



SAERfoam[®] Epoxy System



SAERfoam[®] is a lightweight structural core developed to be used in high-performance sandwich structures, manufactured using either vacuum infusion, RTM or compression.

SAERfoam combines strong glass reinforcement throughout the layer and a lightweight core to provide high strength and an excellent stiffness-to-weight ratio, which makes SAERfoam competitive in performance and price against traditional solutions.

Thanks to a flexible and rapid manufacturing process, SAERfoam can be designed to maximize the mechanical performance of the parts to be produced by providing strength in single or multiple directions.

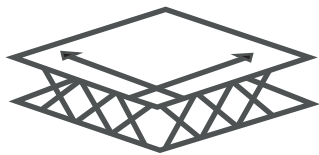
REINFORCING YOUR IDEAS

MAIN ADVANTAGES

- Excellent performance-to-weight ratio
- Light structural core (25% lighter than balsa wood) at affordable cost
- Easy and inexpensive to cut, groove, chamfer and process
- Cost-effective core solution when compared to balsa wood, PVC, PET & SAN cores
- Performance designed to meet individual critical needs
- No moisture absorption issues
- Excellent skin cohesion, reducing delamination in case of impact

PRODUCT RANGE

1 SAERfoam O



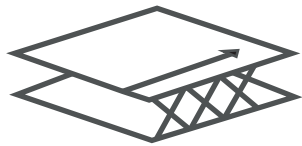
Reinforcement throughout the layer: +/-45°

Thickness: 10 to 30 mm

Standard dimensions: 1200 x 1200 mm

For complex structural loads, mainly where shear strength and stiffness are requested.

2 SAERfoam X



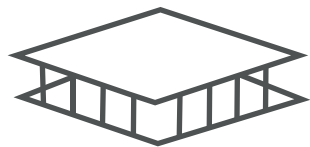
Reinforcement throughout the layer: +/-45°

Thickness: 10 to 30 mm

Standard dimensions: 1200 x 2400 mm

Strong mechanical properties in a single panel direction

3 SAERfoam I



Reinforcement throughout the layer: 90° + CSM 450g skins

Thickness: 10 to 40 mm

Standard dimensions: 1200 x 2400 mm

Suitable for compression resistance only

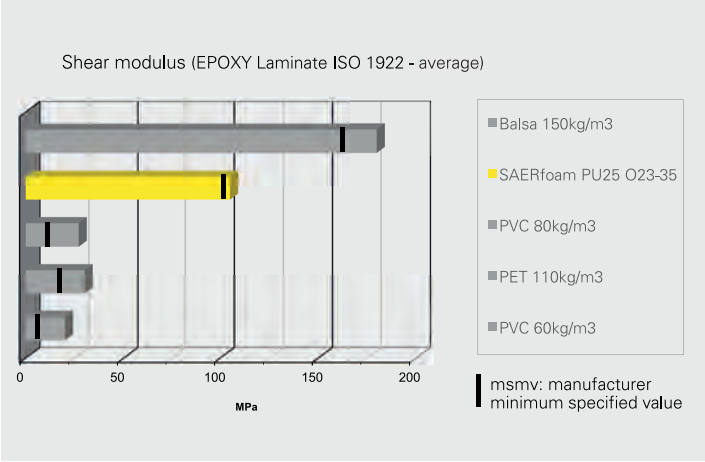
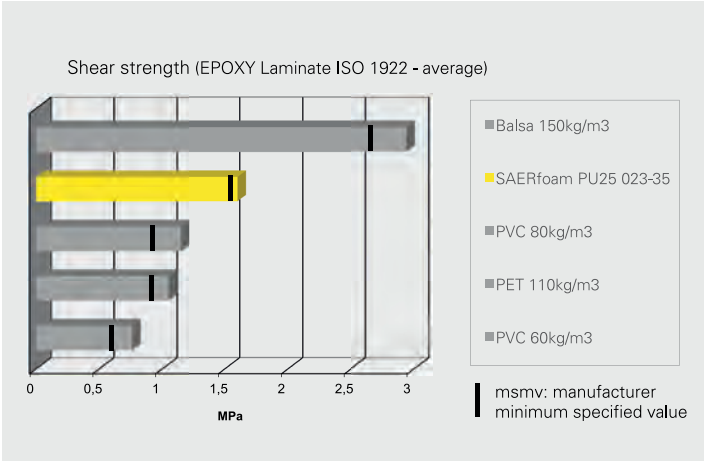
WIND BLADE APPLICATION GRADES

Thickness	Saerfoam	Equivalent Balsa 150
10 mm	O grade	PU10 O15-35
15 mm	O grade	PU15 O18-35
20 mm	O grade	PU20 O20-35
25 mm	O grade	PU25 O23-35
30 mm	O grade	PU30 O25-35

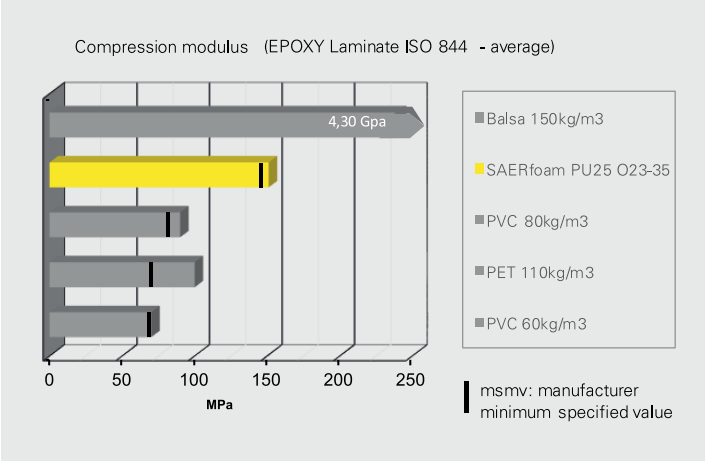
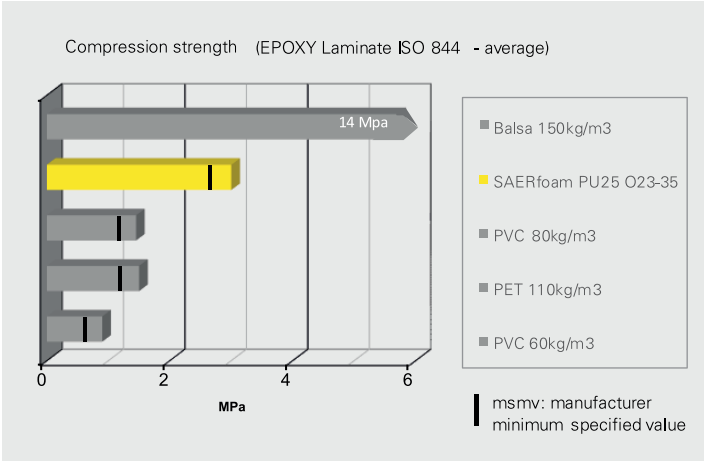
Visit our website to select your optimum SAERfoam:
<http://www.saertex.com/en/products/foam-calculator>

BENCHMARK

SHEAR properties benchmark comparing 25mm impregnated plane sheets



COMPRESSION perpendicular to the plane benchmark



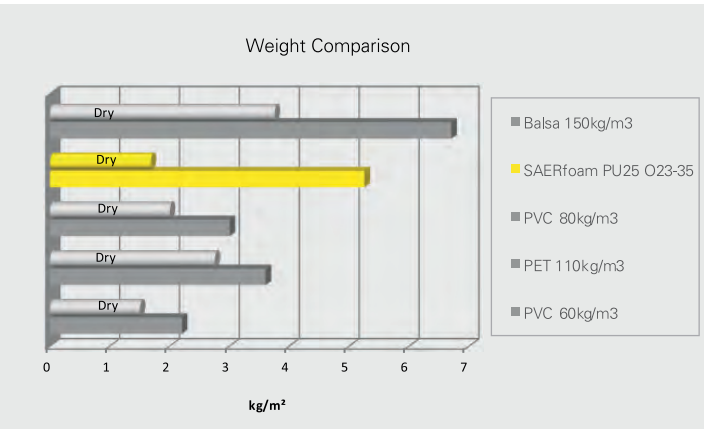
Weight comparison

Thanks to its unique combination of reinforcement and a light-weight closed-cell core, SAERfoam can maintain the weight of a laminate while, in some cases, improve the mechanical properties when compared to alternative solutions.

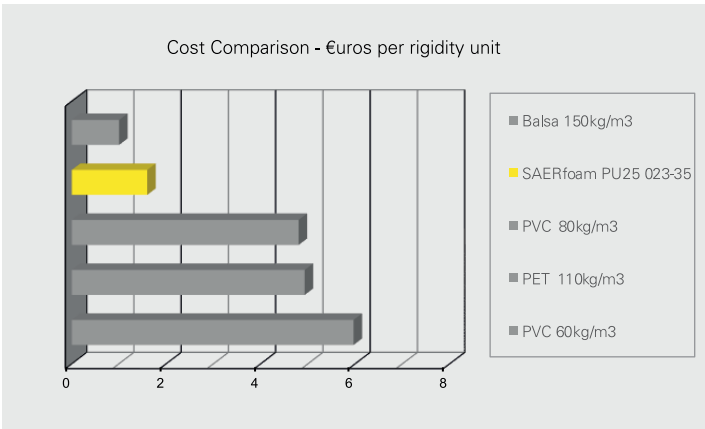
Cost comparison

The table below shows that SAERfoam has one of the best cost-to-rigidity ratios on the market. The SAERfoam ratio is 3 times better than polymeric foams and very close to balsa wood for a 20% weight saving.

SAERfoam impregnated by epoxy resin system



Weight comparison takes into account PET or PVC drilled core (2 mm / 25 mm pattern).



Compared products are impregnated with epoxy resin; the shear modulus is considered for rigidity.

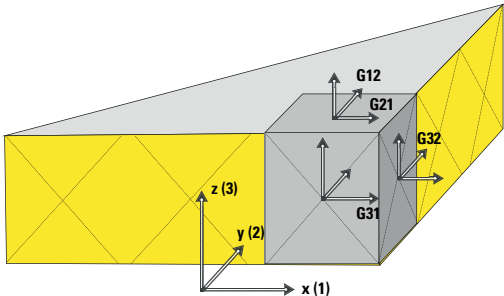
Balsa and SAERfoam are plain sheets and all without skins.

ENGINEERING VALUES FOR SAERfoam® O

(in 25mm)

SAERFOAM PU25 O23-35		UNIT
E ₁	169	MPa
E ₂	76	MPa
E ₃	146	MPa
V ₁₃	0,91	
V ₂₃	0,91	
V ₁₂	0,30	
G ₁₃	107	MPa
G ₂₃	107	MPa
G ₁₂	6,6	MPa

SAERFOAM PU25 O23-35		UNIT
T ₁	7,80	MPa
C ₁	6,20	MPa
T ₂	6,40	MPa
C ₂	6,20	MPa
T ₃	1,90	MPa
C ₃	3,10	MPa
S ₁₃	1,60	MPa
S ₂₃	1,60	MPa
S ₁₂	0,20	MPa

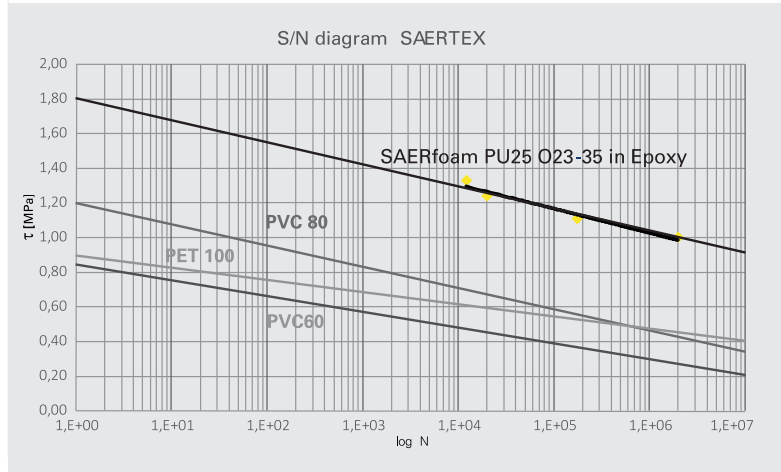


TESTED SAERfoam®

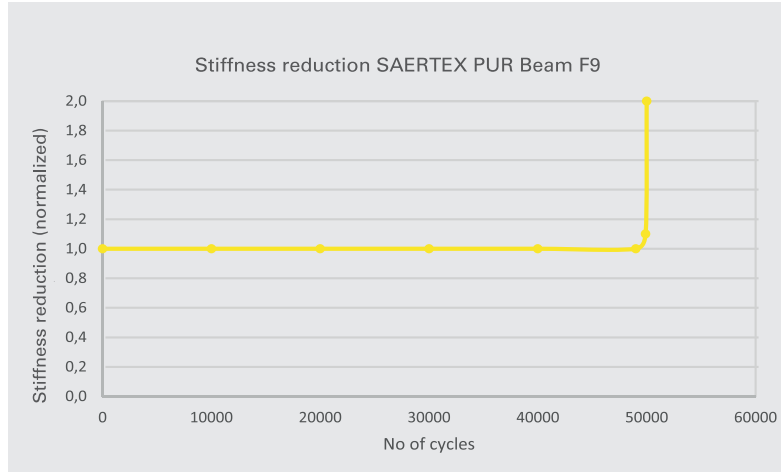
Lay-up (each side):	4 layers of Glass TX825g (0° 425g / -45° 200g / +45° 200g)	30% by weight of Epikure Curing Agent MGS RIMH 134-RIMH 137
SAERfoam type:	PU25mm with 2,25 bridges/cm²	Curing and post-curing: 8h at 80°C
Resin type:	Epoxy Epikote MGS RIMR 135 with	Skins fiber fraction: 71% by weight

FATIGUE PERFORMANCE FOR SAERfoam® O

(Plain sheet in 25mm)



SAERfoam PU25 O25-35 grade has a comparable performance in strength of fatigue lifetime to PVC 80 and 60 grades while achieving significantly higher shear strength and stiffness.



Relative change in stiffness of fatigue lifetime for low fatigue loads and high fatigue loads shows identical behavior. There is a limited linear reduction over time, but the major stiffness drop is just before failure; this specimen survived about 500,000 load cycles.

EXCELLENT MECHANICAL PROPERTIES

The core in a sandwich structure will be stressed in different ways depending upon the structural application. While core shear stiffness and strength are the major performance criteria in sandwich constructions, other properties are also important. Indeed, a specifically designed SAERfoam will often be the best solution to provide the necessary structural properties while saving weight or money.

TECHNICAL SPECIFICATIONS		Testing norm	Unit	SAERfoam PU25 O23-35
DENSITY				
Dry density		-	kg/m³	67
Infused density		-	kg/m³	210
Resin intake		-	kg/m²	3.8
PHYSICAL PROPERTIES (average values)				
Shear strength		ISO 1922	Mpa	1.6
Shear modulus		ISO 1922	Mpa	107
Compressive strength		ISO 844	Mpa	3.1
Compressive modulus		ISO 844	Mpa	143
Tensile strength		ASTM C297	Mpa	1.9
Facing cleavage (peak)		ASTM E2004	N	189 (221)
Max process temperature		-	°C	120°C
Process peak temperature		-	°C	130°C
DIMENSIONS				
Standard sheets	Width	- mm (+2)	1200	
	Length	- mm (+2)	1200	
	Thickness	- mm (+0,5)	10 to 30	
	Finish	Plain/Groove/Drapable		

TESTED SAERfoam®

Skin lay-up (each side):	4 layers of glass TX825g (0° 425g / -45° 200g / +45° 200g)
SAERfoam type:	PU25mm with 2.25 bridges/cm²
Resin type:	Epoxy Epikote MGS RIMR 135/ Epikure Curing Agent MGS RIMH 134-RIMH 137
Curing and post-curing:	8h at 80°C
Skins fiber fraction:	71% by weight

Visit our website to select your optimum SAERfoam:
<http://www.saertex.com/en/products/foam-calculator>

Mechanical properties may vary pending thicknesses. Please contact us to get the exact properties in your chosen grade, resin and thickness.



The data provided gives average values based on our technology. Due to process variations and skin compositions, results may differ. Always seek advice from our specialists to identify which SAERfoam will work best in your process.

SAERfoam[®] EPOXY SYSTEM



Applications and information:
SAERfoam product film
at www.saertex.com/saerfoam

REINFORCING YOUR IDEAS