

# Global Standard Natural Environment

**Our goal is to develop and produce world-class environmental friendly products through our leading-edge technology.**

Anticipating the needs of the age and reacting by our leading-edge technology is **TOGAWA**'s deep-rooted fundamental policy.

In this 21<sup>st</sup> century, remarkable achievement of technology is demanded in a variety of fields.

Through our plastic hoses, **TOGAWA** is always trying to manufacture "environmentally-friendly products" based on our world-class quality and technology.

**Giving the quality top priority, **TOGAWA** is engaged in customer satisfaction and aiming to be an environmental friendly company.**

**Our effort on ISO9001 "Quality Management System" and ISO14001 "Environmental Management System."**

In July of 2001, our Kyoto Plant and in November of 2003, our Tokyo Plant have acquired approval of ISO9001. Placing the "Customer First" for our quality policy, we have been engaged in promoting full employee participation quality assurance activities. In the midst of ever changing social environment, we are trying to identify the customer's needs in order to suggest, produce and deliver products in an appropriate time for further "Customer Satisfaction".



Kyoto Plant

In March of 2005, our Kyoto Plant has acquired the approval of ISO14001. In an effort to becoming an "Environmentally Friendly Company", we have defined our environmental policy and conduct environmental countermeasures. We also provide "Environmentally Friendly Products" while conforming to the laws and regulations, and keeping the balance with the people and nature.



ISO 9001:Kyoto Plant, Tokyo Plant  
ISO 14001:Kyoto Plant



Tokyo Head Office / Tokyo Plant



Shanghai Plant

## Our Effort in Shanghai Togawa

Shanghai Togawa, our subsidiary, has also acquired approval of ISO9001 in May of 2005 and ISO 14001 in June of the same year. We are trying to engage in the "Improvement of Management" to meet our customer's needs.



Osaka office

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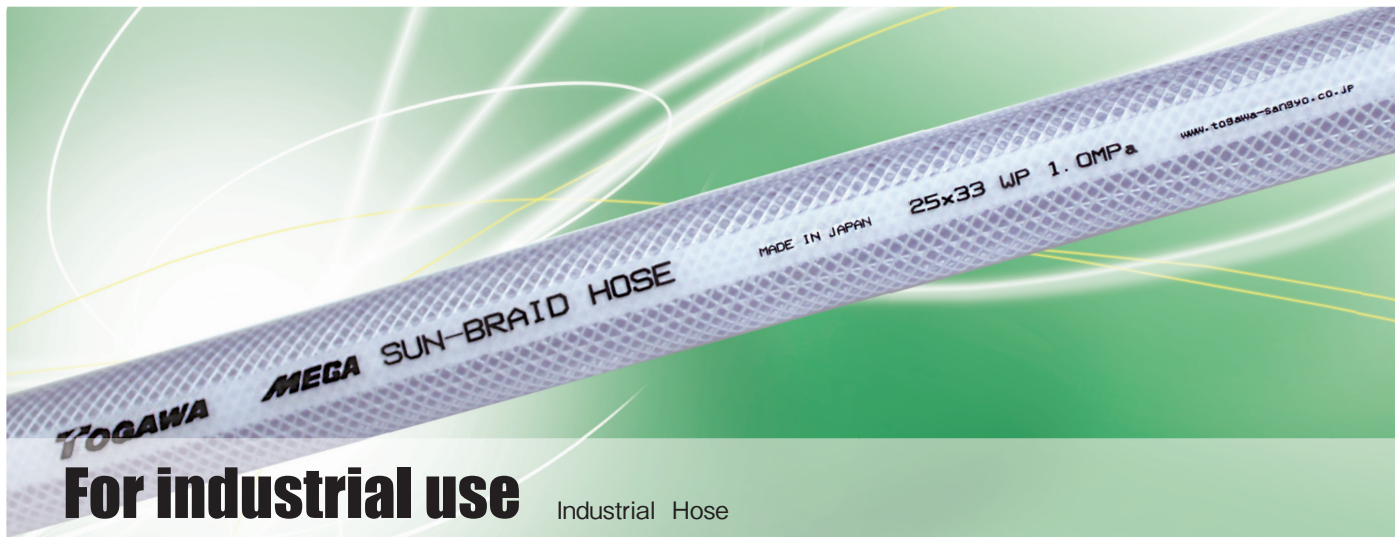
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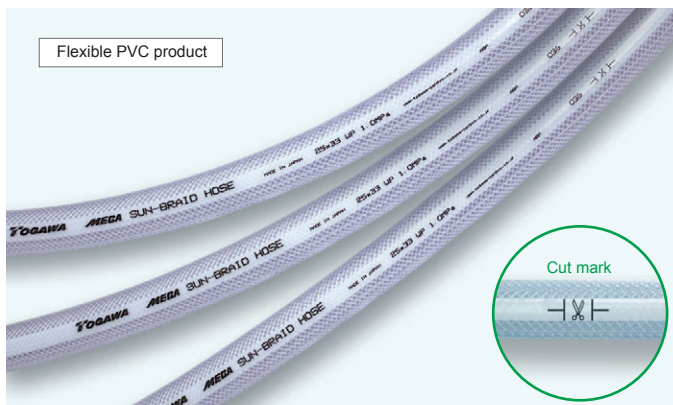


## For industrial use Industrial Hose

This series of hoses can be applied for piping of equipment at factories, installing with various machines (molding and printing machines), and various fluids such as cement fluids used for machine tools, drilling machines, and bridge construction works. Superior in flexibility, transparency, pressure resistance, negative pressure resistance, and oil resistance, this series of hoses are appropriate for industrial use.

### MEGA Sun Braid Hose

Renewed design with white lines. Rubber-like touch of highly elastic resin. The fluids can be visually checked easily.



- Use** For water supply of machines and factories, air piping, and water supply for engineering, and construction sites.
- Features** Highly elastic resin is used. The fluids can be visually checked easily.
- Fluids** Water Oil Note: Cannot be used for fuel oil

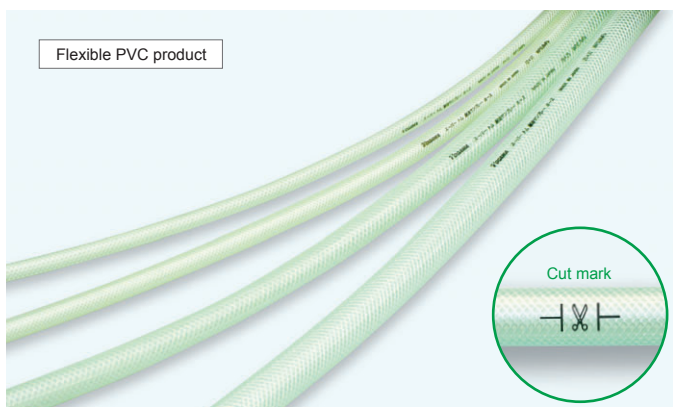
Specifications: Working temperature limit: Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
SB-4	4.0	9.0	100	1.5	8.5	16	0.070	7
SB-6	6.0	11.0	100	1.5	7.5	24	0.090	9
SB-8	8.0	13.5	100	1.4	5.5	32	0.120	12
SB-9	9.0	15.0	100	1.4	5.4	36	0.150	15
SB-10	10.0	16.0	100	1.1	5.0	40	0.160	16
SB-12	12.0	18.0	100	1.0	5.0	48	0.180	18 *
SB-15	15.0	22.0	100	1.0	4.0	60	0.260	26 *
SB-19	19.0	26.0	50	1.0	5.1	76	0.320	16 *
SB-22	22.0	29.0	50	1.0	4.6	88	0.360	18 *
SB-25	25.0	33.0	50	1.0	5.0	100	0.460	23 *
SB-32	32.0	41.0	50	0.7	3.0	128	0.660	33 *
SB-38	38.0	48.0	50	0.6	2.8	152	0.860	43 *
SB-50	50.0	62.0	40	0.6	2.4	200	1.375	55 *
SB-63	63.0	80.0	20	0.3	1.3	252	2.600	52 *
SB-75	75.0	92.0	20	0.3	1.3	300	3.000	60 *
SB-90	90.0	108.0	20	0.3	1.3	450	3.690	73.8
SB-100	100.0	115.0	20	0.3	1.3	500	3.890	77.8

\* The white lines are available only for the products in which inner diameter is between 12 and 75, and are not applied for the products in which inner diameter is between 6 and 10, 90 and 100.

### Super Tom Oil resistance Sun Braid Hose

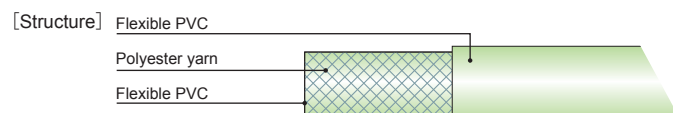
Superior in oil resistance of the specialized resin used. Use this hose for color coding with the MEGA Sun Braid Hose.



- Use** For water supply of machines and factories, air piping, and water supply for engineering, and construction sites.
- Features** Superior in oil resistance, which is appropriate for lubricating oil piping. Can be used for color coding with the MEGA Sun Braid Hose.
- Fluids** Water Oil Note: Cannot be used for fuel oil

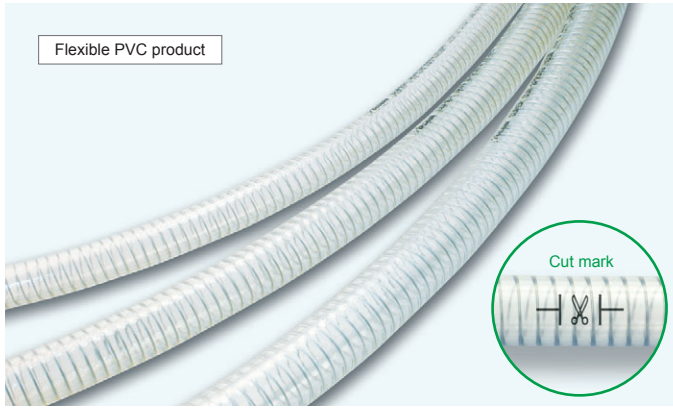
Specifications: Working temperature limit: Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
TB-6	6.0	10.5	100	1.1	7.4	24	0.080	8
TB-8	8.0	13.0	100	1.1	5.4	32	0.110	11
TB-9.5	9.5	15.0	100	1.1	4.9	38	0.150	15
TB-12	12.0	17.0	100	1.0	4.9	48	0.160	16
TB-15	15.0	21.0	50	0.8	3.9	60	0.230	11.5
TB-19	19.0	25.0	50	0.7	3.7	76	0.290	14.5
TB-25	25.0	32.0	50	0.6	2.9	100	0.440	22
TB-32	32.0	39.5	50	0.5	2.5	128	0.580	29
TB-38	38.0	46.5	50	0.4	2.0	152	0.770	38.5
TB-50	50.0	60.0	40	0.3	1.5	200	1.175	47
TB-63	63.0	80.0	20	0.3	1.3	252	2.600	52
TB-75	75.0	92.0	20	0.3	1.3	300	3.000	60



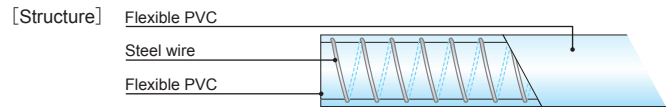
## Super Sun Spring Hose

With hard steel wires put inside, this hose withstands to decompression, which is appropriate for vacuuming applications. Superior in transparency, this hose is appropriate for piping of operating oil.



Specifications: Working temperature limit: Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure		Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
				MPa at 20°C	Burst pressure MPa at 20°C			
SP-6	6.0	11.0	100	0.9	6.5	30	0.100	10
SP-8	8.0	13.5	100	0.9	5.5	40	0.140	14
SP-9	9.0	15.0	100	0.8	5.0	45	0.160	16
SP-12	12.0	18.0	100	0.7	4.5	60	0.230	23
SP-15	15.0	22.0	100	0.6	3.5	75	0.320	32
SP-19	19.0	26.0	50	0.5	3.0	95	0.440	22
SP-25	25.0	33.0	50	0.5	2.5	125	0.540	27
SP-32	32.0	41.0	40	0.4	2.0	160	0.775	31
SP-38	38.0	48.0	40	0.4	1.9	190	0.975	39
SP-50	50.0	62.0	40	0.3	1.3	250	1.475	59
SP-63	63.0	80.0	20	0.3	0.9	315	2.700	54
SP-75	75.0	92.0	20	0.3	0.9	375	3.150	63
SP-90	90.0	108.0	20	0.3	0.9	450	3.810	76.2
SP-100	100.0	115.0	20	0.3	0.9	500	4.200	84



- Use** For water supply of machines and factories, air piping, and water supply for engineering, and construction sites.
- Features** With steel wires put inside, this hose can be used as a ground wire for conveying powders etc.
- Fluids** Water Oil Powders **Note: Cannot be used for fuel oil**

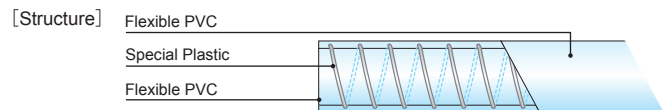
## Super Tom Flex Hose

Both inner and outer surface are rich in smoothness. Excellent oil resistance.



Specifications: Working temperature limit: TP-9~TP19 Between -5°C ~+70°C  
TP-25 Between -5°C ~+60°C

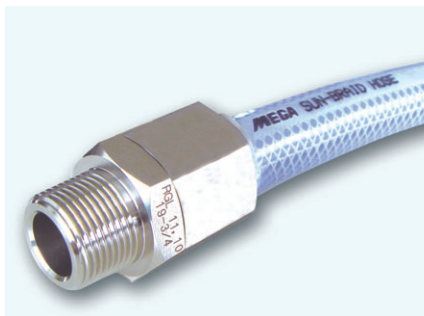
Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure		Weight (kg/m)	Regular size weight (kg)
				MPa at 20°C	Minimum bending radius (mm)		
TP-9	9.0	15.0	40	0.8	36	0.139	5.6
TP-12	12.0	18.0	60	0.5	48	0.174	10.4
TP-15	15.0	22.0	60	0.5	60	0.250	15
TP-19	19.0	26.0	50	0.4	76	0.304	15.2
TP-25	25.4	33.0	20	0.4	100	0.448	9



- Use** For working machine, printing machine, molding machine, piping of plant (Vacuum Hoses)
- Features** Easy to cut with scissors! It is hard to be squashed.
- Fluids** Water Oil **Note: Cannot be used for fuel oil**

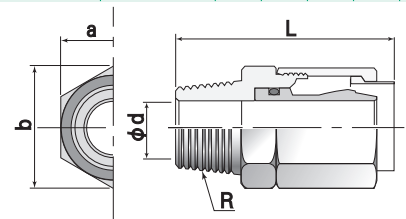
## MEGA Touch

No leak! No loose! Joints for Hoses!



Size List: - For material selection, please add "S" for SUS, "B" for BsBM, "Ro" for Cd-less BsBM at the end of the Model name. -

Nominal designation of MEGA SUN-BRAID HOSE	MEGA TOUCH Model	R	a	b	φd	L	Nominal designation of MEGA SUN-BRAID HOSE	MEGA TOUCH Model	R	a	b	φd	L		
SB-4	TH4-1/8	1/8	17	19.6	4.0	34.8	SB-19	TH19-1/2	1/2	35	40.5	14.0	59.8		
	TH4-1/4	1/4						TH19-3/4	3/4					17.4	63.8
SB-6	TH6-1/4	1/4	21	24.3	5.0	45.3	SB-22	TH19-1	1	38	43.9	19.4	65.0		
	TH6-3/8	3/8						TH22-1/2	1/2					14.0	61.0
SB-8	TH8-1/4	1/4	22	25.4	7.0	44.7	SB-25	TH22-3/4	3/4	42	48.5	24.0	67.8		
	TH8-3/8	3/8						TH22-1	1					21.0	66.0
SB-9	TH9-1/4	1/4	24	27.7	7.0	46.4	SB-32	TH25-3/4	3/4	54	62.4	28.0	74.3		
	TH9-3/8	3/8						TH25-1	1					28.0	75.3
SB-10	TH10-1/4	1/4	24	27.7	8.0	48.4	SB-12	TH32-1 1/4	1 1/4	54	62.4	28.0	75.3		
	TH10-3/8	3/8						TH32-1 1/2	1 1/2					28.0	75.3
SB-12	TH10-1/2	1/2	26	30.0	8.0	46.3	SB-15	TH12-1/4	1/4	30	34.6	14.0	51.7		
	TH12-1/4	3/4						TH12-1/2	1/2					10.0	50.3
SB-15	TH12-3/8	3/8	30	34.6	10.0	48.3	TH15-1/4	1/4	30	34.6	14.0	51.7	53.7		
	TH12-1/2	1/2					TH15-3/8	3/8						10.0	49.7
	TH15-1/4	1/4					TH15-1/2	1/2						14.0	51.7
	TH15-3/8	3/8			10.0	49.7									
	TH15-1/2	1/2			14.0	51.7									
	TH15-3/4	3/4			14.0	53.7									



- Features**
  - Original structure to fasten hoses tightly and strongly.
  - High adhesion without damage your hoses.
  - No breakage due to excessive fastening.
  - Easy attach and remove, improve maintenance workability.
  - Variety of materials : SUS and BsBM also available with RoHS enabled Cd-less BsBM.

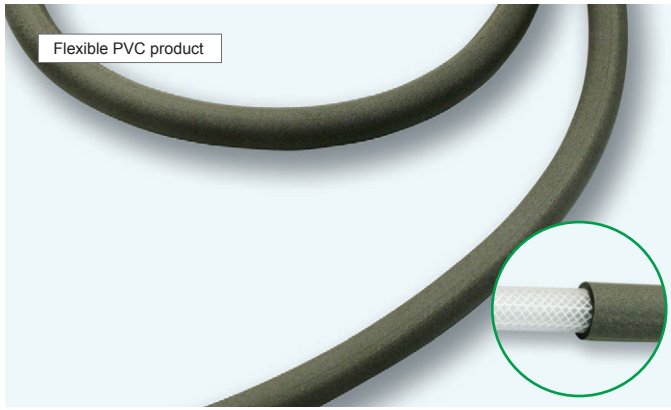
For unlisted sizes or any questions , please contact our sales department.  
Available with : MEGA Sun Braid Hose and Super Sun Spring Hose.

## Foam Sun Braid Hose

A hose for cooling water used for printing or molding machines. The foamed materials keep away waterdrops from the hose surface.

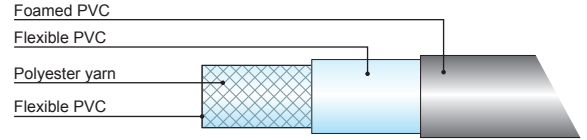
Specifications: Working temperature limit: Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
FB-12	12.0	24.0	50	1.0	5.0	48	0.433	21.7
FB-15	15.0	29.0	50	0.8	4.0	60	0.612	30.6
FB-19	19.0	32.0	50	0.7	3.8	76	0.671	33.6



Flexible PVC product

[Structure]



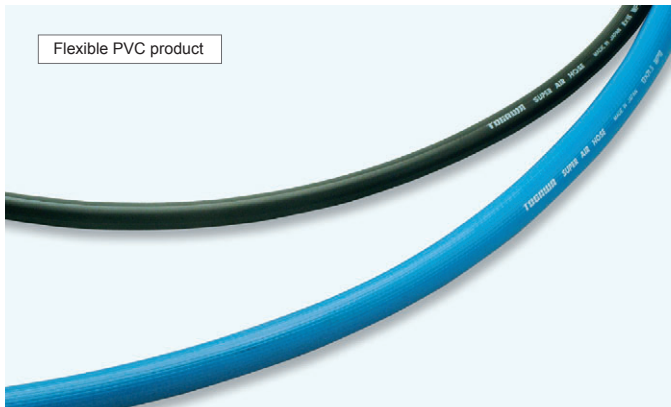
- Use** For the cooling water used for printing or molding machine (for condensation prevention).
- Features** The foamed materials keep away waterdrops from the hose surface.
- Fluids** Water

## Super Air Hose

Lighter than rubber hoses and superior in workability. Withstanding to direct sunlight and blocking cracks.

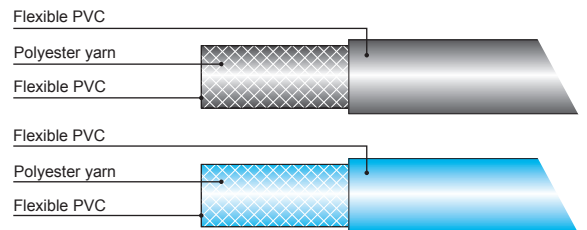
Specifications: Working temperature limit: Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)	Lines
SA-6	6.5	13.0	100	1.0	9.0	32.5	0.120	12	●●
SA-7	7.0	13.5	100	1.0	8.5	35	0.125	12.5	●—
SA-8	8.0	15.0	100	1.0	8.5	40	0.150	15	●●
SA-9	9.5	16.5	100	1.0	8.0	47.5	0.170	17	●●
SA-12	13.0	21.5	100	1.0	7.5	65	0.280	28	●●
SA-19	19.0	27.5	100	1.0	5.0	95	0.390	39	—●
SA-25	25.0	34.5	100	1.0	4.7	125	0.550	55	—●



Flexible PVC product

[Structure]



- Use** For compressors, car maintenance, sheet metal and paint works, quarrying etc.
- Features** Lighter than rubber hoses and superior in workability.
- Fluids** Air

## Super Water Hose

Appropriate for washing and sprinkling water on vessels, gas stations, factories, farmlands, golf courses etc.

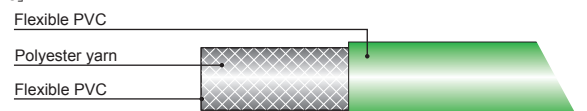
Specifications: Working temperature limit: Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)	Lines
SW-12	12.7	19.0	100	0.7	4.0	63.5	0.195	19.5	●
SW-15	15.0	22.5	100	0.7	4.0	75	0.255	25.5	●
SW-19	19.0	27.0	100	0.7	3.0	95	0.380	38	●
SW-25	25.0	33.5	100	0.7	3.0	125	0.480	48	●
SW-32	32.0	43.0	60	0.5	2.0	160	0.800	48	●
SW-38	38.0	50.0	60	0.5	2.0	190	1.020	61.2	●



Flexible PVC product

[Structure]



- Use** Washing and sprinkling water on vessels, factories, farmlands, golf courses, engineering sites, etc.
- Features** Lighter than rubber hoses and superior in workability.
- Fluids** Water

## Transparent Vinyl Tube

From small to large, variety of sizes are available to fit your usage.



**Use** For piping at factories, sprinkling water for farmlands and gardening.

**Features** From small to large, variety of sizes are available to fit your usage.

**Fluids** Air Water

Specifications: Working temperature limit: Between -5°C and +60°C

Nominal designation	Inner diameter (mm)	Regular size (m)	Packages (number of pieces)
TV-3×5	3.0	200	Five drums/case
TV-4×6	4.0	200	◇
TV-5×7	5.0	200	◇
TV-5×8	5.0	200	◇
TV-6×8	6.0	200	◇
TV-6×9	6.0	200	Four drums/case
TV-6×10	6.0	100	Five drums/case
TV-7×9	7.0	200	Four drums/case
TV-7×10	7.0	100	Five drums/case
TV-7×11	7.0	100	◇
TV-8×10	8.0	100	◇
TV-8×11	8.0	100	◇
TV-8×12	8.0	100	Four drums/case
TV-9×11	9.0	100	Five drums/case
TV-9×12	9.0	100	Four drums/case
TV-9×13	9.0	100	◇
TV-10×12	10.0	100	◇
TV-10×13	10.0	100	◇
TV-10×14	10.0	50	Five drums/case
TV-12×14	12.0	50	◇

Specifications: Working temperature limit: Between -5°C and +60°C

Nominal designation	Inner diameter (mm)	Regular size (m)	Packages (number of pieces)
TV-12×15	12.0	50	◇
TV-12×16	12.0	50	Four drums/case
TV-15×17	15.0	50	◇
TV-15×18	15.0	50	◇
TV-18×21	18.0	50	Three drums/case
TV-18×22	18.0	50	◇
TV-19×23	19.0	50	◇
TV-19×25	19.0	50	Rings
TV-22×26	22.0	50	◇
TV-25×29	25.0	50	◇
TV-25×30	25.0	50	◇
TV-25×31	25.0	50	◇
TV-32×37	32.0	50	◇
TV-32×38	32.0	50	◇
TV-38×44	38.0	50	◇
TV-45×51	45.0	30	◇
TV-50×58	50.0	30	◇
TV-63×73	63.0	30	◇
TV-75×86	75.0	30	◇
TV-90×104	90.0	20	◇

## Super Tom Fusso Tube

The super soft fusso tube with the excellent non-adhesive, low leachability and chemical resistance.



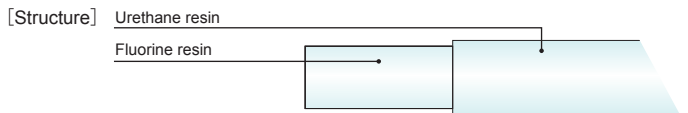
**Use** For piping of paints, solvents, chemicals, drinking water and foods

**Features** Excellent solvent and chemical resistance and low leachability.

**Fluids** Paints Solvents Chemicals Various foods

Specifications: Working temperature limit: Between -40°C and +80°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)
FST-4	4.0	6.0	20-100	0.9	17	19
FST-6	6.0	9.0	20-100	0.7	26	41
FST-8	8.0	12.0	20-100	0.7	46	72

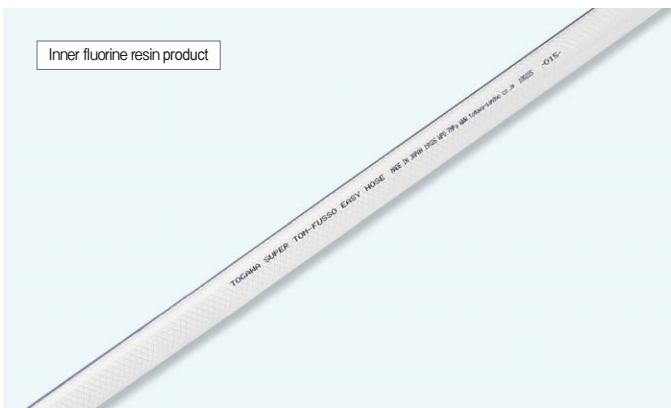


### Features

- A multipurpose tube with excellent chemical resistance and low permeability against the organic solvent. Also has high transparency and flexibility.

## Super Tom Fusso-easy Hose

The super soft fusso hose with a conductive resin line.



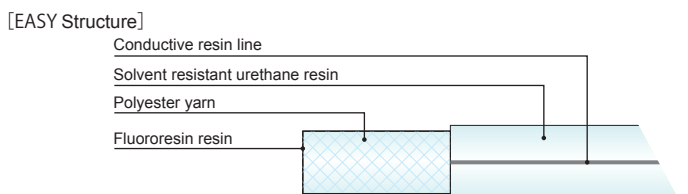
**Use** For piping of paints, solvents, chemicals, drinking water and foods.

**Features** Excellent solvent and chemical resistance and low leachability.

**Fluids** Paints Solvents Chemicals Various foods

Specifications: Working temperature limit: Between -20°C and +60°C

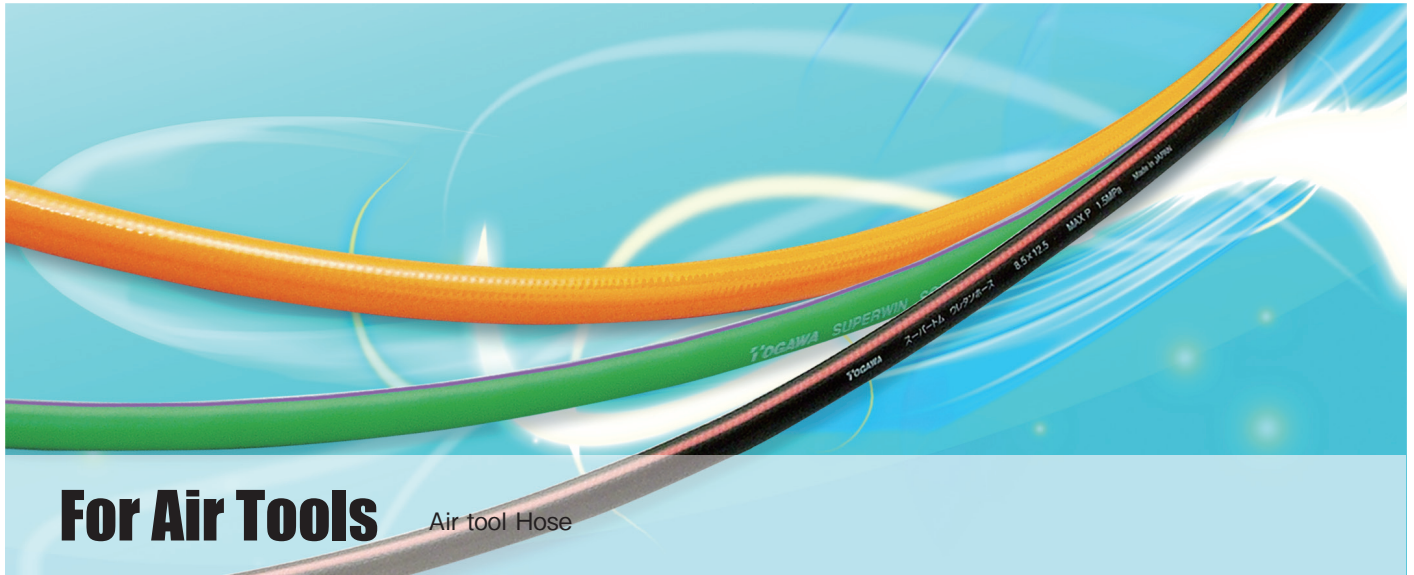
Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
FE-9	9.0	15.0	20	1.1	45	0.141	2.8
FE-12	12.0	18.0	20	1.0	60	0.177	3.5
FE-15	15.0	22.0	20	0.8	75	0.253	5.1
FE-19	19.0	26.0	20	0.7	95	0.308	6.2
FE-25	25.0	33.0	20	0.6	125	0.451	9.0



### Features

A versatile chemical hose is now available!

- As a conductive sleeve is applied around the outer layer, the grounding can be completed just by tightening the metallic joint (when the resistance value is "9× 10<sup>6</sup>W" or less, and the whole length is 15m or less).



## For Air Tools Air tool Hose

A series of air hoses that support maximum working pressure of each application. The hoses can be used for various air tools, spray paint, and air piping at factories with a variety of different colors for color coding.

### Polyurethane Hose (TPH)

Appropriate for air tools (air-tucker, pegger machine, and impact wrench), paint, spray, in-factory air tools.



Polyurethane product

Specifications: Working temperature limit: Between -40°C and +60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)	Delivery unit	Color
TPH-6510	6.5	10.0	100	1.5	7.2	30	0.057	5.7	1	●●●
TPH-8512	8.5	12.5	100	1.5	7.6	40	0.083	8.3	1	●●●
TPH-1116	11.0	16.0	50	1.5	8.0	45	0.128	6.5	1	●

#### Performance evaluation

Descriptions	Evaluation	Descriptions	Evaluation
Lightness	★ ★ ★ ★ ★	Smoothness	★ ★ ★
Softness	★ ★ ★	Spattering resistance	★ ★

\* All the evaluations were made in-house  
\* Use our specified brackets

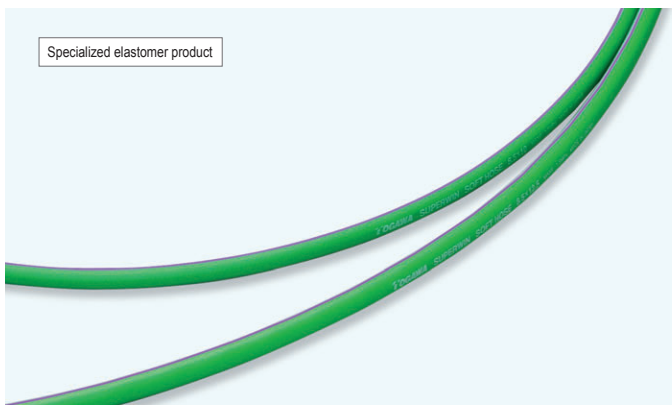
**Usege** For air-paint, air-spray, and in-factory air tools

**Features** With flexibility and light weight, this hose is appropriate for construction sites.

**Fluids** Air

### Super Win Soft Hose II

With further softness and smoothness, this hose is free from winding or hopping.



Specialized elastomer product

Specifications: Working temperature limit: Between -5°C and +60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
SWH-6510	6.5	10.0	100	1.5	6.0	20	0.058	5.8
SWH-8512	8.5	12.5	100	1.5	6.0	40	0.083	8.3

#### Performance evaluation

Descriptions	Evaluation	Descriptions	Evaluation
Lightness	★ ★ ★ ★ ★	Smoothness	★ ★ ★ ★ ★
Softness	★ ★ ★ ★ ★	Spattering resistance	★ ★ ★

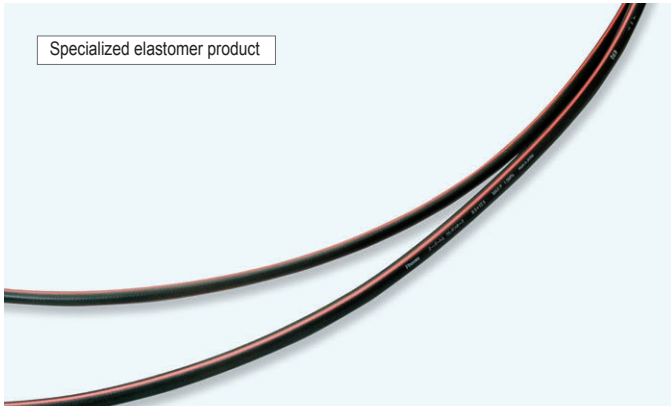
\* All the evaluations were made in-house  
\* Use our specified brackets

Without the winding or hopping, this hose is easy to carry and improves the workability.



## Super Tom Spatter Hose

Compared to conventional air hoses, this hose has greater resistance against sparks due to the inclusion of spark resistance substances, which is appropriate for using at welding sites and automobile service garages, etc.



Specialized elastomer product

Specifications: Working temperature limit: Between -40°C and +60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
STH-6510	6.5	10.0	100	1.5	7.2	30	0.057	5.7
STH-8512	8.5	12.5	100	1.5	7.6	40	0.083	8.3

### Performance evaluation

Descriptions	Evaluation	Descriptions	Evaluation
Lightness	★ ★ ★ ★ ★	Smoothness	★ ★ ★ ★ ★
Softness	★ ★ ★ ★ ★	Spattering resistance	★ ★ ★ ★ ★

\* All the evaluations were made in-house  
\* Use our specified brackets



With the specialized material containing spark resistance substances, this hose is appropriate for using at welding sites.

**Usege** For air-paint, air-spray, and in-factory air tools

**Features** Compared to conventional urethane hoses, this hose has greater resistance against sparks due to the inclusion of spark resistance substances, which is appropriate for using at welding sites and automobile service garages, etc.

**Fluids** Air

## Takumi Air Reel



Air reel product

### Usege

For air-paint, air-spray, and in-factory air tools.

### Features

Reels with rotation function, you can choose the direction. Super flexible hose 'Takumi' Air Hose attached.

### Fluids

Air

Specifications: Working temperature limit: Between -5°C and +60°C

Nominal designation	Hose size	Regular size (m)	Maximum working pressure MPa at 20°C	Regular size weight (kg)
Takumi Air Reel	6.5×10	30	1.5	8.0

## Quattro Reel



Air reel product

### Usege

For air-paint, air-spray, and in-factory air tools.

### Features

Reels with rotation function, you can choose the direction. High pressure and super flexible hose Quattro Hose attached.

### Fluids

Air

Specifications: Working temperature limit: Between -5°C and +60°C

Nominal designation	Hose size	Regular size (m)	Maximum working pressure MPa at 20°C	Regular size weight (kg)
Quattro Reel	6.0×10	30	4.0	8.3

## Sun Tech Air Reel



Air reel product

### Usege

For air-paint, air-spray, and in-factory air tools.

### Features

Reels with rotation function, you can choose the direction. Sun Tech Air Hose attached. You can order the reel stand without a hose.

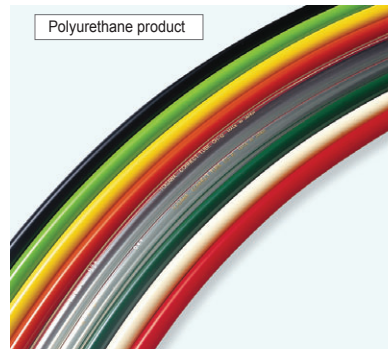
### Fluids

Air

Specifications: Working temperature limit: Between -40°C and +60°C

Nominal designation	Hose size	Regular size (m)	Maximum working pressure MPa at 20°C	Regular size weight (kg)
Sun Tech Air Reel	7.0×10	30	1.5	7.8

## Connect Tube (CH)



Polyurethane product

### Usege

A tube for various pneumatic machines

### Features

Superior in oil resistance, this tube is appropriate for in-factory air piping.

### Fluids

Air

Specifications: Standard type:

Working temperature limit: Between -40°C and +80°C

(Standard length: 100m)

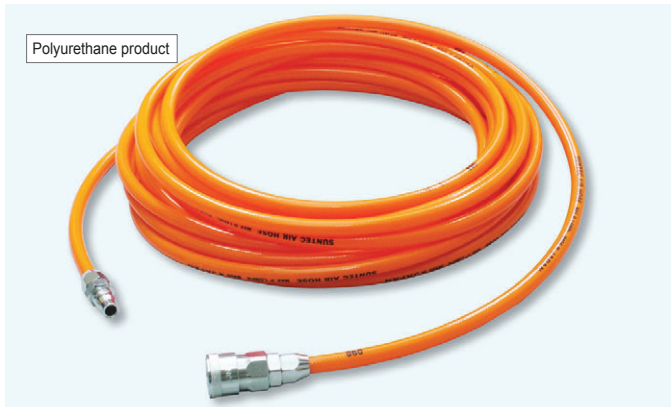
Nominal designation	Outer diameter (mm)	Inner diameter (mm)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Regular size (m)	Weight (kg/m)
CH-4 BK	4.0	2.5	0.7	3.0	10	100	0.009
CH-6 BK	6.0	4.0	0.7	3.5	15	100	0.019
CH-8 BK	8.0	5.0	0.7	3.5	24	100	0.037
CH-10 BK	10.0	6.5	0.7	3.0	30	100	0.054
CH-12 BK	12.0	8.0	0.7	3.0	36	100	0.075



## Sun Tech Air Hose

A convenient and affordable air hose combined with a pair of couplers.  
The hose is available in a variety of different colors.

Specifications: Working temperature limit: Between -40°C and + 60°C

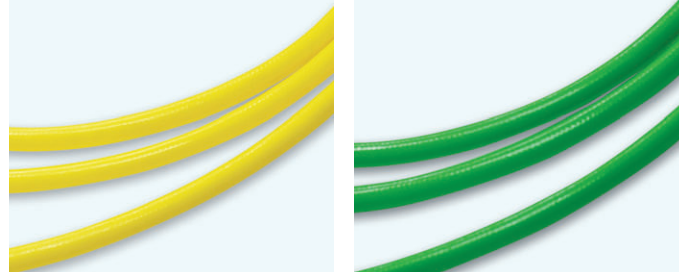


Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Brackets used	Delivery unit	Color
STC-7010	7.0	10.0	10	1.5	6.0	40	Two-touch coupler	10	● ● ●
STC-7020	7.0	10.0	20	1.5	6.0	40		10	● ● ●
STC-7030	7.0	10.0	30	1.5	6.0	40		10	● ● ●
STC-7100	7.0	10.0	100	1.5	6.0	40	—	—	●

**Usege** For air-paint, air-spray, and in-factory air tools

**Features** A convenient and affordable air hose with a pair of couplers. Available in a variety of different colors as orange, green, and yellow.

**Fluids** Air



## Takumi Air Hose

Characterized by the extraordinary flexibility of the special resin. You may feel as if no hose is attached.

Specifications: Working temperature limit: Between -5°C and + 60°C



Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Brackets used	Delivery Unit
TAC-6510	6.5	10.0	10	1.5	4.0	20	One-touch aluminum coupler	10
TAC-6520	6.5	10.0	20	1.5	4.0	20		10
TAC-6530	6.5	10.0	30	1.5	4.0	20		10
TAC-6100	6.5	10.0	100	1.5	4.0	20	—	—

**Usege** For air-paint, air-spray, and in-factory air tools

**Features** Characterized by the extraordinary light weight with the aluminum couplers.

**Fluids** Air



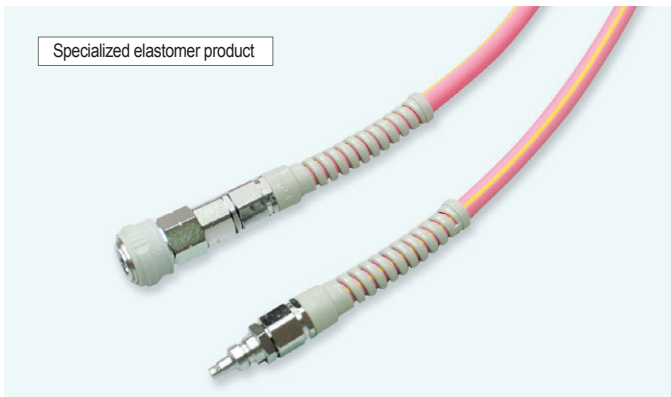
### Super flexible hose with light weight coupler!

This hose can be used in a wide variety of applications such as pegger machines, air-tuckers, and air-spray guns. This hose may be well praised even by professional skilled workers. The couplers, made of aluminum, are characterized by the light weight, resistance to damages, and increased removability and operability. In addition, the couplers are superior in versatility which can be used for a variety of applications ranging from in-factory air piping to hose connection with air tools.

## Quattro Hose

The high pressure hose of super flexibility and smoothness which can support up to 4MPa maximum operating pressure.

Specifications: Working temperature limit: Between -5°C and + 60°C



Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Minimum bending radius (mm)	Brackets used	Delivery Unit
QHC-6010	6.0	10.0	10	4.0	16.0	18	One-touch aluminum coupler	10
QHC-6020	6.0	10.0	20	4.0	16.0	18		10
QHC-6030	6.0	10.0	30	4.0	16.0	18		10

**Usege** For air tools (pegger machines and air-tuckers) and in-factory air tools.

**Features** A high pressure hose that supports up to 4MPa maximum operating pressure and significantly shorten the work hours. With the new proprietary special material, this hose cannot get stuck or kinked easily.

**Fluids** Air

### Performance evaluation

Descriptions	Evaluation	Descriptions	Evaluation
Lightness	★ ★ ★ ★ ★	Smoothness	★ ★ ★ ★ ★
Softness	★ ★ ★ ★	Spattering resistance	★ ★ ★ ★ ★

\* All the evaluations were made in-house  
\* Use our specified brackets

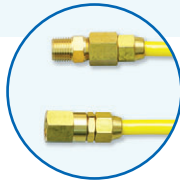
## Connect Coil

With its spring characteristic, this coil won't get kinks easily, which is appropriate for air tools.

Polyurethane product



Screw type



**Usege**

For air-paint, air-spray, and in-factory air tools

**Features**

Because of a coil form, this product will cover broader working space with fewer kinks and wears. As the edges are straightened, no hoses are necessary, and the couplers will improve the workability.

**Fluids**

Air

## Sun Tech Coil

Superior in robustness in addition to high flexibility, elasticity, and wear resistance.

Polyurethane product



Coupler type



**Usege**

For air-paint, air-spray, and in-factory air tools

**Features**

Because of a coil form, this product will cover broader working space with fewer kinks and wears. As the edges are straightened, no hoses are necessary, and the couplers will improve the workability.

**Fluids**

Air

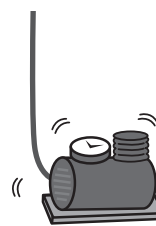
\*This product is made in China.

Specifications: Working temperature limit: Between -40°C and + 80°C

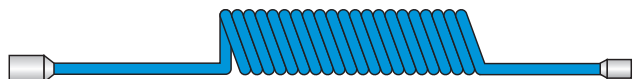
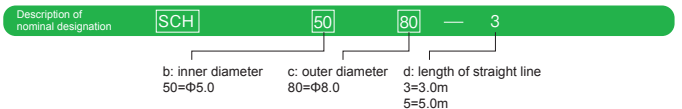
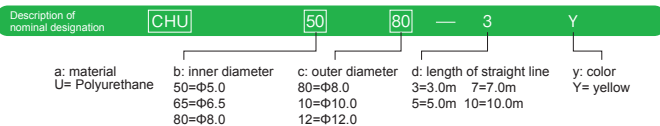
Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Working space (m)	Brackets of both ends	Maximum working pressure	Delivery Unit
					MPa at 20°C	
CHU-5080-3	5.0	8.0	2.0	PF 1/4 Female connector	0.7	10
CHU-5080-5	5.0	8.0	4.0	PF 1/4 Female connector	0.7	10
CHU-5080-7	5.0	8.0	6.0	PF 1/4 Female connector	0.7	10
CHU-5080-10	5.0	8.0	8.0	PF 1/4 Female connector	0.7	10
CHU-6510-3	6.5	10.0	2.0	PF 1/4 Female connector	0.7	10
CHU-6510-5	6.5	10.0	4.0	PF 1/4 Female connector	0.7	10
CHU-6510-7	6.5	10.0	6.0	PF 1/4 Female connector	0.7	10
CHU-6510-10	6.5	10.0	8.0	PF 1/4 Female connector	0.7	10
CHU-8012-3	8.0	12.0	2.0	PF 1/4 Female connector	0.7	10
CHU-8012-5	8.0	12.0	4.0	PF 1/4 Female connector	0.7	10
CHU-8012-7	8.0	12.0	6.0	PF 1/4 Female connector	0.7	10
CHU-8012-10	8.0	12.0	8.0	PF 1/4 Female connector	0.7	10

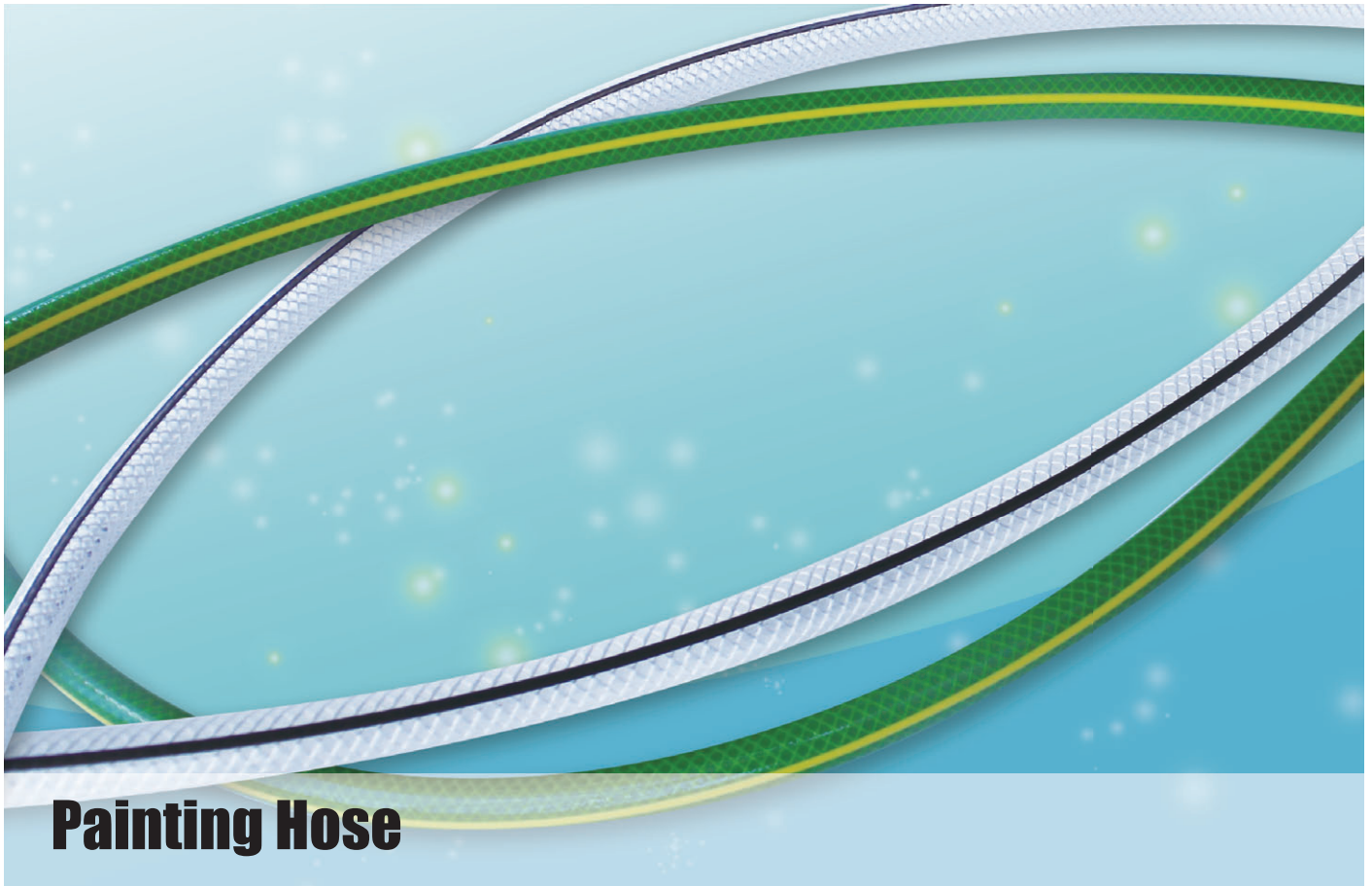
Specifications: Working temperature limit: Between -40°C and + 80°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Working space (m)	Brackets of both ends	Maximum working pressure	Delivery Unit
					MPa at 20°C	
SCH-5080-3	5.0	8.0	2.0	Two-touch coupler	0.7	10
SCH-5080-5	5.0	8.0	4.0	Two-touch coupler	0.7	10



Superior in flexibility, elasticity, and wear resistance.





# Painting Hose

A wide variety of products are prepared in this series to support manual spray, spray robot and automatic spray machines. Each product in this series has following features: swelling property is improved; inner roughness is ultimately studied to shorten the setup time; and a ground connection is added for removing the static electricity.

## FA Tube

Compared to conventional fluorine tube, the softness and smoothness of inner tube have been improved, attaining superior workability.

Specifications: Working temperature limit: Between -20°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	
				MPa at 20°C	Burst pressure MPa at 20°C
FA-06	4.0	6.0	100	1.2	7.8
FA-08	6.0	8.0	100	1.2	5.8
FA-10	8.0	10.0	100	1.2	5.2



Inner fluorine resin product

**Usege** For piping of paints, solvents, and paint robots, and conveyance of foods and beverages.

**Features** Compared to conventional fluorine tubes, the retention power against burst pressure after bending the tube has been greatly upgraded.

**Fluids** Paints Solvents Various foods

### An FA tube appropriate for paint robots!



FA tube has a laminated structure in which fluorine resin is used for the inner layer and polyamide resin for the outer layer. The significant superiority of inner roughness for the fluorine resin will help shortening the setup time for color change. Compared to conventional fluorine tubes, the polyamide resin for the outer layer is superior in softness, workability, and break resistance, and helps shortening the setup time for robots, and reduces downtimes.



### Please note

For any questions and inquires please contact us by email.

**e-mail** [global@togawa-sangyo.co.jp](mailto:global@togawa-sangyo.co.jp)

- The hoses and tubes are significantly influenced by the ambient and fluid temperatures. Choose a hose which is appropriate for those conditions.
- Using hoses or tubes with less than the minimum bending radius may deteriorate the performance and shorten the product life time.
- Do not use these products in the maximum pressure limit for using with equipment that vibrates or gives impact.
- Before using hoses or tubes, never forget to check whether there are no kinks or twists.

\* Refer to the safety notice on page 25 and 26 for more details.

## Sun Paint Tube (P)

Superior in flexibility by using solvent resistant urethane resin for the outer layer. This tube is designed to improve the workability of painting processes.

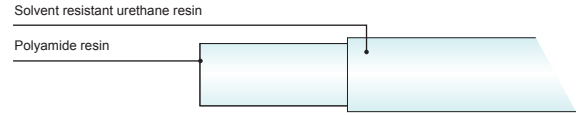


Polyamide/Polyurethane resin product

Specifications: Working temperature limit: Between -20°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C		
P-7	7.0	10.0	100	0.5	2.3	45	5.1

[P Structure]



**Usege** Piping for paints and solvents

**Features** Reduces the load of workers.

**Fluids** Paints Solvents

## Sun Paint Hose (PB-easy)

With the use of polyamide resin, the solvent resistance is significantly improved compared to conventional painting hoses.

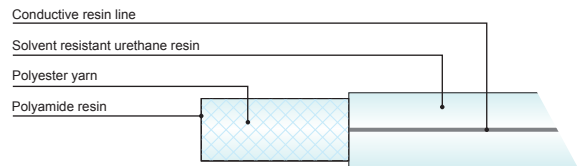


Polyamide/Polyurethane resin product

Specifications: Working temperature limit: Between -20°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C		
PB-easy-7	6.5	10.0	100	1.5	7.2	35	5.7

[EASY Structure]



### Features

A versatile painting hose is now available!

- As a conductive sleeve is applied around the outer layer, the grounding can be completed just by tightening the metallic joint (when the resistance value is  $9 \times 10^6 \text{ W}$  or less, and the whole length is 15m or less).

## Sun Paint Hose (PB-with a ground wire)

With the use of polyamide resin, the solvent resistance is significantly improved compared to conventional painting hoses.

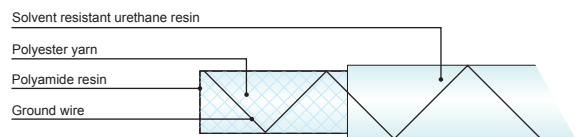


Polyamide/Polyurethane resin product

Specifications: Working temperature limit: Between -20°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Minimum bending radius (mm)	Regular size weight (kg)
				MPa at 20°C		
PB-7	6.5	10.0	100	1.5	35	5.7

[EASY Structure]



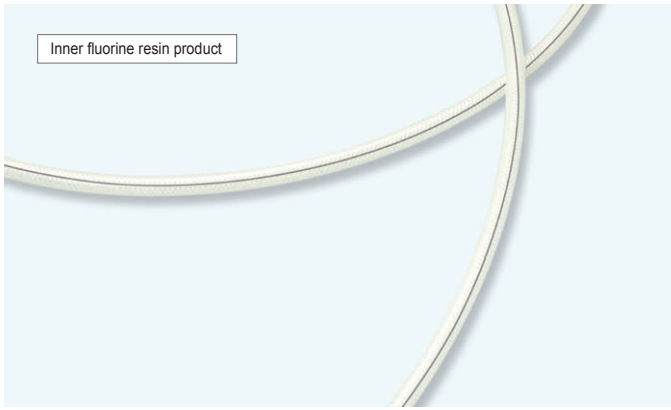
**Usege** For piping of paints and solvents

**Features** Superior in flexibility and pressure resistance, this hose will improve the workability.

**Fluids** Paints Solvents

## Sun Paint Hose (FUB-easy)

With the use of special resin for the outer layer, this hose is superior in significant flexibility. The fluorine resin, used for the wetted layer, will also demonstrate the significant resistance to water paints.

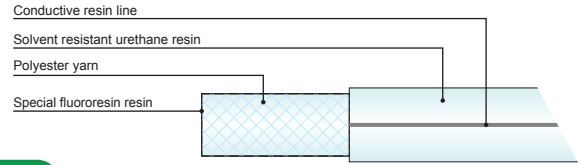


Inner fluorine resin product

Specifications: Working temperature limit: Between -20°C and +60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C		
FUB-easy-7	7.0	10.0	100	1.5	6.0	33	5.5

[EASY Structure]



### Features

Best choice of manual paint hose!

- As the inner fluorine resin is superior in inner roughness, this hose will help to shorten the setup time for color change.

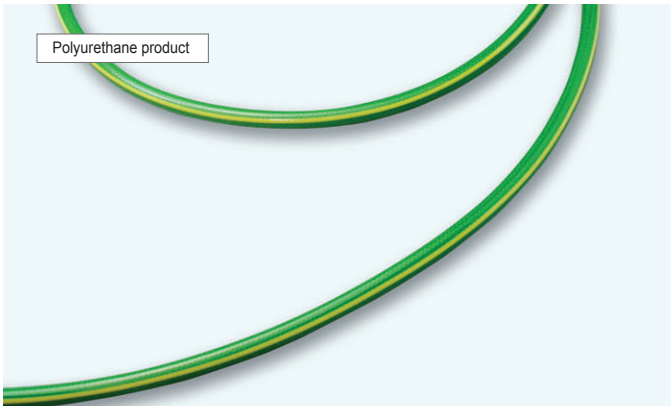
**Usege** For piping of paints and solvents

**Features** The fluorine resin, used for the wetted layer, will demonstrate the significant resistance to water paints in addition to oil paints.

**Fluids** Paints

## Conductive Air Hose (SEH)

A conductive material is used for inner layer and the grounding can be completed just by connecting a metallic joint.



Polyurethane product

Specifications: Working temperature limit: Between -20°C and +60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C			
SEH-6	6.5	10.0	100	1.5	7.0	35	0.057	5.7
SEH-8	8.5	12.5	100	1.5	7.0	45	0.084	8.4

Electric resistance value (Ω)

Nominal designation	Length of hose (m)	
	10m	20m
SEH-6	1.0x10 <sup>5</sup>	2.0x10 <sup>5</sup>
SEH-8	1.0x10 <sup>5</sup>	1.5x10 <sup>5</sup>

\*1. Purpose: The values of electric resistance of conductive air hoses, 6.5 x 1B x 10 and 8.5 x 1B x 12.5 in 10m and 20m, are measured.

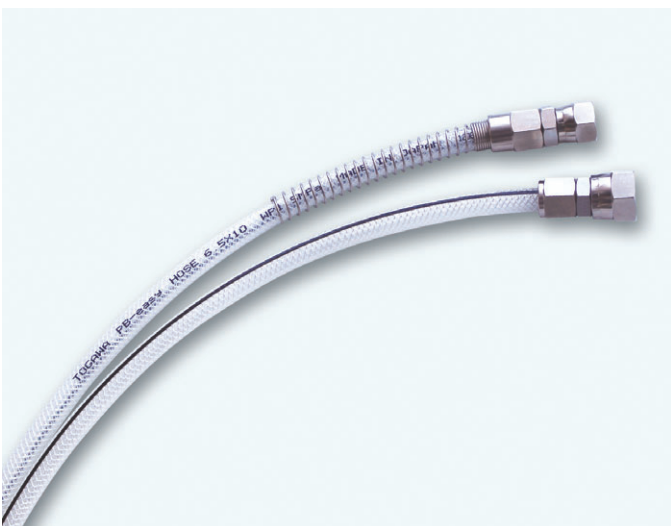
\*2. Test method: A joint (brass) is attached to the conductive air hoses, SE-H6 and SE-H8, and the electric resistance values between the hoses are measured.

**Usege** For antistatic piping of painting

**Features** Stripping off the ground wire is not necessary, which improves the workability. A reliable grounding can be achieved.

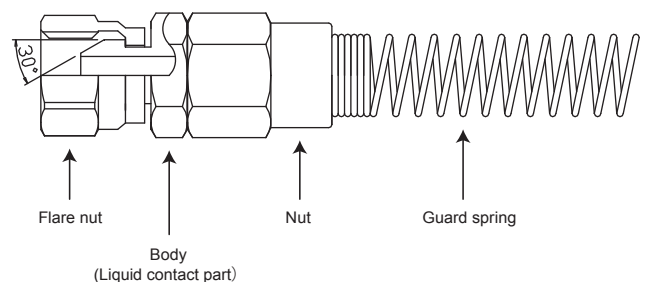
**Fluids** Air

## Joints for Painting Hose



Nominal designation	Joint type	Screw size	Guard spring	Conformed hose	Material
T05-6510 1/4 SB	Female	G 1/4	×		
T05-6510 1/4 SBGS	Female	G 1/4	○	PB-easy 7 PB-7	Liquid contact part:SUS304 Nut: Brass
T05-6510 3/8 SB	Female	G 3/8	×	Fub-easy 7	(electroless nickel plating)
T05-6510 3/8 SBGS	Female	G 3/8	○		

Structure



## List of painting hoses

### Air Hose

To be recommended use Electric Conducted Air hoses for both of the Air Spray and Electric Static Spray Gun.



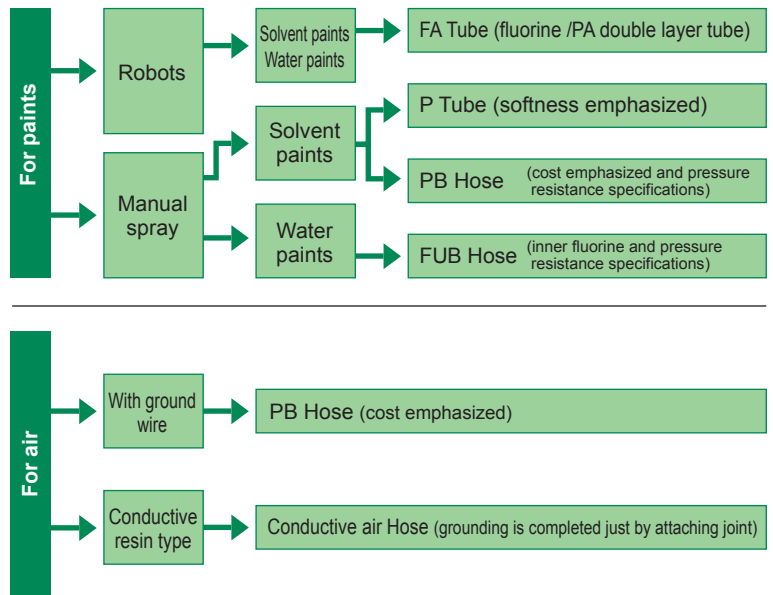
Conductive Air Hose (SEH)

PB Hose  
FUB Hose

Actual working pressure (MPa)  
0.5~0.6

### Paint Hose

	Paint Type	Typical Spray Gun	Actual working pressure(MPa)	Tube & Hose
Robot Auto machine	Under Body Coat	Air Less Gun	15~25	Airless Hose
	Stone Guard Coat	Air-Airless Gun	7~8	Airless Hose
	Primer Coat	ES Gun	0.4~0.5	FA Tube ST Tube
	Surface Coat	ES Gun / Bell		
	To Coat / Base & Clear	ES Gun / Bell		
Manual Spray Gun	Under Body Coat	Air Less Gun	15~25	Airless Hose
	Stone Guard Coat	A-A Gun	7~8	Airless Hose
	Primer Coat	Air Spray Gun E/S Spray Gun	0.2~0.3	PB Hose FUB Hose
		HVLP Gun	0.2~0.6	



Painting Hose

### Comparison data of manual spray hose

Description (unit)	For solvent paints		For water paints	Test method	
	Tube	With reinforced yarns			
	P Tube	PB Hose	FUB Hose		
Hose size (mm)	7x10	6.5x10	7x10		
Immersion test <Immersion solvents: solvent thinner>	+22% (△)	+26% (△)	35% (△)	Togawa method: The hose (25mm) is soaked in an immersion solvent for 20 days and the fluctuation of weight is measured.	
Amount of deflection (mm)	49 (○)	54 (○)	41 (○)	Togawa method: A load weight of 100g is applied to the edge of a 150mm tube, and the amount of deflection is measured.	
Checking of water paint appropriateness A water paint base is filled in the hose, which is left for 20 days	Condition of paint	The paint is somewhat sticky (△)	The paint is somewhat sticky (△)	The paint is watery (◎)	After leaving the hose for 20 days, the degree of removability by natural force is compared.
	Condition of inner hose	A few residual paints (△)	A few residual paints (△)	No residual paints (○)	After removing the residual paints, a water thinner (2 cc) is poured for two times, and the inner part is checked.

# Food Hose

The food hoses that contain no substances which are suspected of having an environmental hormone or dioxin such as phthalate ester and nonyl phenol. Superior in heat and cold resistances, this series of hoses are harmless and safe.

Food Hose

## Heat-Resistant Eco Hose

A non-PVC hose which can be used for fatty foods. It is also superior in chemical resistance.



Specifications: Working temperature limit: Between -20°C and + 80°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C	Burst pressure MPa at 20°C	Weight (kg/m)	Regular size weight (kg)
TEH-12	12.0	18.0	60	1.0	48	0.13	7.8
TEH-15	15.0	22.0	60	0.8	60	0.19	11.4
TEH-19	19.0	26.0	50	0.7	76	0.23	11.5
TEH-25	25.0	33.0	40	0.6	100	0.34	13.6
TEH-32	32.0	41.0	40	0.5	128	0.48	19.2
TEH-38	38.0	48.0	40	0.4	152	0.62	24.8
TEH-50	50.0	62.0	40	0.3	200	0.97	38.8

\* The sizes or colors other than listed above are available by a lot production. The burst pressure is estimated under the condition of 20°C.

### Notes on the operating temperature and maximum working pressure

If you use this product out of the normal temperatures range, refer to the maximum working pressure fluctuations described in the graph of the Clean Elast pressure resistance data in the P.21, and use the hose in the condition below the specified value. In addition, if you use the hose in more than the maximum working pressure (in accordance with the operating temperature), please take care because it may cause a danger of bursting or significantly shorten the service time of the hose.

**Useage** Foods

**Features** A non-PVC hose which can be used for fatty foods. It is also superior in chemical resistance.

**Fluids** Water Various foods Chemicals

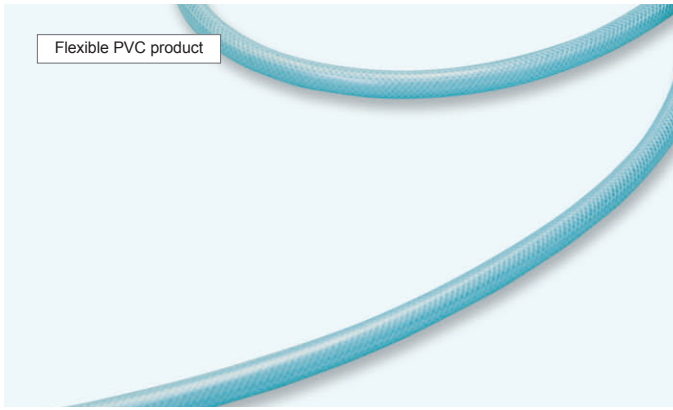
## Important notice on food hoses

### Odor and taste

Odor and/or taste may be generated in some rare cases by the reaction between the hose and fluids (water, foods, or cleaning agents). Check the odor and taste before and after using the hose, as there may be great difference between persons.

## Pure Foods Hose (JHP)

A PVC food hose conforming to JHP (PVC food sanitation association)



Specifications: Working temperature limit: Between -5°C and + 70°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C			
PFH-12	12.0	18.0	50	1.0	5.0	48	0.18	9
PFH-15	15.0	22.0	50	0.8	4.8	60	0.26	13
PFH-19	19.0	26.0	50	0.7	3.8	76	0.32	16
PFH-25	25.0	33.0	50	0.6	3.0	100	0.46	23

\* The sizes or colors other than listed above are available by a lot production. The burst pressure is estimated under the condition of 20°C.

### What are JHP specifications (self-imposed specifications of Japan Hygienic PVC Association) ?

Based on the food sanitation law, the specifications define the recommended materials, unintended materials for use, and the methods of material and dissolve tests. The display of JHP logo is allowed for the products approved by the association. Pure Foods Hose does not contain any phthalate acid, which is registered with the JHP specifications and allowed to display the logo.

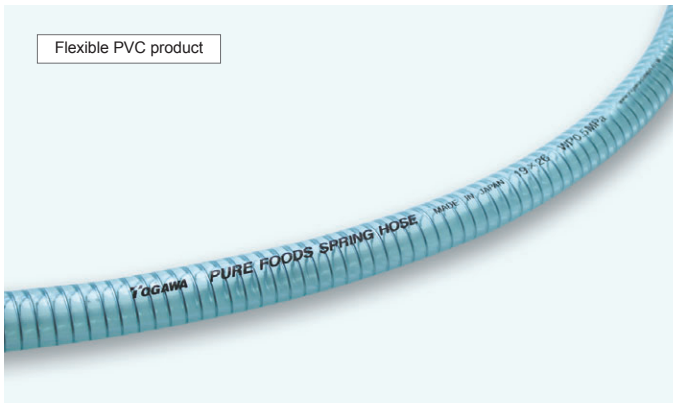
**Usege** For conveyance of foods and beverages

**Features** A safe hose conforming to the JHP specifications (refer to P.17) without harmful substances contained.

**Fluids** Foods and beverages

## Pure Foods Spring Hose (JHP)

A PVC food hose conforming to JHP (PVC food sanitation association)



Specifications: Working temperature limit: Between -5°C and + 70°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C			
PFS-12	12.0	18.0	50	0.7	4.5	60	0.23	11.5
PFS-15	15.0	22.0	50	0.6	3.5	75	0.32	16
PFS-19	19.0	26.0	50	0.5	3.0	95	0.44	22
PFS-25	25.0	33.0	50	0.5	2.5	125	0.54	27

\* The sizes or colors other than listed above are available by a lot production. The burst pressure is estimated under the condition of 20°C.

### What are JHP specifications (self-imposed specifications of Japan Hygienic PVC Association) ?

Based on the food sanitation law, the specifications define the recommended materials, unintended materials for use, and the methods of material and dissolve tests. The display of JHP logo is allowed for the products approved by the association. Pure Foods Spring Hose does not contain any phthalate acid, which is registered with the JHP specifications and allowed to display the logo.

**Usege** For conveyance of foods and beverages

**Features** A safe hose conforming to the JHP specifications (refer to P.17) without harmful substances contained.

**Fluids** Foods and beverages

## Silicon Hose

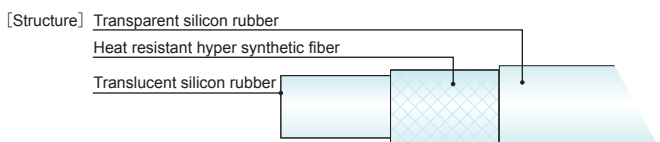
This hose can be used in a wide range of temperature between -30°C and + 150°C.



Specifications: Working temperature limit: Between -30°C and + 150°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
				MPa at 20°C	MPa at 20°C			
SH-5	4.8	10.6	10	1.0	4.0	70	0.090	0.9
SH-6	6.3	12.3	10	1.0	4.0	80	0.120	1.2
SH-8	7.9	14.3	10	1.0	3.0	90	0.150	1.5
SH-9	9.5	16.5	10	1.0	3.0	100	0.160	1.6
SH-12	12.7	20.1	10	0.5	2.0	130	0.180	1.8
SH-15	15.9	24.1	10	0.5	2.0	150	0.260	2.6
SH-19	19.0	28.2	10	0.5	2.0	180	0.320	3.2
SH-25	25.4	35.6	10	0.5	2.0	300	0.360	3.6
SH-32	32.0	43.8	10	0.5	2.0	360	0.460	4.6
SH-38	38.1	50.7	10	0.5	2.0	430	0.660	6.6
SH-50	50.8	65.0	6	0.5	2.0	550	0.860	5.2

\* The sizes or colors other than listed above are available by a lot production. The burst pressure is estimated under the condition of 20°C.



**Usege** For soft drinks, and high-and-low temperature equipment such as air-conditioners, transducers, and office automation devices.

**Features** It can be used in a wide range of temperature between -30°C and +150°C.

**Fluids** Water Various foods Chemicals



## Food hoses and applicable specifications

### Food sanitation law (Announcement No. 370 by the Ministry of Health and Welfare)

		Descriptions of tests	Specifications				
			PVC		Polyethylene (PE) and Polypropylene (PP)	Nylon (PA)	
			Utensils or container packages that contact fatty foods				
			JHP specifications				
		Announcement No.595	Announcement No.267	Announcement No.595	Announcement No.595		
General specifications	Materials	Lead	100 µg/g or less	-	100 µg/g or less	100 µg/g or less	
		Cadmium	100 µg/g or less	-	100 µg/g or less	100 µg/g or less	
		Bis phthalate (2-ethylhexyl)	-	Do not use.(Less than 0.1%)	-	-	
	Elution	Precious metals	1 µg/m or less	-	1 µg/m or less	1 µg/m or less	
		Potassium permanganate consumed	10 µg/m or less	-	10 µg/m or less	10 µg/m or less	
Individual specifications	Material test	Dibutyltin compound	50 µg/g or less	-	-	-	
		Cresol phosphoric acid ester	1000 µg/g or less	-	-	-	
		Polyvinyl chloride	1 µg/m or less	-	-	-	
	Elution test	Evaporation residue	heptane	150 µg/m or less	-	150 µg/m or less	30 µg/m or less
			20% ethanol	30 µg/m or less	-	30 µg/m or less	
			Water		-		
			4% acetic acid		-		
	Caprolactam	20% ethanol	15 µg/m or less	-	-	15 µg/m or less	

### Outline of the specifications

	Announcement and name of the specifications	Descriptions	Target food products
Food sanitation law	Announcement No.595 by the Health, labour and Welfare Ministry in 2011	Utensils or container packages made of synthetic resin	Fatty foods, alcoholic beverages, and other food products
JHP specifications	Established by Japan Hygienic PVC Association (JHPA)	Self-imposed control of the food sanitation for vinyl chloride resin products	

### Food sanitation law (Announcement No. 595 by the Ministry of Health and Welfare)

Material test		
2-mercaptoimidazole	Pb	Cd
ND (conducted for chlorinated rubbers)	100 µg/g or less	100 µg/g or less

Our accepted products	Elution condition	Elution test						
Silicone hose	The test is conducted by soaking in an immersion solution of 2ml per 1cm <sup>2</sup> in 60°C for 30 minutes, and the resulted solution is studied (for the products to be used in the temperature of 100 degrees or more, they are soaked in 95°C for 30 minutes).	Phenol	Formic aldehyde	Zn	Precious metals	Evaporation residue		
		Water	Water	4% acetic acid	4% acetic acid	Water	4% acetic acid	20% ethanol
		5 µg/ml or less	Negative	15 µg/ml or less	1 µg/ml or less	Food and water exceeding PH5	Food of below PH5	Alcoholic beverages and fatty foods
		60 µg/ml or less						

### Our approved products and test menus

Foods Hose	Announcement and general application	Descriptions	Target foods	Specifications standard		
Pure Foods Hose Pure Foods Spring Hose	Food sanitation law of the Ministry of Health, Labour and Welfare	Utensils or container packages made of vinyl chloride resin	Fatty foods	The compounding agent "Bis phthalate (2-ethylhexyl)" is below the standard value. Content: 0.1% or less Elution amount: 1µg/ml or less (immersion condition: 25°C for one hour)		
Pure Foods Hose Pure Foods Spring Hose Heat-Resistant Eco Hose			Announcement No.595 (2011)		Fatty foods	In the specifications test, elution amount is 150 µg/ml or less in the condition where the heptane is used for the immersion solution in 25°C for an hour.
					Alcoholic beverages	In the specifications test, elution amount is 30 µg/ml or less in the condition where the 20% ethanol is used for the immersion solution in 25°C for 30 minutes.
Silicone Hose	Announcement No.595 (2011)	Utensils or container packages made of rubbers	Other foods	In the specifications test, elution amount is 30 µg/ml or less in the condition where the 4% acetic acid and water are used for the immersion solution in 60°C for 30 minutes.		
			Fatty foods	In the specifications test, elution amount is 60 µg/ml or less in the condition where the 20% ethanol is used for the immersion solution in 60°C for 30 minutes.		
			Alcoholic beverages	In the specifications test, elution amount is 60 µg/ml or less in the condition where the 20% ethanol is used for the immersion solution in 60°C for 30 minutes.		
			Other foods	In the specifications test, elution amount is 60 µg/ml or less in the condition where the 4% acetic acid and water are used for the immersion solution in 60°C for 30 minutes (if the operating temperature exceeds 100°C, they must be 95°C for 30 minutes).		

Penalty: Sentence of six months or less, or fine of 30,000 yen or less (applicable for both provider and user)

Hoses are regarded as one of the utensils. For the food sanitation law, only the provision, "utensils or container packages that contact foods or food additives", is applicable.

JHP specifications (self-imposed control on the food sanitation for vinyl chloride resin products) have following meanings:

- \* JHPA(Japan Hygienic PVA Association) voluntarily defines the material list (positive list) which can be used for PVC products, specifications of the products, and test method (applying the announcement of the Health and Welfare Ministry based on the food sanitation law) in order to protect the health and safety of Japanese citizens with the view of conforming to the food sanitation law.
- \* Health and Welfare Ministry announcement No.595

According to the Notice of the Ministry of Health and Welfare No. 85, April 1st in 1986. The Notice of the Ministry of Health and Welfare No. 20 prescribes only for nursing equipments as Rubber Products so No.85 was newly prescribed for the whole field of rubber products as below but due to the revision of the test method, No.595 was prescribed in 2012.

# What's New



Debut as a new standard

# Revolution of Pressure Hose!

# High Pressure Resistance

Industrial Hose suitable for use with water supply of machines and factories, air piping, and water supply for engineering and construction sites.

## MEGA SUN-BRAID HOSE

## MADE IN JAPAN

Flexible PVC product

Pressure resistance of 4-25mm exceeded 1.0MPa!

Specifications: Working temperature limit: Between -5°C and +60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure MPa at 20°C		Minimum bending radius (mm)	Weight (kg/m)	Regular size weight (kg)
				Previous product	MEGA SUN-BRAID HOSE			
SB-4	4.0	9.0	100	1.1	1.5	16	0.070	7
SB-6	6.0	11.0	100	1.1	1.5	24	0.090	9
SB-8	8.0	13.5	100	1.1	1.4	32	0.120	12
SB-9	9.0	15.0	100	1.1	1.4	36	0.150	15
SB-10	10.0	16.0	100	1.1	1.1	40	0.160	16
SB-12	12.0	18.0	100	1.0	1.0	48	0.180	18
SB-15	15.0	22.0	100	0.8	1.0	60	0.260	26
SB-19	19.0	26.0	50	0.7	1.0	76	0.320	16
SB-22	22.0	29.0	50	0.7	1.0	88	0.360	18
SB-25	25.0	33.0	50	0.6	1.0	100	0.460	23
SB-32	32.0	41.0	50	0.5	0.7	128	0.660	33
SB-38	38.0	48.0	50	0.4	0.6	152	0.860	43
SB-50	50.0	62.0	40	0.3	0.6	200	1.375	55
SB-63	63.0	80.0	20	0.3	0.3	252	2.600	52
SB-75	75.0	92.0	20	0.3	0.3	300	3.000	60

### Use

For water supply of machines and factories, air piping, and water supply for engineering and construction sites.

### Features

Highly elastic resin is used.  
The fluids can be visually checked easily.

### Fluids



Water



Oil

Note: Cannot be used for fuel oil

What's new

# Japan market No.1 "TOGAWA" Brand Spray Hose

## Very Light weight Long Life



## NEW HIGH PRESSURE HOSE

Flexible PVC product

## MADE IN JAPAN

### Special features by using at high pressure...

- ◆ Can sprinkle agrochemicals to all surfaces of farm products.
- ◆ Can supply liquid fertilizer with uniformly and density.
- ◆ Fog cooling effect will keep greenhouses at a suitable temperature.

Specifications: Working temperature limit : Between -5°C and + 60°C

Nominal designation	Inner diameter (mm)	Outer diameter (mm)	Regular size (m)	Maximum working pressure	Burst pressure	Weight (kg/m)	Regular size weight (kg)	Brackets
				MPa at 20°C	MPa at 20°C			
HP-8.5	8.5	14.5	50 · 100	4.0	14.0	0.14	14.0	ISO
HP-10	10.0	17.0	50 · 100	4.0	14.0	0.18	18.0	ISO

### Use

For agricultural machines

### Features

Very flexible and easy to handle  
Very light weight

### Fluids



Water










Agrochemicals

Note: Cannot be used for fuel oil

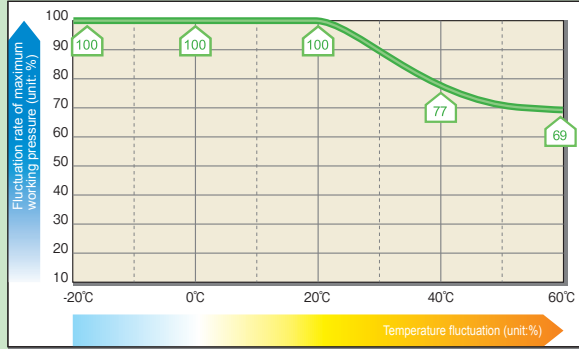
# Hose selection chart

Please select a hose depending on fluids you use. Due to a using environment and a using condition, descriptions below might be slightly different. For further information, please contact us.

	Product name	Features	Reinforcing layer	Material	Page placed
 Water	MEGA Sun Braid Hose	For general industry work	Fiber	Flexible PVC product	3
	Super Tom Oil resistance Sun Braid Hose	Oil resistance	Fiber	Flexible PVC product	3
	Super Sun Spring Hose	Oil resistance	Steel wire	Flexible PVC product	4
	Foam Sun Braid Hose	Dew condensation prevention	Fiber	Flexible PVC product	5
	Super Water Hose	For general industry work	Fiber	Flexible PVC product	5
	Super Tom Flex Hose	Oil resistance	Plastic hard wire	Flexible PVC product	4
	Transparent Vinyl Tube		None	Flexible PVC product	6
	Super Tom Fusso-easy Hose	For chemicals and food	Fiber	Inter fluorine resin	6
	Super Tom Fusso Tube	For chemicals and food	None	Inter fluorine resin	6
	Pure Foods Hose (JHP)	For foods	Fiber	Flexible PVC product	16
	Pure Foods Spring Hose (JHP)	For foods	Steel wire	Flexible PVC product	16
	Heat-Resistant Eco Hose	For foods	Fiber	Polyolefin product	15
	Silicone Hose	For foods	Fiber	Silicon products	16
 Air	Super Air Hose	For air	Fiber	Flexible PVC product	5
	Polyurethane Hose (TPH)	For air	Fiber	Polyurethane product	7
	Super Win Soft Hose II	For air	Fiber	Specialized elastomer product	7
	Super Tom Spatter Hose	For air	Fiber	Specialized elastomer product	8
	Sun Tech Air Hose	For air	Fiber	Polyurethane product	9
	Takumi Air Hose	For air	Fiber	Specialized elastomer product	9
	Quattro Hose	For air 4.0MPa pressure resistance	Fiber	Specialized elastomer product	9
	Conductive Air Hose (SEH)	For air	Fiber	Polyurethane product	13
	Connect Coil	For air coil shape	None	Polyurethane product	10
	Sun Tech Coil	For air coil shape	None	Polyurethane product	10
 Oil	Super Tom Oil resistance Sun Braid Hose	Oil resistance	Fiber	Flexible PVC product	3
	Super Sun Spring Hose	Oil resistance	Fiber	Flexible PVC product	4
	Super Tom Flex Hose	Oil resistance	Fiber	Flexible PVC product	4
 Various foods	Pure Foods Hose (JHP)	For foods	Fiber	Flexible PVC product	16
	Pure Foods Spring Hose (JHP)	For foods	Steel wire	Flexible PVC product	16
	Heat-Resistant Eco Hose	For foods	Fiber	Polyolefin product	15
	Silicone Hose	For foods	Fiber	Silicon products	16
	Super Tom Fusso Tube	For chemicals and food	None	Inter fluorine resin	6
	Super Tom Fusso-easy Hose	For chemicals and food	Fiber	Inter fluorine resin	6
 Chemicals	Heat-Resistant Eco Hose	For foods	Fiber	Polyolefin product	15
	Silicone Hose	For foods	Fiber	Silicon products	16
	Super Tom Fusso Tube	For chemicals and food	None	Inter fluorine resin	6
	Super Tom Fusso-easy Hose	For chemicals and food	Fiber	Inter fluorine resin	6
  Paints Solvents	Sun Paint Tube (P)	For paints	None	Polyamide/Polyurethane resin	12
	Sun Paint Hose (PB-easy)	For paints	Fiber	Polyamide/Polyurethane resin	12
	Sun Paint Hose (PB-with a ground wire)	For paints	Fiber	Polyamide/Polyurethane resin	12
	Sun Paint Hose (FUB-easy)	For paints	Fiber	Inter fluorine resin	13
	FA Tube	For paints	None	Inter fluorine resin	11

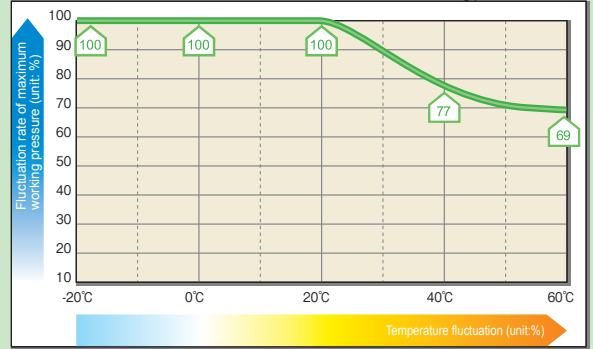
**MEGA Sun Braid Hose**

Relationship between the working temperature and the maximum working pressure



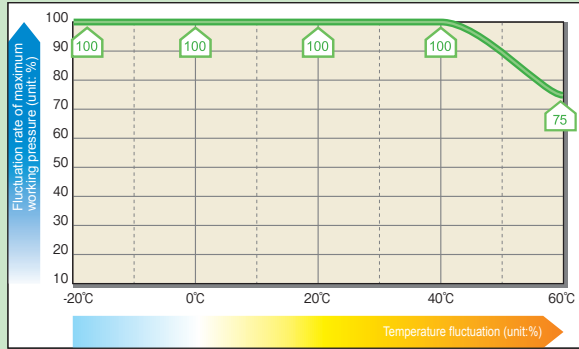
**Super Tom Oil Resistant Sun Braid Hose**

Relationship between the working temperature and the maximum working pressure



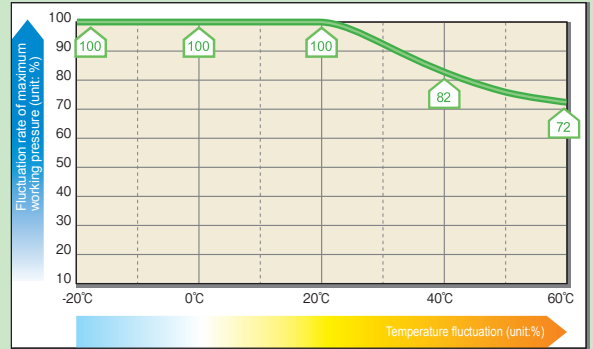
**Super Sun Spring Hose**

Relationship between the working temperature and the maximum working pressure



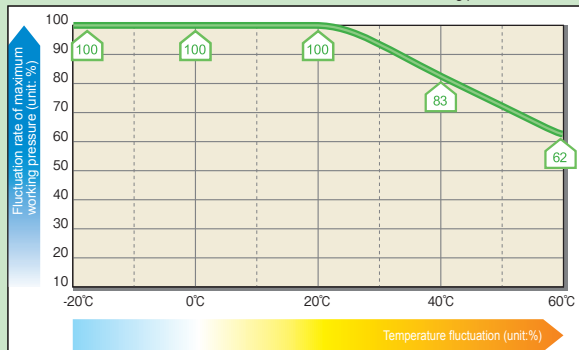
**Super Air Hose**

Relationship between the working temperature and the maximum working pressure



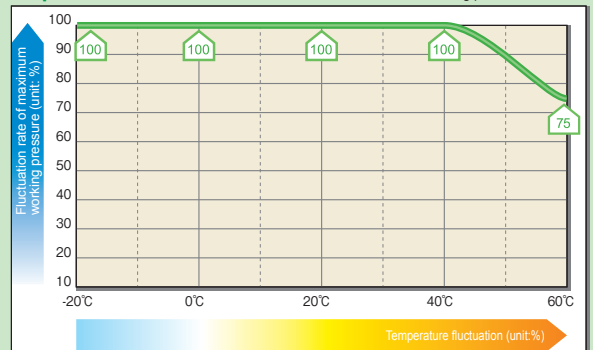
**Polyurethane Hose**

Relationship between the working temperature and the maximum working pressure



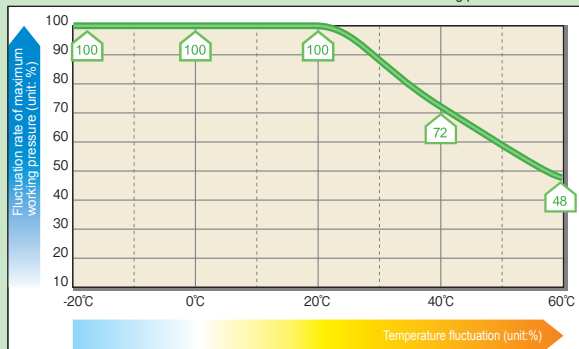
**Super Win Soft Hose II**

Relationship between the working temperature and the maximum working pressure



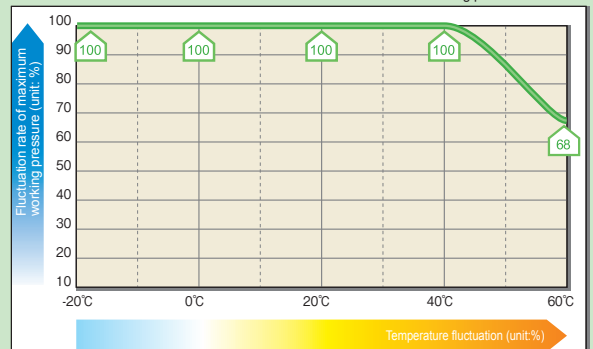
**Super Tom Spatter Hose**

Relationship between the working temperature and the maximum working pressure



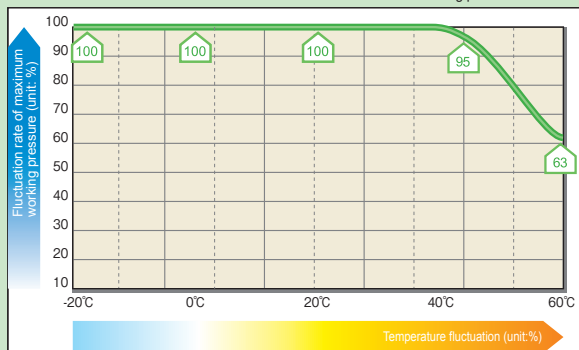
**Quattro Hose**

Relationship between the working temperature and the maximum working pressure



**Heat-Resistant Eco Hose**

Relationship between the working temperature and the maximum working pressure



\* The above pressure resistant data on the graph does not indicate the guaranteed value. Use the data for your reference only.



# Series Selection Chart

Series	Product name	Flexibility	Transparency	Oil resistance	Pressure resistance	Robustness	Negative pressure resistance	Main Usage	Materials	Outer layer color	Page placed
Industrial Hose	MEGA Sun Braid Hose	◎	◎	○	◎	△	×	Piping for factory equipment	PVC	Transparent blue	3
	Super Tom Oil resistance Sun Braid Hose	◎	○	◎	◎	△	×	Machine tools	Oil resistance PVC	Transparent green	3
	Super Sun Spring Hose	○	◎	◎	△	◎	○	For conveyance	Oil resistance PVC	Transparent	4
	Super Tom Flex Hose	○	○	◎	△	◎	○	For chemical	Oil resistance PVC	Transparent blue	4
	Foam Sun Braid Hose	△	×	○	◎	△	×	Cooling chiller piping	PVC	Black	5
	Super Air Hose	○	×	○	◎	◎	×	Air piping	PVC	Black and blue	5
	Super Water Hose	○	×	○	◎	◎	×	Water piping	PVC	Green	5
	Transparent Vinyl Tube	◎	◎	△	×	×	×	Piping and protective blue	PVC	Transparent	6
	Super Tom Fusso Tube	○	○	◎	×	△	×	For chemical	FUSSO	Transparent	6
	Super Tom Fusso-easy Hose	△	○	◎	◎	○	×	For chemical	FUSSO	Transparent	6
Series	Product name	Flexibility	Smoothness	Pressure resistance	Kink resistance	Spattering resistance		Main Usage	Materials	Outer layer color	Page placed
Air tool Hose	Polyurethane Hose (TPH)	○	○	○	○	×	—	Piping for factory equipment	TPU	Orange	7
	Super Win Soft Hose II	◎	◎	○	◎	×	—	For air tool	Special TPE	Green and purple lines	7
	Super Tom Spatter Hose	○	◎	○	◎	◎	—	Welding site	Special TPE	Black and red lines	8
	Connect Tube CH	△	△	○	×	×	—	Piping for factory equipment	TPU	Black	8
	Sun Tech Air Hose	○	○	○	○	×	—	For air tool	TPU	orange,yellow,and green	9
	Takumi Air Hose	◎	◎	○	◎	×	—	For air tool	Special TPE	Red and yellow line	9
	Quattro Hose	◎	◎	◎	◎	×	—	For air tool	Special TPE	Pink and yellow lines	9
	Sun Tech Coil	○	△	○	◎	×	—	Piping for factory equipment	TPU	blue	10
	Connect Coil	○	△	○	◎	×	—	Piping for factory equipment	TPU	yellow	10
Series	Product name	Flexibility	Transparency	Solvent resistance	Pressure resistance	Conductivity	Inner smoothness	Main Usage	Materials	Outer layer color	Page placed
Painting Hose	FA Tube	△	○	◎	○	×	◎	For paints	Fluorine	Transparent	11
	Sun Paint Tube (P)	◎	◎	○	△	×	○	For paints	PA	Transparent	12
	Sun Paint Hose (PB-easy)	◎	◎	○	◎	◎	○	For paints	PA	Transparent	12
	Sun Paint Hose (PB-with a ground wire)	◎	◎	○	◎	◎	○	For paints	PA	Transparent	12
	Sun Paint Hose (FUB-easy)	○	○	◎	◎	◎	◎	For paints	PA	Transparent	13
	Conductive Air Hose (SEH)	○	—	×	◎	◎	—	For air	TPU	Green	13
Series	Product name	Flexibility	Transparency	Oil resistance	Robustness	Heat resistance	Negative pressure resistance	Main Usage	Materials	Outer layer color	Page placed
Food Hose	Heat-Resistant Eco Hose	○	○	○	△	◎	×	For food and beverages	TPE	Transparent	15
	Pure Foods Hose (JHP)	◎	○	△	△	○	—	For food and beverages	PVC	Transparent blue	16
	Pure Foods Spring Hose (JHP)	○	○	△	△	○	◎	For food and beverages	PVC	Transparent blue	16
	Silicone Hose	◎	△	×	×	○	×	For food and chemicals	Silicone	Opaque white	16

**Flexibility** : Easy piping work. Brackets can be inserted and attached easily.

**Tranceparency** : Fluids can be visually checked. Find acumulation easily.

**Oil resistance** : Flexibility lasts long. Prevent fluids leakage due to hose harden and cracks.

**Pressure resistance** : Stable pressure resistance will avoid troubles.

**Robustness** : Flattening resistance enables shorter bending radius.Withstanding external pressure enables smooth conveyance of fluids.

**Heat resistance** : High temperature of melting,softening and heat decomposition will keep stable heat resistant.

**Conductivity** : Electrically conducting materials improve electroconductivity and enhance working safety.

**Inner smoothness** : High viscosity fluids also can flow smoothly.

# Engineering Data

Read the following engineering data carefully in order to choose an appropriate hose for the safe use. If you have any questions, please feel free to contact us.

**e-mail [global@togawa-sangyo.co.jp](mailto:global@togawa-sangyo.co.jp)**

Chemical resistance and oil resistance data

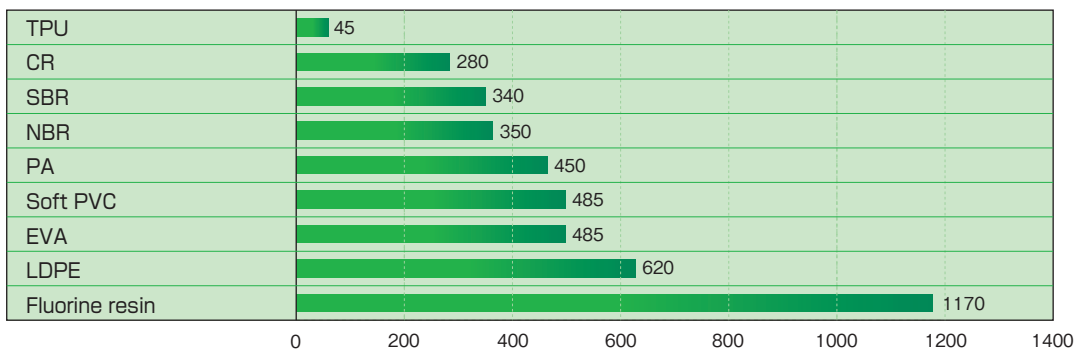
Fluid name	Tube and hose					
	MEGA Sun Braid	TPH	Silicone	Super Tom Fusso	Sun Paint (P)	Heat Resistant
Acetylene	○	—	△	○	○	○
Sulfurous acid	○	×	—	○	×	—
Sulfurous acid gas	○	—	—	○	×	○
Sodium sulfite	△	△	○	○	○	○
Ammonia gas (cold)	▲	×	○	○	▲	○
Ammonia gas (hot)	×	×	○	○	×	○
Ether	×	▲	×	△	○	△
Ethyl alcohol	▲	△	○	○	○	○
Air	○	○	○	○	○	○
Air (hot)	△	△	○	○	○	○
Ethyl chloride	×	△	△	△	○	△
Ammonium chloride	△	—	○	○	▲	○
Sulfur chloride	△	—	○	○	○	○
Potassium chloride	○	○	○	○	○	○
Calcium chloride	○	×	○	○	△	○
Hydrochloric acid (cold)	△	▲	○	○	×	○
Hydrochloric acid (hot)	×	×	×	○	×	×
Hydrogen peroxide (diluted)	△	—	○	○	×	○
Hydrogen peroxide (concentrated)	△	—	○	○	×	○
Gasoline	×	○	×	○	○	△
Xylene	×	▲	×	○	○	△
Chloroform	×	×	×	△	○	×
Creosote oil	×	△	×	○	×	○
Glycerin	▲	○	○	○	○	○
Diesel oil	—	○	×	—	○	△
Mineral oil	▲	○	×	○	○	△
Hydraulic oil			×	△-○		○
Petroleum hydraulic oil	×	○	×	○	○	○
Mineral oil emulsion	▲	○	×	○	△	○
Ethylene glycol	—	△	○	○	△	○
Phosphate ester	—	—	—	○	○	○
Acetic acid (concentrated)	—	▲	○	—	○	○
Acetic acid (10%)	—	○	○	—	○	○
Oxygen	○	○	○	○	○	○
Sulfuric acid (10%)	○	—	○	○	○	○
Sulfuric acid (70%)	△	×	×	○	×	○

Chemical resistance and oil resistance data

Fluid name	Tube and hose					
	MEGA Sun Braid	TPH	Silicone	Super Tom Fusso	Sun Paint (P)	Heat Resistant
Sodium nitrate	○	—	○	○	○	○
Ammonium hydroxide	△	○	—	○	△	○
Potassium hydrate	○	△	△	○	△	○
Calcium hydrate	○	○	○	○	○	○
Hydrargyrum	○	○	—	○	○	○
Hydrogen	○	○	○	○	○	○
Vapor	×	×	×	○	×	○
Soap water	○	×	○	○	○	○
Carbonic acid	△	—	×	○	△	○
Carbon dioxide	○	○	○	○	○	○
Sodium carbonate	—	×	—	—	○	○
Tar	×	—	○	○	○	○
Toluene	×	▲	×	△	○	△
Naphtha	▲	▲	△	○	○	△
Carbonic anhydride	▲	—	△	○	×	○
Fuel oil	×	○	×	○	○	×
Gastor oil	▲	—	×	○	○	○
Phenol	×	×	○	○	×	○
Butyl alcohol	×	×	○	○	○	○
Benzene	×	△	△	○	○	○
Benzin	×	△	×	○	▲	△
Water	○	▲	○	○	▲	○
Methyl alcohol	×	△	○	○	○	○
Sulfuric acid 10% (cold)	○	▲	○	○	×	○
Sulfuric acid 10% (hot)	△	▲	○	○	×	○
Sulfuric acid 75% (cold)	×	×	×	○	×	○
Sulfuric acid 75% (hot)	×	×	×	○	×	○
Sulfuric acid 95% (cold)	×	×	×	○	×	○
Sulfuric acid 95% (hot)	×	×	×	○	×	○
Aluminum sulfate	○	—	○	○	▲	○
Ammonium sulfate	○	—	○	○	△	○
Sodium sulfate	△	○	—	○	○	○
Nickel sulfate	○	—	○	○	○	○
Magnesium sulfate	○	—	○	○	○	○
Phosphoric acid	△	×	○	○	×	○

[Description of signs] ○ : Completely or practically not affected. ▲ : Slightly affected, but sufficiently endurable for this purpose depending on the condition of use  
 △ : Better not to use for this purpose. × : Significantly affected and not allowed to use for this purpose.

## Wear performance comparison data



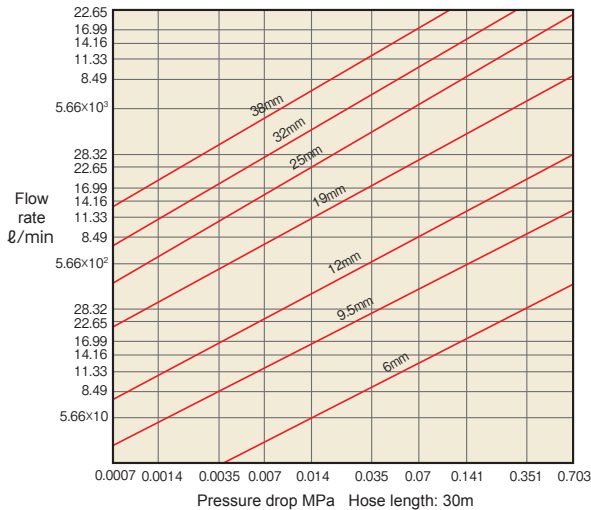
\* Taper wear circle H18  
 Measured by the load weight of 2kg for 1000 rounds

Amount of reduction by wearing (mg)

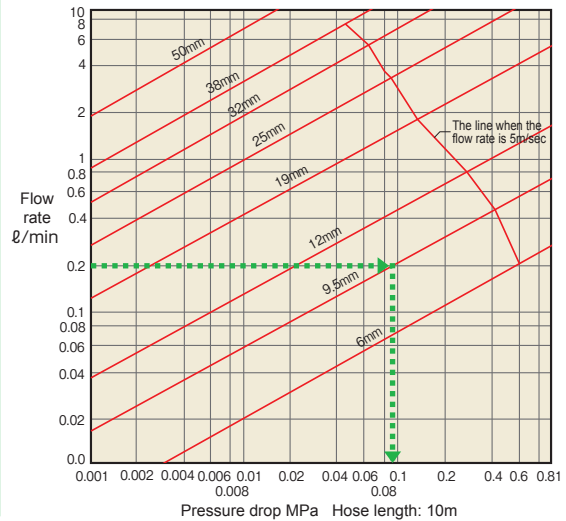
### Hose pressure loss graph

\* The graph does not indicate the guaranteed value. Use the data for your reference only.

[Fluids: air] Hose inner surface: smooth  
Hose size: Inner diameter 6.3 - 38.1mm



[Fluids: water] Gravity: 0.992 Kinematic viscosity: 0.6mm<sup>2</sup>/s=6.0x10<sup>3</sup> St  
Fluid temperature: 40°C. Hose inner surface: smooth Hose size: Inner diameter 6.3 - 50.8 mm



How to read the graph: From the pressure drop graph of the water, when the hose size is 9.5 mm for the inner diameter, 30m for the length, and 0.2 l/sec for the flow rate, the pressure loss becomes 0.3MPa by the graph coefficient "0.09 (MPa/10m) x 30/10 (m) = 0.27" (nearly equal to "0.3").

### Advantages of use

\* Refer to this information with the selection list of each hose

#### Flexibility

**Features**

- 1) Piping work is easy.
- 2) Brackets can be inserted and attached easily.
- 3) High airtightness with brackets will prevent the fluid leakage.

#### Oil resistance

**Features**

- 1) The handling of the hose is easy because of long lasting flexibility.
- 2) Fluid leakage caused by hose hardening or cracks is prevented.
- 3) Long lasting airtightness with brackets will prevent the fluid leakage.

#### Spattering resistance

**Features**

- 1) Withstanding to sparks and lasting long.
- 2) Reducing the maintenance and repair work and saving the cost.
- 3) The troubles caused by fluid leakage are prevented.

#### Pressure resistance

**Features**

- 1) The stable pressure resistance will prevent the troubles from occurring.
- 2) The production is stabilized and the quality is improved.
- 3) A safety work environment is ensured.

#### Robustness

**Features**

- 1) Not easily be flattened which allows for a shorter bending radius.
- 2) Withstanding to pressure coming from the outside, which allows smooth conveyance of fluids.
- 3) Difficult to be crushed and bending around brackets is prevented.

#### Kink resistance

**Features**

- 1) Fluids can be flow smoothly, which improves the workability.
- 2) Difficult to have bends, which improves the durability.
- 3) Sudden clogging of fluids is prevented and eliminating troubles.





# Safety notice

Notes on safety

Follow the safety notices described below to use the Togawa hoses and tubes safe. Although we take utmost care on product quality through our proper quality control, bear in mind following points for using the hose as long as possible. Never fail to follow these safety notices as we cannot assume the responsibilities on the damages caused by the ignorance of these safety notices. If you have any uncertainties, please feel free to contact our sales staff .

\* The following descriptions are common to all of our products. Each product has individual safety notice. Please check the details attached to the product.

## Notice before using hoses and tubes

- 1) The performance and durability of hoses and tubes are largely influenced by the ambient temperature, fluid temperature, and fluid type. Choose a hose or a tube corresponding to the temperature and the fluid.
- 2) Use the hose or tube within the working temperature limit and below the maximum working pressure.
- 3) For the hose and tube that anticipate a hardening or sudden expansion by the fluid used (chemical, agent, acid, alkali, oil, paint etc.), do not use the hose or tube in the maximum upper limit (refer to the article for the chemical resistance in the catalog). Especially, when using a strong toxic chemical, high concentrated acid or alkali, etc., please consult us in advance.
- 4) For painting, use the Sun Paint Hose (PB-with a ground wire), Sun Paint Hose (PB-easy) or Conductive Air Hose as there are possibility of fire etc., by the electrostatic charge.
- 5) For foods, use a food hose. Even if the hoses or tubes are conforming to the guidelines, ordinances etc. of the Ministry of Health, Labour and Welfare, check them carefully before use as the odors or tastes may be sensed differently from person to person. For fatty foods, please feel free to contact our sales staff.
- 6) For special purposes other than above, please feel free to contact our sales staff.

## Notice for using hoses and tubes

- 1) Do not use the hoses or tubes in less than minimum bending radius as it may deteriorate the performance and shorten the life time. If the minimum bending radius is not indicated in the catalog, homepage, or instruction manual, please contact us.
- 2) For attaching a hose or tube, do not bend too much around the area close to the brackets. It may cause damages in an early stage.
- 3) Give some allowance in piping as the length of hoses and tubes may be elastic by the inner pressure.
- 4) Do not give impact on or drag the hoses or tubes, and do not place the hoses or tubes under a vehicle or a heavy object. For the parts which may be bumped into by hard objects such as metals or concrete or the parts which may be contacted by other objects because of vibration or bending, protect these parts with cushioning materials, protective equipment, or springs before use.
- 5) Do not use hoses or tubes at the maximum working pressure for using with equipment that cause a vibration or an impact.
- 6) Before using hoses or tubes, never forget to check whether there are no kinks or twists.
- 7) Do not damage the hoses or tubes with a sharp object (including the package opening). It may cause a burst.
- 8) Use the main cock to stop the water flow. Open or close the valve slowly for adjusting pressure.
- 9) The tube without reinforcement material cannot be used for pressurized applications. However, FA Tube, Sun Tech Coil, and Connect Coil are excluded.
- 10) Please take care so that you won't get hurt from the edge of reinforcement material when cutting the Super Sun Spring Hose.

## Notice for using bracket assemblies

- 1) When inserting a telescopic part of a nipple, do not dip oils or give fire to the hose, tube, or the telescopic part of the nipple. If it is difficult to insert, warm the hose or the tube with lukewarm water.
- 2) Choose a nipple which is appropriate for the hose or tube size, use the nipple in which telescopic part is bigger than the inner diameter of the hose or tube, and insert the nipple into the hose or tube completely. Use a nipple which has no burr or edge. An edge or burr may cause a burst or disconnection of the nipple.
- 3) Fasten the band on the center of telescopic part by using specified tightening torque. When the temperature is high, the hose and tube may become softened. Please refasten the band from time to time.
- 4) Do not use metal wires etc. in place of hose bands and fasten excessively, do not give impacts on the hose or tube with a tool such as a hammer
- 5) Please consult us about the bracket type and the materials/characteristics of the hose and tube, because there are possibility of fluid leakage, bracket disconnection, and a burst by the permanent deformation of the resin after the bracket assembling.
- 6) For the hoses, never use the outer surface seal one-touch bracket for tubes.

### Inspections

- 1) Never fail to conduct a visual inspection (flaws, hardening, softening, color changes, etc.) of hoses and tubes for daily use.
- 2) Never fail to conduct a regular inspection once a month during use of a hose or tube.
- 3) If following abnormalities are found in the daily or regular inspections, discontinue to use the hose or tube immediately and replace it with a new one.
  - (1) Abnormalities around metal parts ... Local expansion, swelling, curving and leakage
  - (2) External flaws ... Outer surface flaws, cracks and water immersion into the reinforcement layer
  - (3) Peeling off of the inner and outer layers
  - (4) Other remarkable deterioration (hardening, oil expansion, cracks, swelling, adhesiveness, deformation, twist, etc.)

### For storage

After the use, wash and remove the residue on the hose or tube, and keep it in an airy place without direct sunlight.  
For the storage of the hose or tube, do not bend or pile up too much, or do not put anything on the hose or tube.

### For disposal

- 1) Dispose the tube or hose after use according to the disposal method provided by the local government.
- 2) The product containing PVC may generate dioxin if incinerated in less the 800°C.

For any questions and inquires please contact us by email.

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**TOGAWA**  
INDUSTRY CORPORATION