



# **Heat Shrink Sleeves**

**Identification Labels** 



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**AMS WOER Tube** WOER SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO.,LTD.



A comprehensive line of heat shrinkable sleeves, labels, tie-on cable markers to meet a broad range of needs including UL,CSA and Mil-Spec requirements, for a variety of Applications. WOER's identification sleeves are Heat shrinkable marking sleeves for wire and cable identification. Made from permanent, flame retarded, radiation crosslinked heat shrinkable polyolefin. This identification sleeves are permanent immediately after printing and remain legible even when exposed to abrasion, aggressive cleaning solvents.

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## **AMS**

Military Identification Sleeves

**Description:** AMS marker sleeves are designed to meet the wire and cable permanent marking needs. It is made of durable and flame retardant heat shrinkable polyolefin, and radiation cross-linked by high energy electronic beam.

Standard: AMS meets AMS-DTL-23053/5 Class 1&3, SAE-AS 81531, MIL-STD-202F/Method 215J, UL224, VW-1, RoHS.

#### **Features**

Material	The sleeving shall be fabricated from irradiated, thermally stabilized and
Waterial	flame retarded modified polyolefin compound
Application range	Military industry; Aerospace & defense; Marine;
Operating temperature range	-55~+135
Minimum recovery temperature	+135
Maximum storage temperature	+50
Shrink ratio	2:1, 3:1
Color	White, Yellow, other color is available if ordered
Printing mode	Single sided printing and Double sided printing formats available
Supplied mode	Either Continuous type or Ladder format type is available
Recommended Printers	Either Thermal transfer printer or Laser printer is OK.
Recommended Ribbons	WO-80500BK resin ribbon, Black

#### **Dimensions**

Shrink ratio-2X

SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO.,LTD.

	As	Supplied (m	m)	After Reco	overy(mm)
Part Number	ID (D)	Flatten Width (W)	Double Wall Thickness	ID (d)	Single Wall Thickness
AMS-M-2X-1.6-	2.00±0.20	3.7±0.3	0.48±0.10	0.79	0.45±0.06
AMS-M-2X-2.4-	2.79±0.20	5.0±0.3	0.48±0.10	1.18	0.49±0.06
AMS-M-2X-3.2-	3.64±0.23	6.3±0.4	0.48±0.10	1.59	0.51±0.06
AMS-M-2X-4.8-	5.26±0.25	8.9±0.4	0.49±0.10	2.36	0.54±0.06
AMS-M-2X-6.4-	6.92±0.28	11.5±0.4	0.50±0.10	3.18	0.56±0.06
AMS-M-2X-9.5-	10.2±0.32	16.7±0.5	0.51±0.11	4.75	0.59±0.06
AMS-M-2X-12.7-	13.5±0.36	21.8±0.6	0.52±0.11	6.35	0.60±0.07
AMS-M-2X-19-	20.1±0.40	32.2±0.6	0.53±0.11	9.53	0.62±0.07
AMS-M-2X-25-	26.7±0.45	42.5±0.7	0.55±0.12	12.7	0.63±0.07
AMS-M-2X-38-	39.8±0.51	63.2±0.8	0.57±0.12	19.1	0.64±0.07
AMS-M-2X-51-	53.0±0.56	83.9±0.9	0.58±0.13	25.4	0.64±0.08
AMS-M-2X-76-	79.4±0.56	125.3±1.0	0.59±0.13	38.1	0.64±0.09

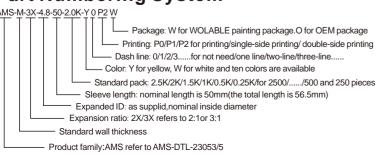
#### Shrink ratio-3X

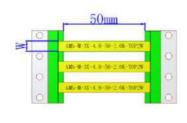
	A:	s Supplied (m	m)	After Recovery(mm)				
Part Number	ID (D)	Double Hall		ID (d)	Single Wall Thickness			
AMS-M-3X-1.6-	2.00±0.20	3.7±0.3	0.47±0.10	0.53	0.52±0.06			
AMS-M-3X-2.4-	2.79±0.20	5.0±0.3	0.47±0.10	0.79	0.57±0.06			
AMS-M-3X-3.2-	3.64±0.23	6.3±0.4	0.48±0.10	1.06	0.61±0.06			
AMS-M-3X-4.8-	5.26±0.25	8.9±0.4	0.49±0.10	1.59	0.67±0.06			
AMS-M-3X-6.4-	6.92±0.28	11.5±0.4	0.50±0.10	2.13	0.71±0.06			
AMS-M-3X-9.5-	10.2±0.32	16.7±0.5	0.52±0.11	3.18	0.77±0.06			
AMS-M-3X-12.7-	13.5±0.36	21.8±0.6	0.53±0.11	4.23	0.80±0.07			
AMS-M-3X-19-	20.1±0.40	32.2±0.6	0.55±0.11	6.35	0.84±0.07			
AMS-M-3X-25-	26.7±0.45	42.5±0.7	0.565±0.12	8.47	0.86±0.07			
AMS-M-3X-38-	39.8±0.51	63.2±0.8	0.57±0.12	12.9	0.89±0.07			
AMS-M-3X-51-	53.0±0.56	83.9±0.9	0.57±0.12	17.2	0.90±0.08			
AMS-M-3X-76-	79.4±0.56	125.3±1.0	0.57±0.13	25.8	0.92±0.09			

**Package information** 

Ordering Size	Ladder Format Type	Continuous Type			
(AMS-M-2X/3X)	A&B-Small Box Packing (PCS/Box)	A-Paper reel Packing (m/reel)	B-Plastic reel Packing (m/reel)		
1.6	2500	50	25		
2.4	2500	50	25		
3.2	2000	100	25		
4.8	2000	100	25		
6.4	2000	100	25		
9.5	1000	100	25		
12.7	1000	100	25		
19	500	100	25		
25	500	100	25		
38	500	50	25		
51	250	50	25		
76	250	50	25		

### **Part Numbering System**









## **RSFR**

### Heat Shrinkable Identification Sleeves

**Description:** RSFR marker sleeve is a flattened, heat-shrinkable tubing intended for wire and cable harness identification. It can also be used for applications where limited fire hazard characteristics are necessary. When RSFR is printed with Woer recommended printers and ink ribbons, the marks remain legible, durable, even when exposed to abrasion, aggressive cleaning solvents, and industrial fluids.

Standard: SAE-AS 81531, MIL-STD-202F/Method 215J, UL224 RoHS

#### **Features**

Material	The sleeving shall be fabricated from irradiated, thermally stabilized and flame retarded modified polyolefin compound containing no halogens or cadmium in the formulation.
Application range	commercial Industrial environment
Operating temperature range	-55~+125
Minimum recovery temperature	+125
Maximum storage temperature	+50
Shrink ratio	2:1, 3:1
Color	White, Yellow, other color is available if ordered
Printing mode	Single sided printing and Double sided printing formats available
Supplied mode	Either Continuous type or Ladder format type is available
Recommended Printers	Thermal transfer printer
Recommended Ribbons	N85 resin ribbon, Black, 100mm(width)*300m(length)

B02 Product Catalogue www.woer.com B03





## **PSFR**

## High-temperature, Heat Shrinkable Identification Sleeves

Description: PSFR marker sleeve is flattened, heat-shrinkable tubing designed for wire and cable identification in high temperature applications or where extreme resistance to fuels, lubricants and cleaning solvents is required. When PSFR is printed with Woer recommended printers and ink ribbon, the marks remain legible, durable, even when exposed to abrasion, aggressive cleaning solvents, and industrial fluids.

Standard: AMS-DTL-23053/18, SAE-AS 81531, MIL-STD-202F/Method 215J, UL224 RoHS

#### **Features**

Material	The sleeving shall be fabricated from irradiated, thermally stabilized and flame retarded modified PVDF
Application range	Aerospace, defense and mass transit industries.
Operating temperature range	-55~+225
Minimum recovery temperature	+150
Maximum storage temperature	+50
Shrink ratio	2:1
Color	White, Yellow, other color is available if ordered
Printing mode	Single sided printing and Double sided printing formats available
Supplied mode	Either Continuous type or Ladder format type is available
Recommended Printers	Thermal transfer printer
Recommended Ribbons	N95 resin ribbon, Black, 100mm(width)*300m(length)

#### **Dimensions**

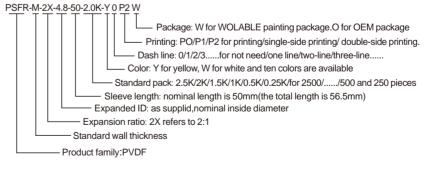
	As Supplied (mm)	After Reco	overy(mm)
Part Number	ID (D)	ID (d)	Single Wall Thickness
PSFR-2X-2.4-*	2.4	1.2	0.25±0.05
PSFR-2X-3.2-*	3.2	1.6	0.25±0.05
PSFR-2X-4.8-*	4.8	2.4	0.25±0.05
PSFR-2X-6.4-*	6.4	3.2	0.30±0.08
PSFR-2X-9.5-*	9.5	4.8	0.30±0.08
PSFR-2X-12.7-*	12.7	6.4	0.30±0.08
PSFR-2X-19.1-*	19.1	9.5	0.43±0.08
PSFR-2X-25.4-*	25.4	12.7	0.48±0.08
PSFR-2X-38.1-*	38.1	19.1	0.60±0.10

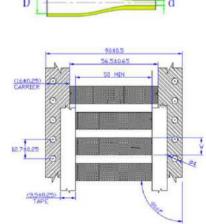
**PSFR** 

#### **Package Information**

Ordering Size	Ladder Format Type	Continuous Type
(PSFR-M-2X)	Small Box Packing (PCS/Box)	Paper reel Packing (m/reel)
2.4	2500	50
3.2	2000	100
4.8	2000	100
6.4	2000	100
9.5	1000	100
12.7	1000	100
19	500	100
25	500	100
38	500	50

#### **Part Numbering System**





Color code	BL	Br	R	Or	Υ	G	Blu	V	Gr	W
Color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White

Note Yellow and white are standard, other color is available if ordered.

**B06** Product Catalogue www.woer.com **B07** 



## **HMS**

## Diesel Resistant Identification Sleeves

**Description:** HMS marker sleeves are used to identify wires and cables where exposure to organic fluids, especially diesel oils, for long period of high of temperatures.

Standard: HMS meets AMS-DTL-23053/6 Class 1, NF F 00608 Categories A&H, SAE-AS 81531, MIL-STD-202F/Method 215J, RoHS

#### **Features**

Material	The sleeving shall be fabricated from irradiated, thermally stabilized and flame retarded modified polyolefin compound
Application range	Military industry; Aerospace & defense; Marine;
Operating temperature range	-55~+135
Minimum recovery temperature	+135
Maximum storage temperature	+50
Shrink ratio	3:1
Color	White, Yellow, other color is available if ordered
Printing mode	Single sided printing and Double sided printing formats available
Supplied mode	Either Continuous type or Ladder format type is available
Recommended Printers	Either Thermal transfer printer or Laser printer is OK.
Recommended Ribbons	N85 resin ribbon, Black, 100mm(width)*300m(length)

#### **Dimensions**

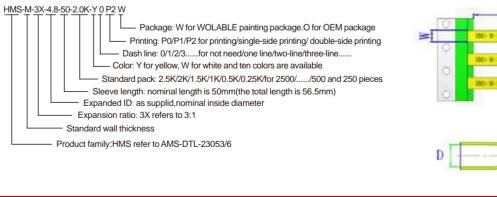
	As	Supplied (m	m)	After Recovery(mm)		
Part Number	ID (D)	Flatten Width (W)	Double Wall Thickness	ID (d)	Single Wall Thickness	
HMS-M-3X-2.4-	2.79±0.20	5.0±0.3	0.47±0.10	0.79	0.57±0.06	
HMS-M-3X-3.2-	3.64±0.23	6.3±0.4	0.48±0.10	1.06	0.61±0.06	
HMS-M-3X-4.8-	5.26±0.25	8.9±0.4	0.49±0.10	1.59	0.67±0.06	
HMS-M-3X-6.4-	6.92±0.28	11.5±0.4	0.50±0.10	2.13	0.71±0.06	
HMS-M-3X-9.5-	10.2±0.32	16.7±0.5	0.52±0.11	3.18	0.77±0.06	
HMS-M-3X-12.7-	13.5±0.36	21.8±0.6	0.53±0.11	4.23	0.80±0.07	
HMS-M-3X-19-	20.1±0.40	32.2±0.6	0.55±0.11	6.35	0.84±0.07	
HMS-M-3X-25-	26.7±0.45	42.5±0.7	0.56±0.12	8.47	0.86±0.07	
HMS-M-3X-38-	39.8±0.51	63.2±0.8	0.57±0.12	12.9	0.89±0.07	

**HMS** 

#### **Package Information**

Ordering Size	Ladder Format Type	Continu	ous Type
Ordering Size (HMS-M-3X)	A&B-Small Box Packing (PCS/Box)	A-Paper reel Packing (m/reel)	B-Plastic reel Packing (m/reel)
2.4	2500	50	25
3.2	2000	100	25
4.8	2000	100	25
6.4	2000	100	25
9.5	1000	100	25
12.7	1000	100	25
19	500	100	25
25	500	100	25
38	500	50	25

### **Part Numbering System**



Color code	BL	Br	R	Or	Υ	G	Blu	V	Gr	W
Color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White

Note Yellow and white are standard, other color is available if ordered

**B08** Product Catalogue www.woer.com **B09** 



## **HNF**

### Halogen Free Low Smoke Low Hazard Identification Sleeves

**Description:** HNF marker sleeve is a flattened, heat-shrinkable tubing designed for wire and cable harness identification. It can also be used for applications where limited fire hazard characteristics are necessary. The zero halogen material coupled with low smoke and low toxic fume emissions make this product perfectly used in enclosed spaces such as mass transit, marine and industrial installations.

**Standard:** NF F16-101, DIN5510-2, BS 6853, EN45545-2, SAE-AS 81531, MIL-STD-202F/Method 215J, RoHS ,FPA130

#### **Features**

Material	The sleeving shall be fabricated from irradiated, thermally stabilized and flame retarded modified polyolefin compound containing no halogens or cadmium in the formulation.
Application range	Industrial environment; Rail & mass transit; Aerospace & defense; Marine;
Operating temperature range	-55~+125
Minimum recovery temperature	+115
Maximum storage temperature	+40
Shrink ratio	2:1
Color	White, Yellow, other color is available if ordered
Printing mode	Single sided printing and Double sided printing formats available
Supplied mode	Either Continuous type or Ladder format type is available
Recommended Printers	Thermal transfer printer
Recommended Ribbons	N85 resin ribbon, Black, 100mm(width)*300m(length)

#### **Dimensions**

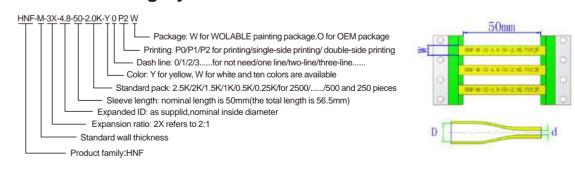
	As	Supplied (m	m)	After Reco	overy(mm)
Part Number	ID (D)	Flatten Width (W)	Double Wall Thickness	ID (d)	Single Wall Thickness
HNF-M-2X-2.4-	2.79±0.20	5.0±0.3	0.48±0.10	1.18	0.49±0.06
HNF-M-2X-3.2-	3.64±0.23	6.3±0.4	0.48±0.10	1.59	0.51±0.06
HNF-M-2X-4.8-	5.26±0.25	8.9±0.4	0.49±0.10	2.36	0.54±0.06
HNF-M-2X-6.4-	6.92±0.28	11.5±0.4	0.50±0.10	3.18	0.56±0.06
HNF-M-2X-9.5-	10.2±0.32	16.7±0.5	0.51±0.11	4.75	0.59±0.06
HNF-M-2X-12.7-	13.5±0.36	21.8±0.6	0.52±0.11	6.35	0.60±0.07
HNF-M-2X-19-	20.1±0.40	32.2±0.6	0.53±0.11	9.53	0.62±0.07
HNF-M-2X-25-	26.7±0.45	42.5±0.7	0.55±0.12	12.7	0.63±0.07
HNF-M-2X-38-	39.8±0.51	63.2±0.8	0.57±0.12	19.1	0.64±0.07

**HNF** 

## **Package Information**

Ordering Size	Ladder Format Type	Continue	ous Type
(HNF-M-2X)	A&B-Small Box Packing (PCS/Box)	A-Paper reel Packing (m/reel)	B-Plastic reel Packing (m/reel)
2.4	2500	50	25
3.2	2000	100	25
4.8	2000	100	25
6.4	2000	100	25
9.5	1000	100	25
12.7	1000	100	25
19	500	100	25
25	500	100	25
38	500	50	25

#### **Part Numbering System**



Color code	BL	Br	R	Or	Υ	G	Blu	V	Gr	W
Color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White

Note Yellow and white are standard, other color is available if ordered

B10 Product Catalogue www.woer.com B11



## **PUR**

## **Indentification Tags**

**Description:** The PUR cable markers are made of a thermoplastic polyurethane material, which is a halogen free, flame retardant, hydrolysis and micro organism resistant material. The raw material fulfills UL94-V0. For identification of cables and wires, the markers are supplied on rolls for thermal transfer print.

**Use:** Markers can be easily removed from the carrier, and applied to cables and wire bundles using cable dies. Thermal transfer printer and WO-80500BK ribbon are recommended for meeting printing performance requirements of SAE AS 81531 and MIL-STD-202F.

## Specification and size

Order Code	Color	Pack size (pcs/coil)	Marker high (mm)	Marker length (mm)
PUR-M-4H-10-60-1K-W	White	1000	10	60
PUR-M-4H-15-75-1K-W	White	1000	15	75
PUR-M-4H-25-75-0.5K-W	White	500	25	75
PUR-M-4H-10-60-1K-BL	Black	1000	10	60
PUR-M-4H-15-75-1K-BL	Black	1000	15	75
PUR-M-4H-25-75-0.5K-BL	Black	500	25	75
PUR-M-4H-10-60-1K-Y	Yellow	1000	10	60
PUR-M-4H-15-75-1K-Y	Yellow	1000	15	75
PUR-M-4H-25-75-0.5K-Y	Yellow	500	25	75
PUR-M-4H-10-60-1K-R	Red	1000	10	60
PUR-M-4H-15-75-1K-R	Red	1000	15	75
PUR-M-4H-25-75-0.5K-R	Red	500	25	75

### **Physic Performance**

Properties	Test Method	Typical value
Hardness	DIN 53505	58 Shore D
Density	DIN 53475	1.27g/cm³
Tensile strength	DIN 53504	30MPa
Ultimate elongation	DIN 53504	400%
Stress at 20% elongation	DIN 53504	13MPa
Stress at 100% elongation	DIN 53504	19MPa
Stress at 300% elongation	DIN 53504	33МРа
Tear Strength	DIN 53515	110N/mm
Abrasion Loss	DIN 53516	30 mm³
Compression set at room temperature	DIN EN ISO 815	30%
Compression set at 70°C	DIN EN ISO 815	45%
Notched impact strength (Charpy) +23°C	DIN EN ISO 179	50 kj/m²

B12 Product Catalogue www.woer.com B13





## RSFR/AMS/HMS/HNF

# Identification Tags"Ladder Type" Thermal transfer

**Description:** According to the structure of label card, the identification tag is made of environment-friendly polyolefin material by means of bombardment and cross-link of high energy electron bunch.

They are mainly applied in the domains such as high-trials, subways, MU train nuclear power station, airplane and space shuttles where the wide-diameter cable and bundle labels with high reliability are required to applied, especially in severe environment.

**Use:** Markers can be easily removed from the carrier, and applied to cables and wire bundles using cable dies. Thermal transfer printer and WO-80500BK ribbon are recommended for meeting printing performance requirements of SAE AS 81531 and MIL-STD-202F.

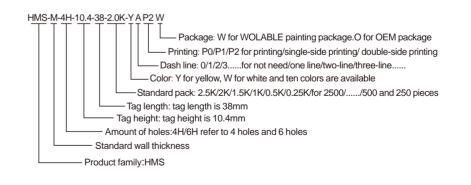
#### Physic performance

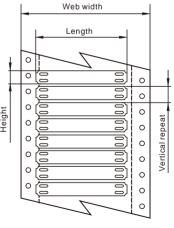
Properties	AMS	нмѕ	HNF	RSFR	Test Method
Tensile strength (MPa)	10.3	13.8	10.3	10.3	ASTM D2671
Tensile strength after aging (MPa)	6.9	11.1	6.9	6.9	ASTM D2671
Ultimate elongation after aging(%)	200	200	200	200	ASTM D2671
Ultimate elongation(%)	100	100	100	100	ASTM D2671
Voltage withstand(V)	2500 V,60s,Pass	2500 V,60s,Pass	2500 V,60s,Pass	2500 V,60s,Pass	UI224
Dielectric strength (MV/m)	19.7	19.7	19.7	19.7	ASTM D2671
Volume resistivity( · cm)	10 <sup>14</sup>	1014	1014	1014	ASTM D2671
Water absorption(%	0.5	0.5	1.0	1.0	ASTM D570
Corrosion	Pass	Pass	Pass	Pass	UL 224
Heat shock	No cracks , flowing or dripping	No cracks , flowing or dripping	No cracks , flowing or dripping	No cracks , flowing or dripping	UL 224
Low temperature flexibility	No cracks	No cracks	No cracks	No cracks	UL 224
Flammability	VW-1	VW-1	DIN5510-2 S3	60s self-extingish	UL 224 DIN5510-2
Smoke density Ao	NG	NG	0.17	NG	BS6853
Index of toxic fume R	NG	NG	0.56	NG	BS6853

## Specification and size

Order Code	Pack size (pcs/coil)	Marker high (mm)	Marker length (mm)
RSFR-4H-10.4-45-2K-W-B-P0-*	2000	10.4	45
RSFR-4H-10.4-53-2K-W-B-P0-*	2000	10.4	53
RSFR-4H-10.4-64-2K-W-B-P0-*	2000	10.4	64
RSFR-6H-10.4-76-2K-W-B-P0-*	2000	10.4	76
RSFR-6H-10.4-90-2K-W-B-P0-*	2000	10.4	90
RSFR-4H-12.0-102-2K-W-B-P0	2000	12.0	102
RSFR-4H-15.0-45-1.5K-W-B-P0	1500	15.0	45
RSFR-4H-15.0-53-1.5K-W-B-P0	1500	15.0	53
RSFR-4H-15.0-64-1.5K-W-B-P0	1500	15.0	64
RSFR-6H-15.0-76-1.5K-W-B-P0	1500	15.0	76
RSFR-6H-15.0-90-1.5K-W-B-P0	1500	15.0	90
RSFR-4H-20.3-45-1K-W-B-P0-*	1000	20.3	45
RSFR-4H-20.3-53-1K-W-B-P0-*	1000	20.3	53
RSFR-4H-20.3-64-1K-W-B-P0-*	1000	20.3	64
RSFR-6H-20.3-76-1K-W-B-P0-*	1000	20.3	76
RSFR-6H-20.3-90-1K-W-B-*-P0	1000	20.3	90
RSFR-4H-25.4-45-1K-W-B-*-P0	1000	25.4	45
RSFR-4H-25.4-53-1K-W-B-*-P0	1000	25.4	53
RSFR-4H-25.4-64-1K-W-B-*-P0	1000	25.4	64
RSFR-6H-25.4-76-1K-W-B-*-P0	1000	25.4	76
RSFR-6H-25.4-90-1K-W-B-*-P0	1000	25.4	90

#### **Part Numbering System**





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**WO-80500BK** 

Ribbon Data Sheet

**Description**&application: WO-80500BK N85 — is an ultra- high durability black resin thermal transfer ribbon, tested and approved for use on WOER AMS-M, HMS-M, DIN-M and HNF-M wire marker sleeves as well as RSFR/AMS/HMS/HNF cable marker tags. For reliable print performance and durability, please use WOER recommended compatible printers.

#### **Characteristics**

Manufacturer:	WOER
The max storage temperature:	-5 -40
Operating temperature:	5 -35
The delivery temperature:	-5 -45
Complied standards:	SAE AS 81531 and MIL-STD-202F/215J
Ribbon width:	100 mm 60mm 40mm
Ribbon length:	300 m
Printable area:	100% full area
Internal diameter	25mm
Outside diameter:	62mm
Ink:	Resin
Standard color:	Black
Ribbon wind direction:	Ink exterior

## Recommended printers and materials

Properties	Typical value
Compatible printer:	WO-III,110-600DPI
Companior printer.	WO-III,110-300DPI
Compatible materials:	AMS, HMS, RSFR, HNF

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