

DESCRIPTION

TechFoam TF-V is a recyclable thermoplastic closed-cell PET foam ideal for composite sandwich structures. It offers superior fatigue resistance, is chemically stable and inert, with high mechanical properties, low resin uptake, and excellent performance and cost ratio. Post industrial and post consumer recycled PET are used along with virgin PET during production optimizing performance and sustainability of TechFoam PET cores.

TechFoam TF-V is compatible with all resin systems and composites application techniques. It can be processed at high temperatures without off-gassing and maintains dimensional stability.

CHARACTERISTICS

- Compatible with all resin systems & lamination techniques
- Outstanding fatigue performance
- Low resin uptake with good adhesion to FRP skins
- High processing temperatures (up to 150°C)
- High long term operating temperatures (up to 100°C)
- Dimensionally stable with off-gassing
- Recyclable and recycled materials (up to 45% recycled PET)
- Color variations due to recycled content does not affect mechanical properties

APPLICATIONS

- Wind Energy: Rotor Blades, Nacelles, Spinners, Covers
- Industrial: Panels, Tanks, Sporting Goods
- Construction: Buildings, Shelters, SIPs, Panels, Domes
- Transportation: Marine – Decks, Transoms, Bulkheads, Interiors
Automotive – Bus, Trucks, Trailers, Recreation, Agriculture
Rail – Floors, Bulkheads, Interiors

PROCESSES

- Open molding (hand lay-up, spray)
- Pre-Preg
- Vacuum infusion
- Injection / Transfer Molding
- Compression Molding
- Thermoplastic Lamination (continuous, batch)
- Thermoforming

Mechanical Properties (Metric)																								
PROPERTY	Method	UNIT	TF-V60		TF-V70		TF-V80		TF-V100		TF-V115		TF-V135		TF-V150		TF-V200		TF-V230		TF-V250		TF-V300	
			Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom
Density	ISO 845	kg/m3	55	60	65	70	75	80	95	100	110	115	130	135	145	150	190	200	220	230	240	250	290	300
Density Range	ISO 845	kg/m3	55-65		65-75		75-85		95-105		110-120		130-140		145-155		190-210		220-240		240-260		290-310	
Compression Strength perpendicular to plane	ISO 844	MPa	0.75	0.85	0.85	0.95	1.1	1.3	1.4	1.55	1.65	1.8	2.2	2.35	2.5	2.7	3.8	4.1	4.4	4.7	4.8	5.3	6.4	6.6
Compression Modulus perpendicular to plane	ISO 844	MPa	70	75	78	80	90	100	95	105	105	120	145	165	170	190	195	215	205	230	230	275	300	335
Shear Strength parallel to weld lines	ASTM C273	MPa	0.45	0.5	0.5	0.6	0.6	0.7	0.73	0.8	0.85	0.95	1.05	1.15	1.2	1.3	1.65	1.9	2.0	2.2	2.2	2.4	2.4	2.7
Shear Modulus parallel to weld lines	ASTM C273	MPa	9	11	12	14	18	20	25	30	30	35	36	40	43	50	65	70	70	75	85	95	105	115
Shear Strength across weld lines	ASTM C273	MPa	0.45	0.5	0.5	0.55	0.6	0.65	0.73	0.78	0.82	0.88	1.00	1.1	1.2	1.3	1.6	1.8	1.8	2.1	2.1	2.3	2.35	2.55
Shear Modulus across weld lines	ASTM C273	MPa	8	9	10	11	16	18	20	25	25	28	32	38	40	45	60	65	60	66	80	90	90	95
Shear Elongation parallel to weld lines	ASTM C273	%	20	25	10	15	10	15	10	15	6	10	6	11	5	10	5	8	5	8	3	6	2	4
Tensile Strength perpendicular to plane	ASTM C297	MPa	1.25	1.35	1.3	1.4	1.4	1.6	1.8	2.0	2.1	2.35	2.0	2.2	2.1	2.4	2.2	2.8	2.5	2.8	2.8	3.3	3.4	3.7
Tensile Modulus perpendicular to plane	ASTM C297	MPa	65	70	70	80	90	100	105	110	120	135	140	150	160	185	200	220	205	230	230	275	300	335
Thermal Conductivity @ 10°C	EN16277	W/m.K	TBD		TBD		0.031		0.034		0.034		0.037		0.042		0.045		0.046		0.048		TBD	
Color	Visual		Varies from white to light green – depending on PET and rPET lots																					
Standard Dimensions	Width	mm±5	1000 / 1220		1000 / 1220		1000 / 1220		1000 / 1220		1000 / 1220		1000 / 1220		1000 / 1220		1000 / 1220		1000 / 1220		1000		1000	
	Length	mm±5	1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440		1250 / 2440	
	Thick	mm±0.5 ^{<100} mm±1.0 ^{>100}	5 - 150		5 - 150		5 - 150		5 - 150		5 - 150		5 - 150		5 - 150		5 - 150		5 - 150		5 - 150		5 - 150	
	Diagonal	mm	<3		<3		<3		<3		<3		<3		<3		<3		<3		<3		<3	
	Tolerance																							

The data provided are approximate values for the nominal density.

The information is believed to be correct and correspond to the latest 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.

Mechanical Properties (Imperial)																								
PROPERTY	Method	UNIT	TF-V60		TF-V70		TF-V80		TF-V100		TF-V115		TF-V135		TF-V150		TF-V200		TF-V230		TF-V250		TF-V300	
			Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom	Min	Nom
Density	ISO 845	pcf	3.4	3.8	4.1	4.4	4.7	5.0	5.9	6.3	6.9	7.2	8.1	8.4	9.1	9.4	11.9	12.5	13.8	14.4	15.0	15.6	18.1	18.8
Density Range	ISO 845	pcf	3.4-4.0		4.1-4.7		4.7-5.3		5.9-6.6		6.9-7.5		9.1-9.7		9.1-9.7		11.9-13.8		13.8-14.7		15-15.9		18.1-19.1	
Compression Strength perpendicular to plane	ISO 844	psi	109	123	123	138	160	189	203	225	239	261	319	341	363	392	551	595	638	682	696	769	928	957
Compression Modulus perpendicular to plane	ISO 844	psi	10150	10875	11310	11600	13050	14500	13775	15225	15225	17400	21025	23925	24650	27550	28275	31175	29725	33350	33350	39875	43500	48575
Shear Strength parallel to weld lines	ASTM C273	psi	65	73	73	87	87	102	106	116	123	138	152	167	174	189	239	276	283	319	319	348	348	392
Shear Modulus parallel to weld lines	ASTM C273	psi	1305	1595	1740	2030	2610	2900	3625	4350	4350	5075	5220	5800	6235	7250	9425	10150	10150	10875	12325	13775	15225	16675
Shear Strength across weld lines	ASTM C273	psi	65	73	73	80	87	94	106	113	119	128	145	160	174	189	232	261	261	305	305	334	341	370
Shear Modulus across weld lines	ASTM C273	psi	1160	1305	1450	1595	2320	2610	2900	3625	3625	4060	4640	5510	5800	6525	8700	9425	8700	9570	11600	13050	13050	13775
Shear Elongation parallel to weld lines	ASTM C273	%	20	25	10	15	10	15	10	15	6	10	6	11	5	10	5	8	5	8	3	6	2	4
Tensile Strength perpendicular to plane	ASTM C297	psi	181	196	189	203	203	232	261	290	305	341	290	319	305	348	319	406	363	406	406	479	493	537
Tensile Modulus perpendicular to plane	ASTM C297	psi	9425	10150	10150	11600	13050	14500	15225	15950	17400	19575	20300	21750	23200	26825	29000	31900	29725	33350	33350	39875	43500	48575
Thermal Conductivity @ 10°C	EN16277	Btu.in/hr.ft2.F	TBD		TBD		0.215		0.236		0.236		0.257		0.291		0.312		0.319		0.333		TBD	
Color	Visual		Varies from white to light green – depending on PET and rPET lots																					
Standard D imensions	Width	inch ±0.2	39.4 / 48		39.4 / 48		39.4 / 48		39.4 / 48		39.4 / 48		39.4 / 48		39.4 / 48		39.4 / 48		39.4 / 48		39.4		39.4	
	Length	inch ±0.2	49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96		49.2 / 96	
	Thick	inch ±0.02 [±]	1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6		1/5 - 6	
		inch ±0.04 [±]																						
		Diagonal	inch	<0.12		<0.12		<0.12		<0.12		<0.12		<0.12		<0.12		<0.12		<0.12		<0.12		<0.12
	Tolerance																							

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