Weights and Tolerances

U. S. Measurements (Approximate Weight Per Sq. Ft. In Pounds)

Thickness (In Inches)	ETS	EHC	H755	HST II	H722	ETS-FR-II	ETR-FR-C	H900	H950	EMD	H515	+/- (inches) Tolerance
1/32	0.31	0.33	0.32	0.26	0.30	0.30	0.30	--	--	0.32	0.25	0.0075
1/16	0.60	0.64	0.64	0.52	0.59	0.59	0.59	--	--	0.63	0.50	0.0075
3/32	0.90	0.97	0.97	0.78	0.89	0.88	0.88	0.90	0.90	0.95	0.75	0.0090
1/8	1.21	1.30	1.29	1.04	1.19	1.19	1.19	1.21	1.21	1.26	1.00	0.0100
3/16	1.82	1.94	1.93	1.57	1.78	1.78	1.78	1.81	1.81	1.89	--	0.0125
1/4	2.43	2.60	2.58	2.09	2.38	2.37	2.37	2.41	2.41	2.52	--	0.0150
3/8	3.64	3.90	3.86	3.14	3.56	3.56	3.56	3.61	3.61	3.78	--	0.0200
1/2	4.86	5.20	5.15	4.18	4.75	4.75	4.75	4.83	4.83	5.04	--	0.0240
5/8	6.08	6.50	6.46	5.44	5.94	5.94	5.94	6.03	6.03	6.30	--	0.0270
3/4	7.29	7.80	7.73	6.27	7.13	7.12	7.12	7.24	7.24	7.56	--	0.0290
1	9.72	10.40	10.30	8.35	9.50	9.50	9.50	9.65	9.65	10.08	--	0.0330
1 -1/2	14.58	15.60	15.45	12.52	14.25	14.25	14.25	14.48	14.48	--	--	0.0410
2	19.44	20.80	20.60	16.70	19.00	19.00	19.00	19.30	19.30	--	--	0.0490

Metric Measurements (Approximate Weight Per 1219mm X 2438mm Sheet In Kilos)

Thickness (In MM)	ETS	EHC	H755	HST II	H722	ETS-FR-II	ETR-FR-C	H900	H950	EMD	H515	+/-(mm) Tolerance
1.0	5.55	5.94	5.90	4.97	5.43	5.43	5.43	--	--	5.76	4.57	0.23
2.0	11.11	11.89	11.81	9.94	10.86	10.86	10.86	--	--	11.52	9.14	0.25
3.0	16.66	17.83	17.71	14.92	16.29	16.29	16.29	16.54	16.54	17.28	13.72	0.35
4.0	22.22	23.77	23.61	19.89	21.72	21.72	21.72	22.06	22.06	23.04	18.29	0.40
5.0	27.77	29.72	29.52	24.86	27.14	27.14	27.14	27.57	27.57	28.80	--	0.55
6.0	33.33	35.66	35.42	29.83	32.57	32.57	32.57	33.09	33.09	34.56	--	0.60
8.0	44.44	47.55	47.23	39.77	43.43	43.43	43.43	44.12	44.12	46.08	--	0.70
10.0	55.55	59.43	59.03	49.72	54.29	54.29	54.29	55.15	55.15	57.60	--	0.80
12.0	66.66	71.32	70.84	59.66	65.15	65.15	65.15	66.18	66.18	69.12	--	0.90
14.0	77.76	83.21	82.65	69.60	76.00	76.00	76.00	77.20	77.20	80.64	--	1.00
16.0	88.87	95.09	94.45	79.55	86.86	86.86	86.86	88.23	88.23	92.17	--	1.10
20.0	111.09	118.86	118.06	99.43	108.58	108.58	108.58	110.29	110.29	115.21	--	1.30
25.0	138.87	148.58	147.58	124.29	135.72	135.72	135.72	137.87	137.87	144.01	--	1.40
30.0	166.64	178.30	177.10	149.15	162.87	162.87	162.87	165.44	165.44	172.81	--	1.45
35.0	194.41	208.01	206.61	174.01	190.01	190.01	190.01	193.01	193.01	201.61	--	1.50
40.0	222.18	237.73	236.13	198.87	217.16	217.16	217.16	220.58	220.58	230.41	--	1.55
45.0	249.96	267.44	265.64	223.73	244.30	244.30	244.30	248.16	248.16	259.22	--	1.65
50.0	277.73	297.16	295.16	248.59	271.45	271.45	271.45	275.73	275.73	288.02	--	1.75

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QUICK REFERENCE GUIDE

General Purpose	High Temp	High Strength	Flame Retardant	Specialty
ETS	EHC	EHC	H900	H515
H722	H755	EMD	H950	EMD
	HST-II	H950	H953	
	EMD	H953		
	H515			

Haysite offers a range of products to meet all your electrical insulation needs. Whether it is GPO -1, 2, or 3, Haysite's Fiberglass Reinforced Plastic Sheets provide our customers with options when faced with critical material requirements.

Typical applications include: General purpose electrical insulation, transformer spacers and supports, transportation components, high voltage appliance insulators, bus bar supports and barriers in switchgear.

- ***Our H900 series is recognized as a top performer in the electrical industry.***

Haysite offers a variety of grades to meet required specifications in high temperature applications. Haysite products retain their desired electrical properties with minimal impact to product strength and stability at elevated temperatures. Typical applications include: Layer and core insulation for dry type transformers, motor slot wedges, washers, brush plates and terminal boards.

- ***Our HST-II is the benchmark for high temperature FRP materials.***

Our product offering includes materials which exhibit substantial resistance to cold flow or creep under heat and pressure.

- ***Haysite has the ability to produce custom high strength sheet.***

Over 25 different grades in a wide range of sheet sizes and thicknesses

- ***Corrosion Resistant, Flexible, Magnetic***

DATA	TEST METHOD	UNIT	NEMA GPO-1			NEMA GPO-1			NEMA GPO-2	NEMA GPO-3				SPECIALTY SHEETS	
General			ETS	EHC		H755	HST II	H722	ETS-FR-II	ETR-FR-C	H900	H950	H953	Slot Wedge EMD	H515
Gov't Specs	--		LP-509 I-24768/4	LP-509 I-24768/4		LP-509 I-24768/4	--	LP-509 I-24768/4	LP-509 I-24768/5	I-24768/6	I-24768/6	I-24768/6	I-24768/6	--	--
Standard Color	--		Buff	Brown		Ivory	Tan	Natural	Red	Red	Red	Red	Red	Black	Tan
Available Thickness	--	Inches	.031" - 2.00"	.031" - 2.00"		.031" - 2.00"	.031" - 2.00"	.031" - 2.00"	.031" - 2.00"	.031" - .093"	.093" - 2.00"	.093" - 2.00"	.093" - 2.00"	.062-1.00"	.031-.125
PHYSICAL															
Barcol Hardness	D2583	Scale	46	74		48	52	46	46	64	62	62	62	67	0
Specific Gravity	D-792		1.87	2.00		1.80	1.62	1.87	1.84	1.83	1.85	1.85	1.89	1.94	1.60
Density, Lbs/In3	D-792	Lbs/Cu. In.	0.067	0.072		0.065	0.058	0.067	0.065	0.066	0.070	0.070	0.068	0.070	0.058
Water Absorption, %	D-570	%	0.60	0.31		0.35	0.30	0.60	0.20	0.20	0.20	0.20	0.20	0.20	0.70
UL Flammability, File# E81893	UL94	Class	--	--		--	HB	--	94V-O	94V-O	94V-O	94V-O	94V-O	--	HB
Flame Resistance		Seconds													
Ignition Time	D-229	Seconds	57	83		103	77	57	93	100	120	130	152	75	67
Burning Time	D-229	Seconds	328	221		211	256	328	27	20	65	33	52	287	422
Radiant Panel	E-162	Flame Spread	--	--		--	--	--	--	1.3	5.0	5.0	5.0	--	--
Smoke Density at 4.0 minutes, flaming	E-662	Optical Density	--	--		--	--	--	--	40	0.33	0.33	0.33	--	--
Smoke Development Index	E84	Seconds	--	--		--	--	--	--	--	340	340	--	340	--
Tunnel Test, 1/4" Thickness	E-84	Flame Spread	--	--		--	--	--	--	<25	<25	<25	<25	--	--
Coefficient of Thermal Expansion	D-696	in/in° C	--	--		--	2.9×10^{-5}	--	--	--	2.7×10^{-5}	2.7×10^{-5}	--	2.7×10^{-5}	--
Temperature Class* Thermal Index	UL-746B	Degrees C	130	155		155	220/210	130	130	130	160/150	160/150	160/150	180	220
IEEE Insulation Class			B	F		F	R		B	B	F	F	F	H	R
Mechanical															
Tensile Strength, PSI	D-638	PSI	10,000	13,000		11,000	13,000	10,000	10,000	9,400	11,000	12,000	14,000	16,500	6,500
Flexural Strength, PSI	D-790	PSI	23,000	27,000		25,000	25,000	18,000	21,000	21,000	22,000	25,000	29,000	33,000	--
Modulus of Elasticity in Flexure, PSI	D-790	X106PSI	1.00	1.71		1.60	1.70	1.00	1.00	1.59	1.50	1.50	1.50	1.80	--
Compressive Strength, PSI	UL-746	PSI	30,000	44,000		40,000	33,000	32,000	30,000	35,000	30,000	32,000	34,000	52,000	10,800
Bond Strength, 1/2" Thickness, PSI	D-229	PSI	1,250	2,000		1,200	1,400	1,250	1,500	1,400	1,400	1,400	1,400	--	--
Shear Strength, PSI	D-732	PSI	14,000	18,000		15,000	15,000	14,000	14,000	14,000	13,600	17,000	14,400	17,900	--
Impact Strength, Izod Edgewise	D-256	Ft Lbs/In. Notch	8.0	11.5		8.5	10.1	8.0	8.0	8.0	8.0	11.0	11.0	11.0	9.5
Electrical															
Dielectric Strength, ^, Short Time In Oil 1/16", VPM	D-149	VPM	500	325		500	400	500	550	450	560	450	435	425	600
Dielectric Strength, Parallel, Step-By-Step In Oil, KV	D-149	KV	54	62		60	62	54	60	55	55	55	62	50	55
Arc Resistance, Seconds	D-495	Seconds	150	180		150	150	150	180	185	190	194	180	180	135
Comparative Track Index	CTI	Seconds	--	--		--	500+	--	500+	500+	600+	600+	600+	600	--
Inline Plane Track Resistance -	D-2303	Minutes	--	--		--	--	--	--	500	1000	>1000	600	--	--
Dielectric Constant @ 60HZ	D-150		4.80	4.67		1.80	4.20	4.80	4.40	4.73	5.20	5.20	5.20	5.30	520
Dielectric Constant @ 1MHZ	D-150		4.30	4.30		--	--	4.30	--	4.69	--	--	--	--	--
Dissipation Factor @ 60Hz	D-150		0.015	0.019		0.02	0.01	0.015	0.019	0.016	0.06	0.06	0.08	0.015	0.06
Dissipation Factor @ 1MHz	D-150		0.011	0.013		--	--	0.011	--	0.011	--	--	--	--	--