AIREX® T92

GM--TDS-121

Structural and Sustainable

DATA SHEET 02.2024 - Replaces 08.2023

DESCRIPTION

AIREX® T92 is a closed-cell, thermoplastic and recyclable polymer foam with recycled content, very good mechanical properties, and an outstanding price / performance ratio.

It has an extraordinary resistance to fatigue, is chemically stable and has negligible water absorption. It is thermally stable during high temperature processing and post curing without after expansion or out-gassing. T92 is designed for easy use with all resin systems and processing technologies.

AIREX® T92 is ideally suited as a core material for a wide variety of lightweight sandwich structures subjected to static and dynamic loads and/or exposed to elevated temperatures during manufacturing.

CHARACTERISTICS

- Easy to process with all types of resin and lamination processes
- High process temperature up to 150 °C (302 °F)
- Outstanding fatigue strength
- Best-in-class resin uptake with AIREX® Seal*X*[1)]
- Very high chemical stability
- Good adhesion (skin-to-core bond)
- Excellent long term thermal stability up to 100 °C (212 °F)
- No water absorption, after expansion nor out-gassing
- Recyclable and recycled material (up to 100 % recycled PET)
- Highly consistent material properties independent from variance in color
- Comprehensive material traceability (machine-readable batch information on each foam sheet)

APPLICATIONS

- **Renewable energy:** Blades (shear webs & shells), nacelles
- **Marine:** Decks, hull sides, superstructures, bulkheads, transoms, interiors
- **Industrial:** Covers, containers, local reinforcements, x-ray tables, sporting goods
- **Automotive:** Truck body parts, floors

PROCESSING[2)]

- Contact molding (hand/spray)
- Vacuum infusion
- Resin infusion / injection (VARTM / RTM)
- Adhesive bonding
- Pre-preg processing
- Compression molding (GMT, SMC)
- Thermoforming

[1)] AIREX® Seal*X* is a controlled surface treatment for minimum resin consumption

[2)] for details, please refer to AIREX® Processing Guidelines

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AIREX

3A COMPOSITES CORE MATERIALS

MECHANICAL PROPERTIES

Typical properties for AIREX® T92		Unit (metric)	Value[1]	T92.60	T92.80	T92.100	T92.130	T92.150[3]	T92.200	T92.280[3]
Density[5]	ISO 845	kg/m³	Average *Typ. range*	65 *60 - 78*	85 *80 - 90*	100 *95 - 105*	135 *127 - 142*	150 *143 - 155*	210 *200 - 220*	280 *260 -295*
Compressive strength perpendicular to the plane	ISO 844 ASTM C365	N/mm²	Average *Minimum*	0.85 *0.75*	1.3 *1.1*	1.55 *1.4*	2.3 *1.95*	2.6 *2.3*	3.8 *3.2*	6.2
Compressive modulus perpendicular to the plane	ASTM C365	N/mm²	Average *Minimum*	55 *45*	75 *60*	90 *65*	110 *90*	130 *110*	180 *150*	270
	ISO 844 B	N/mm²	Average	70	90	110	140	170	220	320
Tensile strength perpendicular to the plane	ASTM C297	N/mm²	Average *Minimum*	1.5 *1.3*	1.9 *1.4*	2.3 *1.5*	2.4 *1.85*	2.6 *2.0*	3.1 *2.5*	4.5
Tensile modulus perpendicular to the plane	ASTM C297	N/mm²	Average *Minimum*	85 *75*	90 *80*	110 *90*	170 *130*	180 *150*	230 *190*	300
Shear strength	ISO 1922	N/mm²	Average *Minimum*	0.55 *0.46*	0.72 *0.65*	0.9 *0.75*	1.3 *1.1*	1.5 *1.25*	2.0 *1.6*	3.3
Shear modulus Parallel to welding lines Across welding lines *Across welding lines*	ISO 1922	N/mm²	 Average Average *Minimum*	 15 14 *12*	 22 19.5 *16*	 26 23 *19*	 34 32 *25*	 42 38 *34*	 55 50 *45*	 78 78
Shear elongation at break	ISO 1922	%	Average *Minimum*	25 *15*	30 *20*	20 *10*	12 *8*	10 *5*	6 *4*	5
Thermal conductivity at 10 °C	EN 12667	W/m.K	Average	0.037	0.030	0.034	0.037		0.045	
Colour	Visual			variable[6]						
Standard sheet	Width[2]	mm ± 5		1220	1220	1220	1220	1220	1220	1005
	Length[2]	mm ± 5		2440	2440	2440	2440	2440	2440	2440
	Thickness[4]	mm ± 0.5		5 to 100	5 to 100	5 to 100	5 to 100	5 to 100	5 to 100	5 to 100

Finishing Options, other dimensions and closer tolerances upon request. [1] Statistical minimum values; test sample thickness 20 mm except thermal conductivity (50 mm). [2] Alternative width 610 mm, alternative length 1220 mm. [3] Preliminary data. [4] For thicknesses 1-7 mm, check TM portfolio. [5] Seal*X* adds approx. 2 kg/m³. [6] Depends on raw material batch.

The data provided gives approximate values for the nominal density and DNV-GL minimum values according to DNV-GL 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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AIREX®

3A COMPOSITES CORE MATERIALS

MECHANICAL PROPERTIES

Typical properties for AIREX® T92		Unit (metric)	Value[1]	T92.60	T92.80	T92.100	T92.130	T92.150[3]	T92.200	T92.280[3]
Density[5]	ISO 845	lb/ft³	Average *Typ.range*	4.1 *3.7 - 4.9*	5.3 *5.0 - 5.6*	6.2 *5.9 - 6.6*	8.4 *7.9 - 8.9*	9.4 *8.9-9.7*	13 *12.5 - 13.7*	17.5 *16.2-18.4*
Compressive strength perpendicular to the plane	ISO 844 ASTM C365	psi	Average *Minimum*	123 *109*	188 *160*	225 *203*	340 *280*	380 *330*	551 *464*	900
Compressive modulus perpendicular to the plane	ASTM C365	psi	Average *Minimum*	7'980 *6'530*	10'880 *8'700*	13'050 *9'425*	15'950 *13'050*	18'850 *15'950*	26'100 *21'750*	39'160
	ISO 844 B	psi	Average	10'150	13'050	15'950	20'310	24'660	31'910	46'410
Tensile strength perpendicular to the plane	ASTM C297	psi	Average *Minimum*	218 *189*	275 *203*	330 *218*	350 *270*	380 *290*	450 *360*	653
Tensile modulus perpendicular to the plane	ASTM C297	psi	Average *Minimum*	12'330 *10'880*	13'050 *11'600*	15'950 *13'050*	24'660 *18'850*	26'110 *21'760*	33'360 *27'550*	43'510
Shear strength	ISO 1922	psi	Average *Minimum*	80 *67*	104 *94*	130 *109*	190 *160*	218 *180*	290 *230*	480
Shear modulus Parallel to welding lines Across welding lines *Across welding lines*	ISO 1922	psi	 Average Average *Minimum*	 2'180 2'030 *1'740*	 3'190 2'830 *2'320*	 3'770 3'335 *2'755*	 4'960 4'640 *3'625*	 6'090 5'510 *4'960*	 7'975 7'250 *6'525*	 11'312 11'312
Shear elongation at break	ISO 1922	%	Average *Minimum*	25 *15*	30 *20*	20 *10*	12 *8*	10 *5*	6 *4*	5
Thermal conductivity at 50 °F	EN 12667	Btu.in/hr.ft².F	Average	0.257	0.208	0.236	0.257		0.312	
Colour	Visual			variable[6]						
Standard sheet	Width[2]	in ± 0.2		48	48	48	48	48	48	40
	Length[2]	in ± 0.2		96	96	96	96	96	96	96
	Thickness[4]	in ± 0.02		⅛ to 4	⅛ to 4	⅛ to 4	⅛ to 4	⅛ to 4	⅛ to 4	0.2 to 2

Finishing Options, other dimensions and closer tolerances upon request. [1] Statistical minimum values; test sample thickness 3/4" except thermal conductivity 2". [2] Alternative width 24", alternative length 48". [3] Preliminary data. [4] For thicknesses 0.04-0.28 inches, check TM portfolio. [5] Seal*X* adds approx. 0.12 lb/ft³. [6] Depends on raw material batch.

The data provided gives approximate values for the nominal density and DNV-GL minimum values according to DNV-GL type approval certificate.