AIREX® T92

GM--TDS-121

Easy Processing Structural Foam

DATA SHEET 07.2017 - Replaces 03.2017

DESCRIPTION

AIREX® T92 is a closed-cell, thermoplastic and recyclable polymer foam with 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 techno-logies.

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
- 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
- Highly consistent material properties
- Comprehensive material traceability (machine-readable batch information on each foam sheet)

APPLICATIONS

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

PROCESSING

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

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AIREX

MECHANICAL PROPERTIES

Typical properties for AIREX® T92		Unit (metric)	Value[1)]	T92.60	T92.80	T92.100	T92.130	T92.200	T92.320[3)]
Density	ISO 845	kg/m³	Average *Typ. range*	65 *60 - 70*	85 *80 - 90*	100 *95 - 105*	135 *127 - 143*	210 *200 - 220*	320 *310 - 330*
Compressive strength perpendicular to the plane	ISO 844	N/mm²	Average *Minimum*	0.85 *0.75*	1.3 *1.1*	1.75 *1.4*	2.4 *2.1*	3.8 *3.2*	7.1 *6.5*
Compressive modulus perpendicular to the plane	ISO 844	N/mm²	Average *Minimum*	55 *45*	75 *60*	90 *65*	140 *110*	180 *150*	280 *240*
Tensile strength perpendicular to the plane	ASTM C297	N/mm²	Average *Minimum*	1.5 *1.3*	1.9 *1.4*	2.3 *1.5*	2.6 *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*	175 *130*	230 *190*	420
Shear strength	ISO 1922	N/mm²	Average *Minimum*	0.55 *0.46*	0.72 *0.65*	0.9 *0.75*	1.3 *1.1*	2.0 *1.6*	3.5 *3.0*
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 30 *25*	 55 50 *45*	 110 110 *90*
Shear elongation at break	ISO 1922	%	Average *Minimum*	25 *15*	30 *20*	20 *10*	12 *8*	6 *4*	5 *3*
Thermal conductivity at 10 °C	EN 12667	W/m.K	Average	0.037	0.030	0.034	0.037	0.045	0.066
Standard sheet	Width[2)]	mm ± 5		1220	1220	1220	1220	1220	1220
	Length[2)]	mm ± 5		2440	2440	2440	2440	2440	2440
	Thickness	mm ± 0.5		5 to 100	5 to 100	5 to 100	5 to 100	5 to 100	5 to 50

Finishing Options, other dimensions and closer tolerances upon request

[1)] Minimum values acc. DNV definition; test sample thickness 20 mm except thermal conductivity (50mm)
[2)] Alternative width 610 mm, alternative length 1220 mm
[3)] Preliminary data

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

MECHANICAL PROPERTIES									
Typical properties for AIREX® T92		**Unit (imperial)**	**Value[1)]**	**T92.60**	**T92.80**	**T92.100**	**T92.130**	**T92.200**	**T92.320[3)]**
Density	ISO 845	lb/ft³	Average *Typ.range*	4.1 *3.7 - 4.4*	5.3 *5.0 - 5.6*	6.2 *5.9 - 6.6*	8.4 *7.9 - 8.9*	13 *12.5 - 13.7*	20 *19.4 - 20.6*
Compressive strength perpendicular to the plane	ISO 844	psi	Average *Minimum*	123 *109*	188 *160*	254 *203*	350 *305*	551 *464*	1'030 *943*
Compressive modulus perpendicular to the plane	ISO 844	psi	Average *Minimum*	7'980 *6'530*	10'880 *8'700*	13'050 *9'425*	20'310 *15'950*	26'100 *21'750*	40'610 *34'810*
Tensile strength perpendicular to the plane	ASTM C297	psi	Average *Minimum*	218 *189*	275 *203*	330 *218*	377 *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*	25'380 *18'850*	33'360 *27'550*	60'920
Shear strength	ISO 1922	psi	Average *Minimum*	80 *67*	104 *94*	130 *109*	190 *160*	290 *230*	508 *435*
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 4'350 *3'625*	 7'975 7'250 *6'525*	 15'950 15'950 *13'050*
Shear elongation at break	ISO 1922	%	Average *Minimum*	25 *15*	30 *20*	20 *10*	12 *8*	6 *4*	5 *3*
Thermal conductivity at 50 °F	EN 12667	Btu.in/hr.ft².F	Average	0.257	0.208	0.236	0.257	0.312	0.458
Standard sheet	Width[2)]	in ± 0.2		48	48	48	48	48	48
	Length[2)]	in ± 0.2		96	96	96	96	96	96
	Thickness	in ± 0.02		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)] Minimum values acc. DNV definition; test sample thickness 20 mm (3/4") except thermal conductivity 50 mm (2")

[2)] Alternative width 24", alternative length 48"

[3)] Preliminary data

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