



DATA SHEET



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## AIREX® R63

Damage tolerant foam

### Characteristics

- Extraordinary impact strength (non-brittle failure mode)
- Easy to thermoform (cold and hot)
- Dimensionally stable
- Excellent fatigue resistance
- Outstanding core-to-skin adhesion
- Non biodegradable
- Good sound and thermal insulation

### Applications

- **Marine:**  
Hull bottoms, hull sides
- **Road and Rail:**  
Front-ends, side skirts, crash belts
- **Aircraft:**  
Explosion proof cargo containers
- **Recreation:**  
Surf boards, canoes, kayaks
- **Industrial:**  
Containers, shelters, helmets

### Processing

- Contact molding (hand/spray)
- Adhesive bonding
- Thermoforming
- Vacuum infusion

### Description:

AIREX® R63 is a closed-cell, linear, thermoplastic polymer foam with extremely high damage tolerance.

This one of a kind formula combines very high elongation and excellent bond strength. AIREX® R63 is cold formable to simple shapes and thermo-formable to complex three-dimensional curves, and is non-friable.

AIREX® R63 is an exceptional core material for dynamically loaded and shock absorbing sandwich structures.



Typical properties for AIREX® R63		Unit (metrical)	Value <sup>1)</sup>	R63.50	R63.80	R63.140
Density	ISO 845	kg/m <sup>3</sup>	Average <i>Typ. range</i>	60	90 80 - 120	140 125 - 170
Compressive strength perpendicular to the plane	ISO 844	N/mm <sup>2</sup>	Average <i>Minimum</i>	0.38	0.90 0.70	1.6 1.3
Compressive modulus perpendicular to the plane	DIN 53421	N/mm <sup>2</sup>	Average <i>Minimum</i>	30	56 46	110 100
Tensile strength in the plane	ISO 527 1-2	N/mm <sup>2</sup>	Average <i>Minimum</i>	0.90	1.4 1.2	2.4 2.2
Tensile modulus in the plane	ISO 527 1-2	N/mm <sup>2</sup>	Average <i>Minimum</i>	30	50 45	90 80
Shear strength	ISO 1922	N/mm <sup>2</sup>	Average <i>Minimum</i>	0.50	1.0 0.8	1.85 1.60
Shear modulus	ASTM C393	N/mm <sup>2</sup>	Average <i>Minimum</i>	11	21 18	37 35
Shear elongation at break	ISO 1922	%	Average <i>Minimum</i>	70	75 70	80 75
Impact strength	DIN 53453	kJ/ m <sup>2</sup>	Average	4.0	5.0	6.5
Thermal conductivity at room temperature	ISO 8301	W/m.K	Average	0.034	0.037	0.039
Standard sheet	width	mm ± 5		1300 to 1400	1200 <sup>2)</sup>	1050 <sup>2)</sup>
	length	mm ± 5		2900 to 3100	2700 <sup>2)</sup>	2400 <sup>2)</sup>
	thickness	mm ± 0.5		5 to 50	3 to 30 <sup>3)</sup>	3 to 20 <sup>3)</sup>
Color				brownish yellow	brownish yellow	brownish yellow

Finishing Options, other dimensions and closer tolerances upon request

<sup>1)</sup> Minimum values acc. DNV definition; test sample thickness 20mm except tensile / impact properties (10mm) and compressive modulus (40mm)

<sup>2)</sup> Tolerance for thickness 3 – 9 mm: +/- 10 mm

<sup>3)</sup> Thicker sheets can be laminated

The data provided gives approximate values for the nominal density and DNV minimum values according to DNV type approval certificate. The information contained herein is believed to be correct and to correspond to the latest state of scientific and technical knowledge. However, no warranty is made, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information. No statement is intended or should be construed as a recommendation to infringe any existing patent.

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Typical properties for AIREX® R63		Unit (imperial)	Value <sup>1)</sup>	R63.50	R63.80	R63.140
Density	ISO 845	lb/ft <sup>3</sup>	Average <i>Typ. range</i>	3.7	5.6 <i>5.0 – 7.5</i>	8.7 <i>7.8 – 10.6</i>
Compressive strength perpendicular to the plane	ISO 844	psi	Average <i>Minimum</i>	55	130 <i>102</i>	230 <i>189</i>
Compressive modulus perpendicular to the plane	DIN 53421	psi	Average <i>Minimum</i>	4'350	8'120 <i>6'670</i>	16'000 <i>14'500</i>
Tensile strength in the plane	ISO 527 1-2	psi	Average <i>Minimum</i>	130	200 <i>174</i>	350 <i>319</i>
Tensile modulus in the plane	ISO 527 1-2	psi	Average <i>Minimum</i>	4'350	7'250 <i>6'525</i>	13'100 <i>11'600</i>
Shear strength	ISO 1922	psi	Average <i>Minimum</i>	72	145 <i>116</i>	270 <i>232</i>
Shear modulus	ASTM C393	psi	Average <i>Minimum</i>	1'600	3'050 <i>2'610</i>	5'370 <i>5'075</i>
Shear elongation at break	ISO 1922	%	Average <i>Minimum</i>	70	75 <i>70</i>	80 <i>75</i>
Impact strength	DIN 53453	ft.lb/in <sup>2</sup>	Average	1.9	2.4	3.12
Thermal conductivity at room temperature	ISO 8301	BTU.in/ft <sup>2</sup> .hr.°F	Average	0.24	0.26	0.27
Standard sheet	width	mm ± 5		1300 to 1400	1200 <sup>2)</sup>	1050 <sup>2)</sup>
	length	mm ± 5		2900 to 3100	2700 <sup>2)</sup>	2400 <sup>2)</sup>
	thickness	mm ± 0.5		5 to 50	3 to 30 <sup>3)</sup>	3 to 20 <sup>3)</sup>
Color				brownish yellow	brownish yellow	brownish yellow

Finishing Options, other dimensions and closer tolerances upon request

<sup>1)</sup> Minimum values acc. DNV definition; test sample thickness 20mm (3/4") except tensile / impact properties 10mm (3/8") and compressive modulus 40mm (1 1/2")

<sup>2)</sup> Tolerance for thickness 3 – 9 mm: +/- 10 mm

<sup>3)</sup> Thicker sheets can be laminated

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