

**Multi-Purpose/Chemical Resistant Hose** | For customers who transfer UV inks, UV-based paints which become harden inside the tube or who have trouble in changing ink viscosity.

# Flexible Fluorine (ETFE) Resin Tubing BLACK

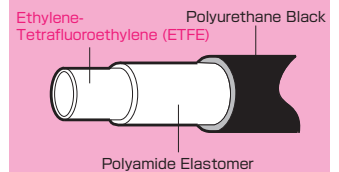
[Model Number : E-SJ-(I.D.×O.D.)-BK]



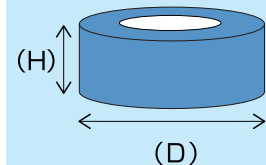
## Applications • Fluids



### [Materials / Structure]



### [Packing Dimension]



- For Industrial Ink-Jet Printers (For UV Ink Supplying Pipes)
- For Transferring UV-based Paints and Solvents of the Painting Equipment
- For Transferring Chemicals used in Laboratory Equipment
- For Transferring Chemicals used in Semiconductor-Related Devices and Flat-Panel Display (FPD) Manufacturing Devices
- For Filling Line of UV Paints and UV-based Adhesives

## 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-3×5-BK	1/8	3×5	0 ~ 0.6		20		20	0.32		Cardboard Box	35.5	5	0.56
							100	1.60		Cardboard Box	37.5	14	2.12
E-SJ-4×6-BK	5/32	4×6	0 ~ 0.6		25		20	0.40		Cardboard Box	35.5	5	0.65
							100	2.00		Cardboard Box	37.5	14	2.52
E-SJ-5×7-BK	1/5	5×7	0 ~ 0.5	0 ~ 0.2	40	-20 ~ 80	20	0.48	Black	Cardboard Box	35.5	5	0.73
							100	2.41		Cardboard Box	37.5	14	2.93
E-SJ-6×8-BK	1/4	6×8	0 ~ 0.4		50		20	0.56		Cardboard Box	35.5	5	0.81
							100	2.82		Cardboard Box	37.5	14	3.74
E-SJ-8×12-BK	5/16	8×12	0 ~ 0.6		50		20	1.54		Cardboard Box	40	8.5	1.84
							100	7.69		Paper Bobbin	45.5	15	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)."

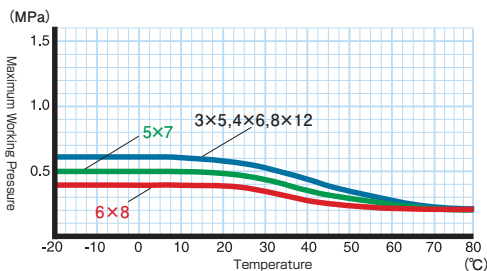
## Characteristics and Functions

- UV Cut
- Solvent Resistance
- Non-PVC
- Non Adhesiveness
- Chemical Resistance
- Low Elution
- Flexibility

- UV Cut**...By cutting ultraviolet, E-SJ-BK is suitable for transferring UV-based paints, adhesives, and inks.
- Chemical Resistance**...Since the inner layer is made of ETFE fluorine resin, E-SJ-BK is resistant to most of the chemical substances. For more information on chemical resistance data, please refer to our corporate website.
- Flexibility**...Due to the laminated structure, compared with the conventional single-layer fluorine tubing, E-SJ-BK is superior in flexibility. This improves your work efficiency.
- Hard to Break**...Unlike the conventional single-layer fluorine tubing, E-SJ-BK 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.
- Plasticizer-Free**...E-SJ-BK does not contain plasticizer (an elution material) at all. E-SJ-BK is an oil-free tubing.
- Non-PVC**...E-SJ-BK is made of a non-PVC material.
- 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.
- Green Procurement**...E-SJ-BK is compliant with RoHS2 requirements.
- Original Fittings**...By using our original fittings, you can avoid accidents which are caused by incorrect choices of hose and fittings.

## Technical Information

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

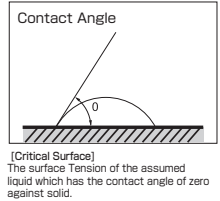


\* The above graph is the value when our original fittings are used.

### 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.

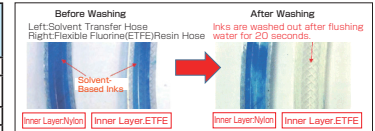
Resins	Critical Surface Tension (dyne/cm)	Contact Angle for Water (θ)
Ethylene-Tetrafluoroethylene (ETFE)	22	96
Polyvinylidene Fluoride (PVDF)	25	82
High Density Polyethylene	31	73
Hard Vinyl Chloride	39	68
PET	43	-
Nylon	46	54



Washing out the inks (by organic solvents) stuck inside the hose

Test Piece 1 : Inner Layer: Nylon-Solvent Transfer Hose (E-SJ)  
 Test Piece 2 : Inner Layer: Ethylene-Tetrafluoroethylene-Flexible Fluorine (ETFE) Resin Yarn Reinforced Hose (E-SJ-B)

Test Conditions	Kind of Ink	Solvent-Based Inks
	Ink Inclusion Period	7 Days (at Room Temperature)
Washing Methods	Cleaning Solution	Ethyl Acetate
	Cleaning Period	20 Seconds
	Pressure	Less than 0.01MPa



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)

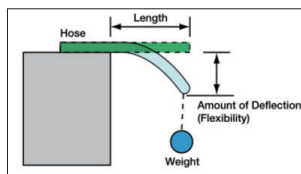
- This is one indication of flexibility. Flexibility varies depending on hose (tubing).
- The larger the amount of deflection is, the more flexible the hose (tubing) is.
- \*The lower the minimum bend radius value is, the harder the hose (tubing) is.

(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 PFATubing (4 × 6)	23	6

### Test Method for Amount of Deflection (Flexibility)

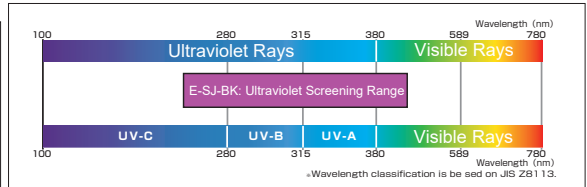
Add a 50 gram weight to the end of the tubing for one minute. Then, measure the amount of deflection. (The test piece goes through the annealing step in advance to make it straight.)  
 ※③ PTFE Tubing and ④ PFA Tubing are not our products.



### (UV Penetration Data)

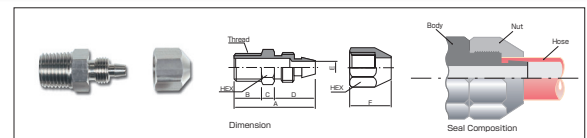
- Test Sample : E-SJ- 4 × 6-BK
- UV Wavelength Range : 260nm 450nm
- Test Machine : Spectrophotometer U-4100 (Hitachi, Ltd)

Test Result: 99% Ultraviolet Impermeability



## HAKKO Original Fittings

Model Number	Body						Nut			Weight Gram/Piece	Applicable Hose
	A	B	C	D	E	Thread	HEX	F	HEX		
E-FTS-3 × 5-R1/4	30	12	5	13	2.5	R1/4	14	13	12	29	E-SJ-3 × 5-BK
E-FTS-4 × 6-R1/4	31	12	5	14	3.5	R1/4	14	14	14	33	E-SJ-4 × 6-BK
E-FTS-5 × 7-R1/4	31	12	5	14	3.5	R1/4	14	14	14	33	E-SJ-5 × 7-BK
E-FTS-6 × 8-R1/4	33	12	5	16	5.5	R1/4	17	16	14	30	E-SJ-6 × 8-BK
E-FTS-8 × 12-R3/8	41	13	7	21	7	R3/8	19	21	19	63	E-SJ-8 × 12-BK



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-BK 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.

# HAKKO CORPORATION

## HAKKO CORPORATION

### HEAD OFFICE / SALES DEPARTMENT

Unity Forum 5F, 42-18, 1-Chome Itabashi, Itabashi-Ku, Tokyo 173-0004, Japan  
 TEL (81) 3-3963-5381 FAX (81) 3-3961-4400

### OSAKA OFFICE

Akatsuki Building 7F, 13-45, Toyotsu-cho, Suita-shi, Osaka 564-0051, Japan  
 TEL (81) 6-6310-6880

### SAITAMA FACTORY · AKITA FACTORY

URL: <https://eightron.co.jp/English>