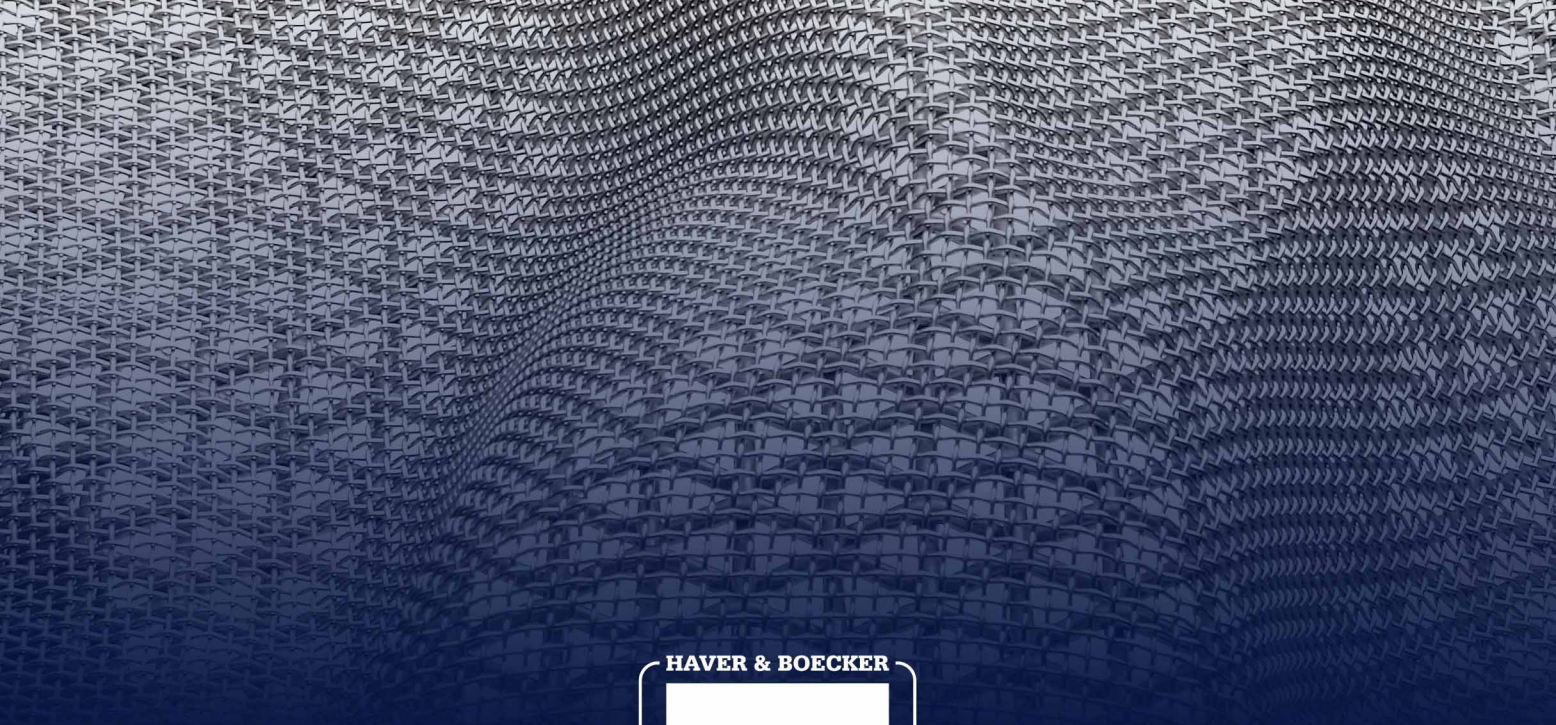


HAVER & BOECKER

TYLER

wstyler

Porostar

Sinter-Bonded Material

A MEMBER OF HAVER & BOECKER

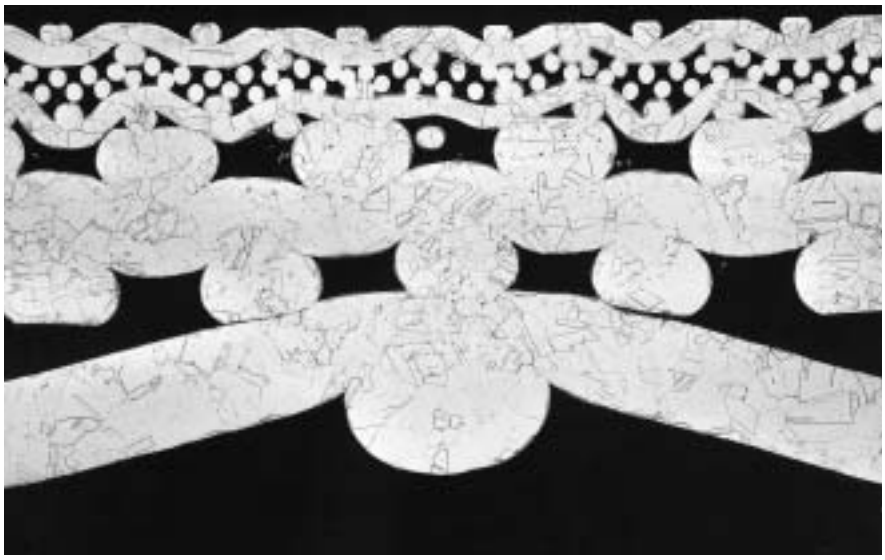
Haver Porostar®

Characteristics and Application

HAVER POROSTAR® is a woven wire cloth laminate. Its individual woven wire cloth layers are closely bonded together by diffusion. The final diffusion results from a second thermal treatment after the first sintering process.

The DUO-SINTER-TECHNIQUE employed in the manufacture of HAVER POROSTAR® leads to the diffusion of all wires in contact with one another. The geometrical structure of the individual woven layers is preserved.
A stable porous filter plate is thus created, with predetermined characteristics in terms of pore-size, pore-distribution, porosity and permeability. POROSTAR® can be formed and welded and is corrosion resistant.

HAVER POROSTAR® is used for filtration and fluidising purposes in many industries: chemical, petrochemical, pharmaceutical, plastic, food, automobile, mechanical engineering and many others. It is a filter medium making possible a migration-free filtration in the range from < 1 micron to 200 microns. Even at maximum pressure, POROSTAR® cannot release any small parts of the filter medium.



POROSTAR®-cross-section, 5 layers, scale apx. 1:40

Sizes

HAVER POROSTAR® is manufactured in seamless sheets of maximum 1,500 mm x 1,200 mm or 1,200 mm x 1,200 mm.

Modern welding techniques are used to combine these sheets into desired larger formats, to make for example filter elements with diameters larger than 1,200 mm or filter cylinders with diameters larger than 400 mm.

Materials

HAVER POROSTAR® is mostly manufactured from Chromium-Nickel-Molybdenum-Steel, Materials 1.4404 = AISI 316-L.

Other alloys, see the table below, are also fabricated.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Material	Material No.	AISI ~	C	Si	Mn	Cr	Mo	Ni	Cu	Ti	Co	W	Fe	N	V	Al
Chromium-Nickel-Molybdenum Steel	1.4404	316 L	0.03	1.0	2.0	16.5–18.5	2.0–2.5	11.0–14.0	–	–	–	–	Rest	–	–	–
Chromium-Nickel-Molybdenum Steel + Special Alloys	1.4571	316 Ti	0.08	1.0	2.0	16.5–18.5	2.0–2.5	10.5–13.5	–	5 x C 0.8	–	–	Rest	–	–	–
Chromium-Nickel-Molybdenum Steel + Special Alloys	1.4539		0.02	0.7	2.0	19.0–21.0	4.0–5.0	24.0–26.0	1.0–2.0	–	–	–	Rest	0.04–0.15	–	–
Hastelloy C 22 High Corrosion Resistant Alloy	2.4602		0.01	0.08	0.5	20.0–22.5	12.5–14.5	Rest	–	–	2.5	2.5–3.5	2–6	–	0.35	–
Alloy 59	2.4605		0.01	0.10	0.5	22.0–24.0	15.0–16.5	Rest/ Bal.	–	–	0. 3	–	1.5	–	–	0.1–0.4

Porostar® Executions

HAVER POROSTAR® is manufactured as STANDARD-type and as special types LIGHT, HIFLO and COMBI.
Specifications up to 10 mm thick have been produced.
Pressure drop measurements of standard types are available on request.

1	2	3	4	5	6
Poresize	POROSTAR STANDARD		POROSTAR Special Type		
Micrometer	5-layers	6-layers	LIGHT 3-layers	HIFLO 4-layers	COMBI
< 1	x	x	x		x
1	x	x	x		x
2	x	x	x		x
5	x	x	x		x
10	x	x	x		x
20	x	x	x	x	x
25				x	x
32				x	x
40	x	x		x	x
50				x	x
63				x	x
75	x	x			x
80				x	x
100	x	x		x	x
Thickness apx. mm	1.55–1.65	3.3–3.5	0.4–0.5	1.6–1.8	*
Weight apx. kg/m²	9.5	15	2	5.3	*

* depending on the execution

Other poresizes as agreed upon

Physical Properties

Upon request we can calculate the tenacity values of filters after having studied the construction designs and the operating conditions. There is a charge for this service.

POROSTAR STANDARD	Proportional Limit		Tensile Strength		Ductile Yield ε
	$R_{P\,0.2}$	$R_{P\,0.2*}$	Rm	Rm*	
	N/10 mm	N/mm²	N/10 mm	N/mm²	%
5-layers	1100	65	2500	147	10
6-layers	1400	40	3800	108	13

* The tenacity values were calculated by the theoretical cross section B x D of the sample without taking in account the different porosities (look cross section POROSTAR®).

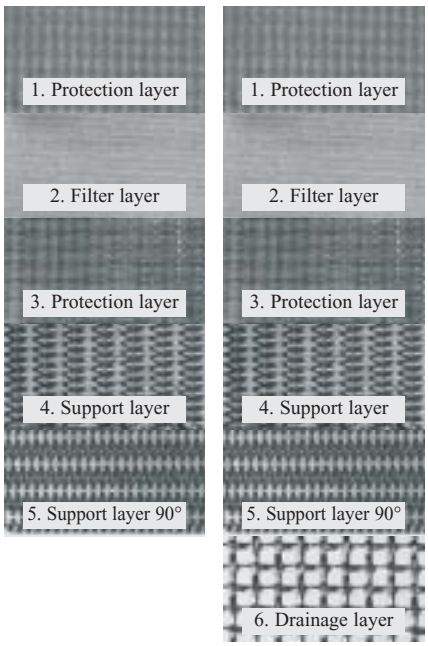
Porostar® Standard

POROSTAR® STANDARD is put in filter sheets and cylinders. It is designed with five or six layers and specially suitable for unbalanced loads.

Construction and function:

1. Protection layer: Protection of the filter layer against physical influences
2. Filter layer: selected according to the poresize
3. Protection layer: protects the filtration layer from possible deformation under high pressure
4. Support layer: } makes the wire cloth laminate stable and improves the welding characteristics
5. Support layer 90°: }
6. Drainage layer: improves the quantity of the filter capacity

When materials processing makes it necessary the construction can be made without the first protection layer.



5-layers 6-layers

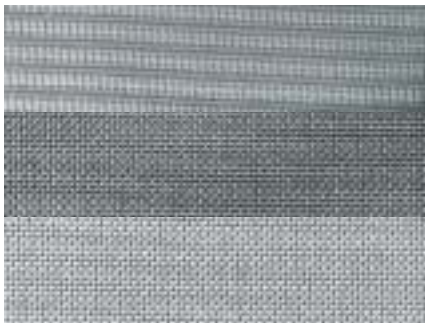
Porostar® Special Types

Porostar® Light

POROSTAR® LIGHT is suitable for the manufacturing of pleated filter cylinders and discs with very small diameters, e.g. 2.5 mm, and is composed of three woven wire cloth layers.

Construction and function:

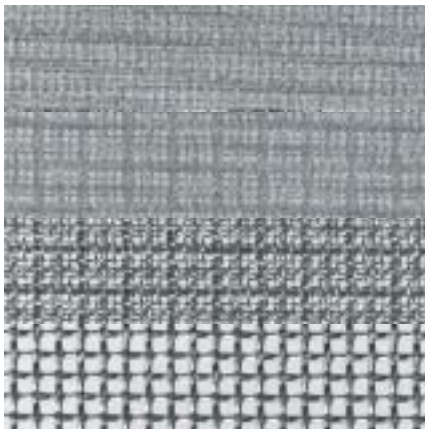
1. Protection layer: protects the filtration layer and improves its stability
2. Filtration layer: selected according to the poresize
3. Protection layer: protects the filtration layer and improves its stability



Porostar® Hiflo®

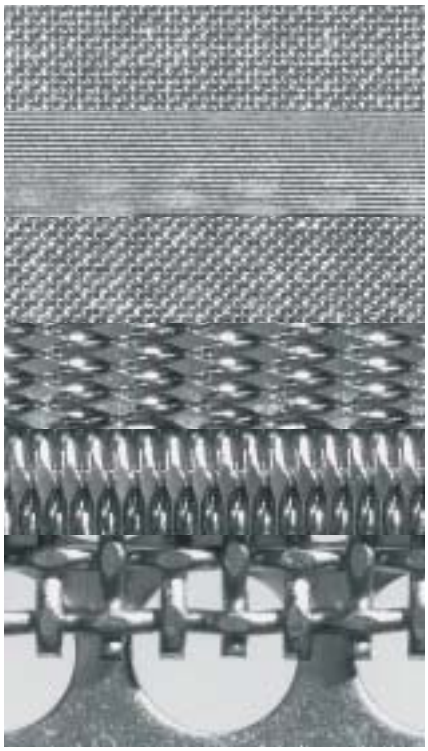
Because of its important flow capacity POROSTAR® HIFLO is specially suitable for sieving and filtering methods using minimized pressures.

Each woven wire cloth layer has square meshes.



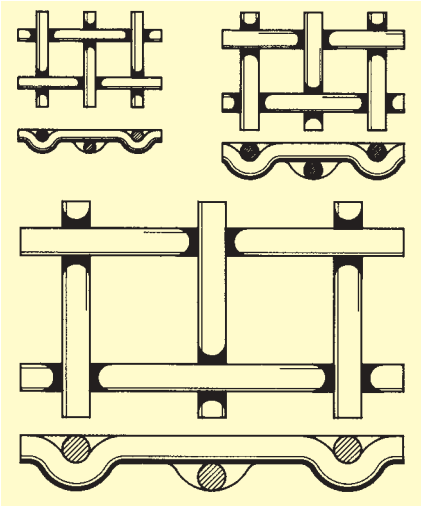
Porostar® Combi

POROSTAR® COMBI is suitable for high pressures even in reverse direction flow. Woven wire cloth layers and a perforated metal plate are bonded by sintering. POROSTAR® COMBI is available in STANDARD type and in special types LIGHT and HIFLO as well.
The number of layers and the thickness of the perforated metal plate are variable.



Drainage

Drainage layers are often integrated in the Porous Wire Cloth Laminate, e.g. in POROSTAR® STANDARD with six layers.
When manufacturing filter components with POROSTAR®, EGLA flat top screens are preferred, because of their high efficacy. The flat top screen offers a good support for the POROSTAR® laminates, the rough underside results in a good drainage.



EGLA Flat Top Screen, Scale 1:1

EGLA Flat Top Screen	
Aperture Width	Wire Diameter
w mm	d mm
5	1.6
6.3	2.5
15	3.8

Plasma-welded Joints of Porostar®

POROSTAR® butt welded to a profile with EGLA flat top screen as an additional drainage and support layer.

POROSTAR® butt welded to a profile with two layers of EGLA flat top screen and an intermediate square mesh layer.

POROSTAR® welded to the outer edge of a steel rod.

POROSTAR® and drainage layer welded to a perforated metal plate.

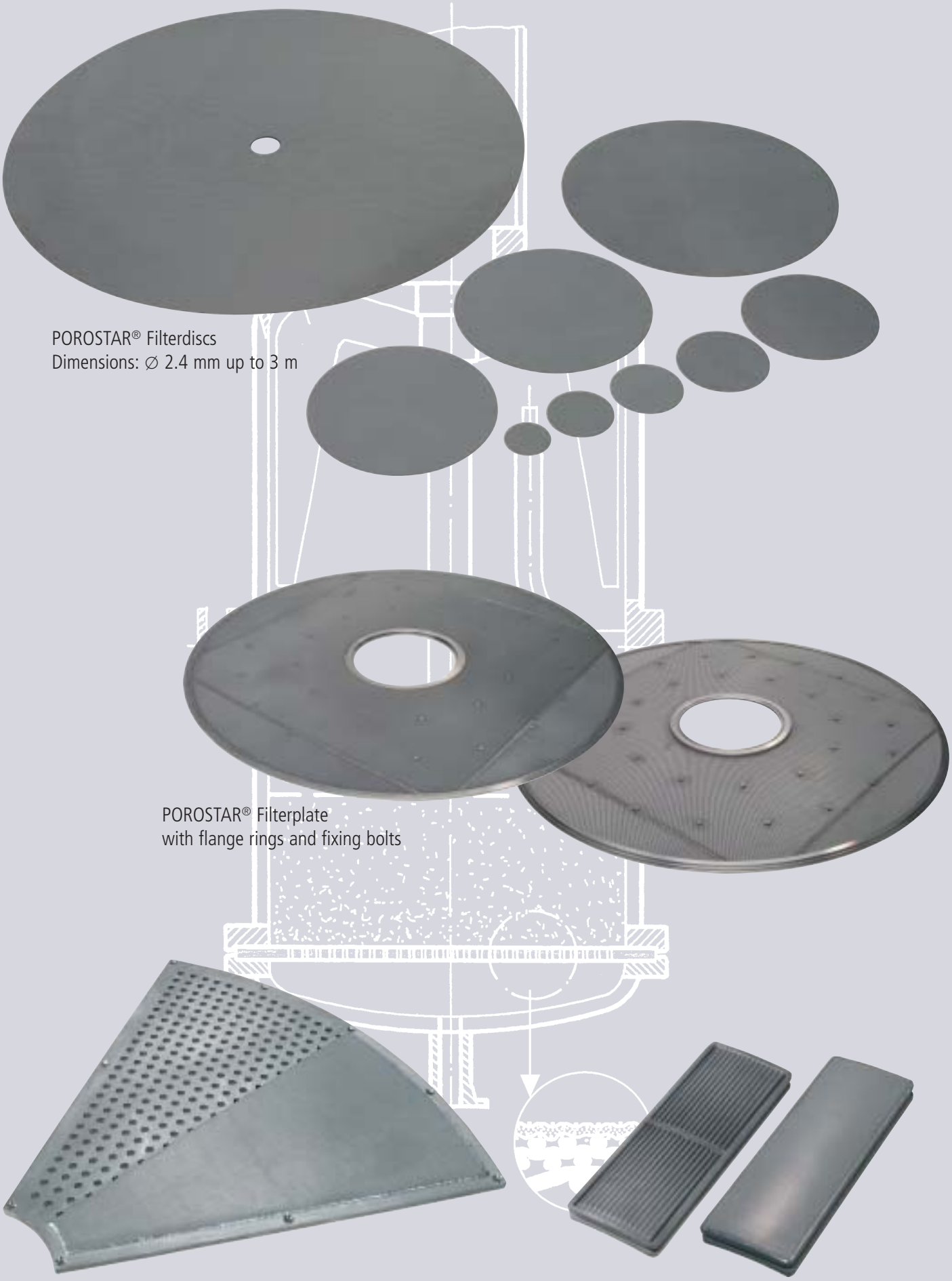
Porostar® Connector-Types of Screw and welded Joints with Carrier Plate

POROSTAR® with female screw connectors plugged through and bonded on both sides

POROSTAR® and perforated metal plate bonded by means of plasma-welding.

Finished Products Porostar®

Filterplates and Filterdiscs



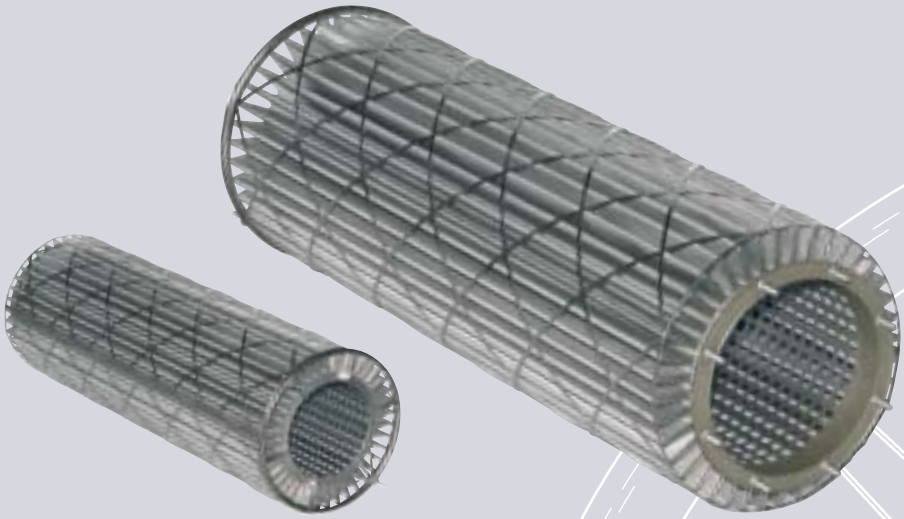
POROSTAR® Filterdiscs
Dimensions: ∅ 2.4 mm up to 3 m

POROSTAR® Filterplate
with flange rings and fixing bolts

POROSTAR® Filtersegment

POROSTAR® Filter Cells, available in many sizes

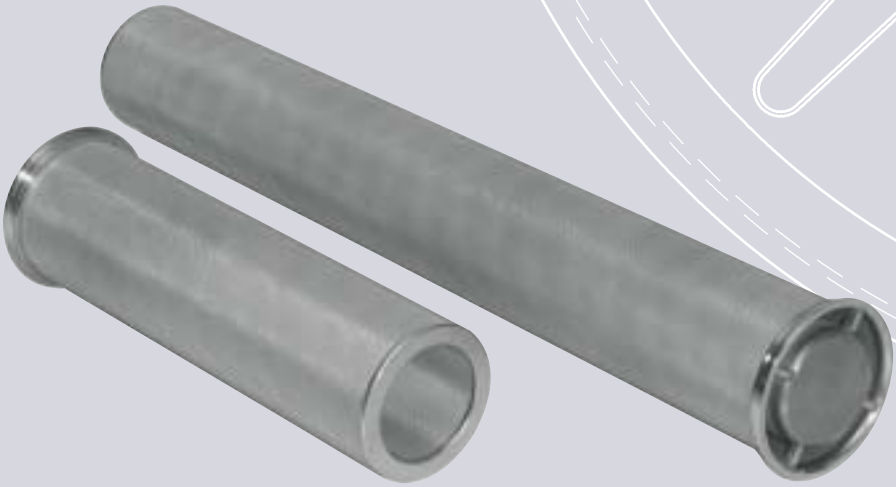
Filter Cylinder and



POROSTAR® Starfilter with support screen
Dimensions : ∅ up to 325 mm, length up to 1.200 mm

POROSTAR® Filter Cylinder with cover and connection ring

POROSTAR® Starfilter, of variable ∅ and length



POROSTAR® Tandem-Filter Candle
Dimensions : ∅ 170 / 125 mm,
Lengths: 422 mm, 622 mm, 822 mm, 1.222 mm

POROSTAR® Cylinder with flange rings
Longitudinal and circumferential seam glued.
Dimensions: ∅ 230 mm, length 570 mm

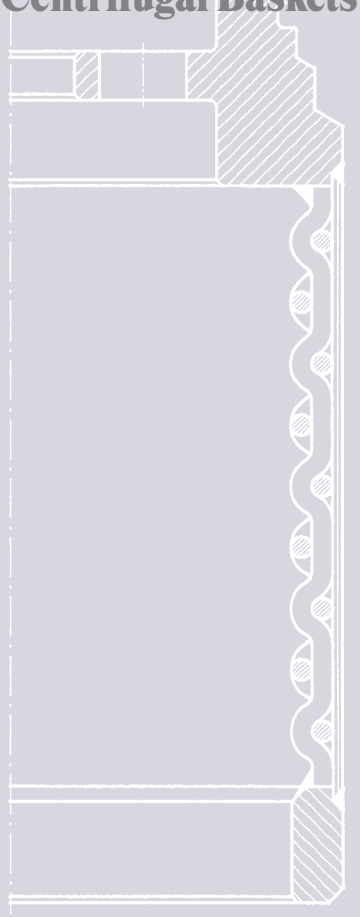
1 Filter Candles

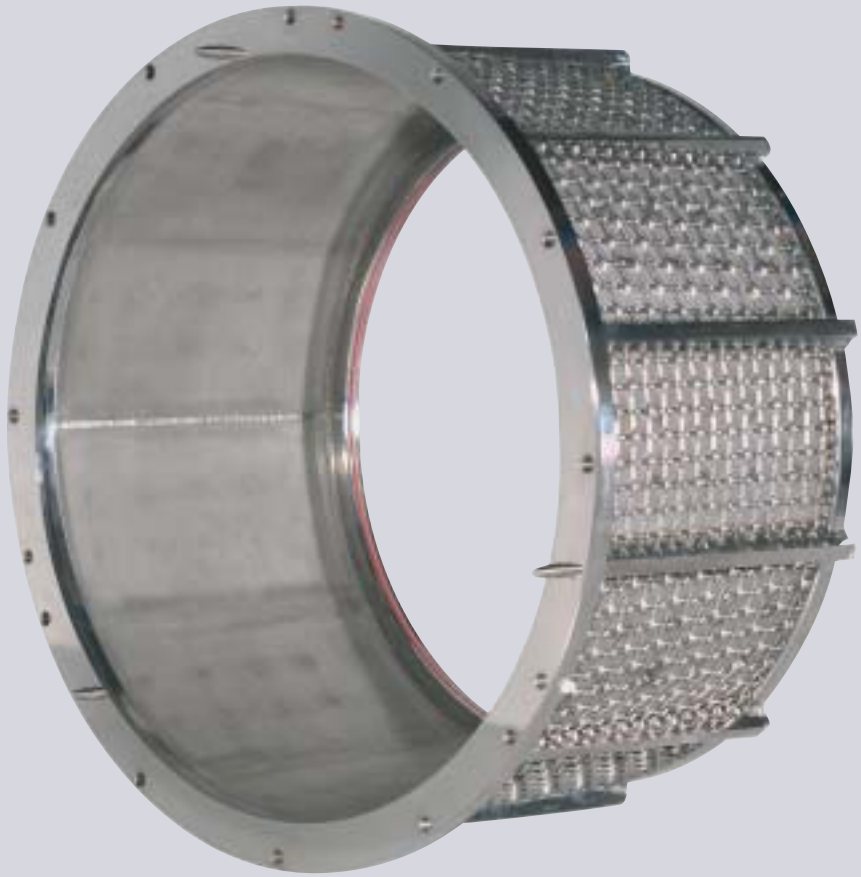
POROSTAR® Filter Candles
with different connectors
Dimensions: ∅ from 14 mm upwards,
length variable

POROSTAR® Filter Candle with bottom
flange and receiving ring

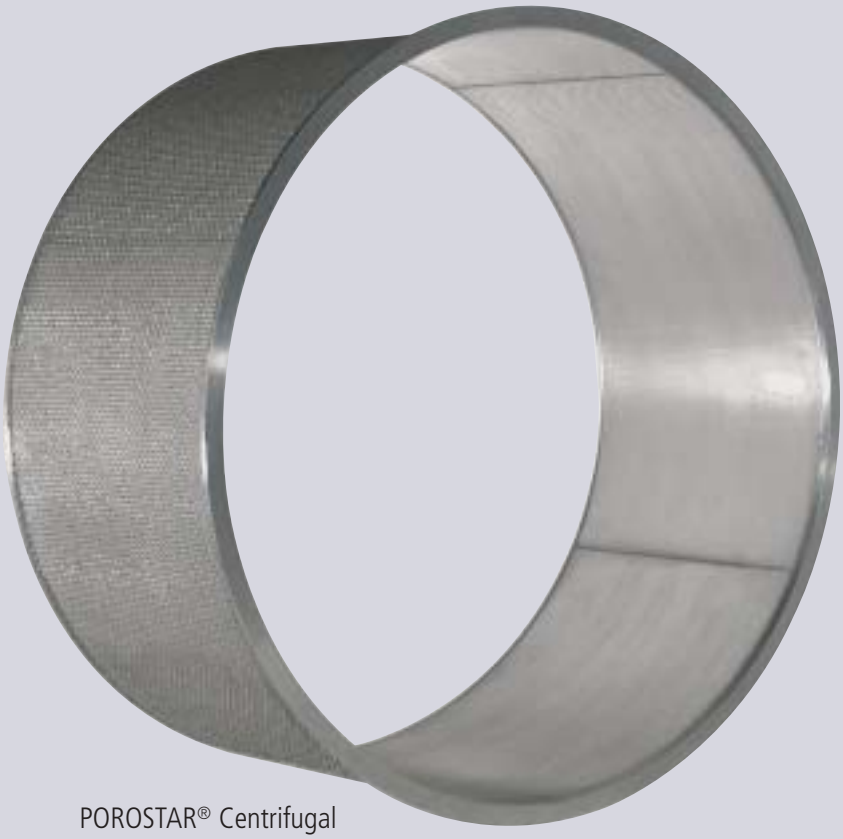
POROSTAR® Filter Candle with a threaded connector and end cap
Dimensions: ∅ 25 mm, length variable

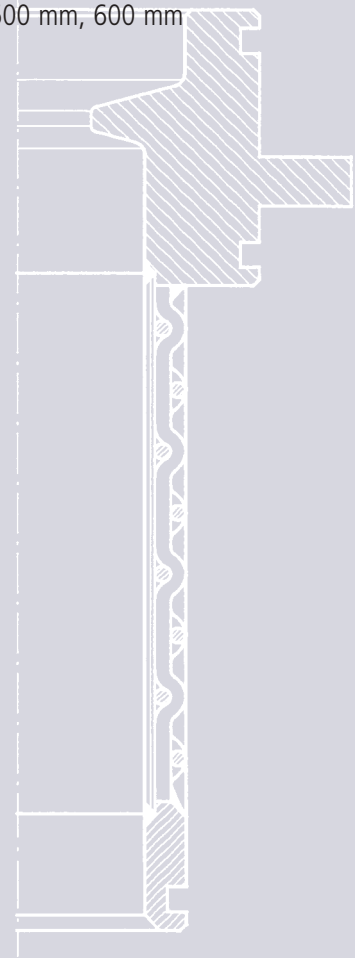
Centrifugal Baskets





POROSTAR® Centrifugal Basket for TZT
Dimensions: ∅ 400 mm, 600 mm, 800 mm, 1.300 mm,
Lengths: 300 mm, 400 mm, 500 mm, 600 mm





POROSTAR® Centrifugal
Basket for trailing blade centrifuges

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