

Multi-Purpose/Chemical Resistant Hose

Single-layer teflon tubing is hard and easy to break. Our Flexible Fluorine (ETFE) Resin Tubing is a suitable alternative tubing for a teflon tubing.

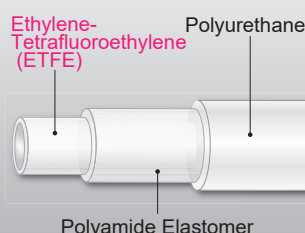
Flexible Fluorine (ETFE) Resin Tubing Clear

[Model Number: E-SJ-(I.D.) × (O.D.)]

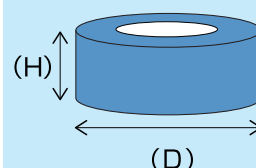
Applications • Fluids



[Materials / Structure]



[Packing Dimension]



- For Industrial Ink-Jet Printers (For Ink-Supplying Pipes)
- For Transferring Paints, Solvents, and Adhesives
- For Transferring Chemicals used in Laboratory Equipment
- For Transferring Chemicals used in Semiconductor-Related Devices and Flat Panel Display (FPD) Manufacturing Devices
- For Transferring Beverage and Food
- For Transferring Fatty Acid Ester such as Biofuel (BDF)
- For Transferring Chemical and Industrial Wastes
- For Transferring Alcohol, Cosmetics, and Chemicals
- For Transferring Chemicals used in Medical Equipment, Endoscope, and so on
- For Transferring Chemicals used in Manufacturing Fuel Cell and Pure Water
- For Filling Line of Paints and Adhesives
- For Filling Line of Fragrance, Colorant, and Additive
- For Air Supplying Pipes at Clean Room

Standard • Packing Information

Model Number	Inch (Inside Diameter) (*1)	I.D. × O.D. mm	Working Pressure MPa		Minimum Bend Radius at 20°C mm	Temperature Range °C	Standard Length m	Product Weight kg/roll	Color	Packing Dimension(*2)			
			at 20°C	at 80°C						Packing	Diameter (D) cm	Height (H) cm	Weight/roll kg/roll
E-SJ-2×4	5/64	2 × 4			15		20	0.24	Clear	Plastic Bag	23.5	5	0.24
							100	1.19		Cardboard Box	38.5	15	1.71
E-SJ-3×5	1/8	3 × 5	0 ~ 0.6		20		20	0.32	Clear	Plastic Bag	25.5	5	0.32
							100	1.60		Cardboard Box	38.5	15	2.12
E-SJ-4×6	5/32	4 × 6		0 ~ 0.2	25	-20 ~ 80	20	0.40	Clear	Plastic Bag	26	5	0.40
							100	2.00		Cardboard Box	38.5	15	2.52
E-SJ-6×8	1/4	6 × 8	0 ~ 0.4		50		20	0.56	Clear	Plastic Bag	30	5.5	0.56
							100	2.82		Paper Bobbin	38.5	15	3.74
E-SJ-6×9	1/4	6 × 9	0 ~ 0.6		35		20	0.88	Clear	Plastic Bag	33	5.5	0.88
							100	4.38		Paper Bobbin	38.5	15	5.30
E-SJ-8×12	5/16	8 × 12			50		20	1.54	Clear	Plastic Bag	35.5	8	1.54
							100	7.69		Paper Bobbin	46	16	8.86

*1: Please note that inch size is approximate, which is not equal to millimeter.

*2: "Diameter (D)" × "Height (H)" means "External Dimensions of Cardboard Box (D)" × "Height (H)."

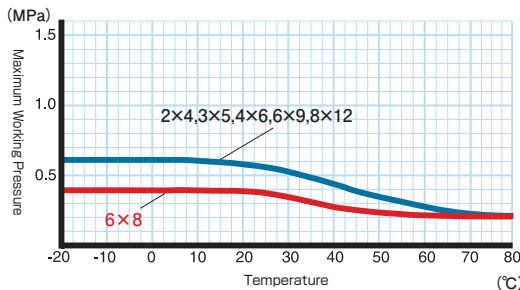
Characteristics and Functions

- Non-PVC
- Non-Adhesiveness
- Chemical Resistance
- Solvent Resistance
- Low Elution
- Low Odor
- Food-Sanitation
- Transparency
- Flexibility
- Oil-Proof
- Alcohol Resistant
- Cold Resistance

- Chemical Resistance**...Since the inner layer is made of ETFE fluorine resin, E-SJ is resistant to most of the chemical substances. For more information, please refer to chemical resistance data.
- Flexibility**...Due to the laminated structure, compared with the conventional single-layer fluorine tubing, E-SJ is superior in flexibility. This improves your work efficiency.
- Hard to Break**...Unlike the conventional single-layer fluorine tubing, E-SJ is hard to break. (Even if it breaks, you can restore its shape to some extent.)
- Non-Adhesiveness**...Since fluorine resin is superior in water-proof and non-adhesiveness, you can wash out the fluids very easily.
- Abrasion Resistance**...Fluorine resin (inner layer) shows higher levels of abrasion resistance. Thus, you can transfer chemical slurry.
- Plasticizer-Free**...E-SJ does not contain plasticizer (an elution material) at all. E-SJ is an oil-free tubing.
- Non-PVC**...E-SJ is made of a non-PVC material.
- Low Elution and Low Odor**...Since this tubing contains very low levels of elution and odor, it is recommended for use in transfers of food, beverage, and cosmetics.
- High Purity**...Fluorine resin does not contain any additives such as plasticizer, so this tubing is suitable for transferring high purity chemical fluids.
- Easy to Cut**...Since we print the cut mark on the tubing every meter, it is easy to cut the length you would like to.
- Transparency**...E-SJ enables you to check the fluid very easily.
- Green Procurement**...E-SJ is compliant with RoHS2 requirements (directive 2011/65/EU:RoHS2). (RoHS 2 free products mean that they do not contain or below the threshold of 10 substances.)
- Original Fittings**...By using our original fittings, you can avoid accidents which are caused by incorrect choices of hose and fittings.
- Food Sanitation Standard Complied**...E-SJ conforms to the Food Sanitation Standard No.370 (The Ministry of Health and Welfare for Food Sanitation, No.370, 1959). (Conformity to N-Heptane). Please contact us regarding the conformity of "Partial Revision of the Food Sanitation Law" (Effective on June 1, 2020) and Positive List System (PL).

Technical Information

E-SJ: Relationship between Working Temperature and Maximum Working Pressure

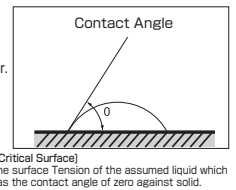


※ The above graph is the value when our original fittings are used.

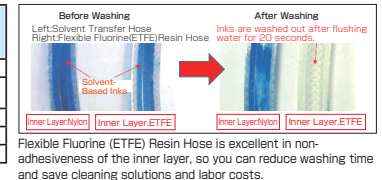
Non-Adhesiveness Comparison Data

Non-adhesiveness and smoothness, which are peculiar to fluorine resin, make it easier to wash out the fluid. You can check the data about critical surface tension and contact angle against water.

Resins	Critical Surface Tension (dyne/cm)	Contact Angle for Water (θ)
Ethylene-Tetrafluoroethylene (ETFE)	22	96
Polyvinylidene Fluoride (PVDF)	25	82
High Density Polyethylene	31	73
Hard Vinyl Chloride	39	68
PET	43	-
Nylon	46	54



Washing out the inks (by organic solvents) stuck inside the hose		
Test Piece 1	Inner Layer: Nylon	Solvent Transfer Hose (E-SV)
Test Piece 2	Inner Layer: Ethylene-Tetrafluoroethylene	Flexible Fluorine (ETFE) Resin Reinforced Hose (E-SJ)
Test Conditions	Kind of Ink	Solvent-Based Inks
Washing Methods	Ink Inclusion Period	7 Days (at Room Temperature)
	Cleaning Solution	Ethyl Acetate
	Cleaning Period	20 Seconds
	Pressure	Less than 0.01 MPa



Flexible Fluorine (ETFE) Resin Hose is excellent in non-adhesiveness of the inner layer, so you can reduce washing time and save cleaning solutions and labor costs.

(Flexibility Comparative Data)

- This is one indication of flexibility. Flexibility varies depending on hose (tubing).
- The larger the amount of deflection is, the more flexible the hose (tubing) is.
- ※ The lower the minimum bend radius value is, the harder the hose (tubing) is.

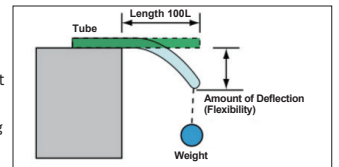
(Test Temperature: 20°C)

Test Sample	Minimum Bend Radius (mm)	Amount of Deflection (mm)
① E-PD-4 × 6	23 (Catalog Value : 25)	28
② E-SJ-4 × 6	23 (Catalog Value : 25)	31
③ PTFE Tubing (4 × 6)	20	7
④ PFA Tubing (4 × 6)	23	6

Test Method for Amount of Deflection (Flexibility)

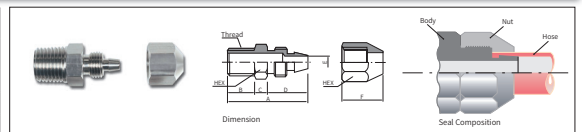
Add a 50 gram weight to the end of the tubing for one minute. Then, measure the amount of deflection. (The test piece goes through the annealing step in advance to make it straight.)

※③ PTFE Tubing and ④ PFA Tubing are not our products.



HAKKO Original Fittings

Model Number	Body							Nut		Product Weight g/Piece	Applicable Hose
	A	B	C	D	E	Thread	HEX	F	HEX		
E-FTS-2 × 4-R1/8	24.5	10	4	10.5	1.7	R1/8	10	10.5	10	13	E-SJ-2 × 4
E-FTS-3 × 5-R1/4	30	12	5	13	2.5	R1/4	14	13	12	26	E-SJ-3 × 5
E-FTS-4 × 6-R1/4	31	12	5	14	3.5	R1/4	14	14	14	29	E-SJ-4 × 6
E-FTS-6 × 8-R1/4	33	12	5	16	5.5	R1/4	17	16	14	32	E-SJ-6 × 8
E-FTS-6 × 9-R1/4	35.5	12	5	18.5	5.5	R1/4	17	18.5	17	41	E-SJ-6 × 9
E-FTS-8 × 12-R3/8	41	13	7	21	7	R3/8	19	21	19	61	E-SJ-8 × 12



Material: 316 L Steel Use Stainless (Body) and 304 Steel Use Stainless (Nut)

- ⚠ *Due to the laminated structure tubing, please use the joints to seal an inner surface of the hose.
- *Please do not use the joints to seal an outer surface of the hose. This may result in the bursting or coming off from the hose.
- *When you use our products, please refer to "Precautions for Use" available on our webpage and product catalog.
- *In terms of chemical resistance, please refer to "Chemical Resistance Data" available on our webpage and product catalog.
- *Although the inner layer is made of fluorine, please make sure whether or not E-SJ is usable for high purity fluids before you use.
- *Although the inner layer is resistance to fluids, but depending on working environments, the fluids would be permeated through the inner layer, resulting in the danger of swelling and degradation of the middle or outer layer.

Contact us if you have any inquiries about HAKKO products.

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