

# AIREX<sup>®</sup> PET foams

For Building & Construction

High-performance rigid  
**AIREX<sup>®</sup> PET foams**  
bring new solutions into  
Building & Construction  
applications

Find out how  
**AIREX<sup>®</sup> PET foams**  
can make you  
more competitive!



[www.3ACcorematerials.com](http://www.3ACcorematerials.com)

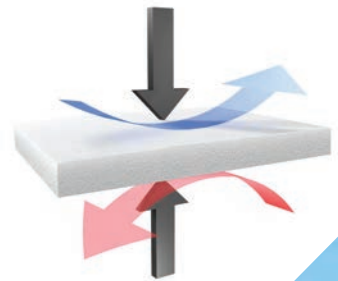


**CORE  
MATERIALS**

**B**uilding & Construction is a wide market of diverse disciplines ranging from design/aesthetics to high structural load-bearing or maximum insulation – to name just a few. Composites and particularly sandwiches using low-weight rigid and insulating polymer foams enable innovative technical solutions offering multiple benefits:

- High-performance 3D roofs and facades.
- Multi-functional: combine insulation & load bearing.
- Mass/weight reduction: lower support structure & installation cost.
- No limits on design and creativity.

## Load-bearing AND insulation in one material



**B**uilding materials are typically fabricated for structural load-bearing OR optimized for thermal insulation. **AIREX® PET foams** combine these two properties and therefore offer new solutions. Tightened legislation with regard to building insulation, modern architectural trends and demand for higher performance call for such innovative solutions in Building & Construction. Rigid foams and sandwich composites offer winning answers to these challenges:

- **Freeform shapes and wide support spans**

With **AIREX® PET** sandwich composites, highly insulating roofs or facades can be freely designed in any 3D shape with fewer supports thanks to their low weight.

- **Structural insulation**

Interfaces – e.g. masonry and windows/doors – can be designed for maximum insulation, avoiding any thermal bridges while transmitting the occurring loads.

- **Minimizing loads and installation efforts**

All weight-relevant elements (facades, balconies, bridges) can be made much lighter to reduce the weight & cost of the substructure as well as minimize time & effort during installation. Renovations may require less structural strengthening for older buildings.

# Sandwich design brings lightweight

The combination of stiff face sheets and a rigid foam core enables very light and strong load-bearing structures.

Sandwich principles. Thickness matters.

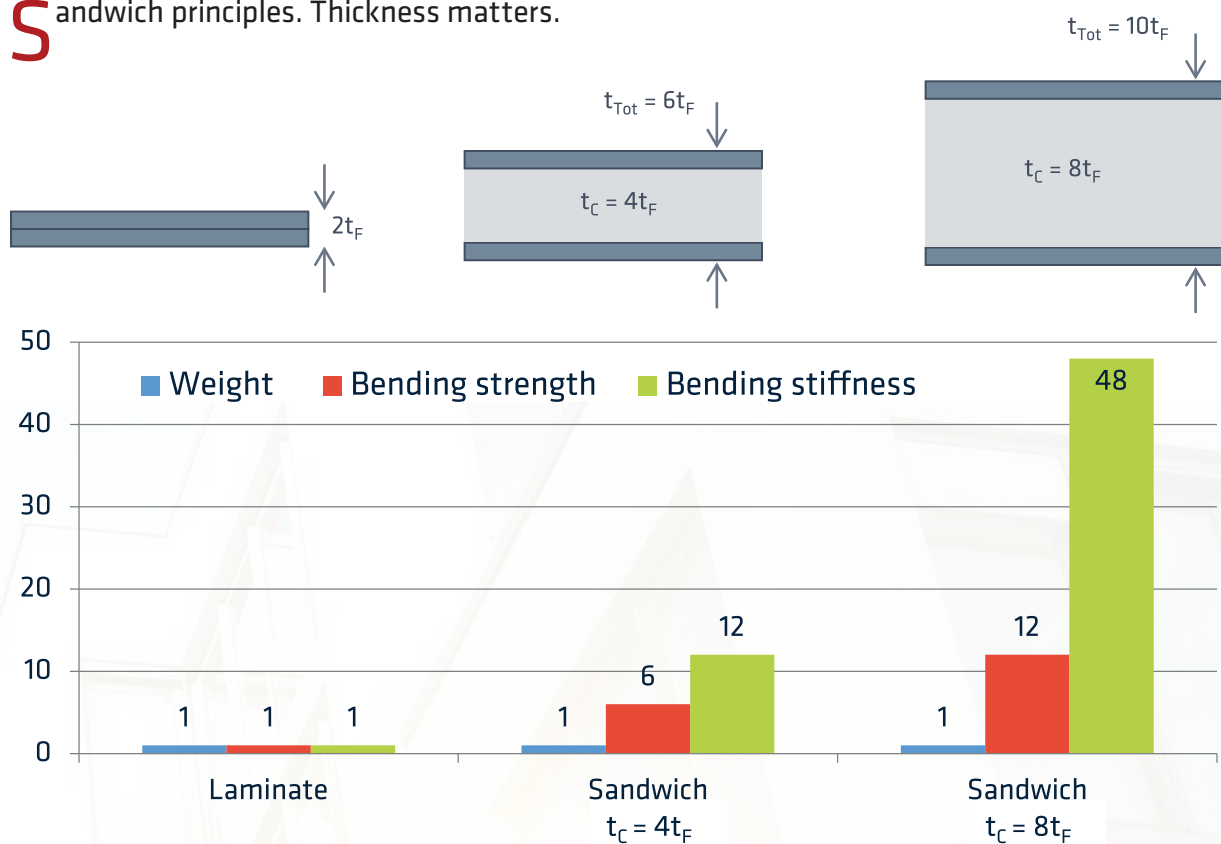
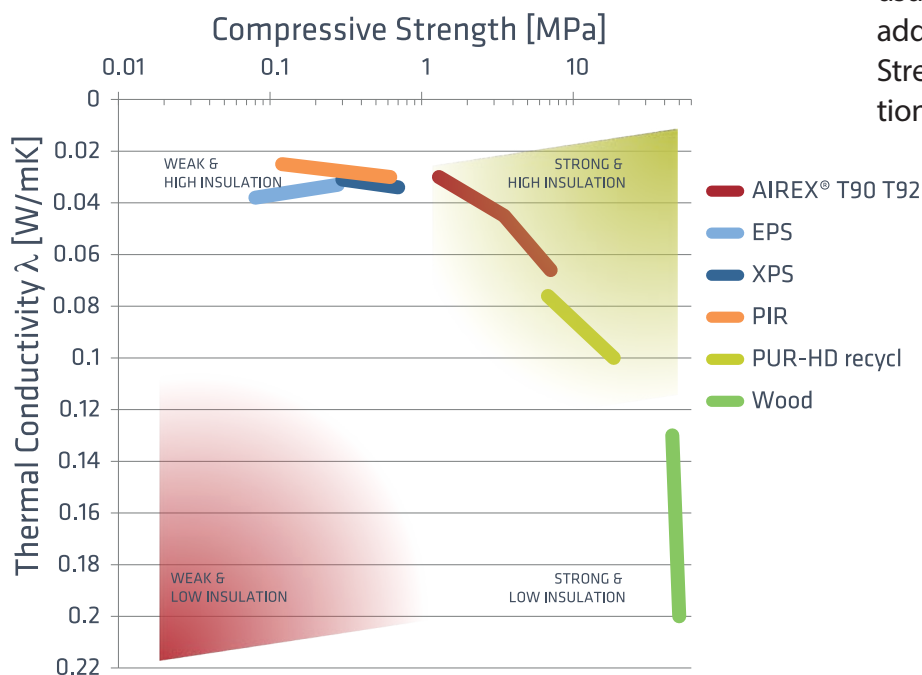


Fig. 1. Composite sandwich structures allow lightweight, strong and stiff structures that can be freely shaped in any 3D form and offer excellent insulation.

## Strong AND insulating – a novel combination

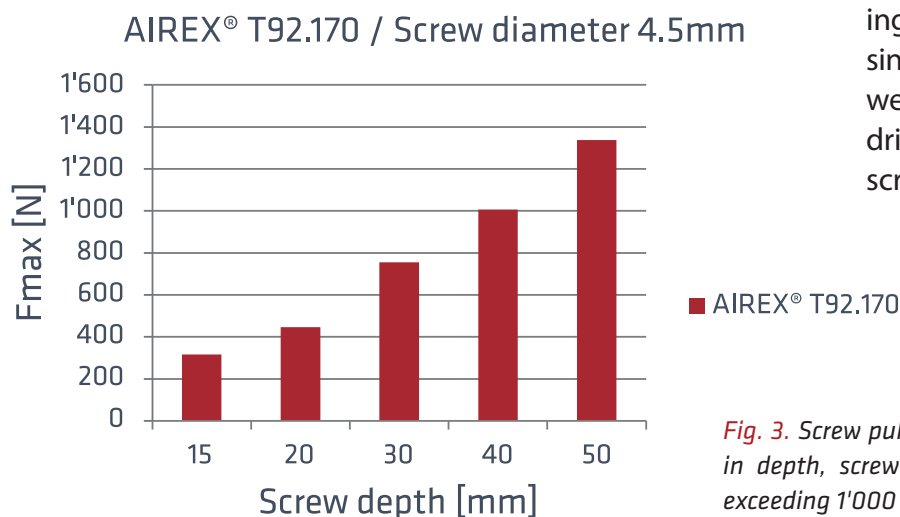
**A**IREX® rigid foams combine properties that usually require two separate, additive material solutions: Strength and thermal insulation.



**Fig. 2. AIREX® PET foams** uniquely combine high mechanical properties with excellent thermal insulation – a new class of materials.

## Screws with tight grip

**S**crews hold firm in **AIREX®** rigid PET foams. Depending on the foam density a single screw can withstand well beyond 1'000 N. No drilling is required to fit the screws into the material.



**Fig. 3. Screw pull-out forces:** depending on screw-in depth, screw type, and foam density, forces exceeding 1'000 N can be achieved.

# Properties of AIREX® T90 & T92

## General foam properties

- Closed-cell, rigid polymer foam based on PET.
- Extremely wide density range ( $60 \text{ kg/m}^3$  up to  $320 \text{ kg/m}^3$ ).
- Long-term stable, no degradation over time.
- Produced with recycled content & recyclable.

## High chemical and physical stability

- High chemical resistance (solvent and alkaline resistant).
- Compatible with a great majority of adhesives and resins.
- Water resistant, no water/humidity absorption, does not rot.
- High temperature resistance, over  $100^\circ\text{C}$ .
- Non-toxic.

## Outstanding mechanical properties

- High load-bearing capacity (up to  $7 \text{ MPa}$  compression).
- Good screw retention, also with standard wood screws.
- High creep resistance.

## Good fire resistance

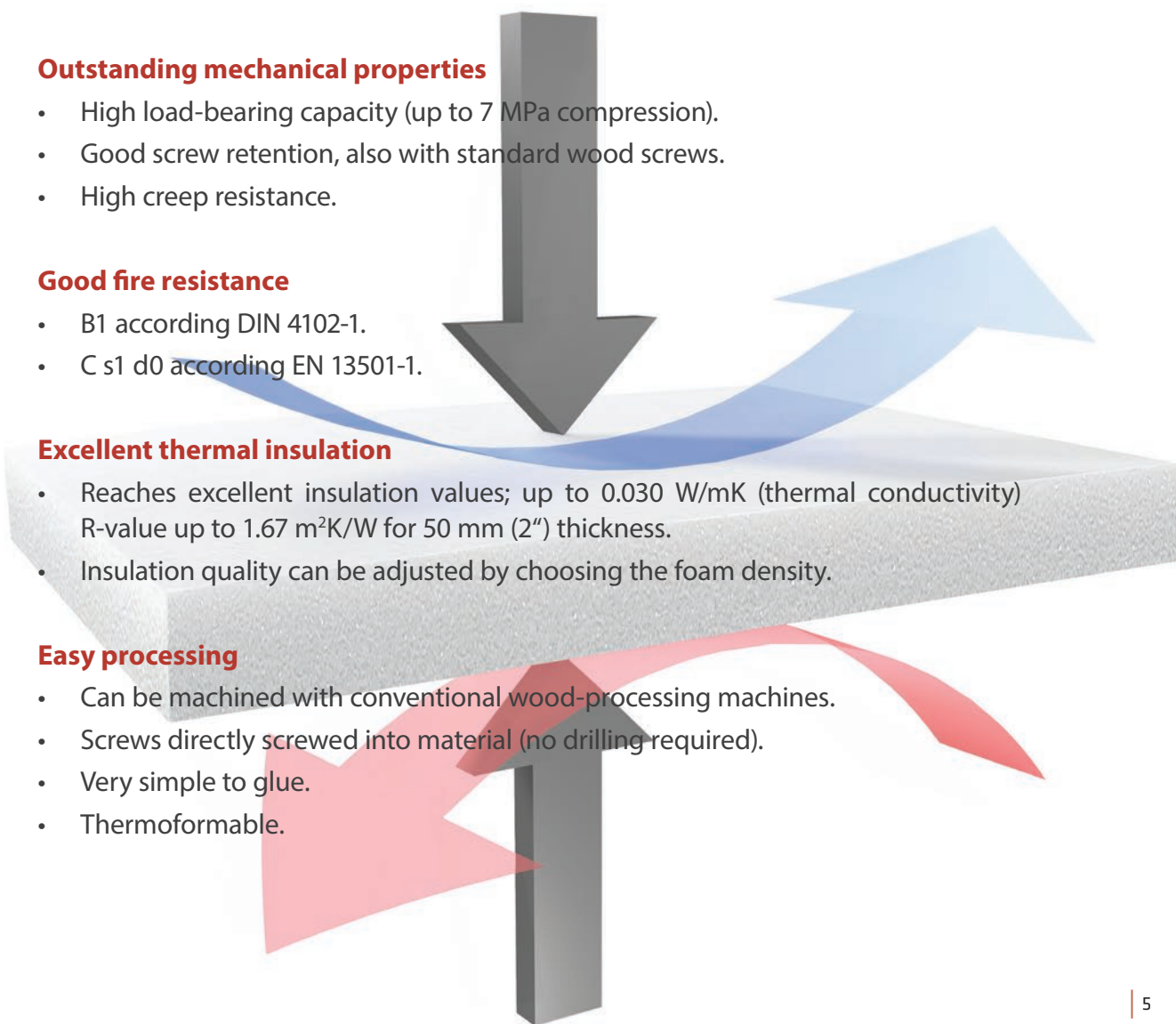
- B1 according DIN 4102-1.
- C s1 d0 according EN 13501-1.

## Excellent thermal insulation

- Reaches excellent insulation values; up to  $0.030 \text{ W/mK}$  (thermal conductivity) R-value up to  $1.67 \text{ m}^2\text{K/W}$  for  $50 \text{ mm}$  ( $2''$ ) thickness.
- Insulation quality can be adjusted by choosing the foam density.

## Easy processing

- Can be machined with conventional wood-processing machines.
- Screws directly screwed into material (no drilling required).
- Very simple to glue.
- Thermoformable.





## Roofs

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**W**ide, unsupported span; 3D freeform, fire resistant, long-term stability.



## High performance **AIREX®** PET foams

Bring new solutions for Building & Construction

## Facades

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**L**ightweight, insulating 3D shaped structures.





## Sandwich panel

Lightweight, humidity resistant, screw retention, fire resistance.

## Structural insulation

Load-bearing capacity, screw retention, thermal insulation, chemical and thermal resistance.

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## ABOUT

### 3A Composites Core Materials

**3A Composites Core Materials** is a global organizational unit within 3A Composites, part of Schweizer Technologies (SIX Swiss Exchange: SWTQ), with operations in Europe, the Americas, China and Papua New Guinea, that has pioneered the sandwich technology for more than 80 years. **3A Composites Core Materials** provides sustainable, lightweight and resource-friendly, high-quality core materials to enable the production of lighter and thus more energy-efficient end products for multiple applications such as wind turbine blades, nacelle covers, hull of a boat, automotive parts, building & construction applications, et al.



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