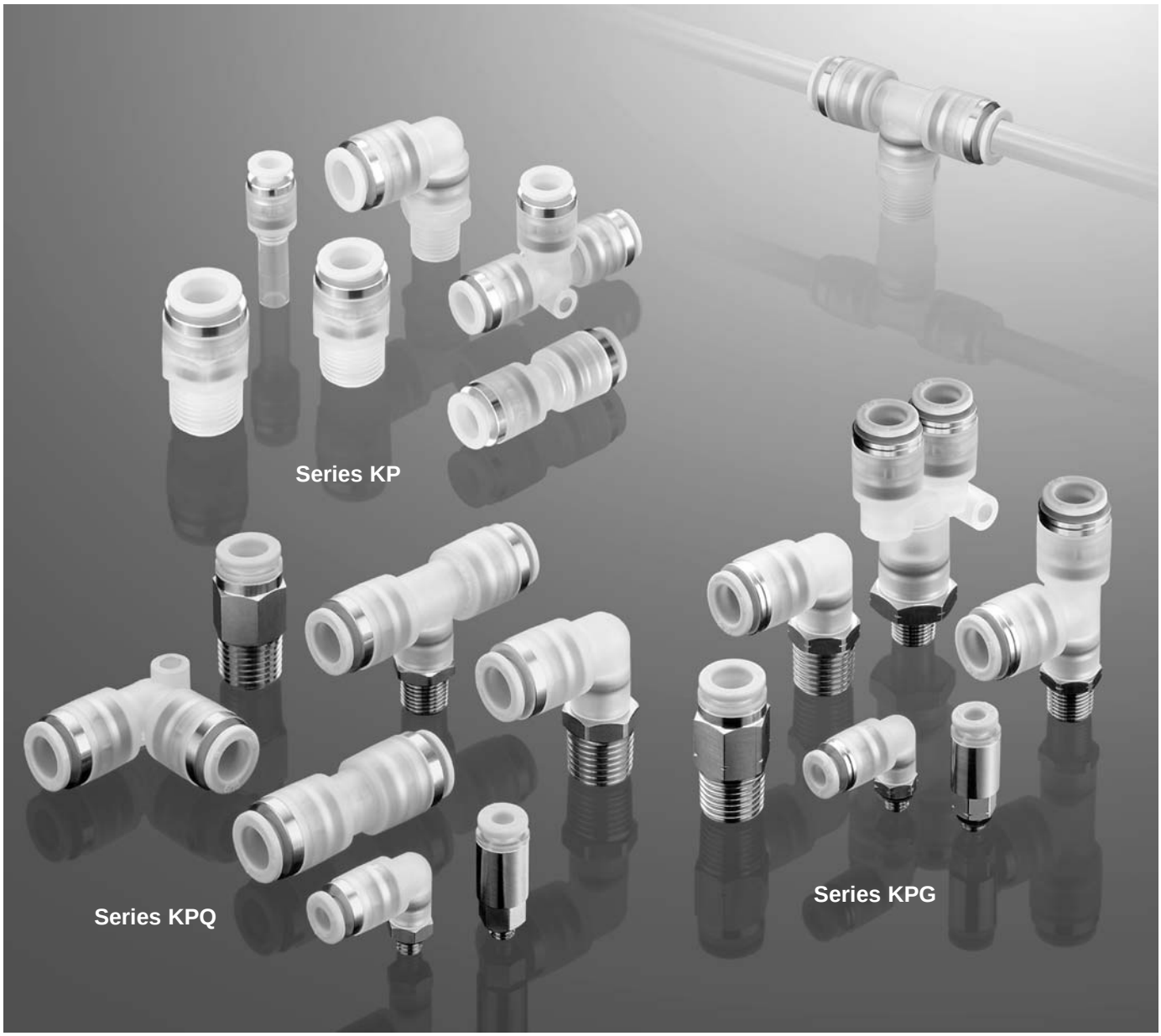
Clean One-touch Fittings and Tubing

Series KP/KPQ/KPG
Series TPH/TPS



Series KPQ/KPG for drive system air piping added to clean One-touch fitting series KP

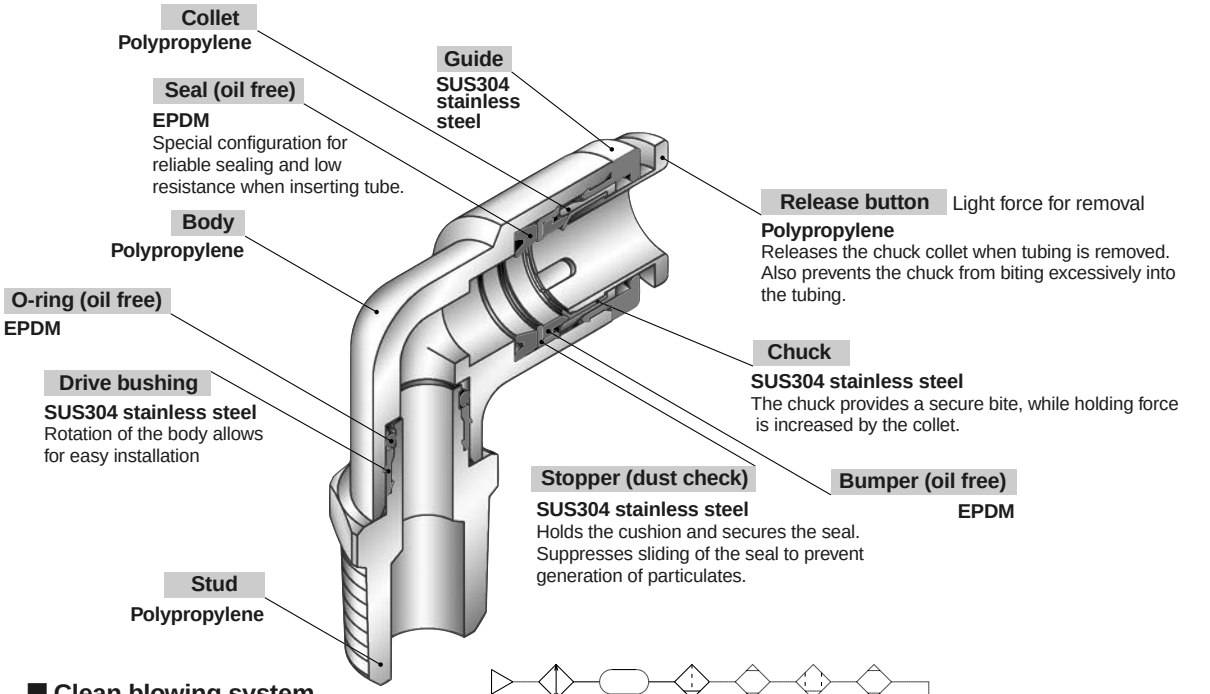
One-touch fittings and tubing for clean room blowing systems

One-touch fittings (for blowing)

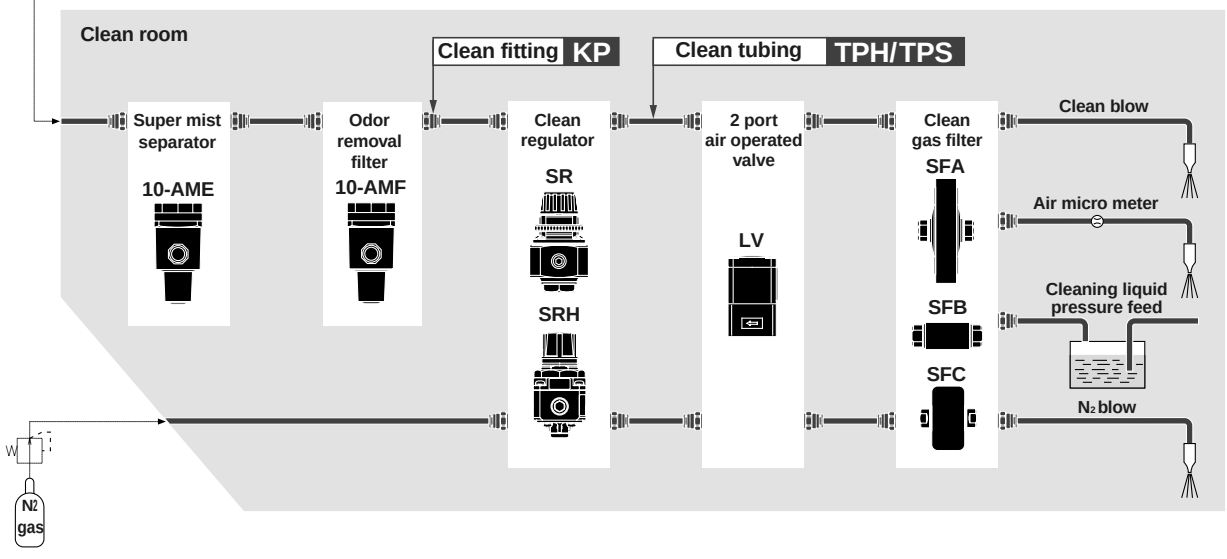
Series KP

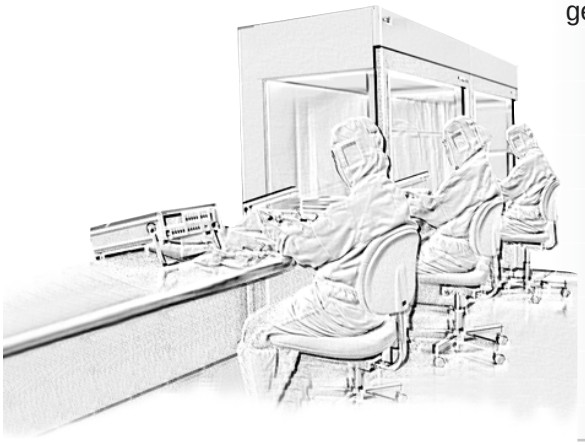
- Completely oil free
- Liquid-contact areas are non-metallic
- Parts cleaning, assembly and double packaging in a clean room
- Can be used for vacuum (–100kPa)

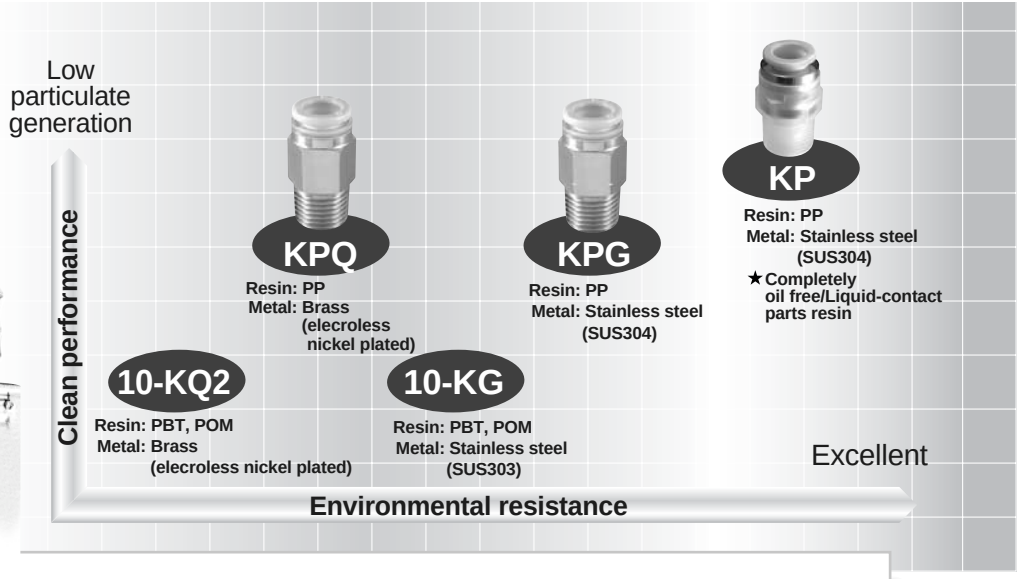
Series KP



■ Clean blowing system







One-touch fittings (for drive system air piping)

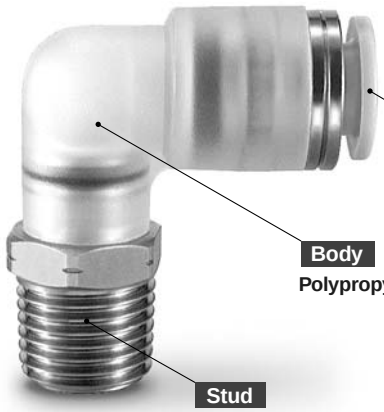
Series KPQ/KPG

Brass (electroless nickel plated) | Stainless steel (SUS304)

- M5 size standardized
- Resin parts are P.P. (polypropylene)

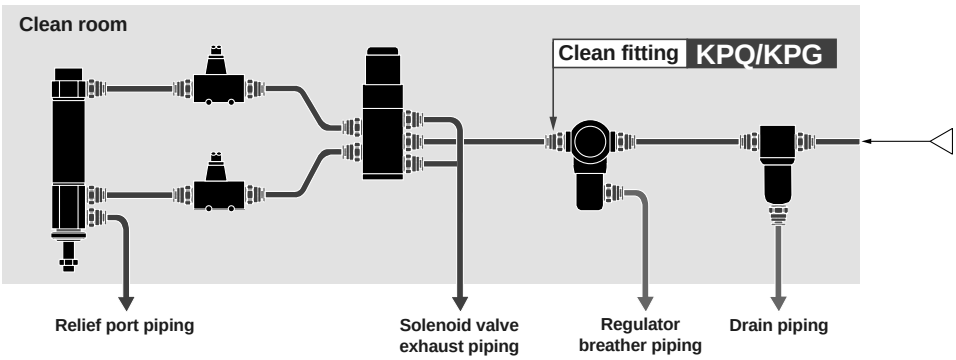
Series KPQ

Series KPG



Male connector

■ Drive air piping system



Polyolefin Tubing

Series TPH/TPS

Series	Material	Tubing O.D. mm					Colour	Tubing length m
		4	6	8	10	12		
TPH	Polyolefin	●	●	●	●	●	White, Black Red, Blue Yellow, Green	20
TPS	Soft Polyolefin	●	●	●	●	●		100

Polyolefin Tubing
Series TPH

Series

● – 20m bundle □– 100m bundle

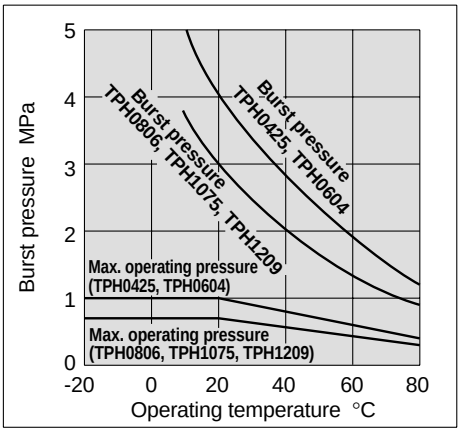
Designation	TPH0425	TPH0604	TPH0806	TPH1075	TPH1209
O.D. mm	4	6	8	10	12
I.D. mm	2.5	4	6	7.5	9
White (W)	●	●	●	●	●
Black (B)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●

Specifications

Fluid	Air, Nitrogen gas, Water (pure water) Note 1)				
Maximum operating pressure (at 20°C)	1.0MPa Note 2)		0.7MPa Note 2)		
Min. bending radius mm	15	25	35	45	55
Burst pressure	Refer to the burst pressure characteristics curve.				
Operating temperature	– 20 to 80°C, For water 5 to 80°C				
Material	Polyolefin resin				

Note 1) Consult SMC regarding other fluids.
Note 2) The maximum operating pressure is the value at 20°C. Refer to the burst pressure characteristics curve for other temperatures. Furthermore, an abnormal temperature rise due to adiabatic compression can cause tubing to burst.
Note 3) The minimum bending radius indicates the value at a temperature of 20°C with an outside diameter rate of change of 10% or less. At higher temperatures the outside diameter rate of change may exceed 10% within the minimum bending radius.

Burst Pressure Characteristics Curve and Operating Pressure



How to Order

TPH0604 B – 20

Tubing designation

Colour

Symbol	Colour
W	White
B	Black
R	Red
BU	Blue
Y	Yellow
G	Green

Roll length

Symbol	Length
20	20m bundle
100	100m bundle

K□
M□
H□
D□
MS
T□
LQ
Clean Room

Soft Polyolefin Tubing
Series TPS

Series

● –20m bundle □–100m bundle

Designation	TPS0425	TPS0604	TPS0805	TPS1065	TPS1208
O.D. mm	4	6	8	10	12
I.D. mm	2.5	4	5	6.5	8
White (W)	●	●	●	●	●
Black (B)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●

Specifications

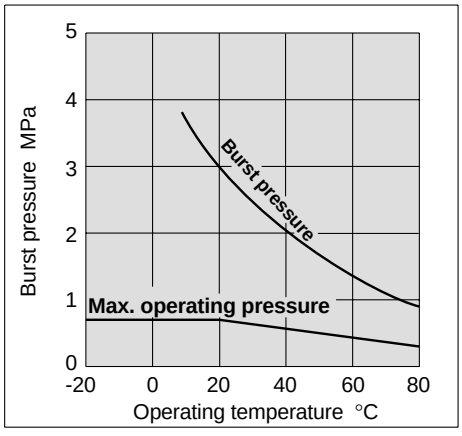
Fluid	Air, Nitrogen gas, Water (pure water) Note 1)				
Maximum operating pressure (at 20°C)	0.7MPa Note 2)				
Min. bending radius mm	10	20	25	30	40
Burst pressure	Refer to the burst pressure characteristics curve.				
Operating temperature	– 20 to 80°C, For water 5 to 80°C				
Material	Polyolefin resin				

Note 1) Consult SMC regarding other fluids.

Note 2) The maximum operating pressure is the value at 20°C. Refer to the burst pressure characteristics curve for other temperatures. Furthermore, an abnormal temperature rise due to adiabatic compression can cause tubing to burst.

Note 3) The minimum bending radius indicates the value at a temperature of 20°C with an outside diameter rate of change of 10% or less. At higher temperatures the outside diameter rate of change may exceed 10% within the minimum bending radius.

Burst Pressure Characteristics Curve and Operating Pressure



How to Order

TPS0604 B – 20

Tubing designation

Colour

Symbol	Colour
W	White
B	Black
R	Red
BU	Blue
Y	Yellow
G	Green

Roll length

Symbol	Length
20	20m bundle
100	100m bundle

Clean Series Tubing

Polyurethane Tubing *Series 10-TU*

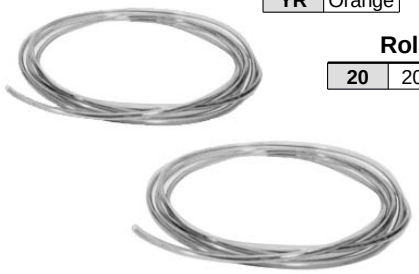
10 – TU0425 BU – 20

- **10** – Clean series
- **TU0425** – Tubing designation
- **BU** – Colour

B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green
C	Clear
YR	Orange

- **20** – Roll length

20	20m bundle



Series

● – 20m bundle

	Tubing size				
	Metric size (series TU)				
Designation	10-TU0425	10-TU0604	10-TU0805	10-TU1065	10-TU1208
O.D. mm	4	6	8	10	12
I.D. mm	2.5	4	5	6.5	8
Black	●	●	●	●	●
White (W)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●
Clear (C)	●	●	●	●	●
Orange (YR)	●	●	●	●	●

Specifications

Fluid	Air, Water				
Maximum operating pressure (at 20°C)	0.8MPa				
Burst pressure	Refer to the burst pressure characteristics curve.				
Min. bending radius mm Note)	10	15	20	27	35
Operating temperature	Air: –20 to 60°C, Water: 0 to 40°C (with no freezing)				
Material	Polyurethane				

Note) The minimum bending radius indicates the value at a temperature of 20°C with an outside diameter rate of change of 10% or less. At higher temperatures the outside diameter rate of change may exceed 10% within the minimum bending radius.

Polyurethane Coiled Tubing *Series 10-TCU*

Specifications

Model	10-TCU 0425B-1	10-TCU 0425B-2	10-TCU 0425B-3	10-TCU 0604B-1	10-TCU 0604B-2	10-TCU 0604B-3	10-TCU 0805B-1
Number of cores	1 core	2 cores	3 cores	1 core	2 cores	3 cores	1 core
Tubing O.D. mm	4			6			8
Tubing I.D. mm	2.5			4			5
Fluid	Air						
Maximum operating pressure (at 20°C)	0.8MPa						
Burst pressure	Refer to the burst pressure characteristics curve.						
Operating temperature	–20 to 60°C						
Material	Polyurethane						
Colour	Black						

Polyurethane Flat Tubing *Series 10-TFU*

Specifications

Model	10-TFU 0425B-2	10-TFU 0425B-3	10-TFU 0604B-2	10-TFU 0604B-3	10-TCU 0805B-2	10-TCU 0805B-3
Number of cores	2 cores	3 cores	2 cores	3 cores	2 cores	3 cores
Tubing O.D. mm	4		6		8	
Tubing I.D. mm	2.5		4		5	
Fluid	Air					
Maximum operating pressure (at 20°C)	0.8MPa					
Burst pressure	Refer to the burst pressure characteristics curve.					
Operating temperature	–20 to 60°C					
Material	Polyurethane					
Colour	Black					
Min. bending radius mm	10		15		20	
Tubing roll length m	10					

Clean Blowing System Related Equipment

Air Operated Valve *Series LV*

Low particulate generating valve with excellent corrosion resistance

Series LVA

Series LVC

Threaded type/Series LVA (basic type)

Note 1) PFA body not available for LVA10

Series	Orifice size (mm)	Body material	Port size Rc				
			1/8	1/4	3/8	1/2	3/4
LVA10	ø2	Note 1) PFA PPS SUS316	●	●			
LVA20	ø4		○	●			
LVA30	ø8			○	●		
LVA40	ø12				○	●	
LVA50	ø20					○	●

○: Body material SUS316 only

Integral fitting type/Series LVC (basic type)

Series	Orifice size (mm)	Body material	Tubing size										
			Metric sizes						Inch sizes					
			4	6	8	10	12	19	1/8	3/16	1/4	3/8	1/2	3/4
LVC20	ø4	PFA	●	●					●	●	●			
LVC30	ø8			●	●	●					●	●		
LVC40	ø10					●	●					●	●	
LVC50	ø16						●	●					●	●

Clean Regulator *Series SR*

Contamination controlled stainless steel regulator

Series SRH

Series SR

Series SRH

Series	Port size Rc						Liquid-contact part materials	
	1/8	1/4	3/8	1/2	9/16-18UNF	7/8-14UNF	Body	Diaphragm
SRH3000	●	●			●		SUS316L (fluid-contact parts SUS316)	Liquid-contact surfaces PTFE + Fluoro rubber (grade A) Fluoro rubber (grade B)
SRH4000		●	●	●		●		

Series SR

Series	Port size Rc					Liquid-contact part materials	
	M5	1/8	1/4	3/8	1/2	Body	Diaphragm
SR1000	●					SUS316	Fluoro rubber Fluoro rubber host with PTFE on liquid-contact surfaces
SR3000		●	●				
SR4000			●	●	●		

Clean Gas Filter *Series SF*

0.01mm particles 100% eliminated

Series SFA

Series SFB

Series SFC

Cartridge type

Series	Type	Principal materials			Thread type	Port size	
		Element	Housing	Seal		M5	1/4
SFA100 SFA200 SFA300	Disk	PTFE + Polyethylene	SUS316 (electropolished)	Fluoro rubber (FPM)	Rc NPT TSJ UOJ	●	●
SFB100	Straight	PTFE membrane				●	●

Disposable type

Series	Type	Principal materials			Thread type	Port size	
		Element	Housing	Seal		1/4	3/8
SFB300	Straight	PTFE membrane	SUS316 (electropolished)	–	Rc TSJ URJ	●	
SFC100	Multistage Disk	PTFE membrane PVDF holder		O-ring PTFE		●	●

DOCUMENT No. : TU*-TDD0003

Chemical resistance of series TPH/TPS

SMC CORPORATION

The table below shows chemical resistance of polyolefin base tubing series TPH and TPS. This information is for reference only. Before using any fluid in this table, nature of the fluid and secondary disaster presence should be fully examined.

○:Resistant △:Slightly deteriorated or absorbed ×:Non-resistant *:Possibility of stress cracks

Chemical	Concentration	Temperature		Chemical	Concentration	Temperature	
		20℃	60℃			20℃	60℃
Acetaldehyde*	100%	△	×	Zinc chloride	Saturation	○	○
Acetone*	100%	△	×	Barium chloride	Saturation	○	○
Aniline	100%	△	×	Calcium chloride	—	○	○
Amyl alcohol*	100%	○	×	Copper chloride	—	○	○
Ammonia water	0.88 spgr liquid	○	○	Iron chloride	Saturation	○	○
Ammonia	Dry gas	○	○	Magnesium chloride	Saturation	○	○
Sodium aluminate	—	○	○	Mercury chloride	Saturation	○	○
Linseed oil*	100%	△	×	Nickel chloride	Saturation	○	○
Sodium benzoate	Saturation	○	○	Potassium chloride	Saturation	○	○
Sodium nitrite	—	○	○	Sodium chloride	Saturation	○	○
Sodium sulfite	—	○	○	Tin chloride	Saturation	○	○
Carbon monoxide	—	○	○	Ammonium chloride	Saturation	○	○
Sulfur	—	○	△	Methyl chloride	—	×	×
Yeast	—	○	—	Phosphorous oxychloride	—	×	×
Ethyl alcohol	<96%	○	○	Diethyl ether*	—	×	—
	100%	△	△	Ammonium persulfate	—	○	○
Ether	—	×	—	Potassium persulfate	—	○	○
Ethylene glycol	—	△	△	Potassium permanganate	—	○	○
Chlorine	Dry gas	△	×	Sodium peroxide	—	○	○
	Liquid 100%	×	×	Hydrogen peroxide	—	○	○
Chlorine water	2%	○	○	Sea water	—	○	○
	Saturation	○	△	Formic acid	80% or less	○	○
Calcium chlorate	Saturation	○	○		100%	△	△
Potassium chlorate	Saturation	○	○	Xylene*	100%	×	×
Hydrochloric acid	10%	○	×	Metallic soap*	—	○	—
Aniline chloride	—	×	—	Beef tallow	—	○	—
Aluminum chloride	—	○	△	Milk	—	○	○

Chemical	Concentration	Temperature	
		20℃	60℃
Chloroform*	100%	△	×
Chlorosulfonic acid	—	×	×
Chromic acid	Electrolyte	○	○
Potassium chromate	Saturation	○	○
Chrome alum	Saturation	○	○
Citric acid	—	○	○
Creosote*	—	×	—
Cresol*	—	×	—
Cresylic acid	50%	○	○
Glycerol	—	○	△
D-glucose	—	○	○
Silicofluoric acid	—	○	—
Antimony pentachloride	—	○	○
Phosphorus pentoxide	100%	○	○
Mineral oil*	—	△	×
Soda	—	○	—
Salicylic acid	—	○	○
Acetic acid	<10%	○	○
	10~50%	○	△
	60% or less	△	×
Amyl acetate*	—	×	—
Ethyl acetate	—	△	×
Methyl acetate	—	×	×
Sodium acetate	—	○	○
Lead acetate	Saturation	○	○
Phosphorous trichloride	100%	○	—
Antimony trichloride	—	○	○
Boron trifluoride	—	○	—
Oxygen	100%	○	×
Zinc oxide	—	○	○
Cyclohexanol	—	△	△
Cyclohexanone	—	×	—

Chemical	Concentration	Temperature	
		20℃	60℃
Copper cyanide	—	○	○
Silver cyanide	—	○	○
Potassium cyanide	Saturation	○	○
Sodium cyanide	Saturation	○	○
Mercury cyanide	Saturation	○	○
Nitric acid	5~25%	○	△
	50%	△	×
	70~98%	×	×
Ammonium nitrate	Saturation	○	○
Calcium nitrate	Condensation	○	○
Copper nitrate	—	○	○
Potassium nitrate	Saturation	○	○
Silver nitrate	—	○	○
Strontium nitrate	—	○	○
Magnesium nitrate	Saturation	○	○
Nickel nitrate	Condensation	○	○
Salt water (Brine)	—	○	○
Cane sugar	—	○	○
Oxalic acid	Saturation	○	○
Tartaric acid	10%	○	○
	Saturation	○	△
Vegetable oil*	—	△	×
Bromine	Dry gas	×	×
Hydrobromic acid	50%	○	○
	100%	○	○
Methyl bromide	—	×	×
Potassium bromide	Saturation	○	○
Potassium bromate	—	○	○
Ammonium bicarbonate	—	○	○
Sodium bicarbonate	Saturation	○	○
Potassium bicarbonate	Saturation	○	○
Sodium hydrogen sulfate	Saturation	○	○

Chemical	Concentration	Temperature	
		20℃	60℃
Potassium hydrogen sulfate	—	○	○
Sodium bisulfite	Saturation	○	○
Potassium bisulfite	—	○	○
Potassium dichromate	Saturation	○	○
Sodium hypochlorite	15%	○	○
Calcium hypochlorite	15%	○	○
Sodium hyposulfite	—	○	○
Tetraethyl lead	—	○	—
Carbon tetrachloride	100%	×	×
Camphor oil*	—	×	×
Silicon fluid*	—	△	×
Developer	—	○	○
Emulsifier	—	○	—
Hydrogen	100%	○	○
Aluminum hydroxide	—	○	○
Barium hydroxide	Saturation	○	○
Calcium hydroxide	—	○	○
Potassium hydroxide	<50%	○	○
	Condensation*	○	○
Sodium hydroxide	<40%	○	○
	Condensation*	○	○
Magnesium hydroxide	Condensation	○	○
Ammonium hydroxide	—	○	○
Mercury	—	○	○
Stearic acid	100%	○	×
Cetyl alcohol*	—	○	—
Soapy water	—	○	○
Petroleum ether	—	×	×
Petroleum	—	×	×
Tannic acid	10%	○	○
Ammonium carbonate	—	○	○
Barium carbonate	Saturation	○	○
Calcium carbonate	—	○	○

Chemical	Concentration	Temperature	
		20℃	60℃
Magnesium carbonate	Saturation	○	○
Sodium carbonate	Condensation	○	○
Potassium carbonate	—	○	○
Ammonium thiocyanate	Saturation	○	○
Potassium thiosulfate	—	○	○
Sodium thiosulfate	Saturation	○	○
Starch	Saturation	○	○
Turpentine oil*	100%	×	×
Dextrose	Saturation	○	○
Trichloroethylene*	100%	×	×
Triethanolamine*	100%	○	×
Animal oil*	—	△	×
Soft soap*	—	○	○
Nitrobenzene*	—	△	×
Diethyl ether*	—	△	△
Carbon dioxide	100%	○	○
Carbon disulfide	100%	×	×
Ethylene dichloride*	100%	×	×
Sulfur dioxide	Dry gas	○	○
	Humid gas	○	△
Potassium dichromate	—	○	○
Emulsifier	—	○	○
Lactic acid	—	○	○
Paraffin	—	△	×
Hydroquinone	—	○	○
Beer	—	○	○
Castor oil*	—	×	—
Arsenic acid	100%	○	○
Lead arsenate	—	○	—
Picric acid	1%	○	○
	Alcohol 10%	○	○
Surface active agent*	—	○	○
Butyl alcohol*	100%	○	×

Chemical	Concentration	Temperature	
		20℃	60℃
Dioctyl phtalate*	—	△	×
Dibutyl phthalate*	100%	△	×
Phenol*	—	×	—
Sodium ferricyanide	Saturation	○	○
Sodium ferrocyanide	Saturation	○	○
Grape sugar (Glucose)	—	○	○
Fluorine	—	△	×
Aluminum fluoride	—	○	○
Copper fluoride	—	○	○
Potassium fluoride	—	○	○
Sodium fluoride	Saturation	○	○
Hydrofluoric acid	<60%	○	○
	75%	○	△
Benzaldehyde*	—	×	—
Benzene*	—	×	×
Benzenesulfonic acid	—	×	—
Benzyl alcohol	—	×	—
Boric acid	—	○	○
Sodium borate	—	○	○
Potassium borate	—	○	○
Formaldehyde	40%	○	○
Water	—	○	○
Methyl alcohol	<50%	○	○
	100%	△	△
Methyl ethyl ketone*	100%	△	×
Ammonium metaphosphate	Saturation	○	○
Sodium metaphosphate	—	○	○
Alum	—	○	○
Monochloroacetic benzene	—	×	×

Chemical	Concentration	Temperature	
		20℃	60℃
Sulfuric acid	10~ 60%	○	△
	70%	○	×
	80%	△	×
	98%	×	×
Aluminum sulfate	—	○	○
Barium sulfate	Saturation	○	○
Calcium sulfate	—	○	○
Copper sulfate	Saturation	○	○
Iron sulfate	—	○	—
Magnesium sulfate	Saturation	○	○
Manganese sulfate	—	○	○
Nickel sulfate	Saturation	○	○
Potassium sulfate	Condensation	○	○
Sodium sulfate	Saturation	○	○
Zinc sulfate	Saturation	○	○
Ammonium sulfate	Saturation	○	○
Aniline sulfate	—	×	×
Barium sulfide	Saturation	○	○
Potassium sulfide	Condensation	○	○
Sodium sulfide	25%	○	○
	Saturation	○	○
Hydrogen sulfide	—	○	—
Ammonium sulfide	Saturation	○	○
Phosphoric acid	<90%	○	×
	95%	△	×
Calcium phosphate	—	○	○
Potassium phosphate	—	○	○
Sodium phosphate	—	○	○
Tricresyl phosphate	—	×	×
Sodium dihydrogen phosphate	100%	○	○