

What is Dibond

Dibond

Aluminium composite panel (ACM) with PE core

Dibond is an aluminium composite panel (ACM) made of two thin aluminium skins and a thermoplastic polyethylene (PE) core. This sandwich construction combines low weight with high flatness and flexural rigidity, making it a versatile sheet material for facades, advertising technology and interior fit-out.

Construction and Working Principle

The panel follows the classic sandwich principle: two aluminium skins (alloy EN AW-5005A, AlMg1, each 0.30 mm thick) are permanently bonded to a polyethylene core (LDPE, density 0.92 g/cm³). Because the load-bearing aluminium layers sit far from the neutral axis, the panel achieves a section modulus and flexural rigidity that a solid aluminium sheet of equal stiffness would only reach at a much higher weight.

Available in thicknesses of 2, 3, 4 and 6 mm with weights per unit area from 2.90 to 6.60 kg/m². As panel thickness increases, section modulus and flexural rigidity increase disproportionately, so the appropriate thickness can be chosen for different spans and loads.

Surface and Colour Range

The aluminium skins are factory-coated with a modified polyester paint system using the coil coating process. Gloss level ranges from 30 to 85 % depending on colour, with a surface hardness of HB-F (pencil hardness). The coil-coating colour range spans white and silver metallic through to traffic red, traffic yellow, navy blue and deep black.

Processing

Dibond can be sawn, routed, drilled, punched and folded up to 90° after V-groove routing – the latter allowing right-angle folds without a visible joint. The thermal expansion of the aluminium skin is approximately 2.4 mm/m at 100 °C and must be taken into account in design and fixing.

Advantages

- Low weight combined with high flatness and stiffness
- Easy to process (sawing, routing, drilling, folding)
- Wide range of colours and finishes through coil coating
- Weather- and UV-resistant

Disadvantages

- PE core is combustible, building material class B2 (normal flammability)
- Limited suitability for elevated fire-protection requirements without a special version
- Aluminium skins sensitive to sharp-edged mechanical damage

Limits of Use

The standard version with PE core corresponds to building material class B2 (normal flammability) to DIN 4102-1. For applications with elevated fire-protection requirements, such as high-rise facades, separately declared product variants with a modified core are required. The permissible temperature range is -50 °C to +80 °C.

Acoustics and Thermal Insulation

As a flat panel element, Dibond contributes to the sound insulation and absorption of facade and partition constructions: the sound reduction index rises with panel thickness from 23 dB at 3 mm to 26 dB at 6 mm. Thermally, the panel itself provides only limited insulation (thermal transmittance 5.3-5.7 W/m²K depending on thickness); the actual insulating performance of a facade is provided by the insulation layer behind it, while Dibond acts as a weatherproof, dimensionally stable outer skin.

Sustainability and Recycling

Aluminium and polyethylene can be material-recycled when the skins and core are properly separated. Offcuts from cutting can be sorted by material and routed to the respective recycling streams for aluminium and plastic.

Typical Properties

- Low weight combined with high flatness and stiffness
- Easy to saw, rout, drill and fold
- Weather- and UV-resistant coil-coated finish
- Wide range of colours and gloss levels
- Temperature resistant from -50 °C to +80 °C
- Building material class B2 (normal flammability) to DIN 4102-1

Product Examples

- Facade cladding and ventilated rainscreen facades
- Advertising and display panels
- Furniture fronts and partition elements
- Exhibition stands and trade fair construction
- Signage and wayfinding systems

Typical Industries

- Facade cladding / architecture
- Advertising technology and display construction
- Interior fit-out and furniture making
- Exhibition and trade fair construction
- Signage and wayfinding systems

Test Method	Unit	Value
Weight and Mechanical Values by Panel Thickness		
Weight per unit area	kg / m ²	2 mm: 2.90 3 mm: 3.80 4 mm: 4.75 6 mm: 6.60
Section modulus W	cm ³ / m	2 mm: 0.51 3 mm: 0.81 4 mm: 1.11 6 mm: 1.71
Flexural rigidity E·I	kNcm ² / m	2 mm: 345 3 mm: 865 4 mm: 1620 6 mm: 3840

Surface Coating

Coating system		Modified polyester paint (coil coating)
Gloss level	%	30-85
Hardness (pencil hardness)		HB-F

Acoustic and Thermal Properties

	Test Method	Unit	Value
Sound reduction index R_w		dB	3 mm: 23 4 mm: 24 5 mm: 25 6 mm: 26
Thermal transmittance		W / m ² K	2 mm: 5.72 3 mm: 5.61 4 mm: 5.50 6 mm: 5.30
Fire Behaviour			
Building material class	DIN 4102-1		B2 (normal flammability)

Dibond is an aluminium composite panel with aluminium skins (EN AW-5005A) and a polyethylene (PE) core. The values stated are typical average values and are subject to normal production tolerances; they serve as an aid to material selection and are not a legally binding assurance of specific properties.