

## 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

Endless Options in Electrical Insulation Strength & Stability.

# LAMINATED SHEET

**haysite**  
reinforced plastics

Shaping Composite Innovation.



# haysite

## Laminated Sheet



### ELECTRICAL

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.

### HIGH TEMPERATURE

Haysite offers a variety of grades to meet required specifications in high temperature applications. Haysite products retain their desired electrical properties without adverse affects 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.

### STRUCTURAL

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

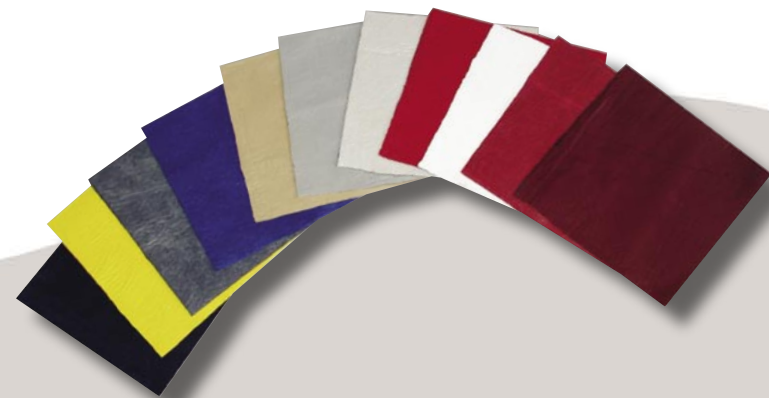
• Haysite has the ability to produce custom high strength sheet.

### SPECIALTY

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		SPECIALTYSHEETS	
			ETS	EHC	H755	HST II	H722	ETS-FR-II	ETR-FR-C	H900	H950	Slot Wedge EMD	H515
<b>GENERAL</b>													
Gov't Specs	--		LP-509 I-24768/6	LP-509 I-24768/6	LP-509 I-24768/6	--	LP-509 I-24768/6	LP-509 I-24768/6	I-24768/6	I-24768/6	I-24768/6	--	--
Standard Color	--		Buff	Brown	Ivory	Lt Brown	Natural	Red	Red	Red	Red	Black	Tan
Available Thickness	--	Inches	.032" - 2.00"	.032" - 2.00"	.032" - 2.00"	.032" - 2.00"	.032" - 2.00"	.032" - 2.00"	.032" - .090"	.090" - 2.00"	.090" - 2.00"	.062-1.00"	.031-.125
<b>PHYSICAL</b>													
Barcol Hardness	Barcol	Scale	46	74	48	52	46	46.00	64	62	62	67	0
Specific Gravity	D-792		1.87	2.00	1.80	1.62	1.87	1.84	1.83	1.80	1.80	1.94	1.64
Density, Lbs/In <sup>3</sup>		Lbs/Cu. In.	0.067	0.072	0.065	0.058	0.067	0.065	0.066	0.065	0.065	0.070	0.059
Water Absorption, %	D-229	%	0.60	0.31	0.35	0.30	0.60	0.20	0.20	0.20	0.20	0.19	0.44
UL Flammability, File# E81893	UL94	Class	--	--	--	HB	--	94V-0	94V-0	94V-0	94V-0	--	--
<b>Flame Resistance, Seconds</b>													
Ignition Time	D-229	Seconds	57	83	103	77	57	93	100	130	130	75	67
Burning Time	D-229	Seconds	328	221	211	256	328	27	20	33	33	287	422
Radiant Panel	E-162	Flame Spread	--	--	--	--	--	--	1.3	5.0	5.0	--	--
Smoke Density at 4.0 minutes, flaming	E-662	Optical Density	--	--	--	--	--	--	40	0.33	0	--	--
Tunnel Test, 1/4" Thickness	E-84	Flame Spread	--	--	--	--	--	--	<25	<25	<25	--	--
Temperature Class*	--	Degrees C	130	155	155	220	130	130	130	160	160	180	--
<b>MECHANICAL</b>													
Tensile Strength, PSI	D-638	PSI	10,000	13,000	11,000	13,000	10,000	10,000	9,400	9,000	11,000	16,500	5,000
Flexural Strength, PSI	D-790	PSI	23,000	27,000	25,000	25,000	18,000	21,000	21,000	18,000	25,000	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	1.80	--
Compressive Strength, PSI	D-695	PSI	30,000	44,000	40,000	33,000	32,000	30,000	35,000	30,000	30,000	52,000	9500
Bond Strength, 1/2" Thickness, PSI	D-229	PSI	1,250	2,000	1,200	1,400	1,250	1500	1400	1400	1400	--	--
Shear Strength, PSI	D-732	PSI	14,000	18,000	15,000	14,000	14,000	14,000	14,000	14,000	14,000	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	9.5	11.0	6.0
<b>ELECTRICAL</b>													
Dielectric Strength, ^, Short Time In Oil 1/16", VPM	D-149	VPM	500	325	500	400	500	550	450	450	525	425	550
Dielectric Strength, Parallel, Step-By-Step In Oil, KV	D-149	KV	54.0	62.0	60.0	62.0	54.0	60.0	55.0	55.0	55.0	60.0	55.0
Arc Resistance, Seconds	D-495	Seconds	150	180	150	150.0	150	180	185	190	194	150	--
Comparative Track Index	CTI	Seconds	--	--	--	500+	--	500+	500+	600+	600+	--	--
Inline Plane Track Resistance -	D-2303	Minutes	--	--	--	--	--	--	500	1000	>1000	--	--
Dielectric Constant @ 60HZ	D-150		4.80	4.67	1.80	4.20	4.80	4.40	4.73	5.20	5.20	4.80	--
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	0.02	--
Dissipation Factor @ 1MHZ	D-150		0.011	0.013	--	--	0.011	--	0.011	--	--	--	--



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			