IWASE

EXLON Series

To become a company that becomes useful for our customers with tubing.

EXLON Tubing of Iwase is being supported by our customers and used in a variety of applications, such as electric devices, automobile, OA, semiconductor, and physics and chemistry. We are committed to keep working toward improving functions and quality of the product, of course, and our delivery systems, quality management systems, and environmental measures so that our customers can use our products with trust.
We appreciate your continuous support and loyalty to Iwase's EXLON Tubing.

IWASE

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EXLON PVC Series

EXLON eco Series

EXLON-Fluoro Resin Series

*The recommended application temperature range in the catalog is only a guideline, and the performance in that temperature range is not guaranteed.
It is recommended to evaluate the applicability by samples before use.

IWASE

EXLON-PVC Series

PVC UL Tubing

PVC AH105 Tubing

PVC J Tubing

PVC A Tubing

PVC AH125 Tubing Normal type / Soft type

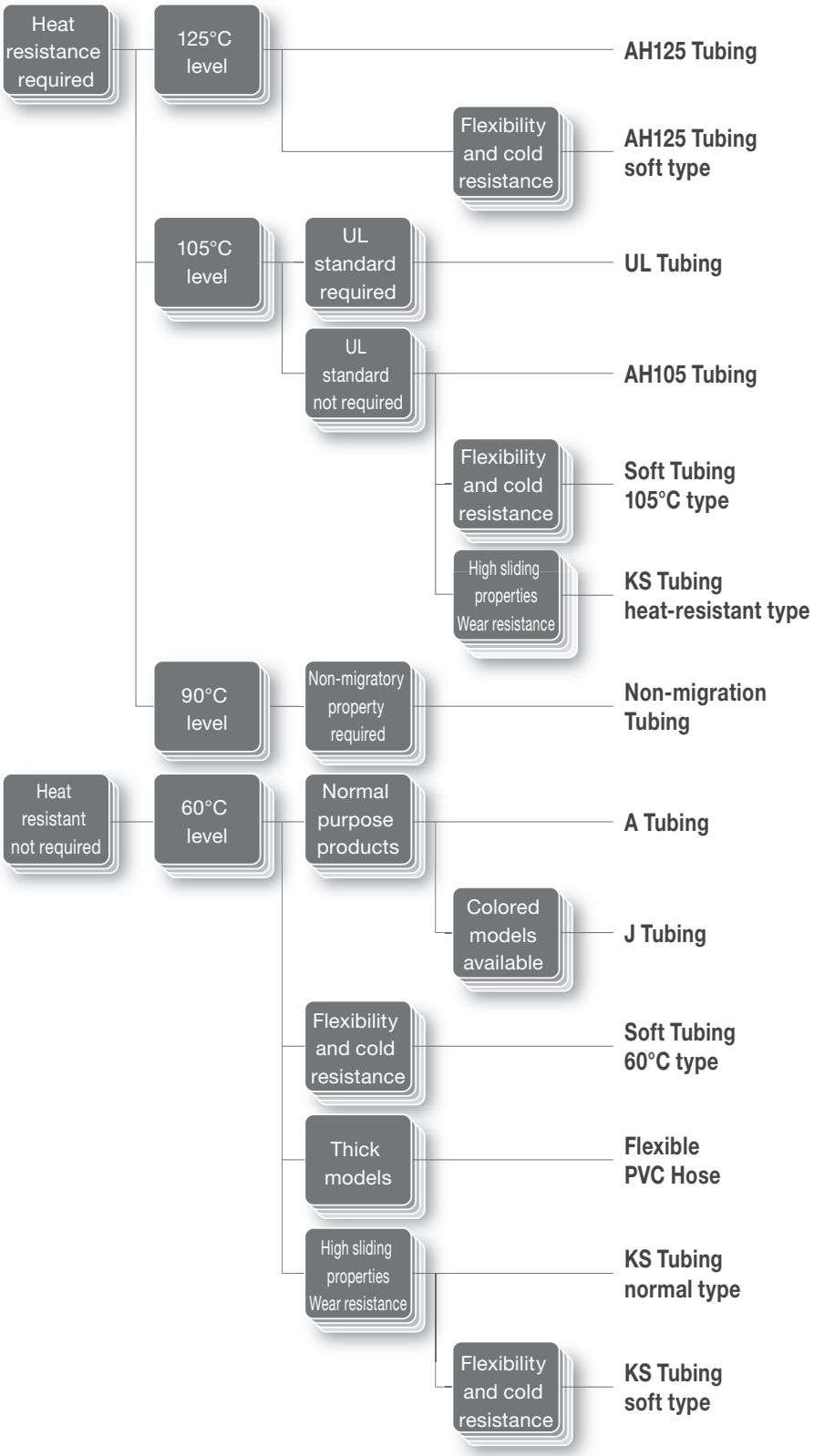
PVC Non-migration Tubing

PVC Soft Tubing 60°C type/105°C type

PVC KS Tubing Normal type / Heat-Resistant type / Soft type

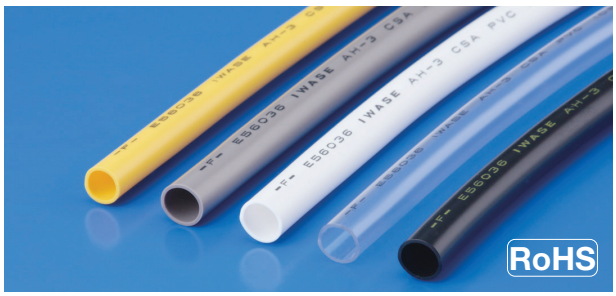
Flexible PVC Hose

EXLON-
PVC
Series



EXLON-PVC Series

EXLON-PVC UL Tubing



Printing on the tubing

For 300 V −F− E56036 IWASE AH−3 CSA PVC 105C VW−1

For 600 V −F− E56036 IWASE AH−6 CSA PVC 105C VW−1

Characteristics

EXLON-PVC UL tubing designed for electric insulation are produced based on UL standards and CSA standards and have excellent heat resistance, flame retardant and environmental resistance.

Details of standards that the UL Tubing complies with

Category	UL224	CSA C22.2	Electrical Appliance and Material Safety Act
Certification number	E 56036	LR 33763	—
			—
Temperature rating	105℃		—
Voltage rating	300V (AH-3) • 600V (AH-6)		—
Flame retardant grade	VW-1		-F-

Table of tubing characteristics

Items		Standard value (UL/CSA)	Performance value	Test method and other aspects
Tensile strength (MPa)		10.4 or more	17.0 or more	
Elongation (%)		100 or more	250 or more	
Dielectric withstand voltage		2,500 V 1 minute or more	10,000 V 1 minute or more	
After heat aging	Tensile strength	7.3 MPa or more	15.0 MPa or more	136°C x 7 days
	Elongation	100% or more	200% or more	
	Dielectric withstand voltage	2,500 V 1 minute or more	10,000 V 1 minute or more	
	Copper stability	Elongation 100% or more	Elongation 200% or more	
	Flexibility	No crack or permanent deformation	No abnormality	
Volume resistivity		10^{10} Ω-cm or more	10^{12} Ω-cm or more	
Flame retardant		VW-1	VW-1	
Cold bend		No crack	No crack	-30°C x 1 hour
Longitudinal change (%)		±5	4.0 or less	100°C x 2 hours

* The data above are representative values and not guaranteed values.
* Recommended temperature range: -20°C to 105°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

EXLON-PVC UL Tubing

IWASE

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Standard wall (thickness) (mm)		Unit length (m)
			AH-6 (600V)	AH-3 (300V)	
AWG 24	0.55	±0.1	0.60	0.40	300
22	0.65	±0.1	0.60	0.40	300
20	0.85	±0.1	0.60	0.40	300
19	0.9	±0.1	0.60	0.40	300
18	1.0	±0.15	0.60	0.40	300
17	1.2	±0.15	0.62	0.40	300
16	1.3	±0.15	0.62	0.40	300
15	1.5	±0.15	0.62	0.40	300
14	1.7	±0.15	0.62	0.40	300
13	1.9	±0.2	0.62	0.40	300
12	2.1	±0.2	0.62	0.40	300
11	2.4	±0.2	0.62	0.40	300
10	2.7	±0.2	0.62	0.50	300
9	3.0	±0.25	0.62	0.50	300
8	3.3	±0.25	0.62	0.50	300
7	3.7	±0.25	0.62	0.50	300
6	4.2	±0.3	0.62	0.50	300
5	4.7	±0.3	0.62	0.50	300
4	5.3	±0.3	0.62	0.50	300
3	5.9	±0.3	0.62	0.50	300
2	6.6	±0.3	0.62	0.50	200
1	7.4	±0.35	0.62	0.50	200
0	8.3	±0.35	0.62	0.50	200
5/16"	8.0	±0.35	0.62		200
6/16"	9.5	±0.35	0.62		200
7/16"	11.1	±0.35	0.68		200
8/16"	12.7	±0.35	0.68		200
9/16"	14.3	±0.4	0.80		100
10/16"	16.0	±0.4	0.80		100
12/16"	19.0	±0.4	0.90		100
14/16"	22.0	+0.7, −0.5	0.90		50
16/16"	25.0	+0.7, −0.5	0.90		50
1-1/16"	27.0	+0.7, −0.5	1.00		50
1-1/4"	32.0	+1.0, −0.5	1.05		50
1-1/2"	38.0	+1.0, −0.5	1.20		50
1-3/4"	44.0	+1.5, −1.0	1.40		50
16/8"	50.0	+1.5, −1.0	1.50		50

- Transparent/Black is the standard color for the tubing. Other colors (red, blue, yellow, gray, brown, white, green, and orange) can be produced when orders are received.
- We also welcome orders for tubes with other colors, special sizes, and pipes cut to length.
- AH-6 AWG#14/16 and over are provided in flat cross section

UL: All sizes of black and transparent tubes are in stock.

Colored models available

UL CSA Acquired

VW-1 Acquired

105℃

EXLON-PVC Series

EXLON-PVC AH 105 Tubing

Printing on the tubing AH 105

Characteristics

EXLON-PVC AH105 Tubing is produced using the same materials as EXLON-PVC UL Tubing that complies with Iwase's UL and CSA Standards. These tubing have extremely excellent heat resistance, electric properties, flame retardant, and other performances.

Purposes

(i) For providing heat resistance, insulation, and protection of wires of electronic and electric devices.
(ii) For protecting lead wires of transformers, magnet coils, condensers, and other devices.

Table of tubing characteristics

Items		Standard value	Properties value	Test method and other aspects
Tensile strength (MPa)		10.4 or more	17.0 or more	
Elongation (%)		100 or more	250 or more	
Dielectric withstand voltage		2,500 V 1 minute or more	10,000 V 1 minute or more	
After heat aging	Tensile strength	7.3 MPa or more	15.0 MPa or more	136°C x 7 days
	Elongation	100% or more	200% or more	
	Dielectric withstand voltage	2,500 V 1 minute or more	10,000 V 1 minute or more	
	Copper stability	Elongation 100% or more	Elongation 200% or more	
	Flexibility	No crack or permanent deformation	No abnormality	
Volume resistivity		10^{10} Ω-cm or more	10^{12} Ω-cm or more	
Flame retardant		VW-1	Equivalent of VW-1	
Cold bend		No crack	No crack	-30°C x 1 hour
Longitudinal change (%)		±5	5.0 or less	100°C x 2 hours

* The data above are representative values and not guaranteed values.
* Properties are the same level as UL Tubing.
* Recommended temperature range: -20°C to 105°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

EXLON-PVC AH 105 Tubing

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
1.5×2.3	1.5	+0.2, −0.1	0.4	±0.08	300
2×2.8	2.0	+0.2, −0.1	0.4	±0.08	300
2.5×3.5	2.5	+0.3, −0.2	0.5	+0.1, −0.08	300
3×4	3.0	+0.3, −0.2	0.5	+0.1, −0.08	300
3.5×4.5	3.5	+0.3, −0.2	0.5	+0.1, −0.08	300
4×5	4.0	+0.3, −0.2	0.5	+0.1, −0.08	300
4.5×5.5	4.5	+0.3, −0.2	0.5	+0.1, −0.08	300
5×6	5.0	+0.3, −0.2	0.5	+0.1, −0.08	Transparent 300/Black 400
6×7	6.0	+0.4, −0.2	0.5	+0.1, −0.08	Transparent 300/Black 400
7×8	7.0	+0.4, −0.2	0.5	+0.1, −0.08	300
8×9	8.0	+0.4, −0.2	0.5	+0.1, −0.08	300
9×10	9.0	+0.4, −0.2	0.5	+0.1, −0.08	200
10×11.2	10.0	+0.4, −0.2	0.6	±0.1	200
12×13.2	12.0	+0.5, −0.3	0.6	±0.1	200
14×15.2	14.0	+0.5, −0.3	0.6	±0.1	100
16×17.2	16.0	+1.0, −0.8	0.6	±0.1	100
18×19.2	18.0	+1.0, −0.8	0.6	±0.1	100
20×21.6	20.0	+1.0, −0.8	0.8	±0.1	100

- Transparent/Black is the standard color for the tubing. Other colors (red, blue, yellow, gray, brown, white, green, and orange) can be produced when orders are received.
- We also welcome orders for tubes with other colors, special sizes, and pipes cut to length.
- Printing on the tubing can be from 2.5φ to 16φ.

*Those without markings are available as well.

Colored models available

High flame retardant

105°C level

EXLON-PVC Series

EXLON-PVC J Tubing

Characteristics

EXLON-PVC J Tubing is equivalent of EX PVC1, which complies with the old standard JIS C 2415.
These multipurpose vinyl tubing are designed with a good balance of properties, including electric insulation property, flame retardant, and flexibility.

Purposes

(i) For providing electric insulation for devices and equipment, such as electronic devices, electric appliances, measuring instruments, and communication devices.
(ii) For providing mechanical protection for or as identification of electric wires and devices.

Table of tubing characteristics

Items		Unit	Standard value	Properties value	Test method and other aspects
Tension test	Tensile strength	MPa	10.4 or more	15.0 or more	JIS C 2133
	Elongation	%	100 or more	200 or more	
Dielectric withstand voltage		—	Nondestructive	Nondestructive	2,500 V x 1 minute
Cold bend		—	No crack	No crack	-10°C x 1 hour
Longitudinal change (%)		%	-10 or more	-10 or more	120°C x 1 hour
Volume resistivity		Ω•m	10^8 or more	10^{10} or more	JIS C 2133

* The data above are representative values and not guaranteed values.
* Recommended temperature range: -20°C to 60°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

EXLON-PVC
J Tubing

Standard size chart				
Inner diameter (mm)	Thickness (mm)	Tolerance		Unit length (m)
		Inner diameter (mm)	Thickness (mm)	
0.5	0.35	±0.1	±0.08	500
0.8	0.35	±0.1	±0.08	500
1.0	0.4	±0.1	±0.08	500
1.2	0.4	±0.1	±0.08	500
1.5	0.4	±0.1	±0.08	500
2.0	0.4	±0.2	±0.08	500
2.5	0.4	±0.2	±0.08	400
3.0	0.5	±0.2	+0.1, −0.08	400
3.5	0.5	±0.2	+0.1, −0.08	400
4.0	0.5	+0.3, −0.2	+0.1, −0.08	400
4.5	0.5	+0.3, −0.2	+0.1, −0.08	400
5.0	0.5	+0.3, −0.2	+0.1, −0.08	400
5.5	0.5	+0.3, −0.2	+0.1, −0.08	400
6.0	0.5	+0.4, −0.2	+0.1, −0.08	400
7.0	0.5	+0.4, −0.2	+0.1, −0.08	300
8.0	0.5	+0.4, −0.2	+0.1, −0.08	300
9.0	0.5	+0.4, −0.2	+0.1, −0.08	300

Standard size chart				
Inner diameter (mm)	Thickness (mm)	Tolerance		Unit length (m)
		Inner diameter (mm)	Thickness (mm)	
10.0	0.5	+0.4, −0.2	+0.1, −0.08	250
11.0	0.5	+0.5, −0.3	+0.1, −0.08	200
12.0	0.5	+0.5, −0.3	+0.1, −0.08	200
13.0	0.5	+0.5, −0.3	+0.1, −0.08	200
14.0	0.5	+0.5, −0.3	+0.1, −0.08	200
15.0	0.5	+0.5, −0.3	+0.1, −0.08	200
16.0	0.6	+1.0, −0.8	±0.1	100
18.0	0.6	+1.0, −0.8	±0.1	100
20.0	0.8	+1.0, −0.8	±0.1	50
22.0	0.8	±1.5	±0.1	50
25.0	0.8	±1.5	±0.1	50
30.0	1.0	±1.5	±0.1	50
35.0	1.0	±1.5	±0.1	50
40.0	1.0	±1.5	±0.1	50
45.0	1.0	±1.5	±0.1	50
50.0	1.0	±1.5	±0.1	50

- Transparent/Black is the standard color for the tubing. Other colors (red, blue, yellow, gray, brown, white, green, and orange) can be produced when orders are received.
- We also welcome orders for tubes with other colors, special sizes, and pipes cut to length.
- Sizes 16φ and over come with flat cross sections.

*Air-inflated version is also available (up to φ30)

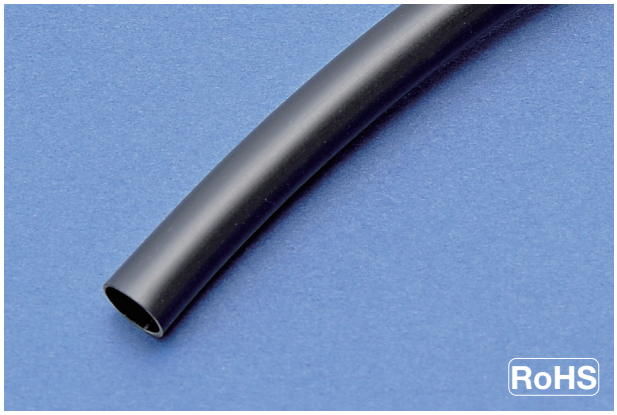
Colored models available

Self-extinguishing characteristics

60°C level

EXLON-PVC Series

EXLON-PVC A Tubing



Characteristics

Normal-purpose insulating vinyl tubes excellent in flexibility and workability.
Performance is equivalent to J-tube Black, while the appearance is a matte finish.

Purposes

(i) For providing electric insulation for devices and equipment, such as electronic devices, electric appliances, measuring instruments, and communication devices.
(ii) For providing mechanical protection for or as identification of electric wires and devices.

Table of tubing characteristics

Items		Unit	Standard value	Properties value	Test method and other aspects
Tension test	Tensile strength	MPa	10.4 or more	15.0 or more	JIS C 2133
	Elongation	%	100 or more	200 or more	
Dielectric withstand voltage		—	Nondestructive	Nondestructive	2,500 V x 1 minute
Cold bend		—	No crack	No crack	-10°C x 1 hour
Longitudinal change (%)		%	-10 or more	-10 or more	120°C x 1 hour
Volume resistivity		Ω•m	10^8 or more	10^{10} or more	JIS C 2133

* The data above are representative values and not guaranteed values.
* Recommended temperature range: -20°C to 60°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

EXLON-PVC
A Tubing

Standard size chart				
Inner diameter (mm)	Thickness (mm)	Tolerance		Unit length (m)
		Inner diameter (mm)	Thickness (mm)	
2.5	0.4	±0.2	±0.08	400
3.0	0.5	±0.2	+0.1, −0.08	400
3.5	0.5	±0.2	+0.1, −0.08	400
4.0	0.5	+0.3, −0.2	+0.1, −0.08	500
4.5	0.5	+0.3, −0.2	+0.1, −0.08	500
5.0	0.5	+0.3, −0.2	+0.1, −0.08	500
5.5	0.5	+0.3, −0.2	+0.1, −0.08	500
6.0	0.5	+0.4, −0.2	+0.1, −0.08	500
6.5	0.5	+0.4, −0.2	+0.1, −0.08	400
7.0	0.5	+0.4, −0.2	+0.1, −0.08	400
7.5	0.5	+0.4, −0.2	+0.1, −0.08	300
8.0	0.5	+0.4, −0.2	+0.1, −0.08	300
9.0	0.5	+0.4, −0.2	+0.1, −0.08	300
10.0	0.5	+0.4, −0.2	+0.1, −0.08	250
11.0	0.5	+0.5, −0.3	+0.1, −0.08	200
12.0	0.5	+0.5, −0.3	+0.1, −0.08	200
13.0	0.5	+0.5, −0.3	+0.1, −0.08	200
14.0	0.5	+0.5, −0.3	+0.1, −0.08	200
15.0	0.5	+0.5, −0.3	+0.1, −0.08	200
16.0	0.6	+1.0, −0.8	±0.1	100
18.0	0.6	+1.0, −0.8	±0.1	100
20.0	0.8	+1.0, −0.8	±0.1	100
22.0	0.8	±1.5	±0.1	100
25.0	0.8	±1.5	±0.1	100
30.0	1.0	±1.5	±0.1	100

- Tube color is black only.
- We welcome orders for special sizes and tubing cut in various lengths.

EXLON-PVC Series

EXLON-PVC AH125 Tubing

Normal / Soft type

Printing on the tubing

Normal type: IWASE AH125 PVC

Soft type: IWASE AH125 -SOFT PVC

Characteristics

EXLON-PVC AH125 Tubing has the highest heat resistance and resistance to aging (125°C level) among Iwase's PVC series. These are high-level vinyl tubing designed for electric insulation with excellent properties, such as electric insulation properties, wear resistance, thermal deformation resistance, and flame retardant.

125°C level

125°C level

The heat resistance is at the 125°C level.

Flexibility

Flexibility

Extremely flexible, making it suitable for piping in tight spaces and corners.

Self-extinguishing characteristics

Self-extinguishing characteristics

This product has self-extinguishing characteristics.

EXLON-PVC AH125 Tubing

Normal / Soft type

Table of tubing characteristics				
Items		Unit	Properties value	Test method and other aspects
Tension test	Tensile strength	MPa	10.4 or more	JIS C 2133
	Elongation	%	100 or more	
After heat aging	Tensile strength	MPa	7.3 or more	158°C x 7 days
	Elongation	%	100 or more	
Dielectric withstand voltage		—	Nondestructive	2,500 V x 1 minute
Cold bend		—	No crack	-10°C x 1 hour
Longitudinal change		%	5 or less	100°C x 2 hours

* The data above are representative values and not guaranteed values.
* Recommended temperature range, Normal type: -20°C to 125°C
Soft type: -30°C to 125°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×4	3.0	+0.3, −0.2	0.5	±0.1	300
4×5	4.0	+0.3, −0.2	0.5	±0.1	300
5×6	5.0	+0.3, −0.2	0.5	±0.1	300
6×7	6.0	+0.3, −0.2	0.5	±0.1	300
7×8	7.0	+0.4, −0.2	0.5	±0.1	300
8×9	8.0	+0.4, −0.2	0.5	±0.1	300
9×10	9.0	+0.4, −0.2	0.5	±0.1	200
10×11.2	10.0	+0.4, −0.2	0.6	±0.1	200
12×13.2	12.0	+0.5, −0.3	0.6	±0.1	200
14×15.2	14.0	+0.5, −0.3	0.6	±0.1	100

- The standard color for the tubing is black, and tubing are produced based on orders.
- We welcome orders for special sizes and tubing cut in various lengths.

EXLON-PVC Series

EXLON-PVC Non-migration Tubing

Printing on the tubing タイ・スチロール△ヨウ

Characteristics

These are flexible PVC tubing made with special polymer plasticizer and have excellent non-migratory property, oil resistance, and heat resistance.

Non-migratory

Non-migratory

Extremely low plasticizer migration ensures no risk of spoiling the appearance of contact surfaces or deforming them when in contact with other resin molded products, such as housing components.

90°C level

90°C level

The heat resistance is at the 90°C level.

Self-extinguishing characteristics

Self-extinguishing characteristics

This product has self-extinguishing characteristics.

EXLON-PVC
Non-migration Tubing

Data of non-migratory property					
Tubing name	On styrene	On ABS	On PP	On acrylic	On polycarbonate
Non-migration Tubing	○	○	◎	◎	○

• Test conditions: 60°C x 72 hrs. x load 1,000 g

Table of tubing characteristics				
Items		Unit	Properties value	Test method and other aspects
Tension test	Tensile strength	MPa	10.4 or more	JIS C 2133
	Elongation	%	100 or more	
After heat aging	Tensile strength retention rate	%	70 or more	121°C x 7 days
	Elongation retention rate	%	70 or more	
Dielectric withstand voltage		—	Non destructive	2,500V x 1 minute
Cold bend		—	No crack	-10°C x 1 hour
Longitudinal change		%	5 or less	100°C x 2 hours

* The data above are representative values and not guaranteed values.

* Recommended temperature range: -20°C to 90°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
4×5	4.0	+0.3, −0.2	0.5	±0.1	300
5×6	5.0	+0.3, −0.2	0.5	±0.1	300
6×7	6.0	+0.4, −0.2	0.5	±0.1	300
7×8	7.0	+0.4, −0.2	0.5	±0.1	300
8×9	8.0	+0.4, −0.2	0.5	±0.1	300
9×10	9.0	+0.4, −0.2	0.5	±0.1	200
10×11	10.0	+0.4, −0.2	0.5	±0.1	200
12×13	12.0	+0.5, −0.3	0.5	±0.1	200
14×15.2	14.0	+0.5, −0.3	0.6	±0.1	100
16×17.2	16.0	+1.0, −0.8	0.6	±0.1	100

• Transparent and black are the standard tube colors, and other colors are made to order.

• We welcome orders for special sizes and tubing cut in various lengths.

EXLON-PVC Series

EXLON-PVC Soft Tubing 60°C type/105°C type

Characteristics

The use of special PVC in the resin provides great flexibility and elasticity. Heat resistant tubing with 105°C level and excellent heat resistance in the high temperature range are also available besides the generation type with 60°C level.

Cold resistance

Cold resistance

Offers excellent cold resistance and suitable for low temperature environments.

Flexibility

Flexibility

Most excellent flexibility among PVC series.
Suitable for piping in tight spaces and corners.

Self-extinguishing characteristics

Self-extinguishing characteristics

This product has self-extinguishing characteristics.

EXLON-PVC Soft Tubing 60°C type/105°C type

Table of tubing characteristics					
Items		Unit	60°C type	105°C type	Test method and other aspects
Tension test	Tensile strength	MPa	10.4 or more	10.4 or more	JIS C 2133
	Elongation	%	100 or more	100 or more	
After heat aging	Tensile strength	MPa	—	7.3 or more	136°C x 7 days
	Elongation	%	—	100 or more	
Dielectric withstand voltage		—	Nondestructive	Nondestructive	2,500 V 1 minute or more
Cold bend		—	No crack	No crack	-40°C x 1 hour
Longitudinal change		%	5 or less	5 or less	100°C x 2 hours

* The data above are representative values and not guaranteed values.
* Recommended temperature range: 60°C type -30°C to 60°C
105°C type -30°C to 105°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

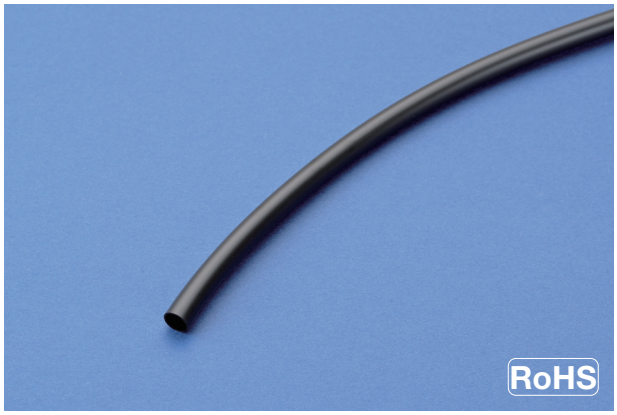
Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×4	3.0	+0.3, −0.2	0.5	±0.1	300
4×5	4.0	+0.3, −0.2	0.5	±0.1	300
5×6	5.0	+0.3, −0.2	0.5	±0.1	300
6×7	6.0	+0.4, −0.2	0.5	±0.1	300
7×8	7.0	+0.4, −0.2	0.5	±0.1	300
8×9	8.0	+0.4, −0.2	0.5	±0.1	200
9×10	9.0	+0.4, −0.2	0.5	±0.1	200
10×11	10.0	+0.4, −0.2	0.5	±0.1	200
12×13	12.0	+0.5, −0.3	0.5	±0.1	200
14×15.2	14.0	+0.5, −0.3	0.6	±0.1	100
16×17.2	16.0	+1.0, −0.8	0.6	±0.1	100
18×19.2	18.0	+1.0, −0.8	0.6	±0.1	100
20×21.6	20.0	+1.0, −0.8	0.8	±0.1	100

- The standard color for the tubing is black, and tubing are produced based on orders.
- We also welcome orders for other colors, special sizes, and tubing cut in various lengths.
- For heat-resistant black, matte black is also available.
- We also welcome orders for highly nonflammable tubing with excellent non-flammability (UL94V-0 grade).

EXLON-PVC Series

EXLON-PVC KS Tubing

Normal type / Heat-Resistant type / Soft type



Characteristics

PVC tubing that has realized wear resistance and high sliding properties. Heat-resistant types at the 105°C level are available, in addition to the normal types at the 60°C level and soft types.

60°C level

Normal / Soft type

Recommended uses
The highest heat resistant temperature

105°C level

Heat-Resistant type

Recommended uses
The highest heat resistant temperature

High sliding properties

High sliding properties

Good slide capability and excellent for passing electric wires longer than 1 meter.

Wear resistant

Wear resistant

Offers good wear resistance and perfect for locations where wires contact each other or move.

EXLON-PVC Series

EXLON-PVC KS Tubing

Normal type / Heat-Resistant type / Soft type

Table of tubing characteristics					
Items		Unit	Normal / Soft type	Heat-Resistant type	Test method and other aspects
Tension test	Tensile strength	MPa	7.0 or more	7.0 or more	JIS C 2133
	Elongation	%	200 or more	200 or more	
After aging	Tensile strength	—	—	4.9 MPa or more	136°C x 7 days
	Elongation	—	—	140 or more	
Dielectric withstand voltage		—	Nondestructive	Nondestructive	2,500 V 1 minute or more
Cold bend		—	No crack	No crack	-40°C x 1 hour
Longitudinal change		%	-10 or more	-10 or more	120°C x 1 hour
Volume resistivity		Ω•m	10^8 or more	10^8 or more	JIS C 2133

* The data above are representative values and not guaranteed values.
* Recommended temperature range: Normal type / Soft type: - 30°C to 60°C
  Heat resistant type: -30°C to 105°C

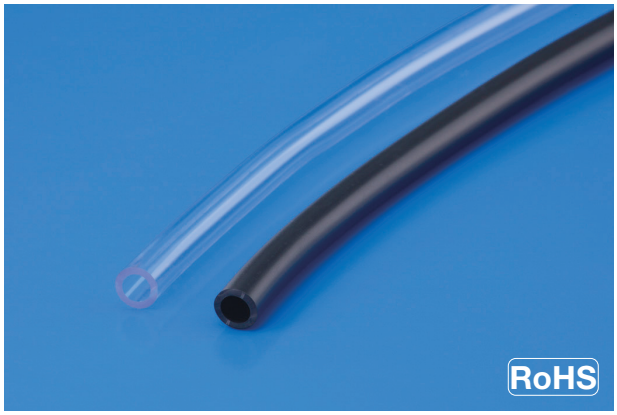
(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×4	3.0	±0.30	0.5	±0.08	400
4×5	4.0	±0.30	0.5	±0.08	400
5×6	5.0	±0.30	0.5	±0.08	400
6×7	6.0	±0.35	0.5	±0.08	400
7×8	7.0	±0.35	0.5	±0.08	300
8×9	8.0	±0.35	0.5	±0.08	300
9×10	9.0	±0.35	0.5	±0.08	300
10×11.2	10.0	±0.35	0.6	±0.1	250
11×12.2	11.0	±0.40	0.6	±0.1	200
12×13.2	12.0	±0.40	0.6	±0.1	200

- We also welcome orders for tubes with other colors, special sizes, and pipes cut to length.
- Black is the standard color of the tubing.

EXLON-PVC Series

EXLON Flexible PVC Hose



Characteristics

Highly flexible PVC resin is used in the material, and thick tubing have great flexibility.

Free pipe arrangement

Free pipe arrangement

The great flexibility makes these tubing suitable as air tubing and wastewater pipes in narrow areas.

60°C level

60°C level

The heat resistance is at the 60°C level.

EXLON
Flexible PVC Hose

Table of tubing characteristics					
Items			Unit	Properties-value	Test method and other aspects
Tension test	Tensile strength		N/mm^2	13.7 or more	JIS K 6771
	Elongation		%	200 or more	
Heat aging test	Tensile strength change rate		%	±20	120°C x 6 hours
	Elongation change rate		%	±20	
Cold resistance test			—	No crack occurs.	-10°C x 5 minutes
Immersion test	Water	Water absorption rate	%	0.5 or less	50°C x 24 hours
		Extraction rate	%	0.5 or less	
	Saline solution		%	±0.5	
	Sulfuric acid		%	±0.5	
	Nitric acid		%	±5	
	Sodium hydroxide solution		%	±5	

* The data above are representative values and not guaranteed values.

* Recommended temperature range: -20°C to 60°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×5	3.0	±0.3	1.0	±0.2	300
4×6	4.0	±0.3	1.0	±0.2	300
5×7	5.0	±0.3	1.0	±0.2	300
6×8	6.0	±0.4	1.0	±0.2	300
7×9	7.0	±0.4	1.0	±0.2	300
8×10	8.0	±0.4	1.0	±0.2	200
9×11	9.0	±0.4	1.0	±0.2	200
10×12	10.0	±0.4	1.0	±0.2	200
12×14	12.0	±0.5	1.0	±0.2	200
13×15	13.0	±0.5	1.0	±0.2	100
14×16	14.0	±0.5	1.0	±0.2	100
15×17	15.0	±0.5	1.0	±0.2	100

- Transparent/Black is the standard color for the tubing. Other colors can be produced when orders are received.
- We welcome orders for special sizes and tubing cut in various lengths.

EXLON eco Series

Flow-Link Tubing NHX-125

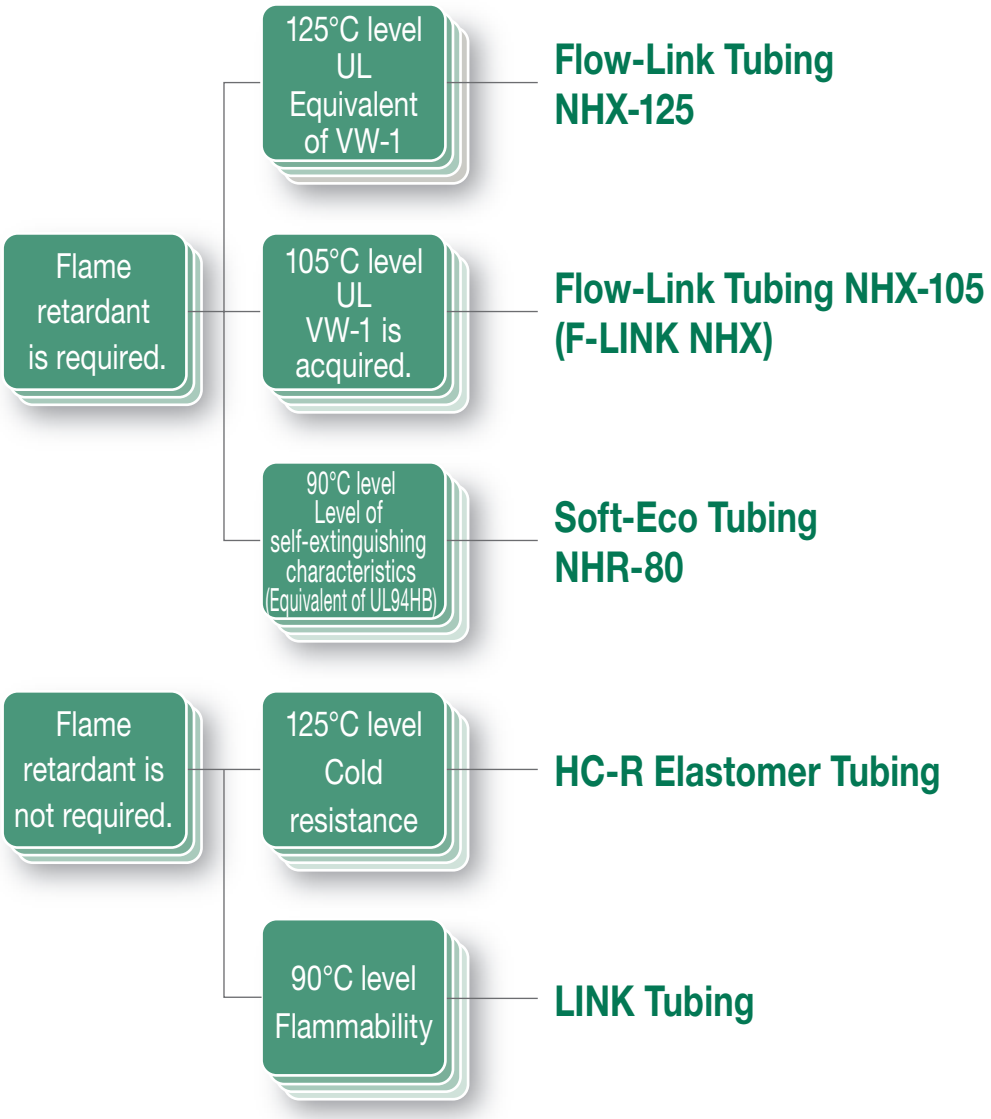
Flow-Link Tubing NHX-105

Soft-Eco Tubing NHR-80

LINK Tubing

HC-R Elastomer Tubing

EXLON eco Series



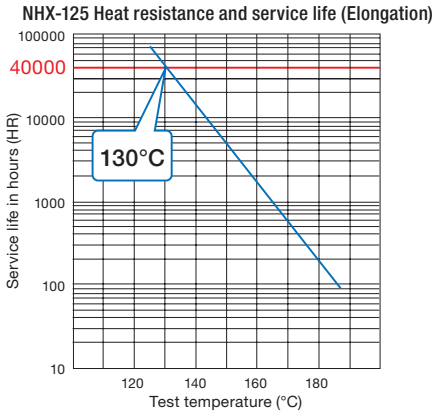
EXLON-eco Series

EXLON-Flow-Link Tubing NHX-125

Printing on the tubing IWASE EXLON NHX-125

Characteristics

This is a clean, high flame retardant, highly heat resistant, and flexible, completely new type of elastomer tubing with environmental conservation features.



High flame retardant

High flame retardancy

Equivalent of VW-1 based on the UL Standard

Flexibility

Flexibility

The workability of the harness is drastically improved with the great flexibility that is not seen in conventional polyethylene tubing with electron beam crosslinking.

125°C level

125°C level

The polymer has unique partial crosslinking structure inside, and the long-term heat resistance is at the 125°C level.

EXLON-Flow-Link Tubing NHX-125

Table of tubing characteristics				
Items		Unit	Properties-value	Test method and other aspects
Tension test	Tensile strength	Mpa	5.0 or more	JIS C 2133
	Elongation	%	200 or more	
After heat aging	Tensile strength	Mpa	5.0 or more	JIS C 2133 158°C x 7 days
	Elongation	%	70 or more	
Dielectric withstand voltage		—	Non destructive	2,500 V x 1 minute
Cold bend		—	No crack	-30°C x 1 hour
Flame retardant		—	Equivalent of VW-1	UL-224

* The data above are representative values and not guaranteed values.

* Recommended temperature range: -20°C to 125°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×3.8	3.0	±0.25	0.40	±0.05	300
4×4.8	4.0				300
5×5.8	5.0	±0.30			300
6×6.8	6.0				300
7×7.8	7.0	±0.35			300
8×8.8	8.0				300
9×10	9.0		0.50		200
10×11	10.0				200
11×12	11.0	±0.40			200
12×13.1	12.0		0.55	±0.06	100
13×14.1	13.0				100
14×15.1	14.0				100
15×16.2	15.0		0.60		100
16×17.2	16.0	±0.50			100
17×18.2	17.0				100
18×19.3	18.0		0.65	±0.07	100
19×20.3	19.0				100
20×21.3	20.0				100

- Tubing with the inner diameter of 15ø or more are flattened and coiled.
- Black is the standard color of the tubing.
- We welcome inquiries on other colors, sizes, and tubing cut in different lengths.

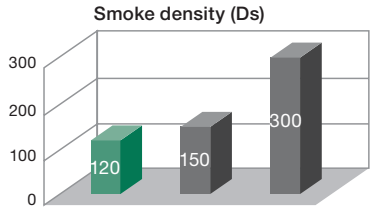
EXLON-eco Series

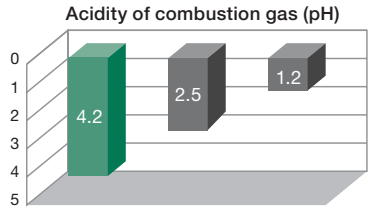
EXLON-Flow-Link Tubing NHX-105

Printing on the tubing −F− IWASE NHX-105 F−LINK−NHX VW−1 E90287

Characteristics

This is a completely new type of clean, high flame retardant, highly heat resistant, and flexible elastomer tubing with environmental conservation features.





High flame retardant

High flame retardancy

In compliance with the UL non-flammability standard VW-1 (UL File No./E90287)
In compliance with the -F- Mark of the Electrical Appliance and Material Safety Act. In compliance with Flammability Test for Railway Stock.

Flexibility

Flexibility

The same level of flexibility as flexible PVC tubing is achieved.

105°C level

105°C level

The polymer has a special cross-linked structure, which enables the heat resistance level of 105°C.

Low smoke emission

Low smoke emission

This tube has low smoke density and low acidity.
(See the graph above.)

EXLON-Flow-Link Tubing NHX-105

Table of tubing characteristics				
Items		Unit	Properties-value	Test method and other aspects
Tension test	Tensile strength	Mpa	5.0 or more	JIS C 2133
	Elongation	%	150 or more	
After heat aging	Tensile strength	Mpa	5.0 or more	JIS C 2133 136°C x 7 days
	Elongation	%	100 or more	
Dielectric withstand voltage		—	Nondestructive	2,500 V x 1 minute
Cold bend		—	No crack	-30°C x 1 hour
Flame retardant		—	VW-1	UL-224

* The data above are representative values and not guaranteed values.
* Recommended temperature range: -20°C to 105°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
1×1.9	1.0	±0.15	0.45	±0.04	300
2×2.9	2.0				300
3×3.9	3.0	±0.25			300
4×5	4.0		0.50	±0.05	300
5×6	5.0	±0.30			300
6×7	6.0				300
7×8	7.0	±0.35			300
8×9	8.0				300
9×10	9.0				200
10×11.2	10.0		0.60	±0.06	200
11×12.2	11.0	±0.40			200
12×13.2	12.0				200
13×14.2	13.0				100
14×15.2	14.0				100
15×16.2	15.0				100
16×17.4	16.0	±0.50	0.70	±0.07	100
17×18.4	17.0				100
18×19.4	18.0				100
19×20.4	19.0				100
20×21.4	20.0				100

- Tubing with the inner diameter of 15ø or more are flattened and coiled.
- Black is the standard color of the tubing.
- We welcome inquiries on other colors, sizes, and tubing cut in different lengths.

In stock

Small lot

EXLON-eco Series

EXLON-Soft-Eco Tubing NHR-80

Printing on the tubing IWASE EXLON−ソフトエコ NHR

Characteristics

Iwase's Soft-Eco Tubing NHR-80 does not contain any halogen compound or harmful substances in all materials that generate dioxins during combustion or environmental contamination after being landfilled.

Flexibility

Flexibility

The excellent flexibility is suitable for pipe arrangement or storage in narrow areas.
This tubing is a suitable alternative to a flexible PVC tubing.

90°C level

90°C level

The heat resistance is at the 90°C level.

Self-extinguishing characteristics

Self-extinguishing characteristics

This product has self-extinguishing characteristics.

EXLON-Soft-Eco Tubing NHR-80

Table of tubing characteristics				
Items		Unit	Properties-value	Test method and other aspects
Tension test	Tensile strength	Mpa	7.0 or more	JIS C 2133
	Elongation	%	200 or more	
After heat aging	Tensile strength	Mpa	7.0 or more	JIS C 2133 121°C x 7 days
	Elongation	%	200 or more	
Dielectric withstand voltage		—	Nondestructive	2,500 V x 1 minute
Cold bend		—	No crack	-10°C x 1 hour
Flame retardant (UL-94)		—	Equivalent of HB	Sheet thickness: 1 mm

* The data above are representative values and not guaranteed values.

* Recommended temperature range: -20°C to 90°C

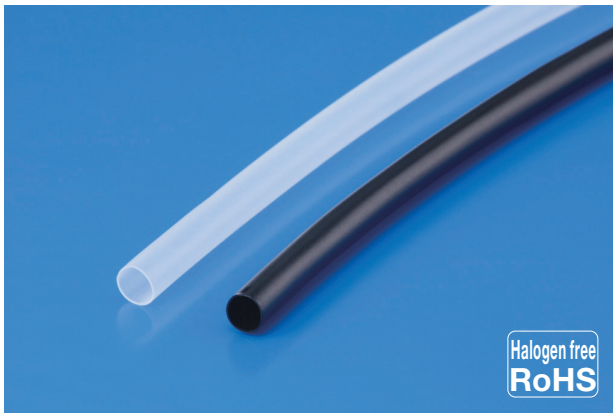
(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×3.8	3.0	±0.25	0.40	±0.05	300
4×4.8	4.0				300
5×5.8	5.0	±0.30			300
6×6.8	6.0				300
7×7.9	7.0	±0.35	0.45		300
8×8.9	8.0				300
9×9.9	9.0				200
10×11	10.0		0.50		200
11×12	11.0	±0.40			200
12×13	12.0				100
13×14.1	13.0		0.55	±0.06	100
14×15.1	14.0				100
15×16.2	15.0		0.60		100
16×17.2	16.0	±0.50			100
17×18.2	17.0				100
18×19.3	18.0		0.65	±0.07	100
19×20.3	19.0				100
20×21.3	20.0				100

- ø15 and over are provided with flat cross sections.
- Black is the standard color of the tubing.
- We welcome inquiries on other colors, special sizes, and tubing cut in different lengths.
- Please contact us for details of the hardness.

EXLON-eco Series

EXLON LINK Tubing



Characteristics

These are cross-linked polyethylene tubing developed with Iwase's unique production technologies.
LINK Tubing have the thermal deformation resistance that compares with products with radiation crosslinking while taking advantage of the excellent electric insulation performance of polyethylene.

Varnish resistance

Varnish resistance

These tubing have excellent chemical resistance (such as against varnishing) to be used as lead wire protection tubing when varnishing is required.

Stress cracking resistance

Stress cracking resistance

These tubing have excellent resistance against stress-induced fatigue fracture or cracks on materials in comparison to non-cross-linked polyethylene.

90°C level

90°C level

The heat resistance is at the 90°C level.

EXLON LINK Tubing

Tubing and materials property chart				
Items		Unit	Properties-value	Test method and other aspects
Tensile strength		MPa	10.4 or more	JIS C 2133
Elongation		%	200 or more	
After heat aging	Tensile strength	MPa	7.3 or more	136°C x 7 days
	Elongation	%	100 or more	
Dielectric withstand voltage		—	Nondestructive	2,500 V x 1 minute

* The data above are representative values and not guaranteed values.

* Recommended temperature range: -30°C to 90°C

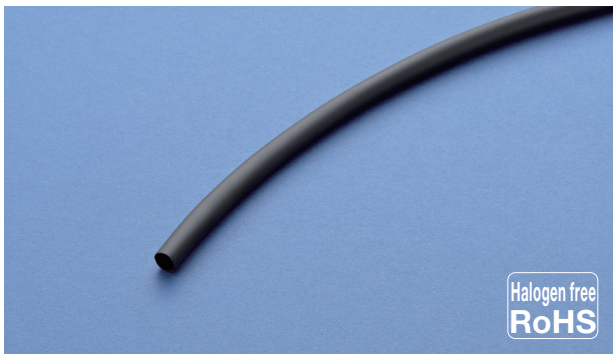
(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
4×4.6	4.0	+0.2, -0.15	0.3	±0.05	400
5×5.6	5.0	+0.3, -0.2	0.3	±0.05	300
6×6.6	6.0	+0.3, -0.2	0.3	±0.05	300
7×7.6	7.0	+0.4, -0.2	0.3	±0.05	300
8×8.8	8.0	+0.4, -0.2	0.4	+0.08, -0.05	200
9×9.8	9.0	+0.4, -0.2	0.4	+0.08, -0.05	200
10×10.8	10.0	+0.4, -0.2	0.4	+0.08, -0.05	200

- Black is the standard color of the tubing.
- Please contact us for other colors, special sizes, and tubing cut in different lengths.

EXLON-eco Series

EXLON
HC-R Elastomer Tubing



Characteristics

An elastomer tube with increased flexibility compared to conventional products that offers excellent heat resistance and cold resistance.

125°C level

125°C level

Recommended uses
The highest heat resistant temperature

Low temperature
Cold resistance

Cold resistance

For low temperature environments, additionally heat resistant

Flexibility

Flexibility

Extremely flexible, making it suitable for piping in tight spaces and corners.

EXLON
HC-R Elastomer Tubing

Table of tubing characteristics				
Items		Unit	Properties-value	JIS C 2133 compliant
Tension test	Tensile strength	Mpa	10.4 or more	Room temperature
	Elongation	%	100 or more	
After aging	Tensile strength	Mpa	7.3 or more	158°C x 7 days
	Elongation	%	100 or more	
Dielectric withstand voltage		—	Nondestructive	2,500 V 1 minute or more
Longitudinal change		%	10 or less	100°C x 2 hours
Cold bend		—	No crack	-50°C x 1 hour

* The data above are representative values and not guaranteed values.

* Recommended temperature range: -40°C to 125°C

(Product characteristics may not be sufficiently demonstrated depending on the conditions of use or environment. Please feel free to contact us for inquiries on applicability).

Standard size chart					
Size	Inner diameter (mm)	Inner diameter tolerance (mm)	Wall thickness (mm)	Thickness tolerance (mm)	Unit length (m)
3×3.8	3.0	±0.35	0.40	±0.1	300
4×4.8	4.0				300
5×6.0	5.0	±0.40	0.50		300
6×7.0	6.0				300
7×8.0	7.0	±0.45	0.50		300
8×9.0	8.0				200
9×10	9.0				200
10×11	10.0				200

- We also welcome orders for tubes with other colors, special sizes, and pipes cut to length.
- Black is the standard color of the tubing.
- Black is the standard color, and other colors are made to order.

IWASE

EXLON-
Fluoro Resin
Series

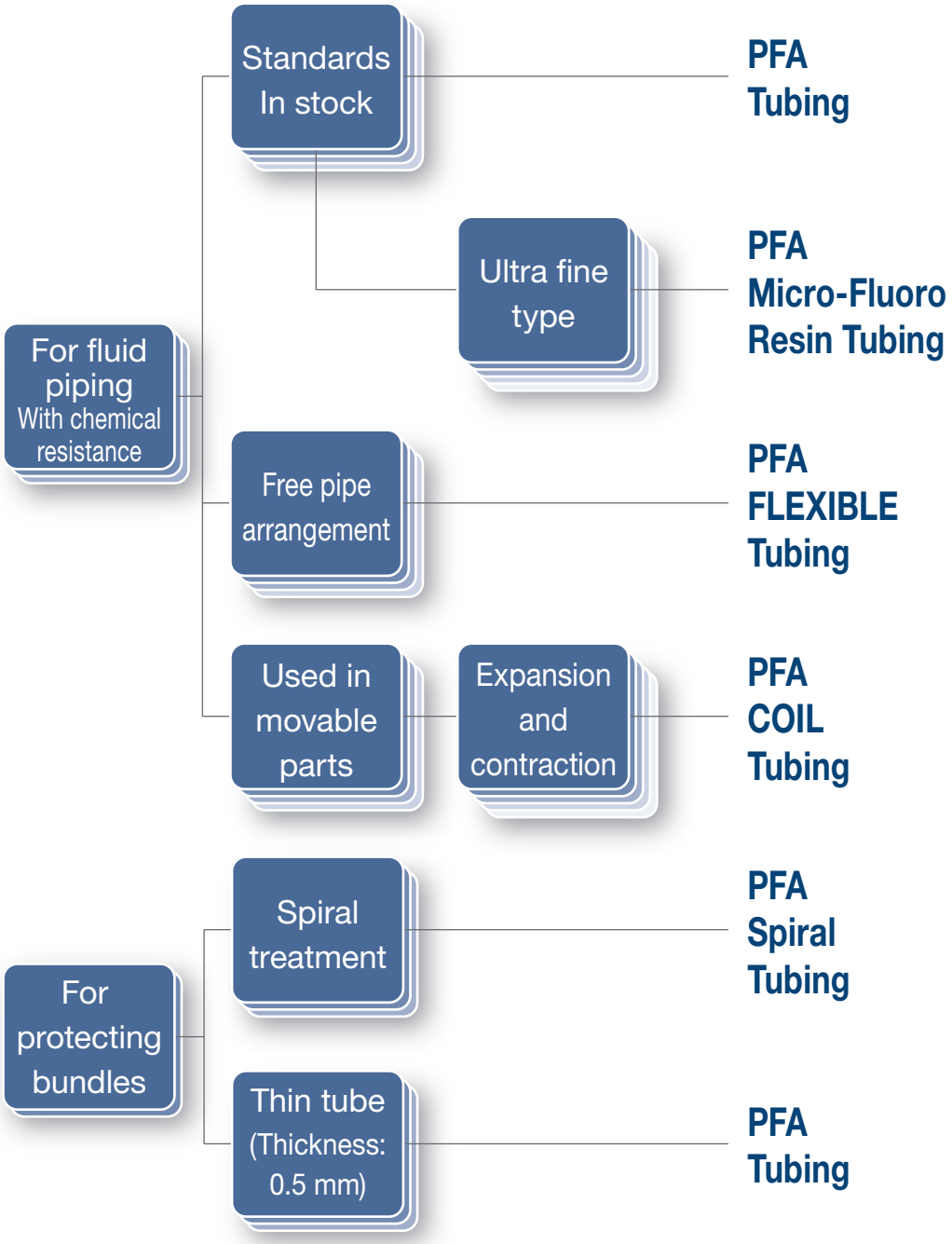
PFA Tubing

PFA Micro-Fluoro Resin Tubing

PFA FLEXIBLE Tubing

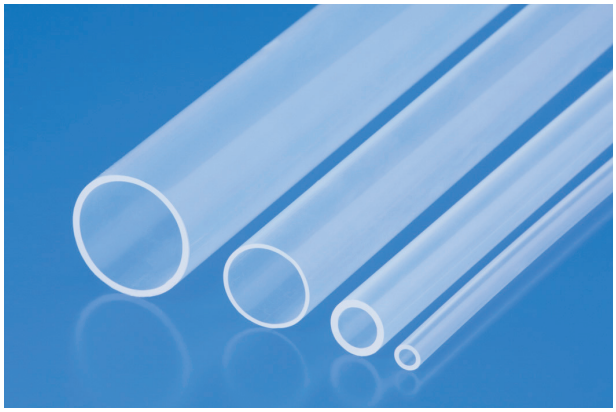
PFA COIL Tubing

EXLON-
Fluoro Resin
Series



EXLON-Fluoro Resin Series

EXLON PFA Tubing



Characteristics

These tubing have excellent heat resistance, chemical resistance, weather resistance, non-cohesiveness, and electric insulation. These tubing can be used for a variety of purposes, including semiconductor production devices, chemical plants, physiochemical devices, food manufacturing equipment, and medical devices.

Highly heat resistant

Highly heat resistant

These tubing are made of PFA resin with the heat resistance which allows continuous uses up to 260°C.

Chemical resistance

Chemical resistance

These tubing are resistant to and inactive against most chemicals and solvents.

Weather resistant

Weather resistant

They have properties that resist age-dependent changes and deteriorations in harsh outdoor environments.

Non-cohesive property

Non-cohesive property

These tubing do not adhere on sticky objects and can be easily peeled off.

Electric insulation

Electric insulation

These tubing have excellent electrical properties and the highest insulation resistance in plastic.

EXLON PFA Tubing

Standard size chart							
Size (Outer diameter x Inner diameter)	Dimension tolerance (mm)		Standard length (m)				
	Outer diameter	Thickness	2 straight	10	20	50	100
3×2	±0.1	±0.08		●	●		●
4×2	±0.1	±0.08		●	●	●	●
4×2.5	±0.1	±0.08		●	●		
4×3	±0.1	±0.08		●			●
5×4	±0.1	±0.08		●			●
6×4	±0.1	±0.08		●	●	●	●
6×5	±0.1	±0.08		●			●
7×6	±0.1	±0.08		●			●
8×6	±0.1	±0.08		●	●	●	●
8×7	±0.1	±0.08		●			
9×8	±0.1	±0.08		●			●
10×8	±0.1	±0.08		●	●	●	●
10×9	±0.1	±0.08		●			
12×9	±0.1	±0.08		●			
12×10	±0.1	±0.08		●	●	●	●
16×13	±0.1	±0.08		●			
16×14	±0.1	±0.08		●			
18×16	±0.1	±0.08		●			
19×16	±0.1	±0.08		●			
3.17×1.59	±0.1	±0.08		●			
6.35×3.96	±0.1	±0.08		●			
6.35×4.35	±0.1	±0.08	●	●	●	●	●
9.53×6.35	±0.1	±0.08	●	●	●	●	●
9.53×7.53	±0.1	±0.08		●			
12.7×9.53	±0.1	±0.08	●	●	●	●	●
12.7×10.7	±0.1	±0.08	●	●			
19.05×15.88	±0.1	±0.08	●	●	●	●	●
25.4×22.26	±0.15	±0.08	●	●	●	●	●

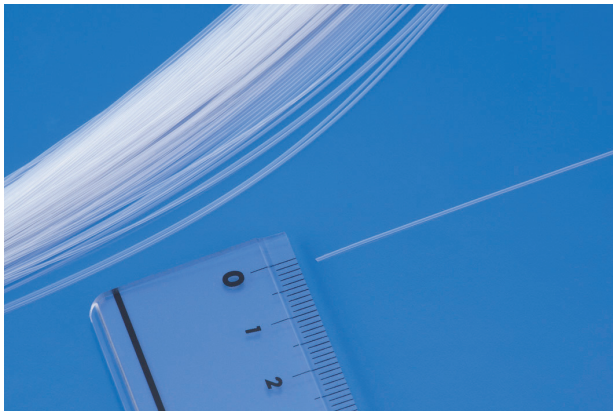
Ones marked with "●" means they are in stock.

In stock

- Other than the above sizes, standard lengths are also manufactured to order; please feel free to submit a request.
- Straight products are also manufactured in 3 m. Please inquire separately for the lot size.

EXLON-Fluoro Resin Series

EXLON
PFA Micro-Fluoro Resin Tubing



Characteristics

These are extra fine tubing made with the same performance as PFA tubing. These tubing can be used for protecting fine wires exposed to the environment where heat resistance and chemical resistance are required and for wiring of biomedical devices and analytical devices.

Ultra fine

Ultra fine

Sizes with the inner diameter from ø0.1 to ø0.5 are available. These are super extra fine PFA tubing suitable for purposes where advanced precision is required.

Highly heat resistant

Highly heat resistant

These tubing are made of PFA resin with the heat resistance which allows continuous uses up to 260°C.

Chemical resistance

Chemical resistance

These tubing are resistant to and inactive against most chemicals and solvents.

EXLON
PFA Micro-Fluoro Resin Tubing

Standard size chart				
Size (Inner diameter x Outer diameter)	Wall thickness (mm)	Dimension tolerance		Standard length (m)
		Inner diameter (mm)	Thickness (mm)	
0.1×0.3	0.1	±0.03	±0.03	100
0.2×0.4	0.1	±0.03	±0.03	100
0.3×0.5	0.1	±0.03	±0.03	100
0.4×0.6	0.1	±0.04	±0.03	100
0.5×0.7	0.1	±0.05	±0.03	100

• Other than the above sizes, standard lengths are also manufactured to order; please feel free to submit a request.

EXLON-Fluoro Resin Series

EXLON PFA FLEXIBLE Tubing

Characteristics

Corrugated shapes are created on PFA tubing. The spiral shape of this product prevents getting bent or flattened when folded. These tubing are suitable for wiring in the transportation of chemicals, solvents, and gases, as well as analytical devices and semiconductor devices.

Free pipe arrangement

Free pipe arrangement

The spiral shapes make the bend radius smaller compared to tubing without spiral shapes.

Highly heat resistant

Highly heat resistant

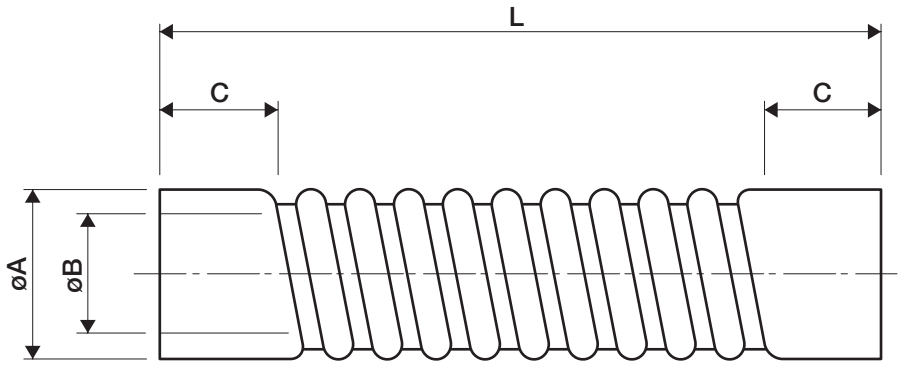
These tubing are made of PFA resin with the heat resistance that allows continuous use up to 260°C.
*The processed shape may not be retained in ambient temperatures of 100°C or higher.

Chemical resistance

Chemical resistance

These tubing are resistant to and inactive against most chemicals and solvents.

EXLON
PFA FLEXIBLE Tubing



øA: Outer diameter
øB: Inner diameter
C: Straight section
L: Total length

Standard size chart			
Size (øA x øB)	Wall thickness (mm)	Straight section C (mm)	Total length L (mm)
5×4	0.5		
6×4	1		
6×5	0.5		
7×6	0.5		
8×6	1		
8×7	0.5		
9×8	0.5		
10×8	1		
10×9	0.5		300
11×10	0.5		500
12×10	1	30	1000
14×12	1		1500
16×14	1		2000
18×16	1		
19×16	1.5		
6.35×4.35	1		
9.53×7.53	1		
12.7×10.7	1		
12.7×9.53	1.585		
19.05×15.88	1.585		
25.4×22.26	1.57		

- The total lengths can be extended from 100 L to 2000 L depending on tubing sizes. The standard length at the straight section (C) at both ends is 30L, but we can produce tubing with other length
- We receive orders starting with a single tubing.
- We can produce tubing with other sizes. Please contact us for details.

Small lot

EXLON-Fluoro Resin Series

EXLON PFA COIL Tubing

Characteristics

PFA tubing are curved and formed in a coil shape. These tubing are suitable for pipe arrangements in moving parts of devices and pipe arrangements with undetermined distances.

Expansion and contraction

Expansion and contraction

The coil shape enables these tubing to be used in moving parts where expansion and contraction are required.

Highly heat resistant

Highly heat resistant

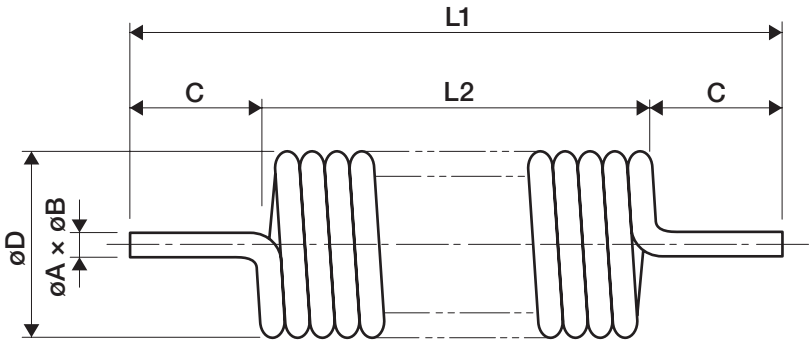
These tubing are made of PFA resin with the heat resistance which allows continuous uses up to 260°C.
*The processed shape may not be retained in ambient temperatures of 100°C or higher.

Chemical resistance

Chemical resistance

These tubing are resistant to and inactive against most chemicals and solvents.

EXLON PFA COIL Tubing



øA x øB: Outer diameter x Inner diameter
C: Straight section
øD: Outer diameter of the coil
L1: Total length of the coil
L2: Length of the bonded section of the coil

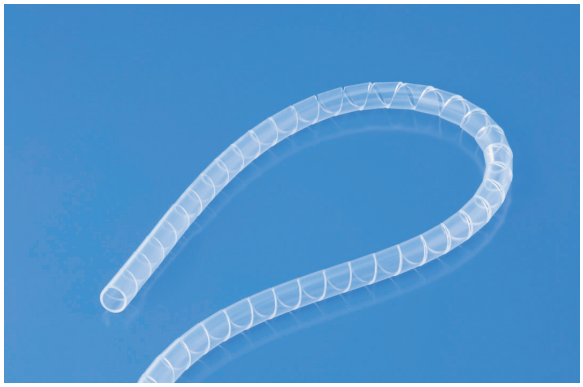
Standard size chart						
Size (øA x øB)	Straight section (C)	Outer diameter of the coil (øD)	Total length of the coil (L1)	Length of the bonded coil (L2)	Number of winding	Range of stretching section (mm)
4×2	100	30	300	100	20	400
6×4	100	40	350	150	20	500
8×6	100	60	400	200	20	600
10×8	100	80	450	250	20	800
12×10	100	150	500	300	20	1,000
3.17×1.59	100	30	300	100	20	400
6.35×4.35	100	40	350	150	20	500
9.53×7.53	100	80	450	250	20	800
12.7×10.7	100	150	500	300	20	1,000

- The standard length of the straight section at both ends is 100L, but we can produce other lengths.
- We receive orders starting with a single tubing.
- We can produce tubing with other sizes. Please contact us for details.
- The coiling work results in 15% to 20% flatness on the contour of the tubing.

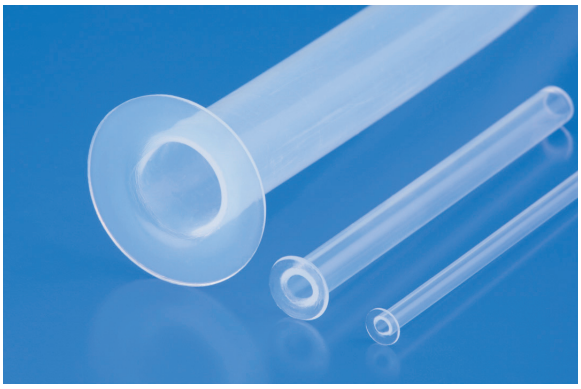
Small lot

Modified PFA Tubing Lineup

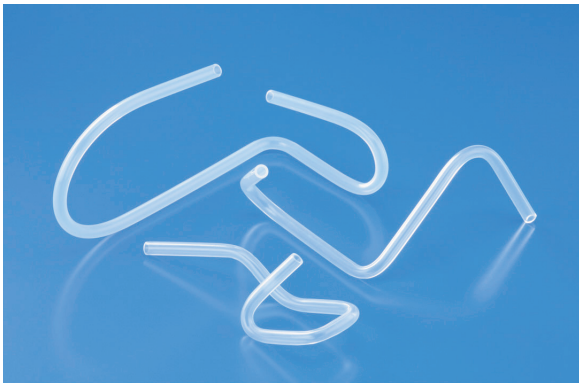
EXLON-Fluoro Resin is modified into secondary products using thermal processing.



Spiral cut



Flare



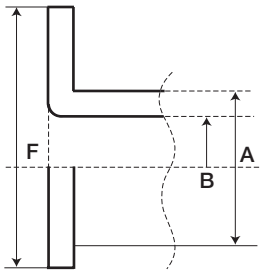
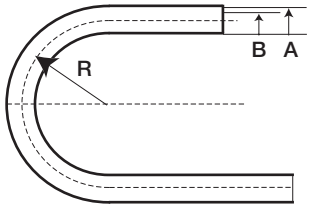
Bend

Tapered

Sealed tip

Other types of modified tubing can be produced in small lots. Please contact us for details.

PFA Tubing dimension chart for available processing (mm)

Outer diameter x Inner diameter (A x B)	 Flare	 Bend
	Maximum outer diameter [F]	Minimum radius [R]
4×2	—	10
6×4	8	10
8×6	12	15
10×8	16	20
12×10	20	25
14×12	24	35
16×14	28	40
18×16	32	60
20×18	36	80
23×20	40	100
3.17×1.59	—	10
6.35×3.96	8	10
9.53×6.35	13	15
12.7×9.53	20	25
19.05×15.88	32	60
25.4×22.26	46	100

• The data above are representative values and not guaranteed values.

EXLON-PFA
Tubing data

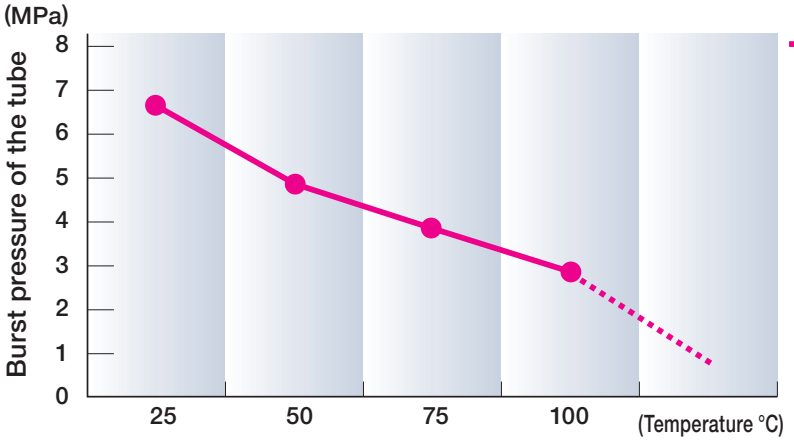
Burst pressure

Size (mm)	Burst pressure (MPa)	Size (mm)	Burst pressure (MPa)	Size (mm)	Burst pressure (MPa)
3×2	6.3	9×8	1.8	3.17×1.59	10.3
4×2	10.5	10×8	3.5	6.35×3.96	7.3
4×2.5	7.3	10×9	1.6	6.35×4.35	5.9
4×3	4.5	12×9	4.5	9.53×6.35	6.3
5×4	3.5	12×10	2.8	9.53×7.53	3.7
6×4	6.3	16×13	3.3	12.7×9.53	4.5
6×5	2.9	16×14	2.1	12.7×10.7	2.7
7×6	2.4	18×16	1.8	19.05×15.88	2.8
8×6	4.5	19×16	2.7	25.4×22.26	1.8
8×7	2.1	22×20	1.5		

- These data are based on the room temperature at 25°C.
- The burst pressure decreases as the operating temperature increases.
- The recommended designed pressure for actual operation (safety pressure) can be obtained by using the safety factor of 3.5 or more for the above burst pressure.
- The data above are representative values and not guaranteed values.

$$\text{Designed pressure for actual operation} = \frac{\text{Burst pressure}}{\text{Safety factor } (\geq 3.5)}$$

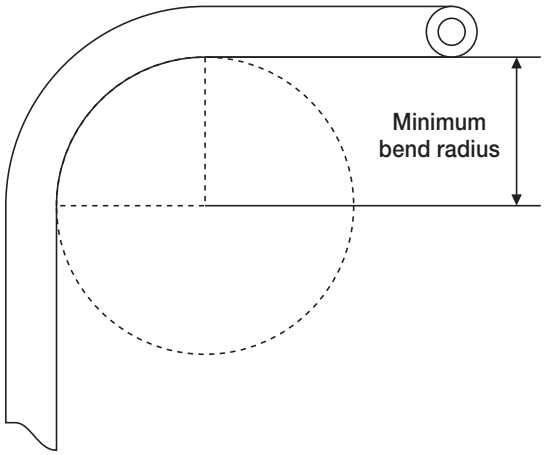
Changes in the burst pressure based on temperature (Size 6ø x 4ø)



Temperature	Burst pressure (MPa)
25°C	6.8
50°C	4.9
75°C	3.9
100°C	2.9

- The data above are representative values and not guaranteed values.

Minimum bend radius



Size (mm)	Minimum bend radius (mm)
4×2	10
6×4	20
8×6	30
10×8	65
12×10	90
6.35×3.96	15
9.53×6.35	50
12.7×9.53	75

• The data above are representative values and not guaranteed values.

Characteristics of fluoro resin

Comparison chart of fluoro resin properties								
	Category	Unit	ASTM testing method	PFA	FEP	ETFE	PVdf	PTFE
Physical	Relative density	—	D792	2.12～2.17	2.12～2.17	1.70～1.76	1.76～1.79	2.14～2.20
	Melting point	°C	—	302～310	253～282	260～270	140～145	320～330
Mechanical	Tensile strength	MPa	D638	24～41	19～22	40～44	20～34	27～34
	Elongation	%	D638	280～300	250～330	400～440	100～300	200～400
	Compression strength	MPa	D695	17	15	49	40～55	12
	Tensile elasticity	MPa	D638	—	343	490～784	784～1,960	392
	Bending elasticity	MPa	D790	647～686	539～637	882～1,372	1,372～1,764	490～588
	Impact strength (izot)	J/m	D256	No destruction	No destruction	No destruction	160～370	160
	Hardness	Rockwell	D785	—	—	R50	—	—
	Hardness	Durometer	D1706	D60	D55	D75	D65～70	D50～65
	Coefficient of dynamic friction	0.7MPa 3m/min	—	0.2	0.3	0.4	0.39	0.1
Thermal	Thermal conductivity	W/m/k	C177	0.25	0.25	0.24	0.10～0.13	0.25
	Specific heat	10^3J/kg/k	D240	1.0	1.2	1.9～2.0	1.4	1.0
	Coefficient of linear expansion	10^{-5}/k	D696	12	8.3～10.5	5.9	7～14	10
	Critical temperature	°C	—	260	200	150	125	260
	Deflection Temperature Load 0.45 MPa	°C	D648	74	72	104	149	121
	Deflection Temperature Load 1.8 MPa	°C	D648	50	50	74	87～120	55
Electrical	Volume resistivity	Ω•cm	D257	＞ 10^{18}	＞ 10^{18}	＞ 10^{16}	2×10^{14}	＞ 10^{18}
	Breakdown strength	KV/mm (thickness 3.2 mm)	D149	20	20～24	16	10	19
	Conductivity 60 Hz	—	D150	＜ 2.1	2.1	2.6	8.4	＜ 2.1
	Conductivity 103 Hz	—	D150	＜ 2.1	2.1	2.6	8.4	＜ 2.1
	Conductivity 106 Hz	—	D150	＜ 2.1	2.1	2.6	6.4	＜ 2.1
	Dielectric dissipation factor 60 Hz	—	D150	＜ 0.0002	＜ 0.0002	0.0006	0.05	＜ 0.0002
	Dielectric dissipation factor 103 Hz	—	D150	＜ 0.0002	＜ 0.0002	0.0008	0.02	＜ 0.0002
	Dielectric dissipation factor 106 Hz	—	D150	＜ 0.0003	＜ 0.0005	0.005	＜ 0.015	＜ 0.0002
	Arc resistance	sec	D495	＞ 300	＞ 300	75	50～70	＞ 300
	Chemical resistance	—	D543	Excellent	Excellent	Good	Acceptable	Good
	Non-flammability	—	D635	Non-inflammability	Non-inflammability	Flame retardance	Flame retardance	Non-inflammability
	Water absorption(24 hr)	%	D570	＜ 0.01	＜ 0.01	0.03	0.05	＜ 0.01

• The data above are representative values and not guaranteed values.

Chemical resistance

Acid

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Acetic acid 50%	○	○	○	○	○	○	○	○
Glacial acetic acid	○	○	○	○	○	○	○	×
Benzoic acid	○	○	○	○	○	△	○	○
Benzene sulfonic acid	○	○	○	○	○	○	○	×
Chlorosulf uric acid	○	○	○	○	△	△	×	×
Chromic acid 50%	○	○	○	○	△	△	○	△
Citric acid	○	○	○	○	○	○	○	○
Formic acid	○	○	○	○	○	△	○	○
Hydrogen bromide	○	○	○	○	○	○	○	○
Hydrochloric acid 10%	○	○	○	○	○	○	○	○
Hydrochloric acid 70%	○	○	○	○	○	○	○	○
Hydrofluoric acid 30%	○	○	○	○	○	△	○	○
Hydrofluoric acid 70%	○	○	○	○	○	△	○	○
Nitric acid 10%	○	○	○	○	○	△	○	○
Nitric acid 50%	○	○	○	○	○	△	○	×
Fuming nitric acid	○	○	○	○	○	△	×	×
Oxalic acid	○	○	○	○	○	○	○	×
Phenol 10%	○	○	○	○	○	○	○	○
Phenol 100%	○	○	○	○	○	△	○	×
Phthalic acid	○	○	○	○	○	○	○	○
Phosphoric acid 30%	○	○	○	○	○	○	○	○
Phosphoric acid 85%	○	○	○	○	○	△	○	○
Succinic acid	○	○	○	○	○	○	○	○
Sulfuric acid 50%	○	○	○	○	○	○	○	○
Sulfuric acid 85%	○	○	○	○	○	○	○	○
Sulfuric acid 95%	○	○	○	○	○	○	○	×
Fuming sulfuric acid	○	○	○	○	○	○	×	×

○ ••• Usable
△ ••• Test is necessary.
× ••• Cannot be used

Base

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Ammonium hydroxide 30%	○	○	○	○	○	○	○	○
Aniline	○	○	○	○	○	○	○	×
Barium hydroxide	○	○	○	○	○	○	○	○
Calcium hydroxide	○	○	○	○	○	○	○	○
Hexamethylenediamine	○	○	○	○	△	△	×	×
Magnesium hydroxide	○	○	○	○	○	○	○	○
Propylamine	○	○	○	○	△	△	×	×
Sodium carbonate	○	○	○	○	○	○	○	○
Sodium hydroxide 10%	○	○	○	○	○	○	○	△
Sodium hydroxide 50%	○	○	○	○	○	○	○	×

Oxidizing agent

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Sulfur dioxide	○	○	○	○	○	○	○	△
Hydrogen peroxide 30%	○	○	○	○	△	△	○	○
Chlorine dioxide10%	○	○	○	○	○	○	○	○
Nitrogen dioxide	○	○	○	○	○	○	○	△
Ozone	○	○	○	○	○	○	○	○
Potassium chlorate	○	○	○	○	△	△	○	○
Potassium permanganate	○	○	○	○	△	△	○	○
Sodium hypochlorite	○	○	○	○	○	○	○	○
Benzoyl peroxide	○	○	○	○	○	○	○	△

Aromatic hydrocarbon

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Benzene	○	○	○	○	○	○	○	△
Naphthalene	○	○	○	○	○	○	○	○
Toluene	○	○	○	○	○	○	○	○

Halogenated hydrocarbon

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Alkali chloride	○	○	○	○	○	○	○	○
Carbon tetrachloride	○	○	○	○	○	△	○	○
Chlorinated benzene	○	○	○	○	○	△	○	△
Chloroform	○	○	○	○	○	△	○	○
Ethylene dichloride	○	○	○	○	○	○	○	○
Ethylene bromide	○	○	○	○	○	○	○	○
Freon R-113 (coolant)	○	○	○	○	○	△	○	○

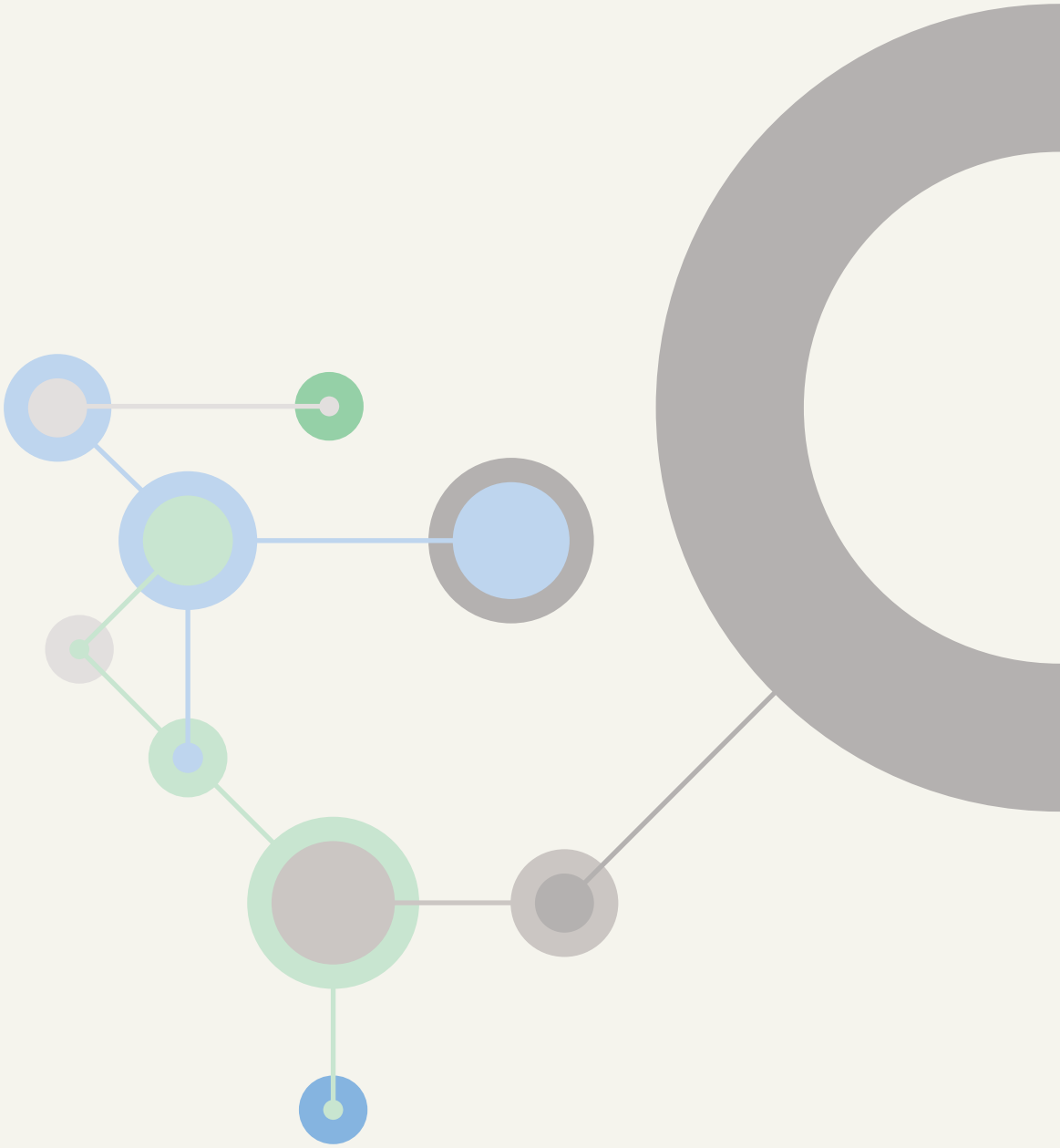
Ether/Ketone

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Acetone 10%	○	○	○	○	○	○	○	×
Acetone 100%	○	○	○	○	○	○	×	×
Acetophenone	○	○	○	○	○	○	×	×
Dimethylformamide	○	○	○	○	○	○	×	×
Ethyl ether	○	○	○	○	×	×	○	×
Ethyl acetate	○	○	○	○	○	○	×	×
Ethylene oxide	○	○	○	○	○	○	○	○
Ethylene glycol	○	○	○	○	○	○	○	○
Glycerine	○	○	○	○	○	○	○	○
Methyl Cellosolve	○	○	○	○	○	○	○	○
Methyl ethyl ketone	○	○	○	○	○	○	×	×
Trimethyl phosphate	○	○	○	○	○	○	×	×

Gas

Product name	PFA		FEP		ETFE		PVdf	
°C	23	100	23	100	23	100	23	100
Ammonia anhydrous	○	○	○	○	○	○	×	×
Carbon dioxide	○	○	○	○	○	○	○	○
Hydrogen	○	○	○	○	○	○	○	○
Methane	○	○	○	○	○	○	○	○
Hydrogen sulfide	○	○	○	○	○	○	○	○

• The data above are representative values and not guaranteed values.



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