Looking for filtration

sintered wire filter

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Filtri da filo

Copor ha maturato un elevato livello di specializzazione ed è particolarmente attrezzata per produrre filtri metallici, sin dal 1980.
I filtri sinterizzati da filo inossidabile sono tra i numerosi filtri presenti sul mercato, una eccellente scelta perché hanno i seguenti vantaggi se confrontati con altri materiali:

1) Uniformità della distribuzione dei pori e controllo della dimensione massima in accordo con la normativa EN-24003 Bubble Test Certificate;
2) Elevata capacità filtrante prima di compromettere la permeabilità.
3) Elevata resistenza alle temperature e a shock termici .
4) Elevata resistenza alla corrosione con AISI 316L, Monel, Astalloy etc...
5) Ottima riduzione delle perdite di carico
6) Facilità nel pulire il filtro invertendo il flusso, tramite vapore ad alta pressione, tramite solventi chimici oppure tramite ricottura in forno ad alta temperatura.
7) Elevato range di filtrazione da 30 a 300 microns, usando vari diametri di filo e densità.

Il principale parametro usato per caratterizzare l'elemento poroso prodotto tramite la sinterizzazione del filo, è la porosità aperta.
La porosità può essere controllata in vari modi per soddisfare specifiche richieste. Riducendo la porosità aumenta la resistenza meccanica e la resistenza alla deformazione, mentre se viene aumentata la porosità la resistenza meccanica diminuisce creando un setto poroso piu' deformabile. La porosità aperta ottenibile può essere richiesta da 70% fino al 20%.
Alcune delle più comuni applicazioni di filtri da filo con elevata porosità sono filtrazioni, per il controllo di liquidi e gas, per silenziare soffi di aria compressa, per il trattenimento di impurità che bloccherebbero il funzionamento di valvole di comando, oppure come filtro taglia fiamma.
Molto utilizzati in applicazioni come macchine alimentari e farmaceutiche, e nel settore autobilistico per i sistemi di alimentazione a gas e carburante liquido.

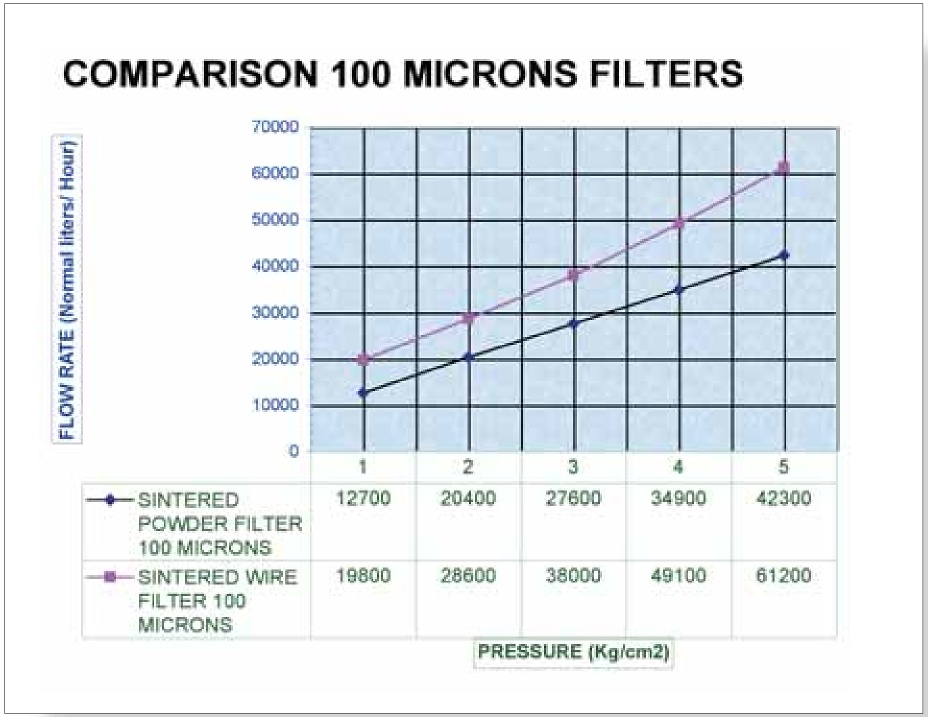
Molto interessante è comparare le prestazioni di filtri in polvere con un filtri in filo.
Nel seguente diagramma di flusso è evidente che un filtro da filo, avente lo stesso potere filtrante di 100 microns, ottiene un migliore flussaggio rispetto al filtro da polvere.

Wire filters

Copor has reached a high level of specialization and is especially equipped to manufacture metal filters, since 1980.
Sintered stainless steel wire filters are an excellent choice for filters as they have following advantages compared to other materials:
1) *Uniform pore distribution and controllable pore size in according with ISO EN-24003 bubble test certificate;*
2) *High separation reliability;*
3) *High temperature and thermal shock resistance;*
4) *High corrosion strength AISI 316L, Monel,Astalloy, etc. ;*
5) *Very good back pressure flow;*
6) *Easy to clean using high pressure, superheated steam, chemicals, or burn-off.*
7) *Wide filtering range from 30 to 300 microns, using different wire diameters and density.*

The principal parameter used to characterize the porous element produced by sintering wire is the opened porosity. The porosity can be controlled in different ways to meet specific requirements. The lower the porosity the higher the mechanical properties and elongation values, the higher the porosity, the higher the permeability but the mechanical properties and elongation values are lower. The range of opened porosity is from 70% to 20%.
Some of the most common applications of high porosity sintered wire filters are filtration, flow control of liquids and gases, safe valves control, silencers and flame arrestors.
Very common applications are food machines and automotive field like gas and fuel injection systems.

Very interesting is to compare performances of sintered powder filters with sintered wire filters. In the following flow-chart (fig. 1) is evident that sintered wire filters, having the same filtration 100m, have better flow than powder filters.



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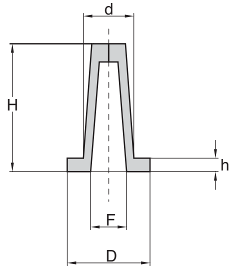
FILTRI DA FILO
WIRE FILTERS

Caratteristiche
Filtri conici in filo di: Acciaio inox AISI 304-316, Ferro, Bronzo, Ottone, Monel, Acciaio zincato

Characteristics
Conical filters in wire: Stainless steel AISI 304-316, Brass, Bronze, Monel, Iron, Zinc plated steel



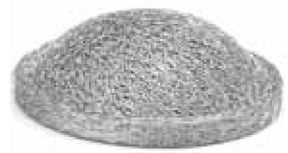
modello **CONO/CONICAL**

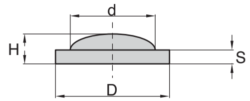
TYPE	D	d	F	h	H
CF 800	6,7	5,7	3,5	2	15
CF 810	6,5	5,5	3,5	2	25
CF 820	7	5,5	3,5	2	25
CF 830	8,8	6	3,5	2	13
CF 840	8	6,3	4	3	26
CF 850	9	6,9	4,5	2,5	16
CF 870	10	8	4	2,3	10

TYPE	D	d	F	h	H
CF 875	11	6,5	4	3	17
CF 880	14	9	7	2,5	28
CF 890	14	8	6	3	20
CF 900	8,1	6,5	4,5	2	15
CF 950	17	12	8	3	27
CF 990	12,5	9,5	6	2	18
CF 1100	22	17	10	3	30

Caratteristiche
Filtri bombati in filo di: Acciaio inox AISI304-316, Ferro, Bronzo, Ottone, Monel, Acciaio zincato

Characteristics
Hat filters in wire: Stainless steel AISI 304-316, Brass, Bronze, Monel, Iron, Zinc plated steel





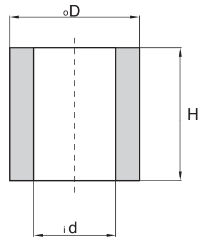
modello **BOMBATO/HAT**

TYPE	d	D	H	S
KF 1000	8	11	5,5	3
KF 1010	9	12	5,5	3
KF 1020	10	14	6	3
KF 1030	13,5	16	6	3
KF 1040	15	17	6,5	3

TYPE	d	D	H	S
KF 1050	15	18	6,5	3
KF 1060	18	22	8	3
KF 1070	20	24	9	3
KF 1080	23	28	10,5	3
KF 1090	30	35	11	3

Caratteristiche
Filtri a bussola in filo di: Acciaio inox AISI 304-316, Bronzo, Ottone, Monel
H = a richiesta

Characteristics
Cylindricals filters in wire: Stainless steel AISI 304-316, Brass, Bronze, Monel
H = on request



modello **BUSSOLA/CYLINDRIC**

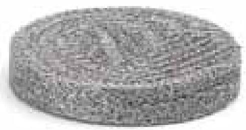
TYPE	d	D
BF 500	4	6,5
BF 510	3,6	6,8
BF 520	5	8,5
BF 530	7,5	10
BF 540	6,5	10,8
BF 550	8	45
BF 560	10,5	13,5
BF 565	10,5	14
BF 570	12	15
BF 580	12	17

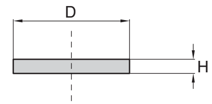
TYPE	d	D
BF 590	12	18
BF 600	14	18
BF 610	14	20
BF 620	10,5	24
BF 630	19	24
BF 640	9	25
BF 645	20	26
BF 646	20	27
BF 647	21	26
BF 650	21	27

TYPE	d	D
BF 655	24	30
BF 660	25	30
BF 670	28	34
BF 700	36	40
BF 710	30	41
BF 720	38	43
BF 730	40	45
BF 740	49,5	55
BF 750	32,5	61,5

Caratteristiche
Filtri a disco in filo di: Acciaio inox AISI 304-316, Ferro, Bronzo, Ottone, Monel, Accciaio zincato
H = a richiesta

Characteristics
Disc filters in wire: Stainless steel AISI 304-316, Brass, Bronze, Monel, Iron, Zinc plated steel
H = on request





modello **DISCO/FLAT**

TYPE	D
DF 10	4
DF 20	4,2
DF 30	4,5
DF 40	5
DF 50	6
DF 55	6,2
DF 60	6,5
DF 70	7
DF 80	8
DF 90	8,5

TYPE	D
DF 100	9
DF 110	10
DF 130	10,8
DF 140	11
DF 150	11,5
DF 160	12
DF 170	14
DF 180	15
DF 200	16,5
DF 210	17

TYPE	D
DF 220	18
DF 225	18,7
DF 230	19
DF 240	20
DF 250	20,8
DF 260	24-23,5
DF 270	25
DF 280	26
DF 290	27
DF 310	27,8

TYPE	D
DF 320	28
DF 330	30
DF 340	30,5
DF 350	31
DF 360	32
DF 370	34,2
DF 380	35
DF 390	39,7
DF 400	40
DF 410	42

TYPE	D
DF 415	44
DF 420	45
DF 430	48,5
DF 440	50
DF 450	54
DF 460	69
DF 470	76
DF 480	80
DF 500	100
DF 510	107
DF 520	115

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edizione 2012

AZIENDA CERTIFICATA
UNI EN ISO 9001:2008

Pore Size Analysis on STAINLESS WIRE FILTER

(Diameter 25mm, Thickness 6mm, 10 grams)

Methodology

There are two methods of Challenge Test filter media with glass microsphere standards - a dry method using sonic energy to fluidise the microspheres, and a wet method where the microspheres are presented to the filter medium as an aqueous suspension using an ultrasonic probe to prevent caking.

The method selected depends on the end use of the filter - dry or wet applications. It also depends on the pore size as the dry method cannot measure below about 20 microns.

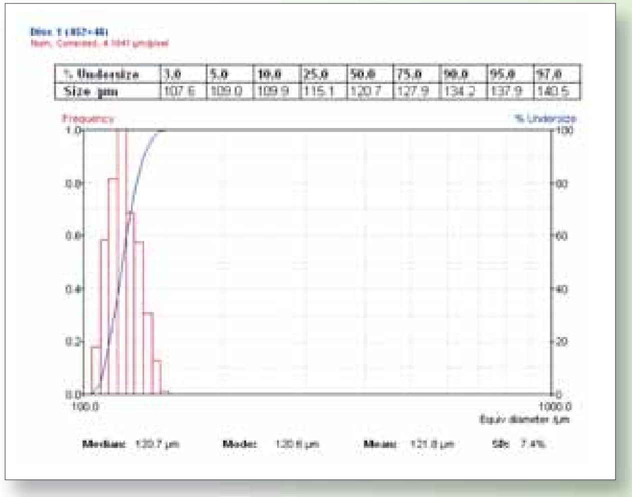
Results

a) Dry sonic test

Filter standards down to 63 microns were used but little passed the filter. This was confirmed by examining the top and bottom sides of the filter. It was suspected that a static mechanism was in progress where the particles can be attracted to the filaments as they pass through. In such cases the geometric pore size does not reflect the performance of the filter.
The wet suspension method was therefore used.

b) Ultrasonic wet test

When the minimum size filter standard in the above test was used in the wet test (63-86 microns), all the suspension passed through. A larger challenge test of 150-200 microns was then used. Nothing passed. When the standard size was reduced to 127-175 microns, still nothing passed so the cut point of the disc was below 125 microns. Reducing the particle size distribution of the standard to 106-147 microns allowed only about 700 particles to pass (approximately1 %) see graph. On a second disc, nothing passed the filter.
In the final test, an 80-123 micron standard was used to challenge the filter.
The disc was successful in retaining at least 75% of the standard.



Conclusion

Non-woven depth filters such as these do not have fixed apertures as in, for example, a woven mesh, so there is usually a wider spread of pore sizes. Although a very few number of pores up to 140 microns were seen in one of the filters, there was no evidence of a similar maximum pore size in the second sample tested and a third sample removed everything greater than 127 microns.
It is therefore concluded that the pore sizes introduced by this method of manufacturing non-woven filter media is between 100 and 127 microns.