Filtration Group®
Filtering The World

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Filter elements for liquid filters
Degree of filtration 2 µm up to 500 µm

Nominal size 5 up to 1800
Differential pressure resistant up to 210 bar (3045 psi)

1. Features

High performance elements for nearly all fluids

- PS: new Filtration Group Premium Select high performance disposable filter elements with innovativ design for hydraulic oils and lubricants, fuels, aqueous media and synthetic media
- Sm-N: disposable deep filtration elements with highest degree of filtration and dirt holding capacity
- Sm-x: standard disposable glass fibre filter elements for various applications
- Mic: inexpensive disposable filter elements
- Drg: cleanable surface filter element, made of wire mesh
- KS-Mic: high efficient disposable depth filter elements for cooling emulsions
- WS-Mic WS-PS and WS-Sm-x: Filter elements with additional water absorption ability
- Designed for Filtration Group filter housings, as alternative elements in the dimensions of other manufacturers and according to a customized specification
- Complete product range according DIN 24550
- Beta rated elements according to ISO 16889 multipass test
- Elements with high differential pressure stability and dirt holding capacity
- Worldwide distribution

2. Preface

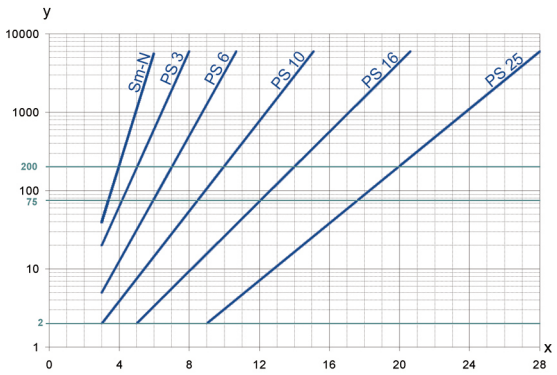
Filter elements are the virtual part of a filter through which the filtration process is realised. For the different liquids and applications Filtration Group developed different filter materials. Therefore a variety of elements are available which would fit into the same housing, but would suit different applications.

3.1 Filter material PS and Sm-N

Depth filters consisting of several layers of glass fibre (progressive design) to filter hydraulic oils and lubricants, flame resistant liquids, fuels and synthetic liquids.

- PS is available in ratings of 5 µm (c), 7 µm (c), 10 µm (c), 15 µm (c) and 20 µm (c) according to ISO 16889 (3µm, 6 µm, 10 µm, 16 µm and 25 µm according to ISO 4572) with a very high dirt holding capacity and simultaneous very low flow resistance.
- Sm-N 2 is available in ratings of 4 µm (c) according to ISO 16889 (2 µm according to ISO 4572) with an extremely high dirt holding capacity for very demanding requirements in regards to the filtration quality, for off-line filtration and for single-pass applications.

Separation grade characteristics



y = beta-value
x = particle size [µm]

determined by multipass tests (ISO 16889)
calibration according to ISO 11171 (NIST)

Filter performance data

tested according to ISO 16889 (multipass test)

PS/Sm-N elements with max. Δp 10 bar

Sm-N	2	$\beta_{4(C)}$	≥	200
PS	3	$\beta_{5(C)}$	≥	200
PS	6	$\beta_{7(C)}$	≥	200
PS	10	$\beta_{10(C)}$	≥	200
PS	16	$\beta_{15(C)}$	≥	200
PS	25	$\beta_{20(C)}$	≥	200

values guaranteed up to 10 bar differential pressure.

In a hydraulic or lubrication system a filter has the task to reduce the contamination to the accepted cleanliness level and to keep it for as long as possible. For the identification of solid particles in industrial hydraulics it is common practice to count particles according to ISO 4406. Subsequently the achievable cleanliness classes of the Sm-x and Sm-N. These values mirror our longtime experience in designing hydraulic filters and could be considered as guide values.

Cleanliness classes	
Filter material	Cleanliness classes according to ISO 4406 (1999), > 4 µm(c)/ > 6 µm (c)/ >14 µm (c)
Sm-N 2	13/11/08
PS 3	14/12/09
PS 6	16/13/10
PS 10	17/15/11
PS 16	20/17/12
PS 25	23/19/13

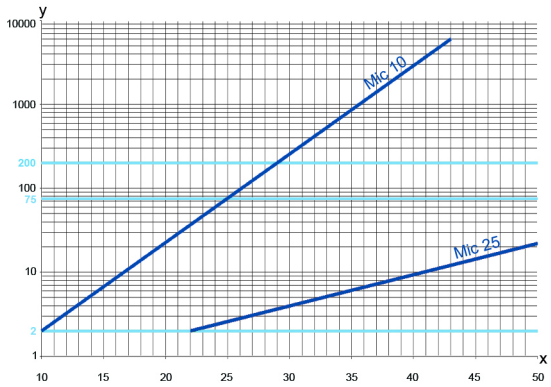
3.2 Filter material Sm-x

Deep filters with glasfibre filter material for all purposes. Filter performance, retention rates and the achievable cleaniness classes are fully corresponding to the new PS filter material.

3.3 Filter material Mic

Depth filters made of cellulose or glass fibre layers with a high dirt holding capacity and a low flow resistance. Degree of filtration 10 µm and 25 µm according to FGC norm. Use in hydraulic oil and lubricants filtration as suction filter as well as low cost filtration in plants with minor demands in regards to the filtrat quality.

Separation grade characteristics



y = beta-value
x = particle size [µm]

Filter performance data

tested according to ISO 16889 (multipass test)

Mic	10	β_{10}	≥	2
Mic	25	β_{25}	≥	2

determined by multipass tests (ISO 16889)
calibration according to ISO 11171 (NIST)

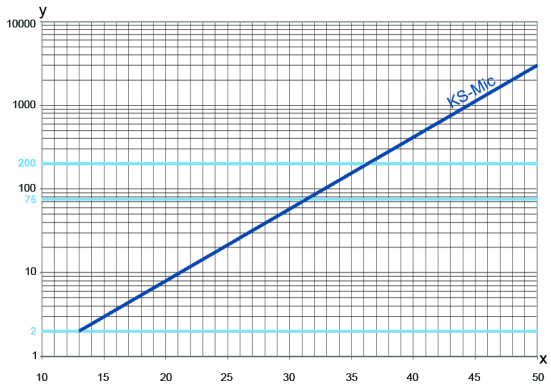
3.4 Filter material Drg

Surface filters made of stainless steel wire mesh with a very low flow resistance designed in the following weaves: plait, twill and linen. Degree of filtration 10 µm, 25 µm, 40 µm, 60 µm, 100 µm, 200 µm, 300 µm and 500 µm. For a wire mesh filter element the degree of filtration is determined by the largest diameter of a globular particle which would be able to pass the fabric. Wire mesh filter elements are used in hydraulic oil and lubricants filtration as suction or coarse filters, for high viscose fluids as well as safety filters for coolant filtration. Wire mesh elements possess a defined removal size as surface filter and a low dirt holding capacity as depth filter.

3.5 Filter material KS-Mic

Depth filter consisting of several, coordinated, binder-free polyester materials with a very high dirt holding capacity and low flow resistance. Degree of filtration: 25 µm according to FGC norm. Use as disposable filter in coolant filtration.

Separation grade characteristics



y = beta-value
x = particle size [µm]

Filter performance data

tested according to ISO 16889 (multipass test)

KS-Mic	25	β_{25}	≥	5

determined by multipass tests (ISO 16889)
calibration according to ISO 11171 (NIST)

3.6 Filter materials WS-Mic, WS-Sm-x and WS-Sm-N

Filtration Group WS-elements for water removal are available as water absorber elements WS-Mic 25 with a low filter efficiency for particles or in combination with the highly efficient Sm-N 2 and Sm-x 10 configuration. A super absorper will change its chemical structure while absorbing water and indicates the amount of absorbed free water by an increase of flow resistance. The free water will be absorbed until the saturation limit is reached. WS-elements are applicable for all common lubrication and hydraulic fluids. The filter property complies with the corresponding Mic-, Sm-x- and Sm-N 2 element. The flow resistance of a water-free liquid would be insignificantly higher.

4. Quality assurance

Filtration Group filters and filter elements are produced according to the following international standards:

Norm	Designation
DIN ISO 2941	Hydraulic fluid power filter elements; verification of collapse/burst resistance
DIN ISO 2942	Hydraulic fluid power filter elements; verification of fabrication integrity
DIN ISO 2943	Hydraulic fluid power filter elements; verification of material compatibility with fluids
DIN ISO 3723	Hydraulic fluid power filter elements; method for end load te
DIN ISO 3724	Hydraulic fluid power filter elements; verification of flow fatigue characteristics
ISO 3968	Hydraulic fluid power-filters-evaluation of pressure drop versus flow characteristics
ISO 10771.1	Fatigue pressure testing of metal containing envelopes in hydraulic fluid applications
ISO 16889	Hydraulic fluid power filters-multipass method for evaluation filtration performance of a filter element

5. Technical specifications

Pleated filter elements
Flow direction from outside to inside
Corrosion protected, chrome VI free, end caps and support tube
Berst pressure resistance up to 210 bar
Filter material and filter area see table
Temperature range of application: -10 °C to +120 °C
Possible applications see description „Filter material“ chapter 3.1
Standard sealings for DIN elements: NBR, other sealing materials available on request
Elements with stainless steel parts available on request

6.1 Type number key and order numbers filter elements for in-line filters

6.1.1 Type number key filter elements for in-line filters

Type			
Pi	in-line filter		
	Filter material and degree of filtration		
	01	Sm-N 2	
	10	Mic 25	
	11	Mic 10	
	21	PS 3	
	22	PS vst 3	
	31	PS 10	
	32	PS vst 10	
	41	PS 25	
	42	PS vst 25	
	51	PS 6	
	52	PS vst 6	
	81	Drg 10	
	82	Drg 25	
	83	Drg 40	
	84	Drg 60	
	85	Drg 100	
	86	Drg 200	
	87	Drg 300	
	88	Drg 500	
	89	Drg special version	
	91	Drg vst 10	
	92	Drg vst 25	
	93	Drg vst 40	
	94	Drg vst 60	
	95	Drg vst 100	
	96	Drg vst 200	
	97	Drg vst 300	
	98	Drg vst 500	
	99	metal edge	
		Nominal size	
		05	NG 50
		08	NG 80
		11	NG 110
		15	NG 150
		30	NG 300
		45	NG 450
Pi	**10**	**05**	**Selection example**

6.1.2 Filter elements* for in-line filters					
Nominal size NG [l/min]	**Order number**	**Type**	**Filter material**	**max. Δ p [bar]**	**Filter surface [cm²]**
50	77576630	Pi 1105 Mic 10	Mic 10	**20**	640
	77718620	Pi 1005 Mic 25	Mic 25		640
	77680135	Pi 2105 PS 3	PS 3		590
	77943509	Pi 5105 PS 6	PS 6		590
	77680325	Pi 3105 PS 10	PS 10		590
	77680440	Pi 4105 PS 25	PS 25		590
	77680192	Pi 2205 PS vst 3	PS vst 3	**210**	470
	77943533	Pi 5205 PS vst 6	PS vst 6		470
	77680382	Pi 3205 PS vst 10	PS vst 10		470
	77680507	Pi 4205 PS vst 25	PS vst 25		470
	77680895	Pi 8105 Drg 10	Drg 10	**20**	590
	77680911	Pi 8205 Drg 25	Drg 25		590
	77680960	Pi 8305 Drg 40	Drg 40		590
	77576648	Pi 8405 Drg 60	Drg 60		365
	77681067	Pi 8505 Drg 100	Drg 100		590
	77718687	Pi 8605 Drg 200	Drg 200		365
	77718703	Pi 8705 Drg 300	Drg 300		365
	77718695	Pi 8805 Drg 500	Drg 500		590
	77689102	Pi 9105 Drg vst 10	Drg vst 10	**210**	470
	77689128	Pi 9205 Drg vst 25	Drg vst 25		470
	77689169	Pi 9305 Drg vst 40	Drg vst 40		470
	77689219	Pi 9405 Drg vst 60	Drg vst 60		470
	77689276	Pi 9505 Drg vst 100	Drg vst 100		470
	77740921	Pi 9605 Drg vst 200	Drg vst 200		470
	77740939	Pi 9705 Drg vst 300	Drg vst 300		470
	77740947	Pi 9805 Drg vst 500	Drg vst 500		470
	on request	on request	KS-Mic25	**20**	-
	on request	on request	Sm-N 2		-
80	77680085	Pi 1108 Mic 10	Mic 10	**20**	1250
	77657174	Pi 1008 Mic 25	Mic 25		1250
	77680143	Pi 2108 PS 3	PS 3		1150
	77943517	Pi 5108 PS 6	PS 6		1150
	77680341	Pi 3108 PS 10	PS 10		1150
	77680457	Pi 4108 PS 25	PS 25		1150
	77680200	Pi 2208 PS vst 3	PS vst 3	**210**	900
	77943541	Pi 5208 PS vst 6	PS vst 6		900
	77681190	Pi 3208 PS vst 10	PS vst 10		900
	77680515	Pi 4208 PS vst 25	PS vst 25		900
	77718737	Pi 8108 Drg 10	Drg 10	**20**	1150
	77680929	Pi 8208 Drg 25	Drg 25		1150
	77680978	Pi 8308 Drg 40	Drg 40		1150
	77681018	Pi 8408 Drg 60	Drg 60		725

* A wider range of element types is available on request.