



## Pneumatic Tube & Special Tube

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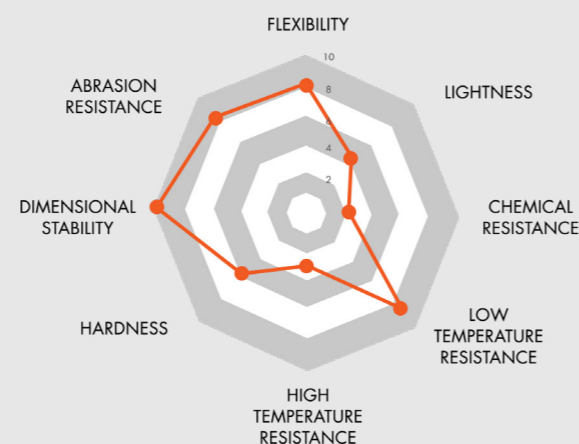
# TUBE POLYURETHANE ELASTOLLAN C98

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## ELASTOLLAN C98

### TECHNICAL FEATURES AT GLANCE ELASTOLLAN C98



Flexible ester base polyurethane tube (hardness 52 Shore D). We have always decided to promote the Elastollan® brand, which ensures constant quality and superior thermal and mechanical stability. The BASF product wins the trust of those who have the way to measure their performance and longevity.

Operating temperature: from -40°C to 60°C

### APPLICATIONS



INDUSTRIAL AUTOMATION



ROBOTICS



VACUUM EQUIPMENT

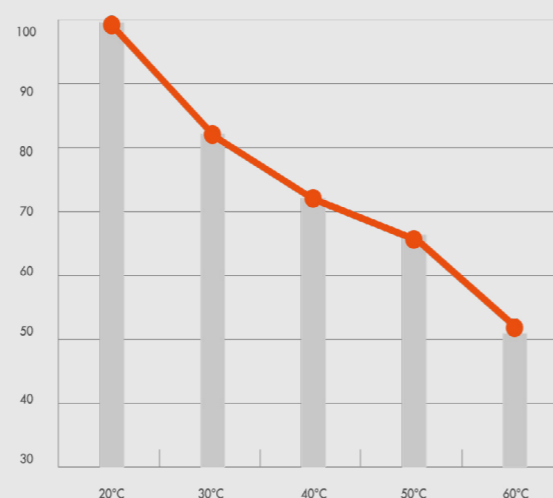


MACHINE TOOL



CABLE CARRIER CHAIN

### PRESSURE VALUES EXPRESSED AS A % IN RELATION TO TEMPERATURE FROM -40°C TO 60°C



### TECHNICAL DATA

	General Proprieties		Typical Values
Density	G/cm <sup>3</sup>	DIN53479	1.18
Flexural modulus	N/mm <sup>3</sup>	DIN53457-T	160
Stress at yield	N/mm <sup>3</sup>	DIN53504-S2	50
Tensile strength at yield	N/mm <sup>3</sup>	DIN53504-S2	550
Tensile elongation at break	N/mm <sup>3</sup>	DIN53515	130
Strenght at break	mm <sup>3</sup>	DIN53516	30
Hardness	Shore A	DIN53505	98
Hardness	Shore D	DIN53505	52

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
90111122	Blue*	4	2	+/- 0.07	10	22
90111122-CRY	Crystal					
90111122-BL	Black					
90111122-O	Orange					
90111122-R	Red					
90111122-Y	Yellow					
90111122-G	Green					
90111132	Blue*	6	4	+/- 0.07	25	14
90111132-CRY	Crystal					
90111132-BL	Black					
90111132-O	Orange					
90111132-R	Red					
90111132-Y	Yellow					
90111132-G	Green					
90111142	Blue*	8	5.5	+/- 0.07	40	12
90111142-CRY	Crystal					
90111142-O	Orange					
90111142-R	Red					
90111142-Y	Yellow					
90111142-G	Green					
90111152	Blue*	10	7.5	+/- 0.07	60	9
90111152-CRY	Crystal					
90111152-BL	Black					
90111152-O	Orange					
90111152-R	Red					
90111152-Y	Yellow					
90111152-G	Green					
90111162	Blue*	12	9	+/- 0.07	70	9
90111162-CRY	Crystal					
90111162-BL	Black					
90111162-O	Orange					
90111162-R	Red					
90111162-Y	Yellow					
90111162-G	Green					
90111172	Blue*	14	11	+/- 0.07	100	8

# TUBE POLYURETHANE 98 ANTISTATIC



PNEUMATIC HOSE

PNEUMATIC HOSE

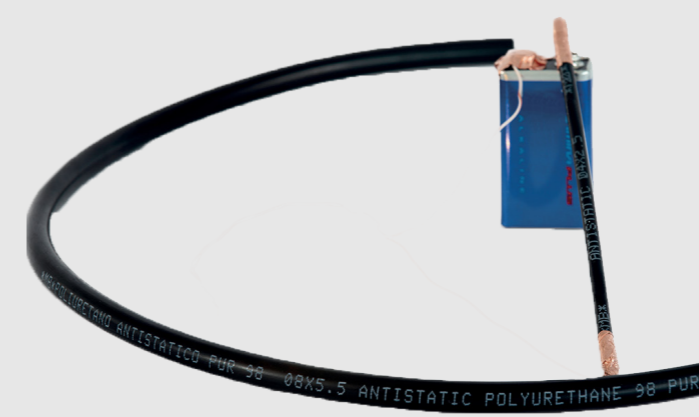
90111172-CRY	Crystal
90111172-BL	Black
901111722-BL	Black

**NOTE** Example for purchase order code with box.

1. 901111321	PU Tube 6x4 mm (Blue)	100 m/box
2. 901111321-BL	PU Tube 6x4 mm (Black)	100 m/box
3. 901111322	PU Tube 6x4 mm (Blue)	50 m/box
4. 901111322-BL	PU Tube 6x4 mm (Black)	50 m/box

Please contact our staff if you need a tube with box codes or if you have any other needs.

## 98 ANTISTATIC



Flexible triple-layer base polyurethane tube, for low pressure, stabilized in light, 98 ShA. Its multi-layer structure consists of an inner and outer layer of dissipative (antistatic) polyurethane having surface electrical resistivity  $\leq 10^6$  Ohm according to ISO 8031:2009(E) and an intermediate layer of polyurethane that gives the product high mechanics. Suitable for use in ATEX environment, group 2, 2/3 G&D category, installation zones 1, 2.

Operating temperature: from -40°C to 60°C

## APPLICATIONS

INDUSTRIAL AUTOMATION	ROBOTICS	MACHINE TOOL
VACUUM EQUIPMENT	CABLE CARRIER CHAIN	ATEX
POWDERED PAINT	ELECTRICAL RESISTANCE	

Code.	Color	Dimensions (mm)		Tolerances	Bending radius	Pressure at 23 C
98LA 2.5x4	Black	4	2.5	+/- 0.07	15	15
98LA 4x6	Black	6	4	+/- 0.07	25	14
98LA 5.5x8	Black	8	5.5	+/- 0.07	40	12
98LA 6.5x10	Black	10	6.5	+/- 0.07	40	14
98LA 8x12	Black	12	8	+/- 0.07	50	13

**NOTE** Special tube subjected to availability or minimum order quantity.

# TUBE POLYURETHANE FABUTHANE 54



## FABUTHANE 54



Flexible ether base polyurethane tube, stabilized in light and hardness 54 Shore D. Food grade acting on contact with solid and liquid foods. We produce it in a range of transparent colors that, in the case of liquids, allow to observe the passage of fluid.

Operating temperature: from -40°C to 60°C

### APPLICATIONS



INDUSTRIAL AUTOMATION



HYDROLYSIS RESISTANCE



MACHINE TOOL



VACUUM EQUIPMENT



FOOD TRANSFER



ROBOTICS



DRINKING WATER

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
54FBU 2.5x4	Crystal	4	2.5	+/-0.07	15	12
54FBU 4x6	Crystal	6	4	+/-0.07	25	11
54FBU 5.5x8	Crystal	8	5.5	+/-0.07	40	9
54FBU 7.5x10	Crystal	10	7.5	+/-0.07	60	7
54FBU 9x12	Crystal	12	9	+/-0.07	70	7

**NOTE** Special tube subjected to availability or minimum order quantity.

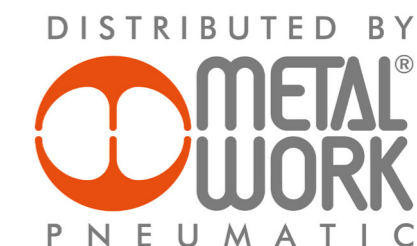
# TUBE POLYURETHANE SPARK RESISTANCE



## SPARK RESISTANCE

Flexible UL94 V2 self-extinguishing ether based polyurethane tube. The high thicknesses of the items in this series ensure good protection in case of accidental and occasional contact with glowing sparks or welding slag.

Operating temperature: from -40°C to 60°C



### APPLICATIONS



VACUUM EQUIPMENT



HYDROLYSIS RESISTANCE



MACHINE TOOL



SELF - EXTINGUISHING RATE



WELDING MACHINE

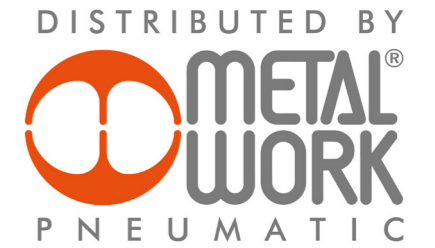


ROBOTICS

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
MS-TPU 2x4	Black	4	2	+/-0.07	10	22
MS-TPU 3.5x6	Black	6	3.5	+/-0.07	15	17
MS-TPU 5.5x8	Black	8	5.5	+/-0.07	30	12
MS-TPU 7.5x10	Crystal	10	7.5	+/-0.07	45	10
MS-TPU 8x12	Crystal	12	8	+/-0.07	40	13

**NOTE** Special tube other colors subjected to availability or minimum order quantity.

# TUBE POLYAMIDE RILSAN® PA 11



## RILSAN® PA 11

Tubes RILSAN® PA 11 flexible linear PHL of plant origin are the preferred solution of those looking for the best among polyamides, with an eye to nature. The excellent mechanical, chemical properties and the resistance to cold impacts allow its use in numerous industrial and automotive applications. The tubes in this series are produced with bio-polyamide 11 produced from renewable sources, derived from the flexible, plasticized lead oil, stabilized in light and heat. The raw material is designed to meet DIN 73378 / 74324 regulations.

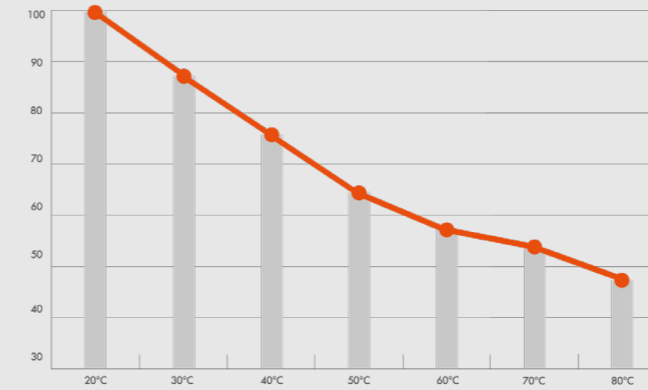


Operating temperature: from -40°C to 80°C

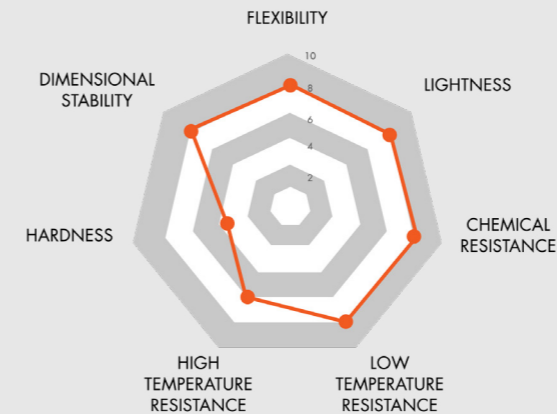
### TECHNICAL DATA

	General Proprieties		Typical Values
Density	G/cm3	ISO R 1183 D	1.05
Melting point	°C	ASTM D 789	178-184
Absorbption at equilibrium		P921LCF002	
At 23 °C & 50% HR	%		0.8
At 23 °C in water	%		1.6
Flexural modulus	Mpa	ISO 178	350
Carpy impact		ISO 179/leU	
At + 23 °C unnotched	Kj/m3		NC
At -30 °C unnotched	"		NC
At + 23 °C notched	"	ISO 179/leA	NC
At - 30 °C notched	"		8.9
Tensile			
Stress at yield	Mpa	ISO R 527	27
Elongation at yield	%		32
Strenght at break	Mpa		48
Elongation at break	%		300
Heat distortion temperature under load of		ISO 75	
Under 0.46 mpa	°C		130
Under 1.85 mpa	°C		45
Flame resistance		ASTM D 635	burns at 9 mm./min
Hardness	Shore D	ISO 868	63

PRESSURE VALUES EXPRESSED AS A % IN RELATION TO TEMPERATURE FROM -40°C TO 80°C



TECHNICAL FEATURES AT GLANCE  
RILSAN 11



### APPLICATIONS

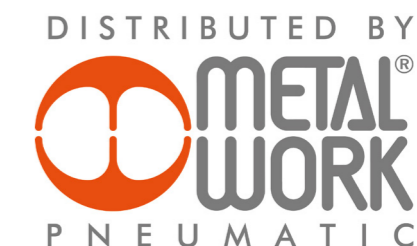
- INDUSTRIAL AUTOMATION
- VACUUM EQUIPMENT
- MACHINE TOOL
- BREAKING SYSTEMS TRUCK TRAILERS
- BREAKING SYSTEMS TRUCK TRAILERS
- PEST CONTROL LINES
- PETROLEUM BASED CHEMICAL TRANSFER
- CHEMICAL RESISTANCE

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
N1100400	Black*	4	2	+/-0.07	15	44
N1100400-W	White*					
N1100400-DB	Dark Blue					
N1100400-B	Light Blue					
N1100400-O	Orange					
N1100400-R	Red					
N1100400-Y	Yellow					
N1100400-G	Green					
N1100600	Black*	6	4	+/-0.07	30	26
N1100600-W	White*					

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
N1100600-DB	Dark Blue					
N1100600-B	Light Blue					
N1100600-O	Orange					
N1100600-R	Red					
N1100600-Y	Yellow					
N1100600-G	Green					
N1100800	Black*	8	6	+/-0.07	50	19
N1100800-W	White*					
N1100800-DB	Dark Blue					
N1100800-B	Light Blue					
N1100800-O	Orange					
N1100800-R	Red					
N1100800-Y	Yellow					
N1100800-G	Green					
N1101000	Black*	10	8	+/-0.07	80	14
N1101000-W	White*					
N1101000-DB	Dark Blue					
N1101000-B	Light Blue					
N1101000-O	Orange					
N1101000-R	Red					
N1101000-Y	Yellow					
N1101000-G	Green					
N1101200	Black*	12	10	+/-0.07	115	12
N1101200-W	White*					
N1101200-DB	Dark Blue					
N1101200-B	Light Blue					
N1101200-O	Orange					
N1101200-R	Red					
N1101200-Y	Yellow					
N1101200-G	Green					
N1101400	Black*	14	12	+/-0.07	155	10
N1101400-W	White*					
N1101400-DB	Dark Blue					
N1101400-B	Light Blue					
N1101400-O	Orange					

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
N1101400-R	Red					
N1101400-Y	Yellow					
N1101400-G	Green					
N1101070	Black	10	7	+/-0.07	50	23
N1101070-W	White					
N1101075	Black	10	7.5	+/-0.07	60	19
N1101075-W	White					
N1101290	Black	12	9	+/-0.07	75	19
N1101290-W	White					
N1101290-R	Red					

# TUBE POLYAMIDE NYLON PA 6



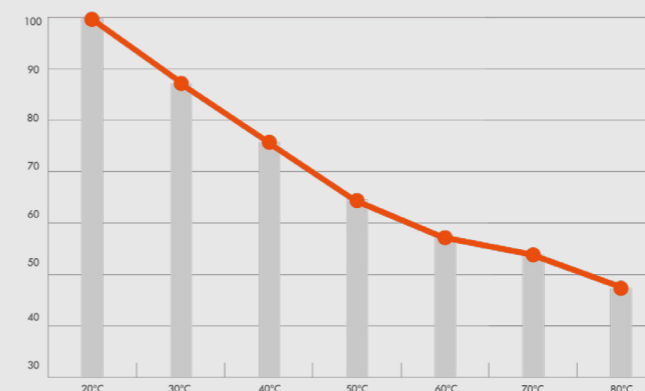
## NYLON PA 6

Rigid linear tube in non-plasticized PA 6. Due to its hygroscopicity that makes it dimensionally unsealed, its use in controlled environments is recommended. If the conditions in which it is installed allow its use, the PA 6 offers the best value for money among polyamides.

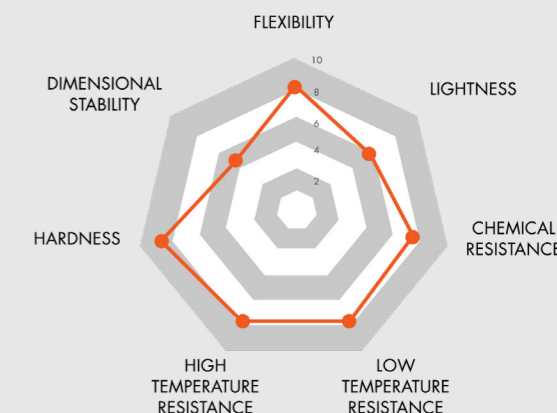
Operating temperature: from -10°C to 80°C



PRESSURE VALUES EXPRESSED AS A % IN RELATION TO TEMPERATURE FROM -10°C TO 80°C



TECHNICAL FEATURES AT GLANCE  
NYLON PA6



## TECHNICAL DATA

	General Proprieties		Typical Values
Density		ASTM D 792	1.13
Melting point	°C	ASTM D 789	220
Water absorption	%	ASTM D 570	9 10
Thermal expansion		ASTM D 696	7 10
Specific heat	J/(g-K)	ASTM D 696	1.7
Thermal conductivity	W/(m-K)	DIN 52612	0.23
Working temperature without stress	°C	ISO 75	70/85
Maximum working temperature for short terms	°C	ISO 75	180
Flamability		ASTM D 635 UL 94	V2
Tensile modulus of elasticity	Mpa	DIN 53457 ISO R 527	3000/1000
Tensile yield strength	Mpa	DIN 53455 ISO R/527	90/45
Tension at strenght	%	DIN 53455 ISO R/528	4.5/20
Dielectric hardness	Kv/mm	DIN 53481 ISO 303	100/60
Dielectric costant		ISO 303/4	3.5/7
Disspation factor		ISO 303/4	0.023/0.3
Hardness	Shore D	ISO 868	85

## APPLICATIONS



MACHINE TOOL



VACUUM EQUIPMENT



MACHINE TOOL

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
N6000200	White*	2	1	+/-0.07	10	55
N6000400	Black*	4	2	+/-0.07	15	55
N6000400-W	White					
N6000600	Black*	6	4	+/-0.07	40	33
N6000600-B	Blue					
N6000600-DB	Dark Blue					
N6000600-W	White					
N6000600-Y	Yellow					
N6000800	Black*	8	6	+/-0.07	70	23
N6000800-B	Blue					
N6000800-R	Red					
N6000800-W	White					
N6000800-Y	Yellow					
N6001000	Black*	10	8	+/-0.07	115	18
N6001000-W	White					
N6001200	Black*	12	10	+/-0.07	165	15
N6001200-B	Blue					
N6001200-W	White					

Please contact our staff if you need a tube with box codes or if you have any other needs.



# TUBE POLYETHYLENE LLDPE

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## LLDPE

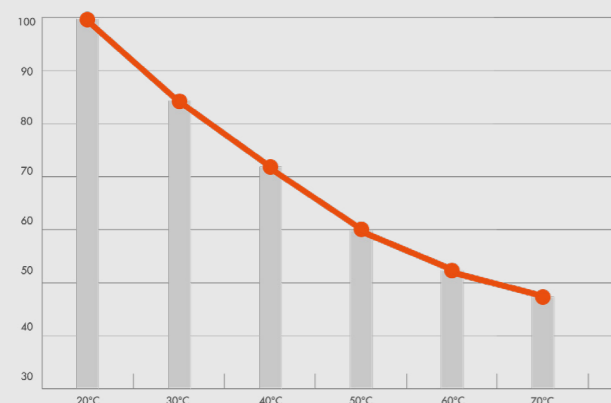


Low Density Linear Polyethylene Tube (LLDPE), food grade, semiflexible stabilized in light. Polyethylene offers at a modest price a tube with good chemical resistance. When compared to low density polyethylene, LLDPE boasts improved tensile, impact and perforation resistance as well as improved thermal stability and stress cracking resistance. It is also tasteless and

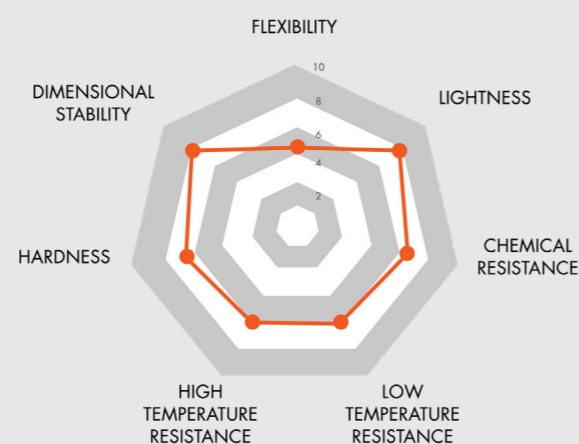
## TECHNICAL DATA

	General Proprieties		Typical Values
Density	G/cm <sup>3</sup>	ASTM 1505 D	0.922
Melting point	°C	metodo interno	113
Crushing temperature	°C	ASTM 746 D	-75
Softening temperature		ASTM 1525 D	96
Tensile yield Strength	Mpa	ASTM 882 B	10~10
Tensile at break	Mpa	ASTM 882 B	25~22
Tension at strenght	%	ASTM 882 B	380~580
Secant module 1%	Mpa	ASTM 882 B	170~190
Abrasion resistance	N/mm	ASTM 1922 D	40~53
Strength at break	g	ASTM 1709 D	260
Dynamic coefficient of rub		ASTM 1894 D	>0.5
Hardness	Shore D	ASTM 2240	46

PRESSURE VALUES EXPRESSED AS A % IN RELATION  
TO TEMPERATURE FROM -20°C TO 70°C



TECHNICAL FEATURES AT GLANCE  
LLDPE



## APPLICATIONS



INDUSTRIAL AUTOMATION



CHEMICAL RESISTANCE



MACHINE TOOL



VACUUM EQUIPMENT



FOOD TRANSFER

Code.	Color	Dimensions (mm)		Tolerances (mm)	Bending radius (mm)	Pressure at 23 C working
		OD	ID			
TPLLD2X4	White	4	2	+/-0.07	15	30
TPLLD2X4-B	Blue					
TPLLD4X6	White	6	4	+/-0.07	30	18
TPLLD4X6-B	Blue					
TPLLD4X6-BL	Black					
TPLLD5X8	White	8	5	+/-0.07	35	20
TPLLD6X8	White	8	6	+/-0.07	60	12
TPLLD6X8-B	Blue					
TPLLD8X10	White	10	8	+/-0.07	90	10
TPLLD9X12	White	12	9	+/-0.07	85	12
TPLLD9X12-B	Blue					

Please contact our staff if you need a tube with box codes or if you have any other needs.

**NOTE** Example for purchase order code with box.

1. 90111321	PU Tube 6x4 mm (Blue)	100 m/box
2. 90111321-BL	PU Tube 6x4 mm (Black)	100 m/box
3. 90111322	PU Tube 6x4 mm (Blue)	50 m/box
4. 90111322-BL	PU Tube 6x4 mm (Black)	50 m/box

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Tel: 092-925-2516 sale.eec@metalwork.co.th

**Metal Work Showroom NEEC:** Thaiwasadu KhonKaen  
224 Moo 1, Samran, Mueang KhonKaen, KhonKaen 40000



metalwork.co.th