or order pre-cut sheets from Formica. We offer the following services:

- Customized cutting to your drawings or specifications
- Use of the Formica optimization software that makes it easy to calculate material utilization and minimize the customer's costs
- Sequential packing of sawn sheets to facilitate installation

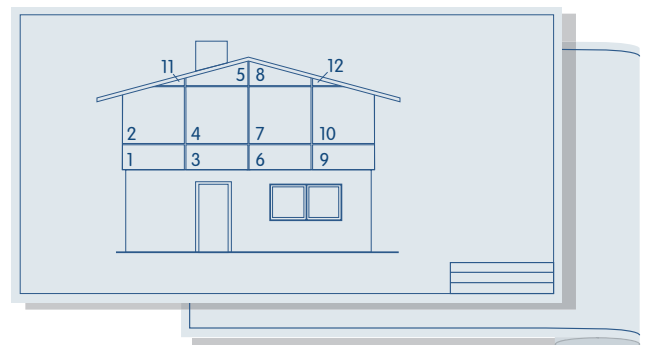
DIY Machining

Formica Exterior is machined essentially in the same way as wood-based materials.

Ideally, sheets should be cut using a circular bench saw with a blade diameter of 300-400 mm and at least 96 teeth. A handheld circular saw with a fine-tooth blade may be used (Ø150/48 teeth) for shorter cuts.

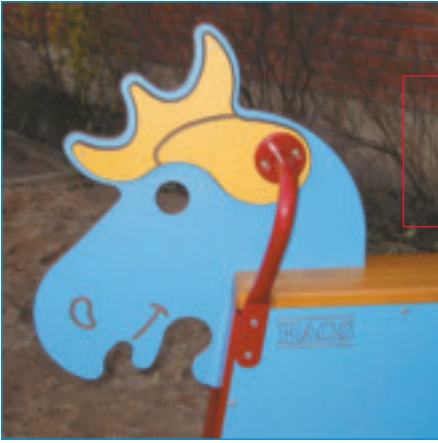
- An electric handheld router or hand plane can be used to deburr edges. Burrs can also be removed with sandpaper.
- For best results, it is important that the material is level and stable during machining to prevent vibrations and movement of the material.

- For best results, always work so that the tool engages the decorative front of the material (applies to all types of machining with tools).
- Use saw blades and drills designed for hard materials.
- Large saw blades yield better results.
- To prevention tension in the material, cut-outs must have rounded internal corners.



Circular Saw

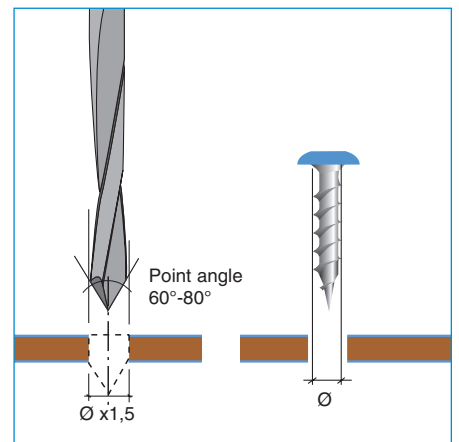
		Saw blade
Peripheral speed	m/s	60
Blade diameter	mm	300
Recommended speed	rpm	4000
Blade thickness	mm	3.0-4.5
Number of teeth	–	96
Tooth profile	–	Straight or 10° face angle or triple chip
Distance between teeth	mm	13-15
Rake	–	10-15°
Hard metal grade	–	H20



Drilling, Routing, and Cut-outs

Drilling should be done as described below. The following are required for a good result:

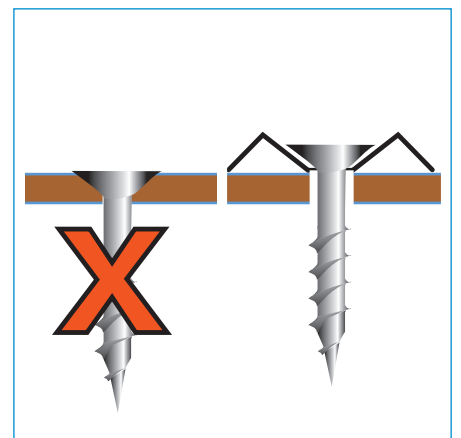
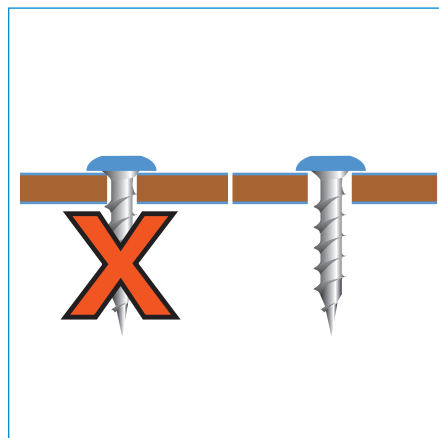
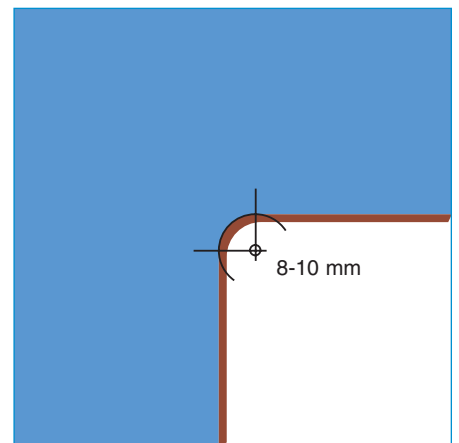
- Use a stable, flat base to avoid cracking on the back of the sheet
- Use a high speed steel bit with a point angle of 60-80° (stocked by Formica)
- Use a bit with a steep pitch and deep grooves for rapid removal of sawdust
- Use a high drilling speed to reduce the risk of chipping



Use a flat metal file or a router to trim or bevel edges and corners.

Cut-out instructions:

- Use a drill, router, or jigsaw
- Make sure that all interior corners in the cut-out are rounded (min 8 mm) to avoid cracking



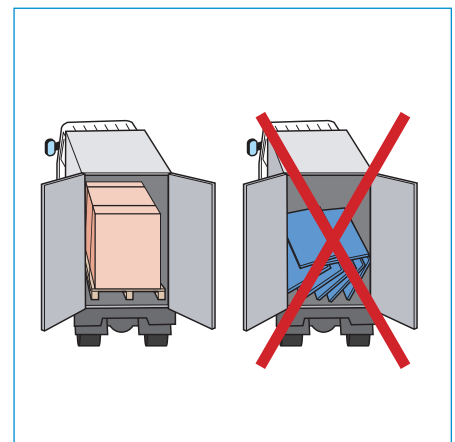


Transport, Handling, Maintenance and Storage

Transport

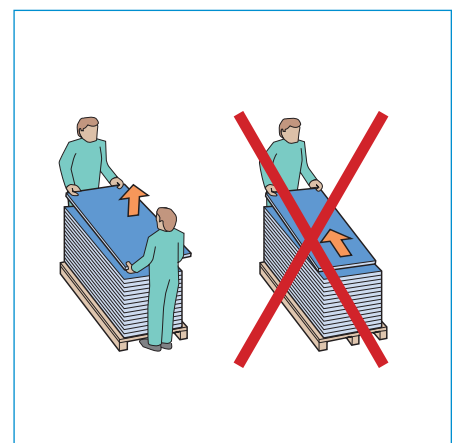
Important! Observe the following rules to prevent damage to the material:

- The sheets must be stacked flat and securely
- Make sure the sheets are properly secured so that they do not slide or fall
- Do not stack more than four pallets on top of each other
- Protect sheets against dirt and moisture



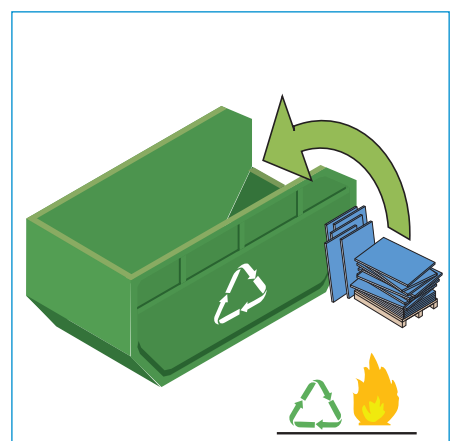
Handling

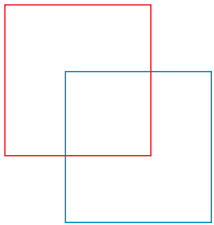
- Check upon delivery that the contents of the shipment matches your order
- Save all packing slips and other transport documents and read the enclosed User Information
- If any part of the shipment is damaged, specify the damaged goods in writing on the transport documentation before signing it
- Inform Formica immediately and in writing within 24 hours
- Do not drag sheets or pallets over one another
- Dirt must be removed with water



Waste Management

Sheets of Formica Exterior have a high energy content and can be recycled and used to fuel incinerators.





Transport, Handling, Maintenance and Storage

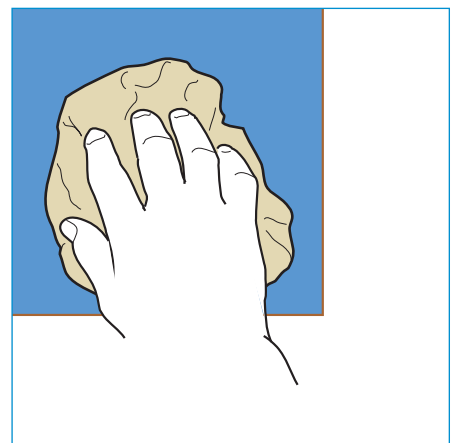
Cleaning

- To clean small areas, use a clean cloth and general purpose cleaning product or dishwashing liquid diluted with hot/warm water. Rinse with clean water.
- Thorough rinsing with warm water and no added detergent is sometimes enough. This is the most environmentally friendly method.
- Formica Exterior can be pressure-washed with warm or cold water.
 - Maximum water temperature of 100°C
 - Minimum distance between nozzle and sheet should be 20 cm



Laundry detergent or chemicals may be used to clean larger areas with a high-pressure washer. Rinse thoroughly afterwards with clean water. Work from the top down.

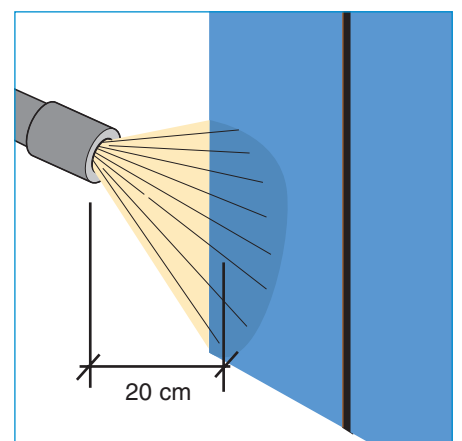
Oil, grease, minor paint splashes can be removed with isopropyl alcohol. Please consult our Technical Service before removing graffiti. Always clean the surface thoroughly after using chemicals. Please contact Technical Service for assistance with more stubborn stains.

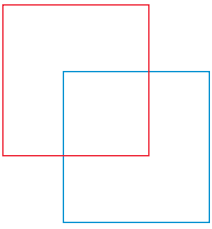


Never use:

- Abrasive materials: steel wool, scouring pads or “creamy” cleaning products with solid, abrasive contents.

Please contact Technical Service on for assistance concerning damaged laminate surfaces.



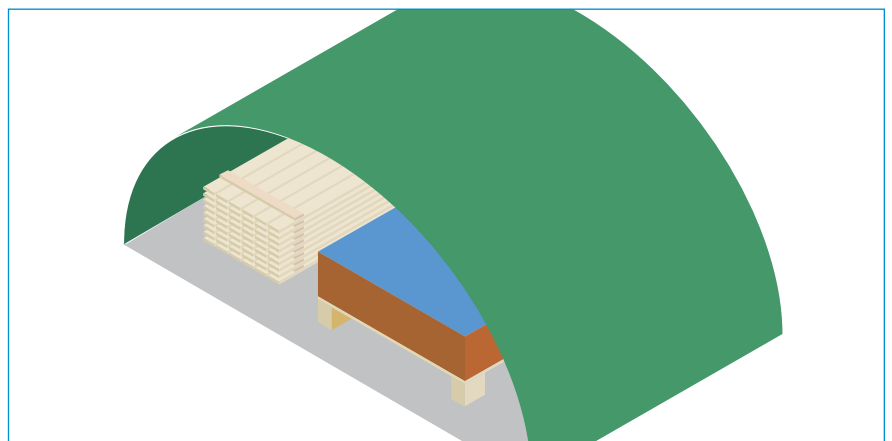
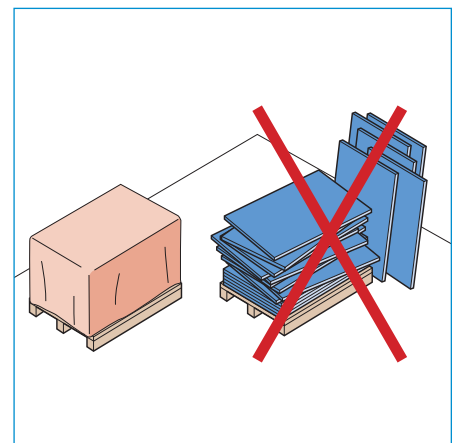


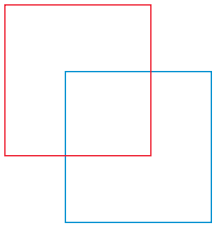
Transport, Handling, Maintenance and Storage

Storage

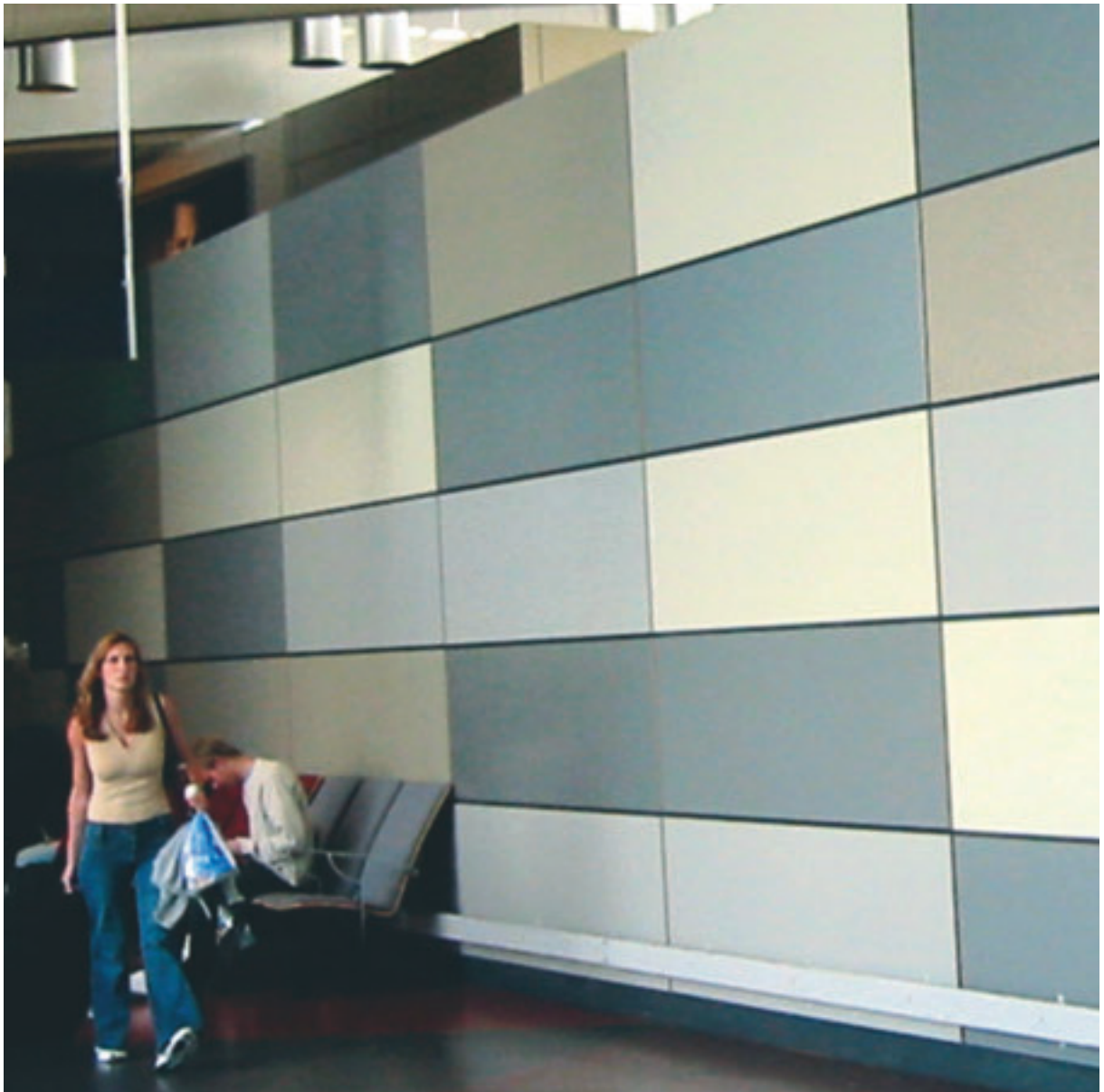
Observe the following storage rules:

- Leave sheets of Formica Exterior in the sealed package until they are used.
- When storing sheets for an extended period, they should be placed on a flat, stable, horizontal surface on a pallet, elevated above the ground, and protected with a waterproof tarp. Keep in mind the risk of “sweating” under warm conditions.
- After removing sheets from the stack for use, replace the waterproof tarp over the remaining sheets.
- Improper stacking can cause the sheets to warp.





Reference Objects Featuring Formica Exterior™



Decorative wall with Formica Exterior at Arlanda Airport in Stockholm, Sweden.

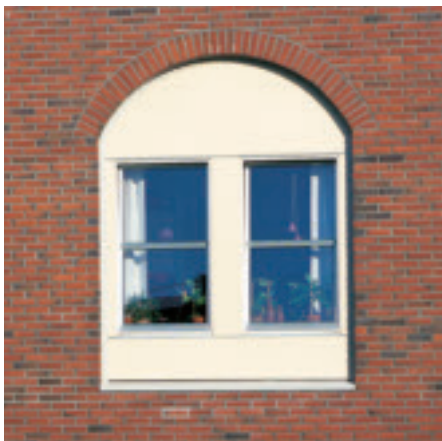
Balconies and facade of a residential building, Österås, Norway.



Balconies on a residential building in Stockholm, Sweden.



Terrace fronts featuring Formica Exterior combined with wrought iron on terraced houses, Trondheim, Norway.



Trim solutions using Formica Exterior on terraced houses, Nedre Steinan Terrasse in Trondheim, Norway.

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