

W⊙LABEL, Identification Sleeves (NF F 16-101)

HNF—Product Data Sheet

◆ Applications

HNF — is designed to meet the requirements of High-speed EMU, subways, marine, offshore and aerospace. Class leading mark permanence and clarity is achieved by WO-III 110-600 or WO-III 110-300 thermal transfer printers and either WO-80500BK or WO-80693BK ribbons

◆ Characteristics

Operating temperature.....-30°C to +125°C

Totally recovered temperature \geq +120 °C.

Standard colors..... Yellow, White (Other colors are available upon request).

Index of oxygen..... \geq 32 % (Class I2, NF F 16-101).

Index of flammable.....I.F. \leq 40%. Halogen free, low generation of toxic gases, corrosive acid, and smog (Class F2, NF F 16-101).

Flammability..... Self-extinguish in 60 sec. (AMS DTL 23053/5).

◆ Standard Sizes

Table 1 Size for 2X M-Wall

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

Table 2 Size for 3X M-Wall

Part Number	Expanded As Supplied (mm)			Recovered After Heating (mm)	
	Inside Diameter, ID	Flatten Width	Double Wall Thickness	Inside Diameter, Id	Single Wall Thickness
HNF-M-3X-1.6-*	2.00±0.20	3.7±0.3	0.47±0.10	≤0.53	0.52±0.06
HNF-M-3X-2.4-*	2.79±0.20	5.0±0.3	0.47±0.10	≤0.79	0.57±0.06
HNF-M-3X-3.2-*	3.64±0.23	6.3±0.4	0.48±0.10	≤1.06	0.61±0.06
HNF-M-3X-4.8-*	5.26±0.25	8.9±0.4	0.49±0.10	≤1.59	0.67±0.06
HNF-M-3X-6.4-*	6.92±0.28	11.5±0.4	0.50±0.10	≤2.36	0.71±0.06
HNF-M-3X-9.5-*	10.2±0.32	16.7±0.5	0.52±0.11	≤3.18	0.77±0.06
HNF-M-3X-12.7*	13.5±0.36	21.8±0.6	0.53±0.11	≤4.75	0.80±0.07
HNF-M-3X-19-*	20.1±0.40	32.2±0.6	0.55±0.11	≤6.35	0.84±0.07
HNF-M-3X-25-*	26.7±0.45	42.5±0.7	0.56±0.12	≤8.47	0.86±0.07
HNF-M-3X-38-*	39.8±0.51	63.2±0.8	0.57±0.12	≤12.9	0.89±0.07
HNF-M-3X-51-*	53.0±0.56	83.9±0.9	0.57±0.13	≤17.2	0.90±0.08
HNF-M-3X-76-*	79.4±0.56	125.3±1.0	0.57±0.13	≤25.8	0.92±0.09

◆ Specifications

Table 3 Requirements for heat-shrinkable identification Sleeves

Properties(Units)	Sample status	requirements	Testing methods
Tensile strength (MPa)	Unaged	≥ 10.3	ASTM G154, MIL-DTL-23053E ISO 37,500mm/min 168h at 158℃, ,ISO 188
	Heat-aged/After fluid	≥6.9	
Ultimate elongation (%)	Unaged	≥200	IEC 243,ASTM G 154 168h at 158℃,ISO 188
	Heat-aged/After fluid	≥100	
Voltage withstand(V)	Unaged & Heat-aged	2500 V,60s,Pass	IEC 243,ASTM G 154 168h at 158℃,ISO 188
Dielectric strength (MV/m)	Unaged	≥ 19.7	
	Heat-aged/After fluid	≥ 15.8	
Volume resistivity (Ω-cm)	Unaged	≥ 10 ¹⁴	IEC 93
Water absorption (%)	Unaged	≥ 1.0	ASTM 570,23℃,24h
Corrosion	Unaged	Pass	23℃,Rh 95±5%,24h and16h at 150℃
Heat shock	Unaged	No cracks, flowing or dripping	Wind to the specified mandrel ,4h at 225℃
Low temperature flexibility	Unaged	No cracking	Wind to the specified mandrel,1h at -30℃,
Oxygen Index (%)	Unaged	≥32	Class I2, NF F 16-101
Index of flammable, (I.F. %)	Unaged	≤40	Class F2, NF F 16-101
Flammability	Unaged	Self-extinguish in 60 s	AMS DTL 23053/5

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