

HAYER & BOECKER



DIE DRAHTWEBER



**SCREEN PRINTING MESH.
MAKING QUALITY VISIBLE.**

HAYER & BOECKER

THE WIRE WEAVERS

For many years Haver & Boecker has been developing and producing special wire mesh for the screen printing industry, whose quality and function have set standards throughout the industry. In continuing the further development of screen printing technology, we work closely with the screen printing industry and its suppliers throughout the world. As a result of this collaboration one of the important benefits is the continuous development of new metal mesh types.

Our expertise and comprehensive portfolio of innovative, high quality screen printing mesh make us one of the leading industry partners for all who demand the highest accuracy in screen printing. This includes industry sectors ranging from the solar industry and electronics to decorative ceramic products, hollow glassware and container glass.

Reproduction of the finest detail.

Haver & Boecker manufactures Haver metal mesh exclusively for screen printing in our own factories on state of the art weaving machines. Our specially developed calendering process makes it possible to achieve a thinner mesh thickness with more defined tolerances and therefore printing results of exceptional precision.

The stainless steel wires are inspected and tested in our own laboratory for compliance with the technical specifications developed between Haver & Boecker and the wire suppliers. We have developed our own testing criteria and procedures that are leading in the industry. Our strict quality control is maintained throughout production, cleaning and further processing of the mesh through the final inspection.

Because of the tight thickness tolerance of Haver metal mesh, an electronic measuring device is used to check the defined fabric thickness. Using our calibrated measuring instruments to evaluate and summarize the data, we then record it in a detailed test certificate. This ensures that every mesh leaving our factory meets the highest standards; the stainless steel mesh ensures the most accurate registration and reproduction of detail in screen printing. The thickness of the ink deposit can be determined with great precision and its consumption accurately calculated.

Besides our extensive standard range of mesh specifications, we also provide customized solutions tailored to your special needs guaranteeing excellent results.



Haver & Boecker began producing wire cloth in Hohenlimburg, Germany, in 1887. Today, we are one of the world's leading wire weaving companies with a global network of branches and manufacturing facilities.

Our work is based upon experience, continuous research and development of our products and manufacturing processes, along with the knowledge and ability of our staff. This combination of tradition and innovation allows us to meet and exceed the high expectations of our customers.

ATTENTION TO THE SMALLEST DETAIL.



WOVEN WITH PERFECTION AND PRECISION.

Haver metal mesh is manufactured from high-performance stainless steel alloys which offers a number of distinct advantages. Extremely thin wires, defined cloth thicknesses, accurate mesh openings and tighter tolerances produce outstanding printing results with specific ink deposits. Without its physical properties being affected, the mesh is cleaned in a specially developed process developed by Haver & Boecker. Its dimensionally uniform and stable screen aperture size makes it far superior to polyester fabrics. Haver metal mesh exhibits a minimal amount of elasticity during printing, meaning that screen printing stencils have a very long service life when handled correctly.

Despite their fineness and delicate appearance, all Haver & Boecker screen printing mesh is highly resistant to aggressive inks and pastes. In addition, because the wire is naturally conductive it thereby prevents any potential electricity build-up on the screen itself.

Innovative fabrics for innovative printing processes.

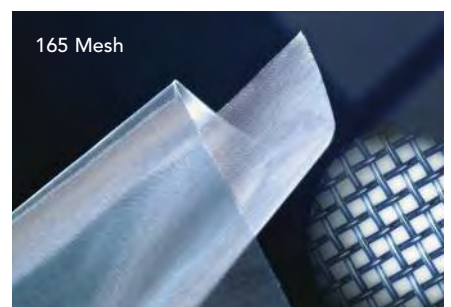
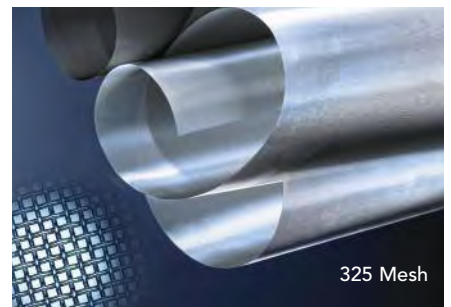
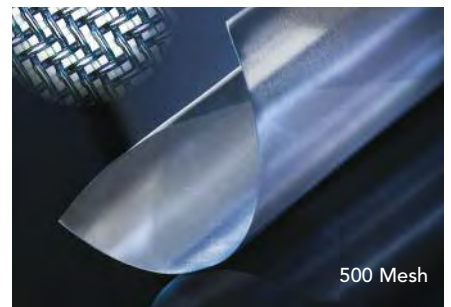
With our innovative screen printing mesh we have created a pre-requisite for developing increasingly productive screen printing processes.

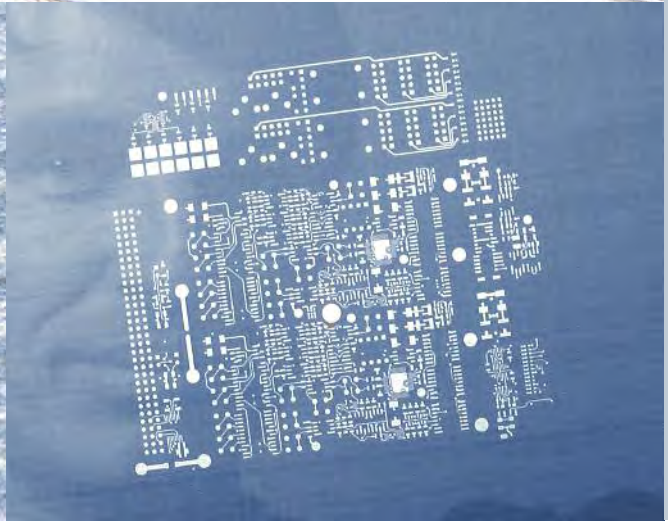
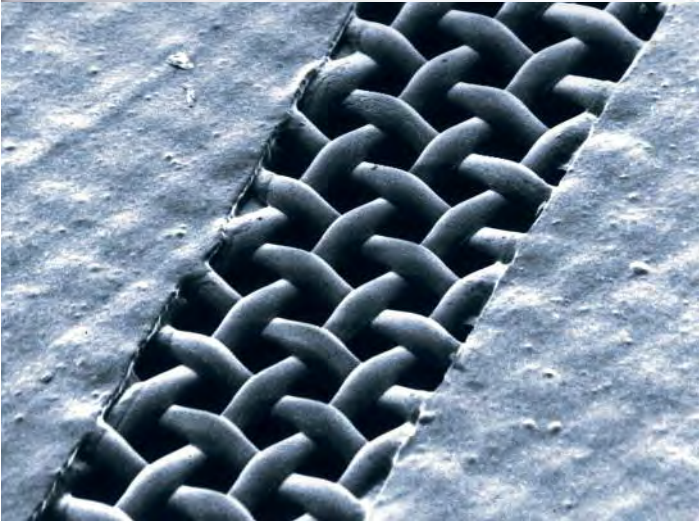
The developments by our research and development department for fine mesh include 3D mesh and the highly stable Haver Tensile Bolting Cloth (HAVER TBC).

3D mesh is manufactured with the same mesh openings and wire diameter as conventional wire mesh but by modifying the weaving process. 3D mesh therefore achieves a higher theoretical ink volume resulting in a noticeable gain in opacity and brilliance.

HAVER TBC – Tensile Bolting Cloth – is a highly stable stainless steel mesh for screen printing. Compared to standard Bolting Cloth (BC), TBC screen printing cloth is woven from stainless steel alloys. These alloys are somewhat elastic yet have great yield strength and stability due to complex annealing processes and their specific metal composition.

HAVER TBC was developed in close collaboration with its users throughout the world in order to meet the high requirements of precision screen printing. Optimized stretching properties ensure highly accurate registration and an improvement or reduction in off-contact printing, leading to a high reproducibility of prints. The high tensile strength of the wires results in a longer service life and maximum printing speeds. HAVER TBC stabilizes quickly during the stretching process and there is little tension loss during printing.



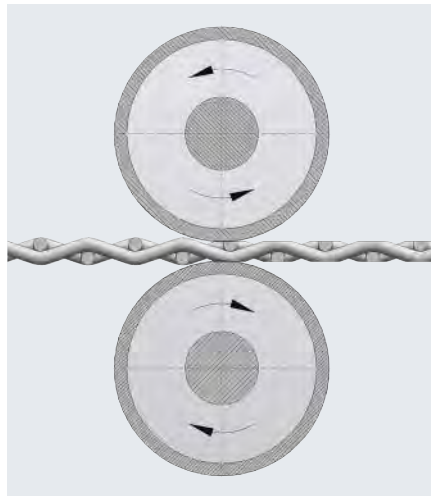


ALMOST INDIVIDUAL: CALENDERING (CT).

Haver wire mesh is manufactured from high-quality wires on looms which were developed and assembled by Haver & Boecker's engineering staff in Oelde. The calendering process first developed by Haver & Boecker, offers the ability of screen printing mesh to be optimized to meet the customers requirements.

Calendering – Meeting the customers individual requirements.

As early as the 1950s Haver & Boecker developed a calendering process to meet the requirements of a specifically defined ink deposit.



Calendering is a process whereby the mesh is placed between two steel rollers and reduced to a predetermined thickness, without the mesh openings being altered. This process stabilizes the mesh, while at the same time acquires a smooth and uniform surface.

Calendered mesh offers a precisely defined ink deposit for each individual application. The smooth surface not only minimizes any differences in the thickness of the ink deposit from print to print and run to run but also squeegee wear.

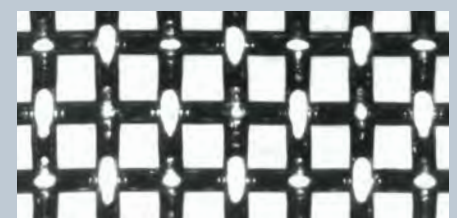
Haver & Boecker supplies two different options of calendering and also offers customized calendering to meet the requirements of individual users.



Standard calendering

The mesh is reduced to the extent that it is 20% less in thickness than double the diameter of a single wire:
 $D = 2 \times d \times 0.8.$

The mesh openings are not altered and the appearance becomes slightly shiny.



Maximum calendering

The fabric is reduced to a thickness up to 30% below double the diameter of a single wire:
 $D = 2 \times d \times 0.7.$

This enables the maximum possible reduction in the thickness of the wire cloth without it being deformed. The mesh openings stay the same and the fabric appearance now resembles foil.

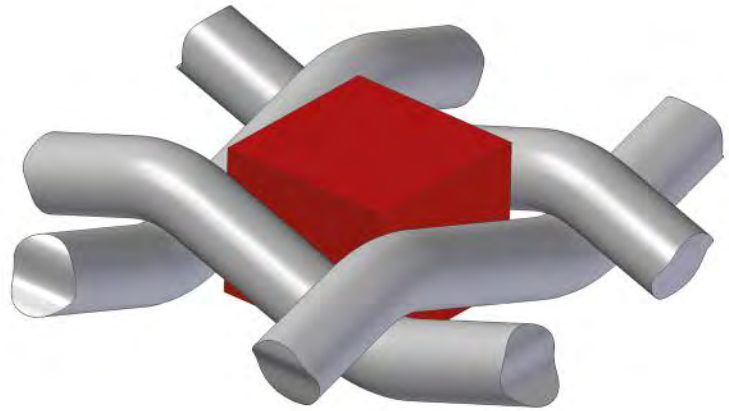


CALCULATING THEORETICAL INK VOLUME.

Besides ink viscosity, substrate surface, position and hardness of the squeegee and other factors, mesh openings and mesh thickness have a decisive influence on the quality of the printing results.

Calculating the theoretical ink volume V_{th} serves to determine which screen printing mesh specification is most suitable for the application.

By weaving with extremely thin wires, Haver & Boecker is able to manufacture especially thin screen printing mesh. This enables an optimum ink flow ensuring a highly uniform film of ink and a precisely defined ink deposit.



Calculating the theoretical ink volume is based on cubes whose size is determined by the mesh openings.

The volume is determined by the aperture width w and cloth thickness D .

The formula in cm^3 per m^2 :

$$V_{th} = \left(\frac{w}{w + d} \right)^2 \times D$$

V_{th} = theoretical ink deposit in $\frac{\text{cm}^3}{\text{m}^2}$

w = aperture width in μm

d = wire diameter in μm

D = cloth thickness in μm

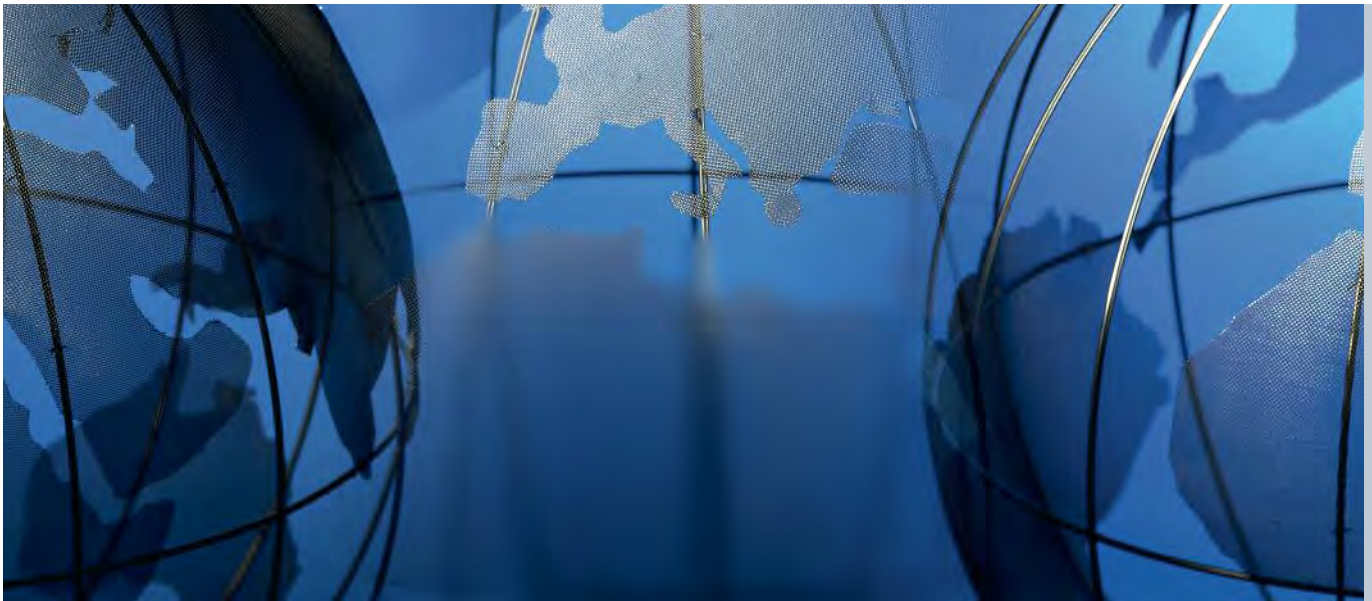


AT A GLANCE: OUR MAIN SCREEN PRINTING MESH SPECIFICATIONS.

HB Code	Mesh	Aperture width	Wire diameter	Open Area	Cloth thickness	Cloth thickness tolerance	Theoretical Ink Deposit		Theoretical max. tension
		w μm	d μm	Ao %	μm	μm	cm^3/m^2	$\text{inch}^3/\text{ft}^2$	N/cm
Tensile Bolting Cloth TBC									
VA 250-15	635	25	15	39	30	-/+ 3	12	0.066	23
VA 200-18	500	34	18	43	36	-/+ 3	15	0.087	25
VA 160-20	400	45	20	48	40	-/+ 3	19	0.109	25
VA 160-24	400	38	24	38	48	-/+ 3	18	0.102	38
VA 140-25	350	48	25	43	50	-/+ 3	22	0.123	35
VA 130-29	325	50	29	40	58	-/+ 3	23	0.132	43
VA 120-29	300	56	29	43	58	-/+ 3	25	0.143	40
VA 115-20	290	67	20	59	40	-/+ 3	24	0.134	19
VA 110-25	280	67	25	53	50	-/+ 3	27	0.150	28
VA 100-30	250	71	30	49	60	-/+ 3	30	0.168	36
VA 110-32	280	60	32	43	64	-/+ 3	27	0.154	45
VA 108-36	270	56	36	37	72	-/+ 3	27	0.151	58
VA 100-36	250	63	36	40	72	-/+ 3	29	0.165	53
VA 80-40	200	85	40	46	80	-/+ 3	37	0.210	52
Standard									
VA 200-25	500	25	25	25	60	-/+ 5	15	0.085	40
VA 165-23	400	38	23	39	48	-/+ 3	19	0.106	28
VA 160-25	400	38	25	36	52	-/+ 3	19	0.107	32
VA 160-20	400	45	20	48	45	-/+ 3	22	0.122	20
VA 160-18	400	45	18	51	40	-/+ 3	20	0.116	16
VA 130-30	325	50	30	39	63	-/+ 3	25	0.140	36
VA 130-36	325	42	36	29	81	-/+ 5	23	0.133	53
VA 123-25	325	56	25	48	55	-/+ 3	26	0.149	25
VA 115-32	290	56	32	40	67	-/+ 3	27	0.154	37
VA 110-32	280	60	32	43	67	-/+ 3	28	0.162	35
VA 108-36	270	56	36	37	80	-/+ 3	30	0.168	45
VA 105-40	260	56	40	34	93	-/+ 5	32	0.179	53
VA 100-36	250	63	36	40	79	-/+ 3	32	0.181	42
VA 100-40	250	63	40	37	85	-/+ 3	32	0.180	49
VA 90-36	230	75	36	46	72	-/+ 3	33	0.186	37
VA 80-50	200	75	50	36	110	-/+ 3	40	0.224	64
VA 80-40	200	85	40	46	89	-/+ 3	41	0.233	41
VA 70-45	180	95	45	46	102	-/+ 5	47	0.266	46
VA 65-50	165	106	50	46	109	-/+ 5	50	0.285	51
VA 57-56	145	118	56	46	120	-/+ 5	55	0.313	57
VA 61-63	156	100	63	38	130	-/+ 5	49	0.277	77
VA 59-67	150	100	67	36	152	-/+ 5	55	0.309	86
VA 48-67	120	140	67	46	140	-/+ 5	64	0.363	69
VA 35-90	88	200	90	48	180	-/+ 6	86	0.485	89
VA 28-100	66	280	100	54	200	-/+ 7	109	0.616	84
3D									
VA 130-30	325	50	30	39	81	-/+ 3	32	0.179	>36

All specifications can be calendered on request. Mesh thickness can be reduced by a maximum of 30%.

NO SITE IS OUT OF SIGHT.



From its very beginnings Haver & Boecker has made a decisive contribution to the technology of wire weaving. Based on a successful company history, Haver & Boecker today offers its customers more experience, technology and expertise pertaining to wire mesh than almost any other company.

Whether science and research, industry or architecture – wherever Haver & Boecker wire mesh is used, our customers benefit from a broad yet still unique individual service.

With our worldwide network, we provide the confidence to be your reliable partner at any time and any place. We will continue Weaving Ideas into the future.

In 2011 Haver & Boecker operates production sites in Germany, Great Britain, Belgium, the USA, Canada, India and Brazil.

More than 2,000 people work for the Group worldwide.

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