SAATIprint™

HANDBOOK

Fabric Selections

Fabric Selection Chart

APPLICATION	FABRIC	MESH COUNT RANGE			
		inch	(cm)	inch	(cm)
GRAPHICS					
Poster (UV Inks)	Saatilene Hitech	380	(150)	— 460	(180)
Poster (Solvent Based Inks)	Saatilene Hitech	305	(120)	— 420	(165)
Stickers/Self-Adhesive	Saatilene Hitech	305	(120)	— 420	(165)
Bottles, Containers, Misc. Objects,	Saatilene Hitech	230	(90)	— 460	(180)
Promotional Items	Saatilene Hibond	230	(90)	— 460	(180)
	Saatilon	305	(120)	— 460	(180)
Touch Panel Printing	Saatilene Hitech	255	(100)	— 380	(150)
(Polyester/Polycarbonate)					
Front Panel Printing	Saatilene Hitech	255	(100)	— 380	(150)
Credit/Account Cards – Graphics	Saatilene Hitech	305	(120)	— 380	(150)
Decal – Graphic	Saatilene Hibond	230	(90)	— 460	(180)
Wood Decoration	Saatilene Hibond	196	(77)	— 330	(130)
TEXTILE					
Water-Based Inks	Saatilene Hitech	86	(34)	— 230	(90)
Flock Printing	Saatilene Hitech	41	(16)	— 110	(43)
Glitter Inks	Saatilene Hitech	24	(9,5)	— 86	(29)
Puff Inks	Saatilene Hitech	30	(12)	— 140	(55)
Plastisol Inks	Saatilene Hitech	110	(43)	— 355	(140)
Transfer Printing Sublimatic	Saatilene Hitech	305	(120)	— 380	(150)
Transfer Base	Saatilene Hitech	110	(34)	— 158	(62)
Carpet Decoration	Saatilene Hitech	61	(24)	— 74	(29)
ELECTRONICS					
"Etch" Resist Primary Image	Saatilene Hitech	255	(100)	— 305	(120)
"Plating" Primary Image	Saatilene Hitech	305	(120)	— 355	(140)
"Solder Mask" – Solvent	Saatilene Hitech	125	(49)	— 196	(77)
"Solder Mask" – UV	Saatilene Hitech	230	(90)	— 380	(150)
Legend Printing	Saatilene Hitech	255	(100)	— 355	(140)
CD					
Compact Discs	Saatilene Hitech	355	(140)	— 460	(180)
	Saatilene CD-Mesh	355	(140)	— 460	(180)

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Fabric Selection Chart

APPLICATION	FABRIC	MESH COUNT RANGE			
		inch	(cm)	inch	(cm)
CERAMIC					
Tiles First and Second Firing	Saatilene Hibond	140	(55) —	196	(77)
Tiles Third Firing	Saatilene Hibond	230	(90) —	420	(165)
Tiles Dry Firing	Saatilene Hitech	24	(9,5) —	61	(24)
Colloid	Saatilene Hitech		—	86	(34)
GLASS					
Automotive Industry	Saatilene Hibond	168	(62) —	305	(120)
Domestic Appliances	Saatilene Hibond	180	(71) —	380	(150)
Building Sites	Saatilene Hitech	168	(62) —	255	(100)
MISCELLANEOUS APPLICATIONS					
UV Varnishes	Saatilene Hitech	380	(150) —	460	(180)
Solvent-Based Varnishes	Saatilene Hitech	158	(62) —	305	(120)
Fluorescent Inks	Saatilene Hitech	158	(62) —	305	(120)
Very Low UV Ink Deposit	Saatilene Hitech Half-Calendered	355	(140) —	460	(180)
Uneven Surfaces	Saatilon	as application			
Projection Exposure	Saatilene Hibond	305	(120) —	380	(150)
Fine Half-Tone	Saatilene Hibond	380	(150) —	460	(180)
Very Long Print Runs	Saatilene Hibond	380	(150) —	460	(180)
High Screen Output	Saatilene Hibond	86	(34) —	508	(200)
on Difficult Substrates	Saatilene Hibond	196	(77) —	460	(180)

NOTE:

1. Selecting a thinner thread diameter will improve ink flow and print definition.
2. Selecting larger thread diameter will increase fabric durability.
3. From mesh count 230 (90) and above, select dyed fabrics for optimum stencil resolution.
4. PW (Plain Weave) fabric will reduce the incidence of moiré, when printing half-tones.

Guidelines and Recommendations for Mesh Specifications

◆ FABRIC THICKNESS

Fabric thickness results from the combination of the number of threads, the thread diameter and the woven structure of the fabric. Major changes in fabric thickness result mostly from changes in thread diameter. Because it is not obvious that a thicker or thinner fabric will give a higher or lower ink deposit (a thicker mesh may have a lower relative open area) one less frequently considers this factor when selecting a mesh count. However the total fabric thickness is needed to calculate the theoretical ink volume of a mesh. The fabric measurement is obtained in an unstretched state.

*PERCENTAGE OF OPEN AREA

Figures for the percentage of open area have been provided to use as a guide in comparing one Saati mesh to another. Please be aware that in comparing different manufacturers' published percentage of open area data, figures will vary due to several factors. The most important difference being whether the manufacturer used nominal (before weaving) or real (after weaving) data in calculating the published figures. The interpretation of the conversion of the data from metric to English can also contribute to differences. For practical application, we advise you dial our toll-free hot line and speak to one of our technical representatives.

● THEORETICAL INK DEPOSIT

As a reminder, the T.I.D. specification is theoretical. It is to be used as the basis for comparison to other mesh counts' theoretical ink volumes. There are many other factors that influence ink deposit. For example, screen tension, substrate absorption, ink type, stencil thickness, squeegee variables, etc. One of our technical representatives can help you narrow down the mesh choices for testing, but actual print and measurement testing needs to be done to obtain the actual ink deposit for each individual shop. (A given mesh count may work well with one shop's variables and have a different result in another shop.)

■ RECOMMENDED TENSION LEVELS

The lower end of the tensioning range can be achieved with most stretching systems, providing provisions have been made to eliminate high stress points. The higher tensions should be used by experienced screen makers utilizing state-of-the-art stretching systems and procedures. (Refer to "Rapid Tensioning vs. Stage Tensioning" Tech Tip on page 37.)

▲ Provides the comparative fabric strength between mesh counts.

New mesh counts and/or thread diameters are added periodically. Please inquire.

SAATILENE® HITECH™
A high tension, low-elongation monofilament polyester for prolonged tensions at the highest levels. Made with special high tensile strength fibers that are uniquely woven, then heat-set by a proprietary process to heighten dimensional stability. You'll minimize your off-contact distances, reduce squeegee pressure and dramatically increase production speed. All of which means virtually no print distortion. Ideal for applications requiring critical registration, color control and uniform ink deposit. Hitech mesh is available in white, Ultra-Orange and Ultra-Yellow in widths from 40/45 to 145 inches. Mesh counts from 17 to 508 per inch.

Saatilene® Hitech™ Low-Elongation/ High-Tension Monofilament Polyester Mesh Specifications

	Mesh Count		Type of Weave	Thread Diameter	Mesh Opening	Overall Fabric Thickness◆		Percentage of Open Area*	Theoretical Ink Deposit●		Recommended Tension■	Specific Cross Section▲
	(per inch)	(per cm)	(TW or PW)	(microns)	(microns)	(inches)	(microns)	%	(cm^3/m^2)	(cu. in./sq. yd.)	(N/cm)	($SCS\ mm^2/cm$)
1	17	6.5	PW	385	1180	0.0281	715	58	415	21.28	35-60	0.756
2	24	9.5	PW	280	810	0.0210	533	55	293	15.02	35-60	0.585
3	30	12	PW	260	580	0.0191	485	47	228	11.69	35-60	0.637
4	38	15	PW	200	475	0.0143	365	50	178	9.57	35-60	0.471
5	46	18	PW	160	400	0.0112	285	52	148	7.62	35-60	0.362
6	54	21	PW	160	330	0.0108	275	46	127	6.51	35-60	0.422
7	61	24	PW	120	290	0.0085	216	50	108	5.57	35-60	0.271
8	61	24	PW	145	275	0.0096	245	43	105	5.21	35-60	0.396
9	74	29	PW	120	220	0.0086	218	41	89	4.54	35-60	0.328
10	74	29	PW	145	190	0.0094	240	32	77	4.02	35-60	0.513

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Saatilene® Hitech™ Mesh Specifications

	Mesh Count		Type of Weave	Thread Diameter	Mesh Opening	Overall Fabric Thickness◆		Percentage of Open Area*	Theoretical Ink Deposit●		Recommended Tension■	Specific Cross Section▲
	(per inch)	(per cm)	(TW or PW)	(microns)	(microns)	(inches)	(microns)	%	(cm^3/m^2)	(cu. in./sq. yd.)	(N/cm)	($SCS\ mm^2/cm$)
11	81 SDE	32	PW	70	245	0.0043	110	61	67	3.31	24-26	0.123
12	86	34	PW	100	185	0.0068	173	41	71	3.64	33-40	0.267
13	96	38	PW	90	170	0.0063	161	42	68	3.47	35-40	0.242
14	110	43	PW	80	150	0.0052	132	43	57	2.88	35-37	0.216
15	125	49	PW	70	130	0.0045	116	40	46	2.28	30-34	0.188
16	140	55	PW	64	120	0.0041	105	41	43	2.20	26-31	0.176
17	158	62	PW	64	90	0.0041	106	32	34	1.66	30-34	0.199
18	180	71	PW	55	80	0.0036	91	33	30	1.53	25-30	0.168
19	196	77	PW	48	78	0.0031	80	36	29	1.48	24-26	0.139
20	196	77	PW	55	70	0.0035	90	28	25	1.28	27-32	0.182
21	230	90	PW	40	68	0.0024	62	38	24	1.23	20-24	0.113
22	230	90	PW	48	55	0.0032	81	27	22	1.08	27-29	0.162
23	241	95	PW	40	65	0.0026	65	37	24	1.23	22-24	0.119
24	255	100	PW	40	55	0.0025	64	31	20	1.02	26-28	0.125
25	255	100	PW	48	40	0.0032	81	16	13	0.66	30-34	0.181
26	280	110	PW	34	53	0.0022	56	35	20	1.02	22-24	0.099
27	280	110	PW	40	47	0.0027	69	26	18	0.92	25-30	0.138
28	305	120	PW	31	53	0.0019	48	40	19	0.97	21-24	0.090
29	305	120	TW	34	47	0.0025	64	31	20	1.02	24-26	0.108

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Saatilene® Hitech™ Mesh Specifications

	Mesh Count		Type of Weave	Thread Diameter	Mesh Opening	Overall Fabric Thickness◆		Percentage of Open Area*	Theoretical Ink Deposit●		Recommended Tension■	Specific Cross Section▲
	(per inch)	(per cm)	(TW or PW)	(microns)	(microns)	(inches)	(microns)	%	(cm^3/m^2)	(cu. in./sq. yd.)	(N/cm)	(SCS mm^2/cm)
30	305	120	PW	34	45	0.0021	54	29	16	0.82	24-26	0.108
31	305	120	PW	40	38	0.0026	67	20	13	0.66	27-32	0.150
32	305	120	TW	40	41	0.0028	70	23	16	0.82	27-32	0.150
33	330	130	PW	34	39	0.0021	55	26	14	0.71	24-27	0.118
34	330	130	TW	34	41	0.0024	60	28	17	0.87	24-27	0.118
35	355	140	PW	31	38	0.0019	48	28	13	0.66	20-22	0.105
36	355	140	PW	34	29	0.0022	56	16	9	0.46	23-26	0.127
37	355	140	TW	34	32	0.0024	60	20	12	0.61	23-26	0.127
38	380	150	PW	27	35	0.0017	44	27	12	0.61	17-20	0.085
39	380	150	PW	31	29	0.0019	49	20	10	0.51	22-24	0.113
40	380	150	PW	34	25	0.0022	56	13	7	0.35	25-27	0.136
41	380	150	TW	34	28	0.0023	61	17	10	0.51	25-27	0.136
42	420	165	PW	27	30	0.0018	46	25	12	0.61	17-21	0.094
43	420	165	PW	31	25	0.0019	49	17	8	0.41	24-26	0.125
44	420	165	TW	31	30	0.0024	60	24	14	0.71	24-26	0.125
45	420	165	TW	34	25	0.0026	66	16	10.5	0.53	24-28	0.149
46	460	180	PW	27	25	0.0017	43	20	8	0.41	18-22	0.103
47	460	180	TW	31	23	0.0022	56	17	9.5	0.48	23-27	0.136
48	508	200	TW	31	18	0.0023	60	13	8	0.41	23-27	0.151

The Saatilene, Saatitex, and Saatilon mesh specifications provided are average values measured on piece goods (in a relaxed state) manufactured with yarns of perfect nominal diameter (cfr. international standards) and under normal hygrometric conditions (20 degrees C = 68 degrees F, 65% relative humidity). They are subject to normal variations of ±3% on thread count in cases of variations in the above-mentioned conditions.

Saatilene® Hitech™ Half-Calendered Polyester Specifications

Mesh Count		Type of Weave	Thread Diameter	Mesh Opening	Overall Fabric Thickness◆		Percentage of Open Area*	Theoretical Ink Deposit●		Recommended Tension■	Specific Cross Section
inch	cm	TW or PW	microns	microns	inch	microns	%	cm^3/m^2	cu. in/ sq. yd.	(N/cm)	(SCS mm^2/cm)
355	140	PW	34	26	0.0020	50	13	6.5	0.33	20-29	0.127
355	140	TW	34	27	0.0020	50	14	7	0.35	20-29	0.127
380	150	PW	34	21	0.0020	51	10.5	5.5	0.28	22-30	0.136
380	150	TW	34	23	0.0020	51	12	6	0.30	22-30	0.136
420	165	TW	31	24	0.0017	42	16	7	0.35	20-28	0.125
420	165	TW	34	21	0.0020	52	12	6	0.30	25-33	0.150
460	180	TW	31	17	0.0018	45	10	4.5	0.23	23-29	0.135

SAATITEX®: A high-quality multifilament polyester. Available in widths from 40 to 145 inches and mesh counts from 6xx to 25xx.

Saatitex® Multifilament Polyester Specifications

Fabric Type	Mesh Count (per inch)	Mesh Opening (inches)	Overall Fabric Thickness◆ (inches)	Percentage of Open Area*	Theoretical Ink Deposit● (cu. in./sq. yd.)
6xx	74	0.0092	0.0059	46	3.52
8xx	86	0.0072	0.0059	39	3.01
1Oxx	110	0.0053	0.0051	33	2.04
12xx	122	0.0046	0.0047	32	1.94
14xx	127	0.0041	0.0047	27	1.63
16xx	158	0.0033	0.0041	27	1.43
18xx	168	0.0036	0.0039	36	1.58
20xx	175	0.0034	0.0033	34	1.48
25xx	196	0.0027	0.0032	28	1.22

SAATILON®: A precision-woven monofilament nylon. Due to its inherent elastic properties, it is ideal for printing on uneven and curved surfaces. Excellent abrasion resistance and ink passage. Available in white, Ultra-Orange, and Ultra-Yellow in widths from 40 to 80 inches. Mesh counts from 17 to 460 per inch.

Saatilon® Monofilament Nylon Specifications

Mesh Count (per inch)	Type of Weave	Thread Diameter (microns)	Mesh Opening (inches)	Overall Fabric Thickness◆ (inches)	Percentage of Open Area*	Theoretical Ink Deposit● (cu. in./sq. yd.)
17	PW	400	0.0461	0.0303	55	21.69
96	PW	90	0.0069	0.0067	42	3.64
110	PW	80	0.0063	0.0057	43	3.17
140	PW	61	0.0047	0.0043	44	2.46
158	PW	61	0.0039	0.0041	38	2.05
180	PW	61	0.0031	0.0044	32	1.84
196	PW	50	0.0031	0.0033	37	1.58
230	PW	50	0.0024	0.0037	29	1.38
255	PW	44	0.0022	0.0032	31	1.28
280	PW	38	0.0020	0.0028	32	1.17
305	TW	37	0.0019	0.0028	32	1.17
305	PW	37	0.0017	0.0026	25	0.87
305	TW	38	0.0017	0.0028	27	0.97
305	PW	38	0.0017	0.0026	25	0.87
330	TW	38	0.0016	0.0029	26	0.97
355	TW	37	0.0013	0.0027	20	0.71
380	TW	37	0.0012	0.0028	21	0.76
420	TW	30	0.0012	0.0023	25	0.76
460	TW	30	0.0010	0.0024	21	0.71

SAATILENE® CD-MESH: Compact discs printing requires a series of features from screen fabrics such as: tensile strength, elevated tension, stability, stencil durability and reliability. This is due to the prevailing conditions when printing CDs: long runs, fast printing speed, good ink permeability, high job output, quick press set up and fast and efficient screen recycling. Saatilene CD-MESH is the fruit of the latest technology in fabric make-up engineered for such an application where expectations are great. It offers tension stability superior to that of high modulus Polyester fabrics with a greater elastic memory and exceptional stencil adhesion. It enhances the reproduction quality of the finest half-tone dot, and can be recycled maintaining the same properties.

New mesh counts and/or thread diameters are added periodically. Please inquire.

Saatilene® CD Specifications

Mesh Count		Weave	Nominal Thread Diameter	Mesh Opening	Free Opening	Fabric Thickness◆	Theoretical Ink Deposit●	Specific Cross-Section	Maximum Recommended Tension■ From-To
inch	cm		µ	µ	%	µ	cm3/m2	mm2/cm	N/cm
305	120	PW	34	44	27	54	15	0.109	24-26
305	120	PW	40	35	18	63	11	0.151	23-26
380	150	PW	31	31	22	47	10	0.113	22-24
380	150	PW	34	23	11	56	6	0.136	25-27
460	180	PW	27	22	16	41	7	0.103	18-22

PW: Plain Weave (1:1)
The above are average values measured in relaxed state, manufactured with yarns of a perfect nominal diameter. (cfr. international standards), under normal hygrometric conditions (20°C=68°F, 65% relative humidity). They are subject to normal variations up to 7% if conditions vary from those stated above.

SAATILENE® PCB-MESH: Electronic circuit boards are fundamental to the perfect functioning of simple or sophisticated modern day equipment, machinery or mass communication systems. Their production depends on the highest know-how and reliable manufacturing components. Saatilene PCB-Mesh is a screen fabric specially engineered for the production of electronic circuit boards by the screen printing process. It is a product with all the necessary ingredients a screen fabric should offer for such a decisive end product: high modulus of elasticity for tight screen tension; fast tensioning procedures for the busy screen production department; optimum fabric stability.

Saatilene PCB-Mesh is produced with a special surface treatment that guarantees extremely high stencil durability particularly for indirect and capillary stencil systems, and the mesh manufacturing tolerances are certified to the ISO 9001 standards giving peace of mind when dealing with close tolerance applications. Saatilene PCB-Mesh is produced from the highest grade of monofilament polyester yarn, and is available in a choice of UV absorbent dyes to enhance the stencil edge quality of the most demanding circuits imaged with direct or capillary stencil systems. In all cases of primary and secondary imaging, select Saatilene PCB-Mesh from the range of Saati screen printing fabrics.

Saatilene® PCB Technical Specifications

Mesh Count		Weave	Nominal Thread Diameter	Mesh Opening	Free Opening	Fabric Thickness◆	Theoretical Ink Deposit●	Specific Cross-Section	Maximum Recommended Tension■ From-To
inch	cm		µ	µ	%	µ	cm3/m2	mm2/cm	N/cm
230	90	PW	40	68	38	62	24	0.113	24-32
255	100	PW	40	55	31	60	19	0.126	28-34
305	120	PW	34	45	29	54	16	0.109	26-33
355	140	PW	34	29	16	55	9	0.127	26-32

PW: Plain Weave (1:1)
The above items are available in standard widths of 115 and 158 cm (45" and 62").

SAATILENE® HIBOND™: Saatilene Hibond is a high tension/low elongation polyester monofilament screen printing fabric, offering added bonuses to the stencil maker and printer alike: time savings and stencil durability. While all screen fabrics imperatively require a thorough mesh treatment before stencil processing, Saatilene HIBOND is delivered ready to use. Its special factory finishing renders the use of adhesion promoters obsolete and in some cases reduces ghost imaging. Apart from the production time savings, it will extend the life of stencils from single to triple and more. This is a unique feature that is especially beneficial where printing conditions are unusually harsh either due to the nature of the substrate or that of the ink system.

Stencil Processing Time Chart

ACTION	TRADITIONAL FABRIC TIME (MINUTES)	SAATILENE HIBOND TIME (MINUTES)
Wetting of Fabric	0.5	0.0
Roughening	5.0	0.0
Rinsing	0.5	0.0
Drying	10.0	0.0
Wetting (film)	(0.5)	(0.5)
Screen Coating	5.0	5.0
Drying	20.0	20.0
TOTAL TIME	**41.0**	**25.0**
TIME SAVINGS: 40%		

New mesh counts and/or thread diameters are added periodically. Please inquire.

Saatilene® Hibond™ Technical Specifications

	Mesh Count		Weave	Nominal Thread Diameter	Mesh Opening	Free Opening	Fabric Thickness◆	Theoretical Ink Deposit●	Specific Cross-Section	Maximum Recommended Tension■ From-To
	inch	cm		µ	µ	%	µ	cm3/m2	mm2/cm	N/cm
1	110	43	PW	80	150	43	132	57	0.216	35-37
2	125	49	PW	70	130	40	116	46	0.188	30-34
3	125	49	PW	80	120	35	132	46	0.246	37-40
4	129	51	PW	70	120	38	118	45	0.196	30-35
5	129	51	PW	80	110	31	129	40	0.296	37-40
6	140	55	PW	64	120	41	105	43	0.176	26-31
7	140	55	PW	80	95	27	140	38	0.276	40-45
8	158	62	PW	64	90	32	106	34	0.199	30-34
9	173	68	PW	55	89	36	89	32	0.161	25-30
10	173	68	PW	70	65	20	120	24	0.261	38-42
11	180	71	PW	55	80	33	91	30	0.168	25-30
12	196	77	PW	48	78	36	80	29	0.139	24-26
13	196	77	PW	55	70	28	90	25	0.182	27-32
14	230	90	PW	40	68	38	62	24	0.113	20-24
15	230	90	PW	48	55	27	81	22	0.162	27-29
16	241	95	PW	40	65	37	65	24	0.119	22-24
17	255	100	PW	40	55	31	64	20	0.125	26-28
18	255	100	PW	48	40	16	81	13	0.181	30-34
19	280	110	PW	34	53	35	56	20	0.099	22-24
20	280	110	PW	40	47	26	69	18	0.138	25-30
21	305	120	PW	31	53	40	48	19	0.090	21-24
22	305	120	PW	34	45	29	54	16	0.108	24-26

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Saatilene® Hibond™ Technical Specifications

	Mesh Count		Weave	Nominal Thread Diameter	Mesh Opening	Free Opening	Fabric Thickness◆	Theoretical Ink Deposit●	Specific Cross-Section	Maximum Recommended Tension■ From-To
	inch	cm		µ	µ	%	µ	cm3/m2	mm2/cm	N/cm
23	305	120	TW	34	47	31	64	20	0.108	24-26
24	305	120	PW	40	38	20	67	13	0.150	27-32
25	305	120	TW	40	41	23	70	16	0.150	27-32
26	330	130	PW	34	39	26	55	14	0.118	24-27
27	330	130	TW	34	41	28	60	17	0.118	24-27
28	355	140	PW	27	43	36	42	15	0.080	16-18
29	355	140	PW	31	38	28	48	13	0.105	20-22
30	355	140	PW	34	29	16	56	9	0.127	23-26
31	355	140	TW	34	32	20	60	12	0.127	23-26
32	380	150	PW	27	35	27	44	12	0.085	17-20
33	380	150	PW	31	29	20	49	10	0.113	22-24
34	380	150	TW	31	34	27	55	15	0.113	22-24
35	380	150	PW	34	25	13	56	7	0.136	25-27
36	380	150	TW	34	28	17	61	10	0.136	25-27
37	420	165	PW	27	30	25	46	12	0.094	17-21
38	420	165	PW	31	25	17	49	8	0.125	24-26
39	420	165	TW	31	30	24	60	14	0.125	24-26
40	420	165	TW	34	25	16	66	10.5	0.149	24-28
41	460	180	PW	27	25	20	43	8	0.103	18-22
42	460	180	TW	31	23	17	56	9.5	0.136	23-27
43	508	200	TW	31	18	13	60	8	0.151	23-27

Other items available on request. PW: Plain Weave (1:1), TW: Twill Weave (1:2 - 2:2)

The above are average values measured on piece-good in relaxed state, manufactured with yarns of a perfect nominal diameter (cfr. international standards), under normal hygrometric conditions (20°C=68°F, 65% relative humidity). They are subject to normal variations up to 7% if conditions vary from those stated above.

METALESTER MESH: Metalester is a high precision screen printing fabric whose technical characteristics are the direct result of Saati's latest weaving technology combined with the most recent developments in the physical properties of the yarn. Metalester consists of a High Modulus polyester fabric coated by electro-deposition of a thin but controlled layer of nickel. This gives the product specific technical features that benefit a number of industrial screen printing applications that cannot be satisfied with conventional polyester fabrics.

FIELD OF APPLICATIONS

- Hollow glass
- Flat glass
- Ceramic
- Printed circuit

New mesh counts and/or thread diameters are added periodically. Please inquire.

FEATURES

- Low mesh distortion: The nickel incapsulation of the mesh considerably reduces fabric elongation helping to maintain the geometrical characteristics of the mesh
- High stability: The product's low elongation characteristics enhance the stability of the tensioned fabric, reaching optimum stabilization within a very short period of time
- Excellent abrasion resistance: The inherent nature of the nickel brings added value to Metalester in terms of mechanical abrasion compared to conventional polyester fabrics
- Antistatic: Nickel is an excellent conductor of electricity and therefore eliminates all risk of static build up
- Heat transfer: The excellent conductivity of Metalester makes it the right choice to print with thermoplastic inks
- Optimum stencil adhesion: Most stencil systems adhered extremely well to Metalester, particularly indirect photo stencil films

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Metalester Technical Specifications

Mesh Count		Weave	Thread Diameter	Mesh Opening	Free Opening	Fabric Thickness◆	Theoretical Ink Deposit●	Maximum Reco. Tension Levels■	Standard Width	
inch	cm		µm	µm	%	µm	cm3/m2	N/cm	cm	inch
61	24	PW	137	275	45	225	101	28	105	41
110	43	PW	87	142	37	142	53	28	105	41
140	55	PW	70	110	36	114	41	26	105	41
158	62	PW	75	88	29	116	34	26	105	41
180	71	PW	68	72	26	91	24	26	105	41
196	77	PW	71	62	22	93	20	26	105	41
230	90	PW	45	62	31	70	22	24	105	41
255	100	PW	47	55	29	71	21	24	105	41
280	110	PW	43	47	27	59	16	22	105	41
305	120	PW	43	41	24	60	14	20	105	41
355	140	PW	45	27	15	61	9	20	105	41
380	150	PW	41	28	18	51	9	20	105	41

(*) PW = Plain weave 1:1. Other widths available (cm/inch): 120/47 - 140/55 and 155/61

HAVER & BOECKER STAINLESS STEEL WIRE CLOTH

SaatiPrint is a direct importer of Haver & Boecker Stainless Steel Wire Cloth. Precision woven in Germany under ISO 9001 certification, Haver Wire Cloth is manufactured specifically for screen printing. Thus it provides the ink deposit uniformity and close-tolerance registration you need for your critical jobs. For maximum ink deposit control, choose Haver's exclusive CT Foil calendered wire.

Haver & Boecker's entire wire manufacturing process has been certified to meet the highest international quality standards (DIN EN ISO 9001). The most extensive of the ISO standards, the 9001 certification encompasses Haver & Boecker's product design, development, production, installation and service.

With input from screen printers around the world, Haver's research team has developed measuring methods and test procedures to perfect each phase of production. Haver's tight tolerances, from the selection of wire threads to the final inspection of each roll we deliver, guarantee reliability. So you can count on the integrity of the wire diameter, aperture width and cloth thickness.

You can achieve defined ink deposits easily with the nearly endless choices of Haver Wire. Within any mesh count, there's a range of wire diameters. In addition, any of these can be calendered. Available diameters range from 0.0007" to 0.0055" (accurate to within 1 micron).

Offered in plain or twill weave in widths from 36 to 60 inches and mesh counts from 60 to 500 per inch. (Ask us about larger widths and cut-to-size pieces.)

You'll receive an individual inspection sheet with every full roll. Each production phase is highly monitored with Haver's close- tolerance, electronic measuring systems.

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Haver Stainless Steel Wire Cloth Technical Specifications

	USA Spec. ANSI/AWCI 01-1992		Metric Spec. ISO 4783-1 1989		Open Area	Cloth Thickness as Woven = AW		Theoretical Ink Deposit●		Theoretical Maximum Tension
	Mesh	Wire Diameter	Wire Diameter	Width of Aperture (Opening)		Average	Average	AW As Woven	CT Foil† Avg. Cloth Thickness -20%	AW As Woven
		d	d	w	Ao	D	D	Vth	Vth	Newton
	Threads/in.	inch	micron	micron	%	micron	inch	cm^3/m^2	cm^3/m^2	N/cm
1	60	0.0040	100	315	58	220	0.0087	128	102	75
2	80	0.0020	50	265	71	107	0.0042	76	61	25
3	80	0.0037	95	224	49	190	0.0075	93	74	90
4	105	0.0030	80	160	44	165	0.0065	73	58	84
5	120	0.0026	67	140	46	145	0.0057	67	54	67
6	125	0.0032	80	125	37	190	0.0075	70	56	100
7	135	0.0022	56	132	49	132	0.0052	65	52	53
8	145	0.0022	56	118	46	130	0.0051	60	48	57
9	150	0.0026	67	100	36	147	0.0058	53	42	84
10	165	0.0020	50	106	46	109	0.0043	50	40	52
11	180	0.0018	45	95	46	102	0.0040	47	38	46
12	200	0.0016	40	85	46	89	0.0035	41	33	40
13	200	0.0021	53	75	34	114	0.0045	39	31	70
14	230	0.0011	30	80	53	62	0.0025	33	26	26
15	230	0.0014	36	75	46	76	0.0030	35	28	37
16	250	0.0014	36	63	40	79	0.0031	32	26	41

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Haver Stainless Steel Wire Cloth Technical Specifications

	USA Spec. ANSI/AWCI 01-1992		Metric Spec. ISO 4783-1 1989		Open Area	Cloth Thickness as Woven = AW		Theoretical Ink Deposit●		Theoretical Maximum Tension
	Mesh	Wire Diameter	Wire Diameter	Width of Aperture (Opening)		Average	Average	AW As Woven	CT Foil† Avg. Cloth Thickness -20%	AW As Woven
		d	d	w	Ao	D	D	Vth	Vth	Newton
	threads/in.	inch	micron	micron	%	micron	inch	cm^3/m^2	cm^3/m^2	N/cm
17	250	0.0016	40	63	37	85	0.0033	31	25	50
18	270	0.0014	36	56	37	80	0.0032	30	24	44
19	270TW	0.0016	40	53	32	85	0.0033	27	22	54
20	280	0.0012	30	60	44	66	0.0026	29	23	32
21	300	0.0012	30	56	42	68	0.0027	29	23	34
22	325	0.0009	24	56	49	52	0.0021	25	20	23
23	325	0.0011	30	50	39	63	0.0025	25	20	32
24	325TW	0.0014	36	42	29	81	0.0032	23	18	53
25	400	0.0007	18	45	51	43	0.0017	22	18	16
26	400	0.0010	25	38	36	53	0.0021	19	15	31
27	500TW	0.0010	25	25	25	56	0.0022	14	11	39
	NEW High Tensile (HT)									
28	290	0.0008	20	67	59	45	0.0018	–	–	30

Haver's New High Tensile (HT) Stainless Steel Wire Cloth

A new grade of stainless steel wire cloth is now woven by Haver & Boecker. This High Tensile (HT) wire offers many new benefits. The 290 (0.0008" diameter) mesh has a 59% open area, allowing you to print finer lines over longer production runs. Also, due to the new high tensile alloy, greater stability can be achieved while utilizing the new thinner thread.

†This is an example of the most popular degree of calendering. A wide range of calendering is available. Most popular mesh counts are in stock. Width of rolls: 36" (915mm), 40" (1020mm), 48" (1220mm), 60" (1530mm). Please inquire about others. Length of standard rolls: 100 feet (30.5m). Custom sheeting to size is available. Please inquire.

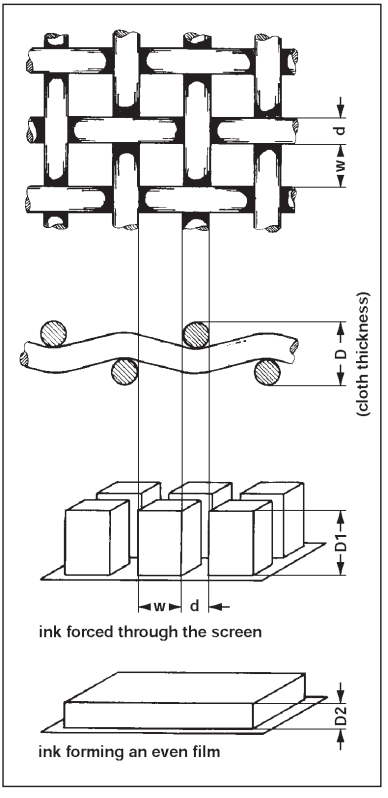
Theoretical Ink Deposit

The theoretical ink deposit is an approximate value used to help select the most appropriate mesh count for the printing application. As seen in the diagram, the ink is forced through the wire cloth in cubes, whose volume is determined by the mesh aperture (w) and the cloth thickness (D). The cubes then flow together to form an even wet ink film of theoretical thickness on the substrate.

Since stainless steel wire cloth can be made with extremely thin wire diameters, it can deposit ink cubes with very small gaps between them. Therefore, the ink cubes have only a small distance to flow and form a uniform ink deposit, and thus, print definition with only the most minimal serration.

In addition to the wire cloth, other factors influencing the ultimate ink deposit include: ink viscosity, surface characteristics of the substrate, photostencil thickness and the squeegee speed, angle and durometer. The theoretical ink deposit (Vth) can be calculated in cm3 per m2 of wire cloth using the following formula:

$$Vth = \left[\frac{W}{w+d}\right]^2 \times D$$



WHERE:

w = mesh aperture (opening/microns)

d = wire diameter (microns)

D = cloth thickness (microns)

D1 = ink thickness (microns) at initial deposit

D2 = ink deposit (microns) after flowout

The Advantages Of Plain Weave Mesh For 4-Color Printing

QUESTION

We use a very high mesh count (380) and high solids content emulsion, which we coat to produce a ten-micron stencil thickness for a sharp image. Everything looks great, but we still run into problems when printing four-color process. Instead of nice round dots, the image is made up of irregular shapes, and some dots are missing altogether.

We know this causes problems with controlling neutral colors and flesh tones, and suspect it contributes to moiré, so what can we do to make a better stencil?

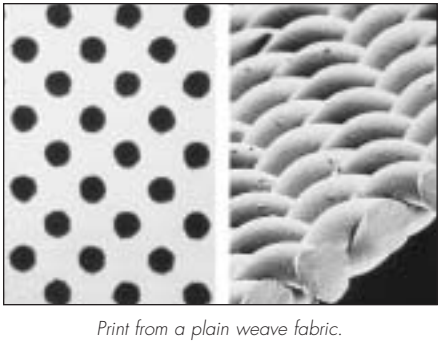
SOLUTION

It sounds like you are already making very high quality stencils, and they are probably ideal for fine line or even single-color halftone printing.

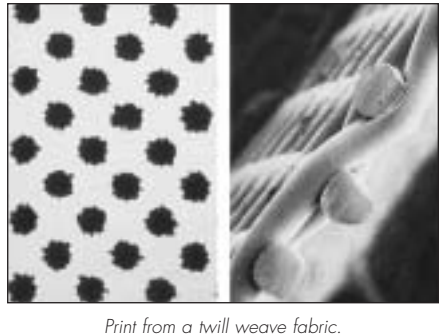
The problem is your ink deposit is way too high for four-color process printing, and you are suffering from some of the same problems that printers using UV-cured inks have had to tackle. Remember, plastisol inks are 100% "solids" too, and the stencil/mesh combination you describe will probably lay down an ink deposit of around 20 microns. This won't cause a problem with the first color down, and probably not the second either. The problems usually arise when trying to lay down small dots of the third or fourth colors. The ink deposit that has already been built up prevents the stencil from contacting the substrate evenly. In areas where the two don't touch, ink will not be pulled cleanly from the screen once the squeegee passes. Instead of a flat substrate, you are trying to print on something with a topography which resembles a microscopic version of Manhattan. The piled up dots of the first few colors produce a high-rise barrier between the screen and the substrate.

The particular 380 mesh you mention, is produced with a twill weave configuration where threads are inserted into every second space in the weave. This means that although it is very fine when measured by the number of threads per inch, there is still a lot of space for the ink to pass through. In comparison, plain weave mesh, where threads are inserted into every space in the weave, has a much lower percentage of open area, as well as a lower fabric thickness. This combined effect of the smaller openings with the thinner fabric would reduce your ink deposit tremendously, as the below comparison shows.

A further benefit of using plain weave mesh is that you can achieve good edge definition and sharp dot reproduction with a much lower stencil thickness. Instead of having to build up a ten-micron stencil in order to smooth over the long knuckles formed in the twill weave fabric, you



Print from a plain weave fabric.



Print from a twill weave fabric.

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could get away with a five-micron stencil thickness on plain weave mesh. This will shave even more precious microns off your ink deposit, and minimize the build-up that occurs and causes problems with your later colors. Simply lowering stencil thickness on the mesh you are using just now is not the answer. While you will print less ink, your halftones will suffer poor edge definition. Star-shaped dots are a major cause of problems with tonal balance and moiré, the very problems we are trying to control.

On a different note, another technique that would also help is the use of positives that have been separated with gray component replacement. With these types of separations, in areas of the design where yellow, magenta and cyan are all present, the density of the first three positives can be reduced. The difference is then made up at the end by printing with a heavier black than would be used with normal separations. The benefit of this method is that early ink build-up is minimized. This, in conjunction with the right mesh and stencil combination, will provide you the biggest window of operation for all the other parameters you have to control, once you get your screens to press.

Mesh Type	Fabric Thickness	% Open Area	Ink Deposit
380 TW.34	63 microns	17%	11 microns
380 PW.34	56 microns	13%	7 microns