

1 Product composition

OPERAL sheets consist of the following:

- Portland cement
- selected mineral fillers providing extra smooth surface
- organic reinforcing fibres
- functional additives
- fine structured water-based acrylate dispersion on the image side
- back coating

2 Production method

OPERAL sheets are manufactured on a Hatschek machine and are autoclaved and rectified. A water-based structured acrylate dispersion coating is then applied on the image side and the edges, with a transparent damp proof coating on the back. The straight longitudinal edges have the same coating as the image side.

3 Dimensions and tolerances

	Thickness	Possible fixing method	Application
OPERAL pre-cut strips	9 mm	screwing, joining by adhesive	Soffit, small facade parts
OPERAL standard sheets	9 mm	screwing, joining by adhesive, riveting	Facade

Dimensions

OPERAL pre-cut strips	OPERAL standard sheets
200 x 2,500 mm	1,220 x 2,500 mm
300 x 2,500 mm	1,220 x 3,050 mm
400 x 2,500 mm	
600 x 2,500 mm	

Tolerances; in accordance with EN 12467 (niveau I)

	Tolerance
Thickness	± 10%
Length and width	± 3.0 mm
Squareness	1.0 mm/m

Weight (ex-works)

Dimensions (mm)	Weight (kg/m ²)	Weight (kg/sheet)
200x2,500	13.0	6.5
300x2,500	13.0	9.7
400x2,500	13.0	13.0
600x2,500	13.0	19.4
1,220x2,500	13.0	38.9
1,220x3,050	13.0	47.4

Thicknesses, sizes and types of the sheets which differ from those available as standard from stock are available subject to minimum order quantities. Please contact EURO PANELS OVERSEAS NV for more information.

4 Colour

OPERAL has a slightly structured coating.

For an overview of the standard colours we refer to the most recent EURO PANELS OVERSEAS NV colour chart. However it is technically impossible that this chart represents the colours realistically. Therefore the final choice of the colour has to be made with samples. Other colours are available upon request for minimum orders. All sheets have to be ordered at the same time since a slight colour difference is possible due to different productions.

Colour differences are measured according the CIELAB colour model. Tolerated colour differences are $\Delta L^* = \pm 2.00$, $\Delta a^* = \pm 1.00$, $\Delta b^* = \pm 1.00$. Color variegation may be accentuated by the effects of light and the viewing angle.

5 Technical properties

Average values according to the European standard EN 12467 'Fibre-cement flat sheets', which describes classification and most testing methods.

<i>A. Testing according to ISO quality management system</i>				
Density	Dry	EN 12467	1,230	kg/m ³
Bending strength	Ambient, ⊥	EN 12467	23.0	N/mm ²
	Ambient, //	EN 12467	17.0	N/mm ²
Modulus of elasticity	Ambient, ⊥	EN 12467	9,500	N/mm ²
	Ambient, //	EN 12467	7,500	N/mm ²
Hygical movement	0-100%, mean		2.10	mm/m
Porosity	0-100%		38	%
<i>B. Classification</i>				
Durability classification		EN 12467	Category A	
Strength classification		EN 12467	Class 3	
Fire reaction classification		EN 13501-1	A2-s1-d0	
<i>C. Type test or best estimate</i>				
Impermeability test		EN 12467	Ok	
Warm water test		EN 12467	Ok	
Soak dry test		EN 12467	Ok	
Freeze thaw test		EN 12467	Ok	
Thermal conductivity λ			0.250	W/mK

6 Advantages

Providing the application guidelines are followed, EURO PANELS OVERSEAS NV fibre-cement sheets have the following superior mix of properties compared to other materials:

- fire safe (no fire ignition, no spread of fire)
- sound insulating
- resistant to extreme temperatures
- water resistant (if in compliance with application guideline)
- resistant to many living organisms (fungi, bacteria, insects, vermin, etc.)
- resistant to many chemicals
- environmentally friendly, no harmful gas emissions

In addition, OPERAL has the following specific properties:

- strong, rigid and versatile sheet
- can be worked on with joinery machinery
- screw and nail without pre-drilling
- aesthetic slightly structured surface
- available in a very wide range of colours

7 Applications

- Facade: facade cladding, cladding of soffits and fascias

8 Available factory finishing

OPERAL can be supplied by EURO PANELS OVERSEAS NV cut to size. Holes 5 to 11 mm in diameter can be factory pre-drilled (for visible fixing).

9 Application data

!!: Sawing and drilling must take place in a dry environment. For decorative applications, sawdust and drillings must be immediately removed from the sheet with a dry micro-fibre towel. Not removed sawdust and drillings can cause permanent stains.

During the mechanical machining of panels, adequate machinery with dust extraction and/or ventilation should be foreseen. If dust extraction is not efficient, dust masks of type FFP2 or better according EN149:2001 should be used.



Cutting/Sawing:

When working on the sheet it must be sufficiently supported so that it does not sag. The sawing bench must be very stable and may not vibrate. The sheet may not be under tension when sawing. The sheet must be free of vibration and tension during sawing for a good saw cut. Cutting in the wrong way can cause delamination problems of the edge.

- Hand circular saw with rail or stationary sawing machines: fast rotation with Universal EURO PANELS OVERSEAS NV cutting blade available at Leitz-Service (available diameters: 160, 190, 225 and 300 mm)
- Jigsaw with carbide-tipped tooth cutting blade type T141 HM from Bosch (available from EURO PANELS OVERSEAS NV)
 - Sawed edges must be smoothed with sandpaper (grain P80)

Drilling:

The sheet should be supported around the hole to be drilled (e.g. by a wooden surface).

- for holes: carbide-tipped twist drill (or completely in carbide) with a 60° nose angle (available from EURO PANELS OVERSEAS NV); available diameters: 5.0 – 6.0 – 7.0 – 8.3 – 9.5 – 11.0 mm
- for round apertures: hole saw with carbide-tipped teeth (e. g. type Pionier from Metabo)
 - Sawed edges must be smoothed with sandpaper (grain P80)

Fastening accessories:

Depending on the application the following fastening accessories can be used (see application instructions for more information).

- Adhesive: is to be used in accordance with the application guidelines and guarantee conditions of the adhesive supplier.
- Screws: can be screwed without pre-drilling.
- Rivets: can be used in completely pre-drilled holes only (cfr ASTRO system).

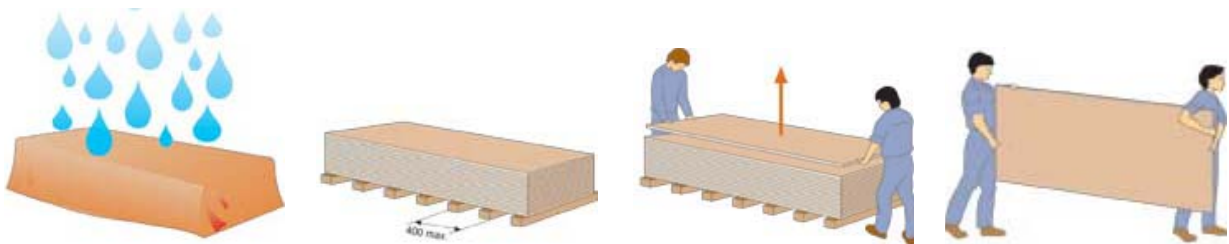
Sealant:

Only use neutral sealants. Non-neutral silicones or thiokols can result in spots.

Retouching:

For aesthetic reasons it is recommended to retouch the sawn edges of OPERAL where necessary and in the event of damage. Retouching must take place with the appropriate coating system and in accordance with the coating conditions. The surface to be painted must be dry and free of dust and grease (dust and/or clean first if necessary). The coating supplied must be stirred well and may not be diluted. First prime with the impregnant and then finish with the acrylate dispersion. Retouch the surface with a brush or roller.

10 Handling



The sheets are packaged on pallets. They are to be transported under a tarpaulin. The sheets must be horizontally stacked on a flat surface. The sheets must always be sufficiently supported so that they do not sag. The sheets must be stacked in a dry ventilated space. If the sheets are stored outside, they must always be protected against rain by a tarpaulin or plastic cover. If the sheets do become wet in the packing, all packaging must be removed and placed in a way that they can dry out thoroughly. It is recommended to allow the

sheets to acclimatise in the space where they are to be used. A sheet must always be lifted from a stack by two persons and then be carried vertically. A foil always has to remain between the stacked sheets in order to prevent paint damage.

11 Health and safety aspects

During the mechanical machining of panels, dust can be released which can irritate the airways and eyes. Apart from this, the inhalation of fine (respirable size) quartz containing dust, particularly when in high concentrations or over prolonged periods of time can lead to lung disease and an increased risk of lung cancer. Depending on the working conditions, adequate machinery with dust extraction and/or ventilation should be foreseen. For more ample information, please check the Safety Data Sheet according to 91/155/EEC.

12 Warranty

The warranty on the product is only valid if the EURO PANELS OVERSEAS NV application guidelines are respected. If in any doubt regarding the suitability of EURO PANELS OVERSEAS NV sheets in any given application, it is advisable to request specific recommendations from EURO PANELS OVERSEAS NV. Under no circumstances can EURO PANELS OVERSEAS NV be held liable for applications of their sheets implemented without approval from EURO PANELS OVERSEAS NV.

13 Maintenance and cleaning

For minor soiling, washing with a mild household detergent or soft soap solution followed by rinsing with clear water.

14 Certification

The manufacturer is able to deliver the CE declaration in terms of the European Construction Products Directive. The products are delivered with the ATG-label (B) and the KOMO-certificate (NL) which guarantees the conformity to the CE-label and to the standard NBN EN 12467 "Fibre-cement flat sheets". The manufacturer is also ISO certified.



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15 More information

Information about the various applications can be found in the EURO PANELS OVERSEAS NV application guidelines. They can be found on the website or be obtained on demand by phone. Information about external suppliers can also be downloaded from the website.

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