

ZHR

Low Fire Hazard And Fluid Resistant Identification Sleeves

TECHNICAL DATA SHEET

Revision Number. 1
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The WM-ZHR-2X and 3X Heat Shrinkable Wire Markers are made of halogen free, flame retardant and low smoke heat shrinkable polyolefin tubing with ideal printability properties for identification purposes, which provides fluid resistance as per EN50343.

Ideal for applications where limited fire hazard characteristics and diesel resistance are required.

The zero halogen material coupled with low smoke and low toxic fume emissions makes this product ideal in enclosed spaces such as mass transit, marine and industrial installations.

Resistant to diesel and key fluids in rail and other industries.

The compound of the tubing is excluded for halogens and offers excellent low fire hazard characteristics combined with minimal smoke emission.

Industry



Industry



Marine



Wind power



Commercial



Aerospace



Construction



Railway



Military



Electrical installations

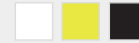


Petrochemical



Telecom

STANDARD TUBE COLOR



TUBE COLORS ON REQUEST



BACKING TAPE COLORS



MATERIAL

Extruded, cross linked polyolefin.

SHRINK RATIO

2:1 & 3:1

OPERATING TEMPERATURE

-55°C up to +125°C

SHRINK TEMPERATURE

>90°C

COMPLIANCES

Mark Permanence:

SAE AS-5942

EN50343 Annex H (section 6.6)

Recommended black ribbon:

FTI-Y, FTI-X

Resistance to solvents:

MIL-STD-202G

Test method 215j

Diesel Resistance :

EN 50343:2014 Annex H

FIRE PROPAGATION

EN45545-2 HL3, R22/23.

NF F 16 101

TOXICITY

BS6853: 1999

STORAGE

Cool and dry in original packaging. Recommended temperature at +10°C to +25°C and 45-55% relative humidity. Use within 2 years from date of manufacture.

APPLICATIONS

Specific developed to be used in Rail , Rail Car, Marine, Motorsports and Industrial marking,insulation, wire bundling and mechanical protection.

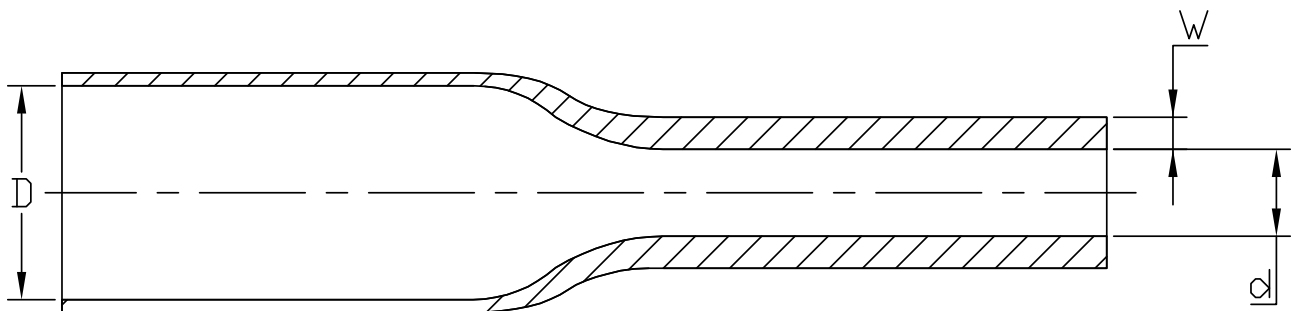
Product Dimensions

DIMENSIONS 2:1

SIZE, INCHES	SIZE, MM	MINIMUM ID (D), AS SUPPLIED MM (INCHES)	MAXIMUM ID, RECOVERED (D) MM (INCHES)	RECOVERED WALL THICKNESS (W), MM (INCHES)
3/32	2.4	2.4 (0.094)	1.2 (0.047)	0.49±0.06 (± 0.002)
1/8	3.2	3.2 (0.126)	1.6 (0.063)	0.51±0.06 (0.06 ± 0.002)
3/16	4.8	4.8 (0.189)	2.4 (0.094)	0.54±0.06 (0.06 ± 0.002)
1/4	6.4	6.4 (0.250)	3.2 (0.126)	0.56±0.06 (0.022 ± 0.002)
3/8	9.5	9.5 (0.374)	4.8 (0.189)	0.59±0.06 (0.023 ± 0.002)
1/2	12.7	12.7 (0.5)	6.4 (0.250)	0.60±0.07 (0.024 ± 0.003)
3/4	19.1	19.1 (0.750)	9.5 (0.374)	0.62±0.07 (0.024 ± 0.003)
1	25.4	25.4 (1.0)	12.7 (0.500)	0.63±0.07 (0.025 ± 0.003)
1 ½	38.1	38.1 (1.5)	19.1 (0.750)	0.64±0.07 (0.025 ± 0.003)
2	50.8	50.8 (2)	25.4 (1.0)	0.64±0.08 (0.025 ± 0.003)
3	76.2	76.2 (3)	38.1 (1.5)	0.64±0.09 (0.025 ± 0.003)

DIMENSIONS 3:1

SIZE, INCHES	SIZE, MM	MINIMUM ID (D), AS SUPPLIED MM (INCHES)	MAXIMUM ID, RECOVERED (D) MM (INCHES)	RECOVERED WALL THICKNESS (W), MM (INCHES)
3/32	2.4	2.4 (0.094)	0.8 (0.031)	0.57±0.10 (0.022 ± 0.004)
1/8	3.2	3.2 (0.126)	1.0 (0.039)	0.61±0.10 (0.024 ± 0.004)
3/16	4.8	4.8 (0.189)	1.6 (0.063)	0.67±0.10 (0.0263 ± 0.004)
1/4	6.4	6.4 (0.250)	2.4 (0.094)	0.71±0.10 (0.0279 ± 0.004)
3/8	9.5	9.5 (0.374)	3.2 (0.126)	0.77±0.10 (0.030 ± 0.004)
1/2	12.7	12.7 (0.5)	4.8 (0.189)	0.80±0.10 (0.031 ± 0.004)
3/4	19.1	19.1 (0.750)	6.4 (0.250)	0.84±0.15 (0.0330 ± 0.006)
1	25.4	25.4 (1.0)	8.4 (0.331)	0.86±0.15 (0.034 ± 0.006)
1 ½	38.1	38.1 (1.5)	12.7 (0.500)	0.89±0.15 (0.035 ± 0.006)
2	50.8	50.8 (2)	18.0 (0.708)	0.90±0.15 (0.035 ± 0.006)
3	76.2	76.2 (3)	25.4 (1.0)	0.92±0.15 (0.036 ± 0.006)



Heat Shrink Product in as supplied "D" and fully recovered state "d" with recovered wall "W"

General Tests for Identification Products

PHYSICAL

PROPERTIES	TEST METHOD	TYPICAL VALUE
Tensile strength	ASTM G 154	10.3 Mpa (min.)
Elongation at break	ISO 37	≥200%
Longitudinal change	UL224	+/-5%

ELECTRICAL

PROPERTIES	TEST METHOD	TYPICAL VALUE
Dielectric strength	ASTM G 154	15.8 kV/mm ²
Volume resistivity	IEC 93	≥ 10 ¹⁴ Ω/cm
Voltage withstand	IEC 243	2500 V/60 sec.

CHEMICAL

PROPERTIES	TEST METHOD	TYPICAL VALUE
Chemical resistance	AMS-DTL-23053/5	Good
Copper corrosion	UL224	No corrosion
Copper stability	UL224	No corrosion

THERMAL

PROPERTIES	TEST METHOD	TYPICAL VALUE
Heat shock 4 hours at 225°C	ASTM D 2671	No dripping, cracking or flowing
Heat aging 168 hours at 158°C	ISO 188	Elongation 100%
Flammability	SAE-AMS-DTL-23053/5	Pass » flame retardant
Low temperature flexibility	1h at - 55°C	No cracking

FIRE PROPAGATION

NORMATIVES	TOXICITY	LOW OXYGEN INDEX	SMOKE GENERATION / DENSITY	FLAMMABILITY INDEX
EN45545-2	CIT 0.07 (HL3)	43.9% (R22 - HL3)	4.4 Ds(max) (HL3)	
NF F 16 101		>32% (I2)		< 40%
BS 6853	R value 0.56	≥34%	A0 0.017	R<1 (class 1a)
DIN 5510-2	FED 0.13		SR2	Class S4 Drop formation class ST2