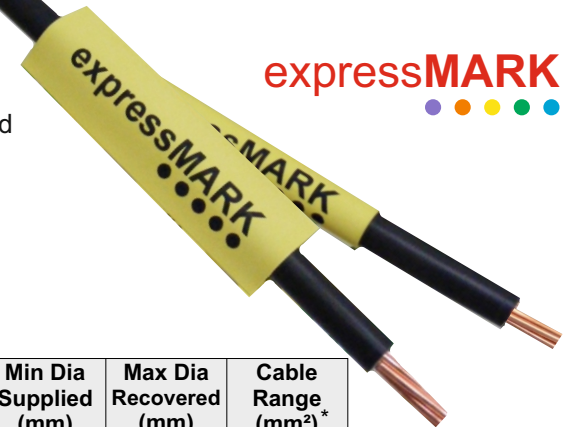


ETZ-M2 Zero halogen heat shrinkable wire markers

expressMARK

expressMARK ETZ sleeves are ideal for applications where limited fire hazard characteristics are critical. The zero halogen, low smoke and low toxic fume emissions make this product ideal for use in enclosed spaces such as mass transit, marine and industrial installations. Marks are permanent immediately and remain legible when exposed to abrasion, aggressive cleaning solvents.



Ordering information

Part Number (WHITE)	Part Number (YELLOW)	Pack Size	Sleeve Size (mm)	Sleeve Length (mm)	Min Dia Supplied (mm)	Max Dia Recovered (mm)	Cable Range (mm ²)*
ETZ-9-024050-B-M2	ETZ-4-024050-B-M2	1000pcs	2.4	50	2.5	1.2	<0.5
ETZ-9-032050-B-M2	ETZ-4-032050-B-M2	1000pcs	3.2	50	3.6	1.6	0.5 to 1
ETZ-9-048050-B-M2	ETZ-4-048050-B-M2	1000pcs	4.8	50	5.2	2.4	1 to 4
ETZ-9-064050-B-M2	ETZ-4-064050-B-M2	1000pcs	6.4	50	6.7	3.2	4 to 6
ETZ-9-095050-B-M2	ETZ-4-095050-B-M2	1000pcs	9.5	50	10.0	4.8	6 to 16
ETZ-9-127050-B-M2	ETZ-4-127050-B-M2	1000pcs	12.7	50	13.6	6.4	16 to 35
ETZ-9-190050-B-M2	ETZ-4-190050-B-M2	1000pcs	19.0	50	20.4	9.5	35 to 120
ETZ-9-254050-A-M2	ETZ-4-254050-A-M2	250pcs	25.4	50	27.0	12.7	120 to 185
ETZ-9-381050-A-M2	ETZ-4-381050-A-M2	250pcs	38.1	50	40.0	19.1	185 to 400

(*based upon customer usage for BS6231 cable)

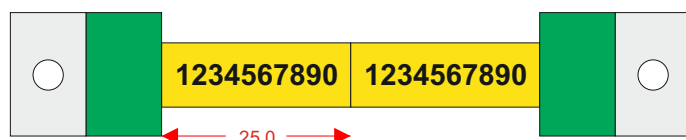
Sleeve length options (change part number above with relevant length)

ETZ-X-XXX 050 -X-M2	1 x 50.0mm sleeves per 50mm strip
ETZ-X-XXX 025 -X-M2	2 x 25.0mm sleeves per 50mm strip
ETZ-X-XXX 017 -X-M2	3 x 16.6mm sleeves per 50mm strip
ETZ-X-XXX 012 -X-M2	4 x 12.5mm sleeves per 50mm strip

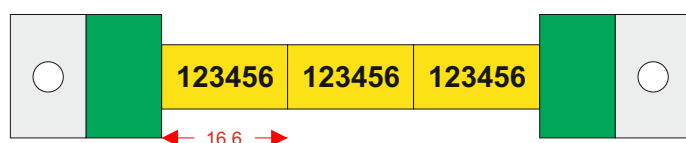
50.0mm sleeve option (example: 11 point Arial with 22 digits)



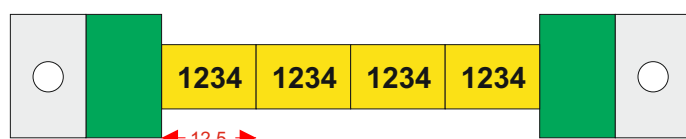
25.0mm sleeve option (example: 11 point Arial with 10 digits)



16.6mm sleeve option (example: 11 point Arial with 6 digits)



12.5mm sleeve option (example: 11 point Arial with 4 digits)



Inner core design
Sized to the same width as the carrier allowing markers to be easily loaded between the printer media guides.



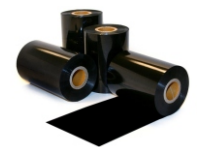
Packaging
Supplied on reels in clearly labelled packaging, and protected within a clear bag to ensure the print surface is dust free.



Perforated edges
Remove markers without the need to remove the coloured side tapes. This leads to less mess and a faster install time.

Colour options (change part number above with relevant colour)

ETZ- 0-XXXXXX-X-M2	BLACK
ETZ- 2-XXXXXX-X-M2	RED
ETZ- 3-XXXXXX-X-M2	ORANGE
ETZ- 4-XXXXXX-X-M2	YELLOW
ETZ- 5-XXXXXX-X-M2	GREEN
ETZ- 6-XXXXXX-X-M2	BLUE
ETZ- 9-XXXXXX-X-M2	WHITE



Printer Ribbon Part Numbers

1966-RIBBON	TE High performance black ribbon
EMR-0-RIBBON-A	EM High performance black ribbon

Ribbons are compatible with the following printer models : T200-IDENT, EOS1, EOS2, TE3112, TE3124, T6112DS, T3212 and T3224.

Printer External Reel Holders

PRINTER-UNI-REEL-M

expressMARK external reel holder. Designed to hold and feed large spools of markers to the printer.



UNIVERSAL-REEL-HOLDER

T.E. external reel holder. Designed to hold and feed larger spools of markers supplied on plastic drums.



ETZ-M2 Zero halogen heat shrinkable wire markers

The ETZ-M2 printable heat shrink tubing is manufactured from halogen free, flame retardant, heat shrinkable polyolefin tubing optimised for thermal printing. The compound of the tubing excludes halogens and offers excellent fire safety characteristics combined with minimal smoke emission.

Physical

Properties	Test Method	Typical Value
Tensile strength	ASTM D 638	10 N/mm ²
Elongation at break	ASTM D 638	≥ 200%
Longitudinal change	ASTM D 2671	-10% to +5%
Specific gravity	ASTM D 792	1.4g/cm ³
Water absorption	ASTM D 570	≤ 0.15%

Electrical

Properties	Test Method	Typical Value
Dielectric strength	ASTM D 2671	20 kV/mm ²
Volume resistivity	ASTM D 257	≥ 10 ¹⁴ Ω cm

Chemical

Properties	Test Method	Typical Value
Fungus resistance	ASTM-DTL-7444	Inert (no growth)
Fluid resistance (24hrs immersion at 23°C)	SAE-AMS-DTL-23053	Good
Copper corrosion	ASTM D 2671B	No corrosion
Oxygen index	ASTM D 2863	36%
Chemical resistance	EN 60684-2-36	Good - Pass

Thermal

Properties	Test Method	Typical Value
Heat shock (4hrs at 175°C)	ASTM D 2671	No dripping, cracking or flowing
Heat ageing (168hrs at 150°C)	ASTM D 638	Elongation ≥ 100%
Low temperature flexibility (-55°C)	EN 60684-2	No cracking and no break
Flammability	ASTM D 635-HB	Pass (flame retardant)
Optical density of smoke	ASTM E 662	Flaming mode 41, non flaming mode 111
Smoke Index	NF F 16-101	Smoke Class F1

Compliance on fire behaviour

Standard	Flame propagation	Toxicity	Smoke density	Low oxygen index
BS 6853		BS 6853 Ap B1 / NF X 70-100	BS 6853 D8.3	ISO 4589-2
NF F-16 101	NF EN 60-695-2	NF X 70-100	NF X 10-702	ISO 4589-2
NFPA130	ASTM E 162	BSS 7239	ASTM E 662	
EN 45545-2		NF X 70-100	EN ISO 5659-2	ISO 4589-2
DIN 5510-2	DIN 54837	DIN ISO 5510-2	DIN 54837	
UNI CEI 11170-3 LR4	ISO 11925-2:2010	NF X 70-100	NF X 10-702	

Environmental UV Stability

Properties	Test Method	Typical Value
UV-A	ASTM G154 Machine set up Temp 50-60°C (140°F) Cycle 8hrs light 4hrs condensation UV wavelength 280-400nm Test duration 1000hrs of exposure.	Pass No damage to the marker Print legible after 20 rubs in accordance with SAE-ASAS3349 and SAE AS 81531.

Technical Data



Standard Colours

Yellow and white.

Other colours upon request.

Material

Radiation cross linked polyolefin.

Shrink ratio 2:1

Operating temperature

-55°C up to +105°C.

Minimum shrink temperature

+90°C.

Specifications

Mark permanence

SAE AS-5942 and LUL 3349.

Chemical and solvent resistance

MIL-STD-202G method 215K

Standard

BS 6853 1999 vehicle category 1a

EN 45545-2 (rail rolling stock)

LU 1-085:A3 (compliant)

NF F 16-101 (French rolling stock)

DIN 5510-2 (German rolling stock)

UNI CEI 11170-3 (Italian rolling stock)

NFPA130 (fixed guideway transit systems)

Boeing BSS 7239 (toxicity test)

Storage

Store in original packaging.

Recommended storage environment

is +10°C to +25°C and 45-55% relative humidity.

Printing method

Thermal transfer

Packaging

Supplied on printer ready reels.

Inner cores are sized to allow

loading inside most printers.

Edge perforations as standard to allow easy removal of markers.