

BOPP FI

Metal filter meshes

BOPP FI Metal filter meshes

Optimum results with metal meshes

BOPP FI is the name behind a comprehensive range of diverse coarse to ultrafine metal filter meshes. The standard range includes an extensive choice manufactured from stainless steel and other metallic alloys, all produced using state of the art weaving machines under clean room conditions. We also produce customer specific special meshes from selected alloys in line with individual requirements.

Our metal filter meshes are particularly suited to surface filtration and have proved their worth in many different applications and environments. Regular aperture size distribution guarantees a considerably higher separation rate in comparison with non wovens. Highly automated production guarantees exceptionally exact and regular pores, making our wire meshes particularly suited to applications in both screening and separation,

as well as both static and cross-flow filtration.

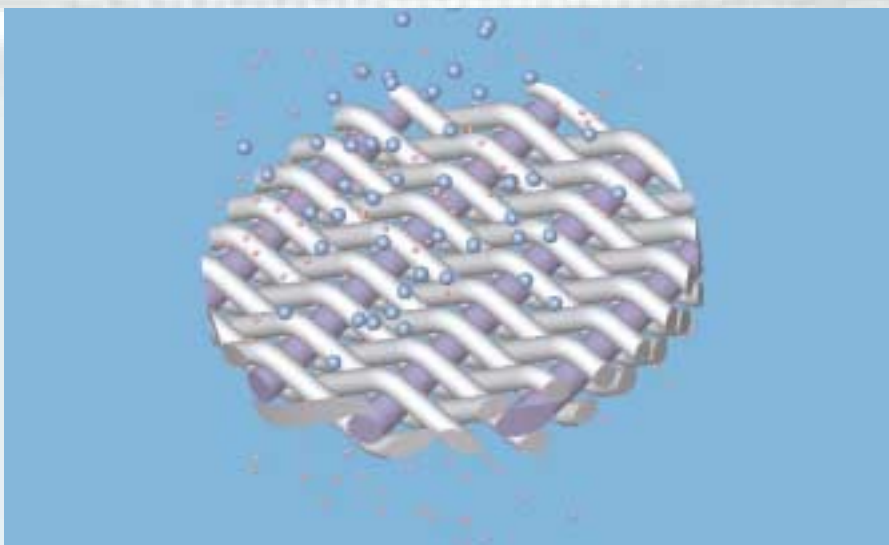
Woven wire meshes are robust and capable of withstanding significant mechanical loads. They are both stable and long lasting.

Filtration using Bopp meshes

Using our meshes is your guarantee of secure, premium filtration results. From the first flow of gases and liquids containing solids, the meshes filter out any particles larger than the apertures. These settle on the surface of the filter and form in time a filter cake, which works to enhance the filtration action. The filter need only be removed when this filter cake becomes too thick or too effective. Whilst these meshes facilitate on the one hand the build up of a regular filter cake, thanks to their smooth surface they also allow for excellent disbonding of the filter cake and cleaning through backwashing.



Properties and Advantages



- High levels of stability and rigidity
- Smooth surface structure
- Advanced abrasion resistance
- Regular pores
- Narrow pore size distribution
- Excellent plasticity
- Good flow rate
- No particle separation
- Good chemical and thermal resistance
- Easy clean
- Excellent reliability

Examples of Applications and Characteristics

Industry	Application	Advantages, Properties
Chemicals	Candle filters Nutsche filters Dryers Filter bags	Easy to pleat Durable, high separation rates Accurately defined through flow and pressure differential Robust, easy clean
Pharmaceuticals	Aeration components Fluidised beds Deaeration filters	Chemically resistant Accurately defined through flow and pressure differential Suitable for Cleaning in Place (CIP)
Hydraulics	Filter elements Filter discs, for dirt filtration or last chance filtration	Durable, precise Limited pressure differential
Machine Tools	Cooling lubricant filters in filter barrels	Limited pressure differential
Mining	Disc filters for coal and minerals High pressure hydraulic filter candles	Durable Pressure stable
Automotive	Fuel filters Filters for brake servos, ventilation	Precise Limited pressure differential
Food	Oil filter presses Filter slabs for juice and wine	Easy clean Chemically resistant
Plastics Processing	Melt filters Polymer candle filters Spinneret filters	Accurate Mechanically stable

Filter fineness and pore size

The filter fineness or pore size is a determining attribute for filter meshes. Today, there are a number of different processes available to correctly ascertain the filter fineness of metal meshes. The absolute filter fineness of Bopp metal filter meshes is defined using the 'Bubble Point Test' to SAE/ARP 901 standards.

Results are demonstrated in two different ways; the **Absolute filter rating** and the **Nominal filter rating**.

Absolute filter rating

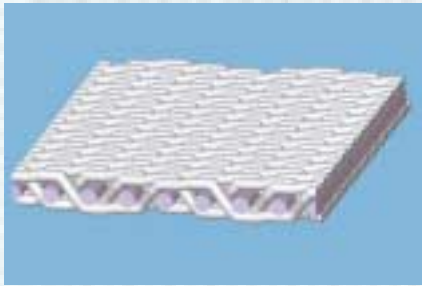
This is calculated according to the diameter of the largest hard spherical particles passing through the filter medium under steady flow conditions.

Nominal filter rating

In practice, this is an essentially inexact value, and different methods are used to arrive at a calculation. With a given value, generally 98% of the particles greater than this value will be excluded.

When comparing filter meshes of differing provenance, we always recommend that mesh count and wire diameter are taken into account alongside the test methods.

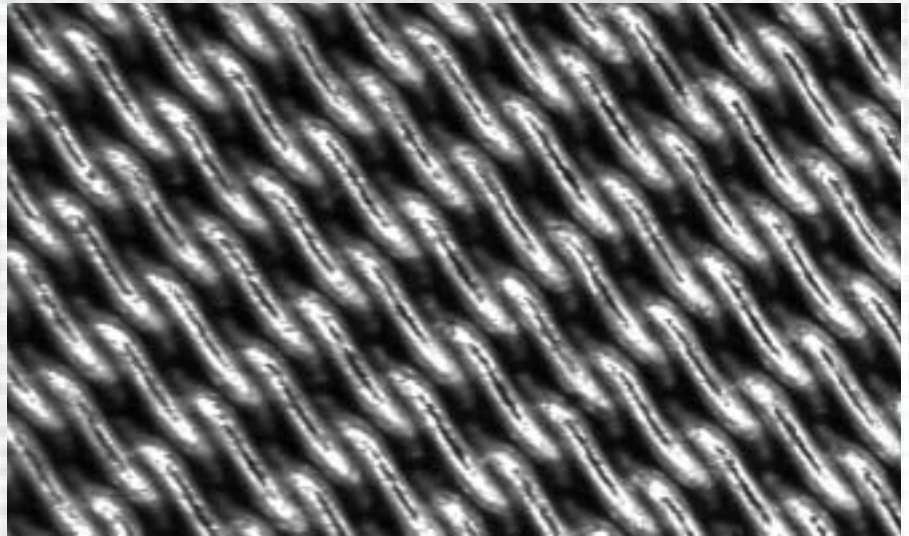
BOPP FI Metal filter meshes



Twilled Dutch weaves

For monofilament, twilled weaves achieve the smallest pores and a smooth mesh surface. The larger material cross section allows for greater mesh stability. Meshes with finer specifications are used for fine filtration, i.e. pressure filtration in hydraulic steering installations and fuel filtration for

critical applications. The coarser specifications are used for pressure and vacuum filtration (disc, cell and drum filtration) and as porous media for fluidised beds. These meshes are usually produced using stainless steel.



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Absolute filter rating μm	Nominal filter rating μm	Mesh description	Yield strength (warp/weft) Rp N/cm	Pores count N Pores/cm ²	AsK mm ² /cm	AsS mm ² /cm	Porosity %	A _{0rel} %	Weight kg / m ²	Thickness mm
5 - 6	< 1	510 x 3600	40 / 100	142'000	0.10	0.25	35	5	0.28	0.05
6 - 7	< 1	450 x 2750	35 / 140	94'000	0.09	0.33	33	4	0.35	0.06
7 - 8	1	375 x 2300	60 / 160	63'000	0.12	0.42	33	4	0.46	0.08
8 - 9	2	325 x 2300	65 / 160	54'000	0.15	0.42	34	4	0.46	0.08
9 - 10	3	325 x 1900	65 / 170	45'000	0.13	0.50	32	5	0.54	0.09
11 - 12	4	250 x 1400	130 / 230	26'000	0.24	0.67	31	4	0.76	0.13
12 - 14	5	200 x 1400	140 / 230	21'000	0.30	0.67	33	4	0.81	0.15
16 - 18	10	165 x 1400	130 / 230	17'000	0.25	0.67	37	6	0.76	0.15
24 - 26	15	*165 x 800	130 / 270	10'200	0.25	0.67	46	8	0.74	0.17
28 - 32	20	*200 x 600	110 / 150	9'300	0.22	0.38	59	9	0.48	0.15
35 - 38	25	80 x 700	130 / 480	4'500	0.25	1.25	38	7	1.18	0.25
70 - 75	50	40 x 560	200 / 600	1'700	0.40	1.67	44	11	1.72	0.38
90 - 100	80	30 x 360	280 / 900	840	0.58	2.50	42	9	2.49	0.55
110 - 120	100	20 x 250	180 / 1300	380	0.39	3.67	39	6	3.34	0.69

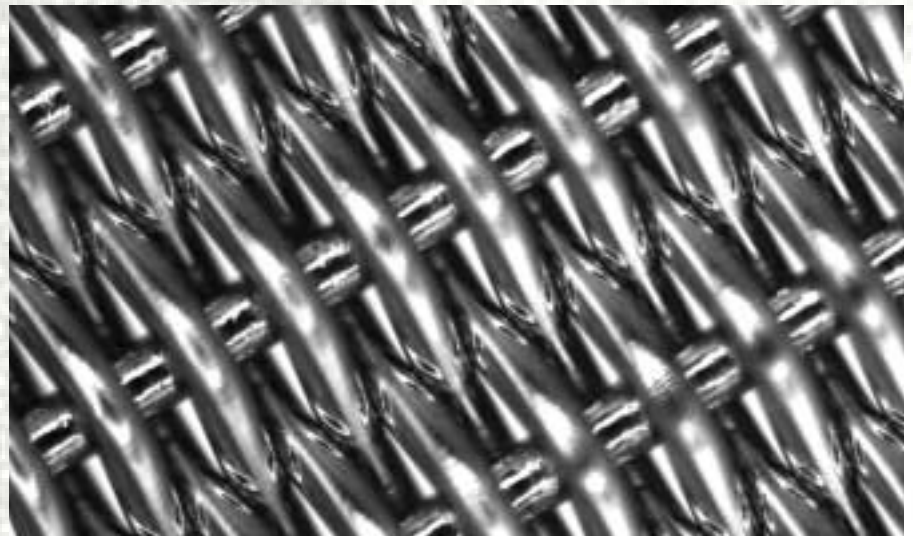
* Twilled Dutch Single Weave



Plain Dutch weaves

These meshes have a lightly textured surface area and are particularly notable for their high flow rate and reduced pressure drop.

They are used in precoated filters and filter candles for applications demanding higher mechanical strength.



Absolute filter rating μm	Nominal filter rating μm	Mesh description	Yield strength (warp/weft) Rp N/cm	Pores count N Pores/cm ²	AsK mm ² /cm	AsS mm ² /cm	Porosity %	A _{0rel} %	Weight kg / m ²	Thickness mm
40 - 45	35	80 x 400	200 / 210	9'400	0.39	0.59	62	19	0.82	0.26
58 - 63	40	50 x 250	150 / 320	3'700	0.30	0.94	65	16	1.03	0.36
70 - 75	55	40 x 200	210 / 400	2'400	0.40	1.17	65	15	1.30	0.46
95 - 105	65	30 x 150	260 / 520	1'400	0.49	1.50	65	16	1.61	0.59
115 - 125	80	24 x 110	500 / 720	770	0.96	2.17	63	13	2.64	0.88
150 - 160	100	20 x 150	200 / 500	930	0.39	1.50	68	27	1.53	0.61
220 - 240	150	14 x 88	550 / 900	370	1.08	2.67	66	23	3.13	1.14
270 - 290	200	12 x 64	650 / 1200	240	1.34	3.51	65	22	3.90	1.44
320 - 340	250	8 x 85	150 / 900	210	0.32	2.67	69	28	2.44	1.00

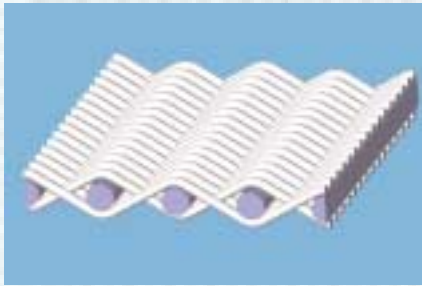
When flowing through twilled dutch weave, particles must negotiate five offset aperture levels. This means that long, fine, rod-shaped and filament-shaped particles are reliably excluded.

Notes on the values given in these tables:

- A_{0rel}** Theoretically free flow rate surface, through which the filtrate can flow, relating to the direction of the surface flow.
- AsK / AsS** Effective cross section at the cut edge, running perpendicular to the wires, to take up tensile force. AsK = warp direction, AsS = weft direction.
- Rp** Maximal acceptable mechanical loading of the mesh in warp or weft direction, without significant lasting deformation.

Porosity, weight and thickness are approximate values, highly dependent upon wire tolerance. These data are typical values for the meshes. No guarantee of performance should be deduced from this. We reserve the right to make technical changes.

BOPP FI Metal filter meshes



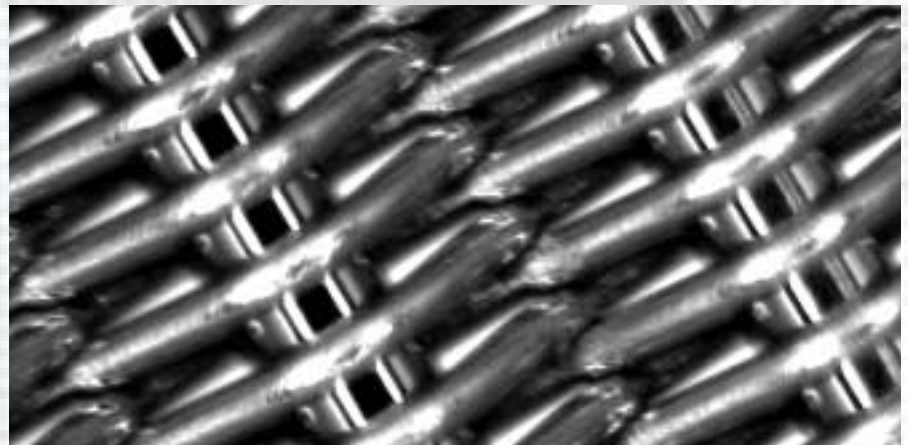
Betamesh

Metal filter meshes demonstrate comparatively high flow capacities and dirt removal capabilities.

The meshes are commonly used for applications including oil and fuel systems, where increased dirt removal capabilities and flow capacity are significant, and also for steering

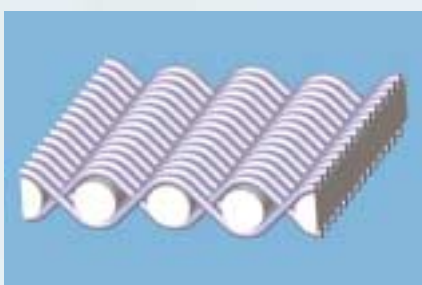
systems and fuel injection jets as well as bearings.

Betamesh is a further advancement of plain Dutch weave meshes, with the focus on flow and backwashing properties. This is achieved by creating apertures on the surface which are smaller than the internal apertures.



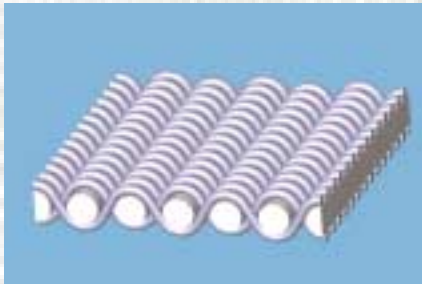
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Absolute filter rating μm	Mesh description	Yield strength (warp/weft) Rp N/cm	Pores count N Pores/cm ²			Porosity %	A _{0rel} %	Weight kg / m ²	Thickness mm
15 - 17	Betamesh 15	55 / 70	75'300			65	22	0.25	0.09
18 - 22	Betamesh 20	70 / 90	52'200			64	27	0.32	0.11
22 - 26	Betamesh 25	95 / 100	38'000			64	31	0.37	0.13
27 - 31	Betamesh 30	110 / 110	28'200			64	33	0.45	0.15
30 - 34	Betamesh 35	130 / 120	21'200			64	33	0.51	0.17
34 - 38	Betamesh 40	140 / 140	16'300			65	34	0.57	0.20
42 - 48	Betamesh 50	190 / 190	10'900			64	35	0.72	0.25
52 - 58	Betamesh 60	210 / 230	7'400			65	34	0.86	0.30
66 - 74	Betamesh 75	280 / 240	4'600			64	34	1.11	0.38
81 - 89	Betamesh 90	330 / 320	3'200			65	33	1.31	0.46
25	Betamesh R 25	75 / 210	29.100	0.23	0.62	55	24	0.68	0.19
34	Betamesh R 34	90 / 210	20.900	0.29	0.65	56	32	0.75	0.22
48	Betamesh R 48	110 / 180	11.200	0.38	0.53	63	35	0.73	0.25
60	Betamesh R 60	170 / 175	6.700	0.49	0.50	66	20	0.79	0.30
80	Betamesh R 80	180 / 220	3.800	0.65	0.79	64	32	1.15	0.42



Betamesh R

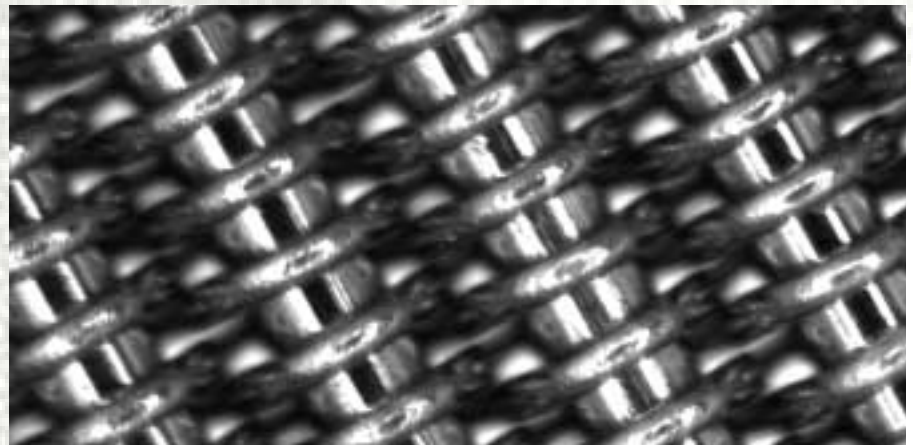
For more simple filtration tasks, Betamesh R has been developed, which offers greater mechanical strength using the Robusta weaving style.



Robusta

These meshes demonstrate high flow rates, thanks to increased porosity. They are comparable to plain Dutch weave meshes, but with a uniform material cross section in both warp and weft directions they are ideal for environments requiring advanced mechanical strength.

Areas of application include precoat filters, filter candles, vacuum filters and spring filters.



Absolute filter rating μm	Nominal filter rating μm	Mesh description	Yield strength (warp/weft) Rp N/cm	Pores count N Pores/cm ²	AsK mm ² /cm	AsS mm ² /cm	Porosity %	A _{0rel} %	Weight kg / m ²	Thickness mm
14 - 17	10	850 x 155	80 / 160	40'800	0.25	0.48	53	11	0.58	0.16
18 - 21	15	720 x 150	95 / 205	33'500	0.27	0.58	52	14	0.69	0.18
23 - 26	20	600 x 125	100 / 220	23'300	0.34	0.60	53	17	0.75	0.20
35 - 38	25	600 x 100	100 / 220	18'600	0.33	0.61	57	30	0.75	0.22
54 - 60	40	280 x 70	210 / 330	6'100	0.71	0.95	56	23	1.34	0.39
56 - 62	50	*400 x 125	160 / 135	3'900	0.55	0.39	58	16	0.75	0.23
65 - 72	60	175 x 50	400 / 480	2'700	1.23	1.39	55	15	2.11	0.60
95 - 105	80	130 x 35	520 / 600	1'400	1.63	1.73	57	17	2.70	0.80
110 - 125	100	140 x 40	600 / 550	1'700	1.55	1.79	55	32	2.80	0.76

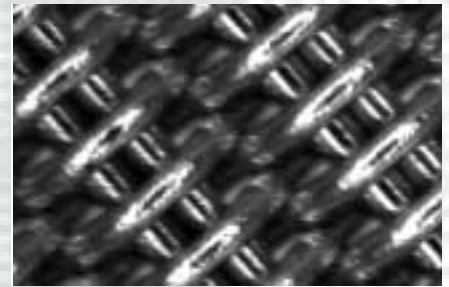
* Robusta twilled

BOPP FI Metal filter meshes



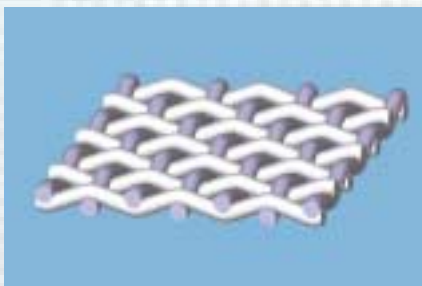
Duplex

This type of mesh demonstrate high flow rates. It is particularly suitable for stringent mechanical loading, and featured a lightly textured surface area. Duplex meshes are selected for applications in pressure and vacuum filtration as well as filter candles.



Absolute filter rating μm	Nominal filter rating μm	Mesh description	Yield strength (warp/weft) Rp N/cm	Pores count N Pores/cm ²	AsK mm ² /cm	AsS mm ² /cm	Porosity %	A _{0rel} %	Weight kg / m ²	Thickness mm
14 - 15	8	Duplex 15	60 / 130	39'200	0.12	0.27	60	11	0.30	0.10
17 - 19	10	Duplex 20	100 / 180	22'300	0.21	0.38	57	9	0.47	0.14
27 - 30	20	Duplex 30	100 / 230	11'400	0.20	0.47	60	11	0.56	0.18
35 - 40	30	Duplex 35	240 / 400	3'700	0.52	0.94	57	7	1.21	0.35
43 - 48	35	Duplex 45	180 / 350	3'700	0.39	0.94	57	10	1.10	0.34
60 - 65	50	Duplex 60	540 / 580	1'260	1.16	1.67	52	6	2.34	0.65
75 - 80	65	Duplex 75	570 / 660	870	1.16	1.92	54	7	2.59	0.74

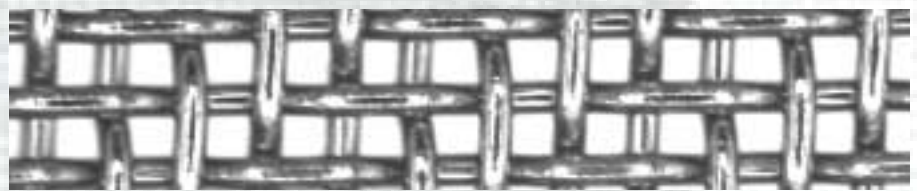
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Square weave meshes

In contrast to the Dutch weaves, the wires are set at intervals. This results in an open mesh, allowing fluids to flow in a straight line. These meshes demonstrate exceptionally low resistance to flow and particularly good backwashing and cleaning properties.

Square weave meshes are used for dirt removal at low pressure differentials and for backwash filtering when used for example in laminated meshes constructions.



Aperture size w μm	Wire diameter d mm	Mesh description	Yield strength (warp/weft) Rp N/cm	AsK mm ² /cm	AsS mm ² /cm	Porosity %	A ₀ %	Weight kg / m ²	Thickness mm
20	0.020	w 0,020 mm - d 0,020 mm	25 / 25	0.08	0.08	63	25	0.13	0.04
25	0.025	w 0,025 mm - d 0,025 mm	35 / 35	0.10	0.10	63	25	0.16	0.05
32	0.025	w 0,032 mm - d 0,025 mm	30 / 30	0.09	0.09	68	32	0.14	0.05
42	0.036	w 0,042 mm - d 0,036 mm	45 / 45	0.13	0.13	66	29	0.21	0.08
50	0.040	w 0,050 mm - d 0,040 mm	45 / 45	0.14	0.14	67	31	0.23	0.09
63	0.040	w 0,063 mm - d 0,040 mm	40 / 40	0.12	0.12	71	37	0.20	0.09
71	0.050	w 0,071 mm - d 0,050 mm	55 / 55	0.16	0.16	70	34	0.26	0.11
80	0.050	w 0,080 mm - d 0,050 mm	50 / 50	0.15	0.15	72	38	0.24	0.11
100	0.065	w 0,100 mm - d 0,065 mm	70 / 70	0.20	0.20	71	37	0.33	0.14

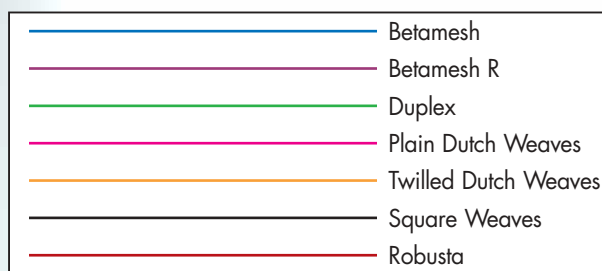
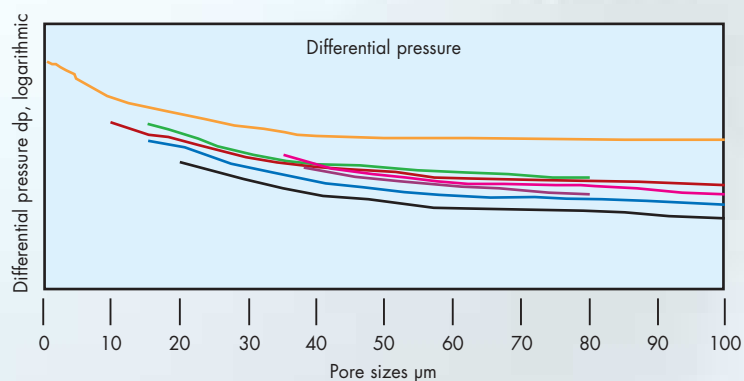
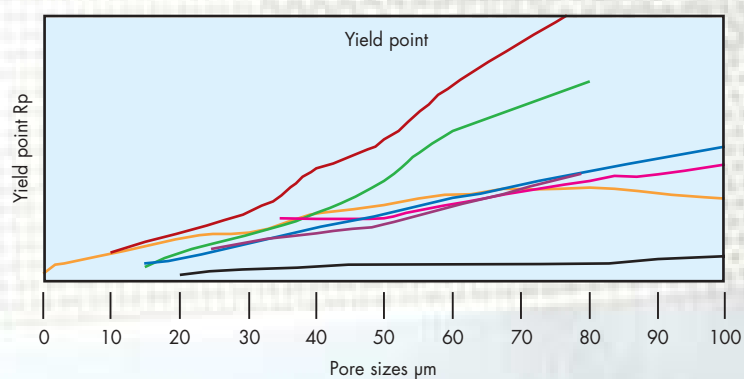
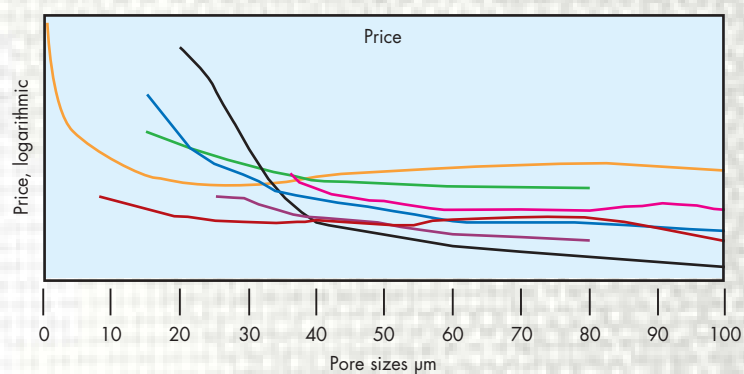
Additional specifications including stronger and coarser meshes are available ex-stock. More information on square weave meshes can be found in our range of application specific brochures.

A direct Comparison of the Properties of Filter Meshes

	Square weaves	Betamesh	Betamesh R	Plain Dutch weaves	Robusta	Duplex	Twilled Dutch weaves
Maximum filter fineness μm	> 10.000	90	100	250	100	100	100
Minimum filter fineness μm	20	15	20	10	10	8	< 1
Separation	o	++	+	++	+	++	++
Stability	-	o	o	++	++	++	+
Pressure differential	++	+	+	o	o	o	-
Backwash capability	++	++	+	+	+	+	o
Porosity	++	++	++	o	o	o	-
Spot welding	++	++	++	++	++	++	++
Roll seam welding	++	++	++	++	++	++	++
TIG/Plasma welding	-	-	-	-	-	-	o
Gluing	++	++	++	++	++	++	++
Stamping	++	++	++	++	++	++	++
Cutting	++	++	++	+	+	++	++

++ = very good, + = good, o = satisfactory, - = sufficient

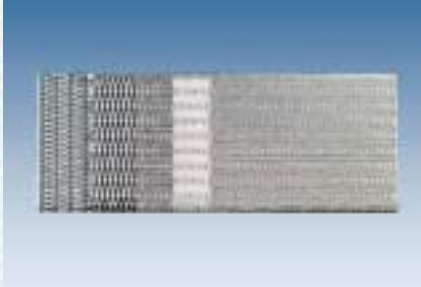
Filter mesh comparison



BOPP FI Metal filter meshes

Laminated Meshes

Our product portfolio includes a range of highly developed laminated meshes for a wide range of applications.

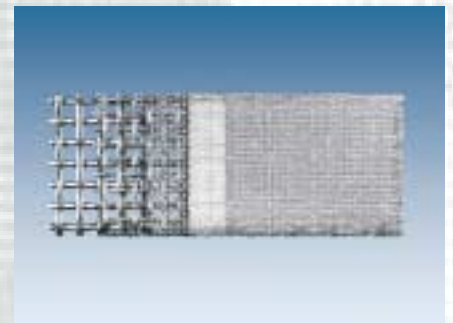


POREMET is a metal sheet-like laminated construction consisting of five different woven wire mesh layers. These mesh layers are aligned together and sintered using heat and pressure. This particular construction creates the optimum combination of stability, filter fineness, flow capacity and backwash capabilities.

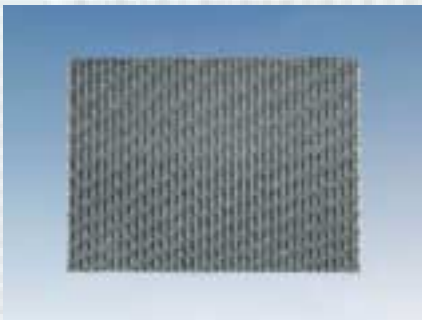
Poremet is used predominantly for the filtration of highly viscous liquids.

ABSOLTA N is a laminated sintered product, similar to Poremet, achieving optimum flow capacity and backwash capability.

ABSOLTA D is a reduced thickness (1.7-1.8mm) five layer construction. Absolta meshes are used in both liquid and gas filtration.

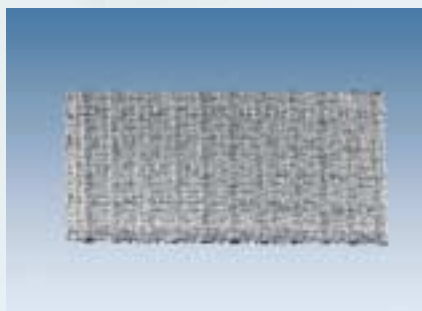
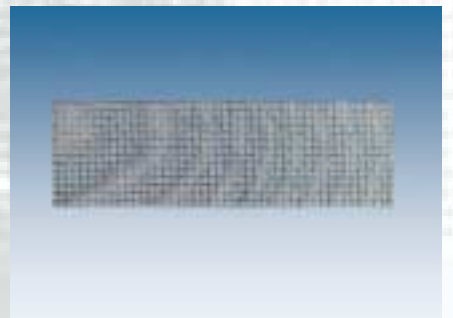


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POREFLO is a metal sheet-like, two to three layer laminate manufactured using woven wire mesh. Additional compaction of the surface area changes this laminate into an air permeable metallic membrane used in areas including fluidisation and debulking.

TOPMESH (two layer Topmesh) provides the perfect solution for fine filtration under harsh industrial conditions. Sintering a support mesh to the fine mesh results in the creation of an extremely robust filter medium for industrial process requirements.



SP (three layer Topmesh) is an even more robust version of Topmesh, consisting of a filter mesh and two support meshes sintered together.

Fabrications

All our meshes and sintered meshes can be fabricated in accordance with customer requirements to preferred shapes and constructions.

Please request a copy of our comprehensive brochure on this subject.

- BOPP Fabrications
- BOPP Sintered wire cloth

You will find comprehensive information and downloads on these and other subjects on our website at www.bopp.ch



Cylinders



Plastic injection moulding components



Extruder packs



Edge bound shapes



Deep drawn filters



Filters using sintered materials

The BOPP Group



Head Office in Zurich

SWITZERLAND

G. BOPP + CO. AG
Bachmannweg 21
CH-8046 Zurich
Phone +41 (0)44 377 66 66
E-Mail info@bopp.ch
www.bopp.com

G. BOPP + CO. AG
Mühltoibel
CH-9427 Wolfhalden
Phone +41 (0)71 888 60 66
E-Mail info@boppwh.ch

FILINOX AG
Mühltoibel
CH-9427 Wolfhalden
Phone +41 (0)71 888 60 22
E-Mail info@filinox.ch

GERMANY

SPÖRL KG
Staudenweg 13
72517 Sigmaringendorf
Phone +49 (0) 7571 7393-0
E-Mail post@spoerl.de
www.spoerl.de

ENGLAND

G. BOPP & CO. LTD.
Grange Close
Clover Nook Industrial Park
Sommercotes, Derbyshire DE 55 4QT
Phone +44 (0) 1773 521 266
E-Mail info@gbopp.com
www.boppmesh.com

ITALY

BOPP ITALIA SRL
Via Sestriere 5/3
10060 Candiolo (TO)
Phone +390 11 962 49 84
E-Mail info@bopp-italia.it
www.bopp.com

SWEDEN

BOPP UTILDI AB
Box 118
SE-312 22 Laholm
Phone +46 430 792 50
E-Mail: bopputildi@bopputildi.se
Internet: www.bopputildi.se

USA

G. BOPP USA INC.
1 Commerce Court
Wappinger Falls, NY 12590
Phone +1 845 226 3839 / 3840
E-Mail gbaker@bopp.com
www.bopp.com

KOREA

**SAMWOO ENTERPRISE
(G. BOPP ASIA)**
Room 536, Shinan Metro Khan B/D
1115, Bisan-Dong, Dongan-Gu
Anyang-City, Kyungki-Do
Phone +82 31 388 0656
E-Mail jhkim1108@yahoo.co.kr

CHINA

**SAMWOO ENTERPRISE
(G. BOPP ASIA)**
Room 508, Building B
Lotus Square
No. 1050, Wuzhong Road, Minhang
District Shanghai
Phone +86 21 6126-5496 / 5497
E-Mail jhkim1108@yahoo.co.kr