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ELECTRICAL

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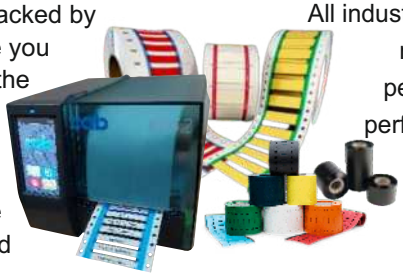
**fastMARK** is a proven product range that is backed by extensive technical data and results that leave you in on doubt that these products will withstand the environment in which you are operating. The extensive range of identification solutions incorporates cable and wire marking systems, stainless steel identification, high performance tapes and labels, manual push-on markers and engraved labels.



All industries; including construction, electrical contracting, marine, military, transportation, renewable energy, petrochemical, rail and oil & gas have need for high performance identification products designed to meet and withstand the harshest of environments.

## The specialist on-site marking systems provider

**fastMARK** meet that need!

### Printers

A range of thermal transfer printers that provide outstanding print quality.
Designed with the operator in mind making them user-friendly and easy to operate.
Ribbon and media loading is made simple due to the ease of access.
A small footprint yet rugged construction make for the perfect on-site marking system.

### Ribbons

A range of specially formulated ink ribbons that are specific to the media being printed.
The industry leading inks meet the most the rigorous of mark permanence industry standards.
Use of the correction ribbon and printer combination ensures excellent print quality at all times.
For convenience ribbons along with printer compatibility are listed on each product page.


### Software

Labelling software is supplied pre-loaded with product templates.
User friendly platform in “What you see is what you get” (WYSIWYG) format.
Options to data manually or import via a database saving you both time and money.
Fully compatible with Windows operating systems.

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# FHM Mil-spec heat shrinkable wire markers

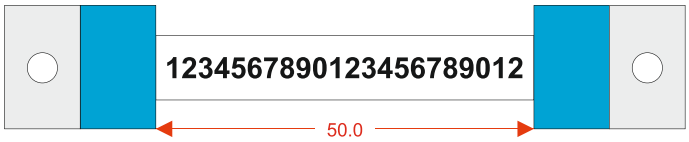
**fastMARK** FHM sleeves are designed to meet the wire and cable marking needs of customers with high performance requirements. Made from durable, highly flame retardant, self-extinguishing, radiation cross-linked heat-shrinkable polyolefin. The marks are permanent immediately after printing and remain legible even when exposed to abrasion, aggressive cleaning solvents and military fuels & oils, Suitable for aerospace, military and defence specified applications.

## Ordering information

| Part Number (WHITE) | Part Number (YELLOW) | Diameter x Length | Pack Size | Cable Range (mm²)* |
|---|---|---|---|---|
| FHM-1K-024050-9 | FHM-1K-024050-4 | 2.4 x 50 | 1000pcs | <0.5 |
| FHM-1K-032050-9 | FHM-1K-032050-4 | 3.2 x 50 | 1000pcs | 0.50 to 1.00 |
| FHM-1K-048050-9 | FHM-1K-048050-4 | 4.8 x 50 | 1000pcs | 1.00 to 4.00 |
| FHM-1K-064050-9 | FHM-1K-064050-4 | 6.4 x 50 | 1000pcs | 4.00 to 6.00 |
| FHM-1K-095050-9 | FHM-1K-095050-4 | 9.5 x 50 | 1000pcs | 6.00 to 16.00 |
| FHM-1K-127050-9 | FHM-1K-127050-4 | 12.7 x 50 | 1000pcs | 16.00 to 35.00 |
| FHM-1K-190050-9 | FHM-1K-190050-4 | 19.0 x 50 | 1000pcs | 35.00 to 120.00 |
| FHM-250-254050-9 | FHM-250-254050-4 | 25.4 x 50 | 250pcs | 120.00 to 185.00 |
| FHM-250-381050-9 | FHM-250-381050-4 | 38.1 x 50 | 250pcs | 185.00 to 400.00 |

(*based upon BS6231 cable)

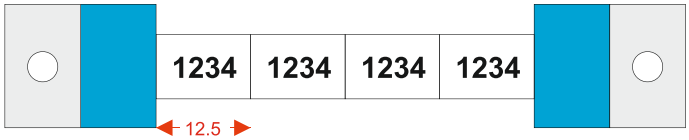
**50.0mm sleeve option** *(example: 11 point Arial with 22 digits)*




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


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


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




### Sleeve length options

| | |
|---|---|
| FHM-X-XXX050-X | 1 x 50.0mm sleeves per 50mm strip |
| FHM-X-XXX025-X | 2 x 25.0mm sleeves per 50mm strip |
| FHM-X-XXX017-X | 3 x 16.6mm sleeves per 50mm strip |
| FHM-X-XXX012-X | 4 x 12.5mm sleeves per 50mm strip |

### Colour options

| | |
|---|---|
| FHM-X-XXX050-0 | BLACK |
| FHM-X-XXX025-2 | RED |
| FHM-X-XXX017-3 | ORANGE |
| FHM-X-XXX012-4 | YELLOW |
| FHM-X-XXX050-5 | GREEN |
| FHM-X-XXX050-6 | BLUE |
| FHM-X-XXX050-7 | VIOLET |
| FHM-X-XXX050-8 | GREY |
| FHM-X-XXX050-9 | WHITE |

| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |
| FTI-HLD-CSO-110X300M-WH | WHITE |
| FTI-HXX-CSO-105X300-BK | BLACK |
| FTI-X-CSO-100X300-BK | BLACK |

Inner Core Design :- Sized to the same width as the carrier allowing markers to be loaded directly within the printer.
Write-on side carrier :- You can hand write information relating to the printed markers directly on the side carrier. Also shows part number and QA code.
Perforated edges :- Remove markers without the need to remove the coloured side tapes. This lead to less mess and a faster install time.

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## FHM Mil-spec thermal printable heat shrink tubing

The FHM printable heat shrink tubing is manufactured from flame retardant, self-extinguishing, flexible polyolefin tubing optimised for thermal transfer printing. Suitable for high performance wire identification in aerospace, military and defence application. The product is UL 224 VW-1 recognised, CSA certified and complies to AMS-DTL-23053/5 Class 1&3.

### Physical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Tensile strength** | ASTM D 638 | ≥14 N/mm² |
| **Elongation at break** | ASTM D 638 | ≥400% |
| **Longitudinal change** | SAE-AMS-DTL-23053 | 0% - -2% |
| **Specific gravity** | ASTM D 792 | 1.34g/cm³ |
| **Secant modulus** | ASTM D 882 | 65 Mpa |

### Electrical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Dielectric strength** | UL 224 | 15 kV/mm² |
| **Volume resistivity** | ASTM D 876 | 3.1 x $10^{14}$ Ω cm |
| **Voltage rating** | UL 224 | 600V |
| **Die-electric voltage resistance** (2.5kV x 60s) | UL 224 | Pass. No breakdown. |

### Chemical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Fungus resistance** | ASTM G 21 | Pass. No growth. |
| **Fluid resistance** (after 24hrs immersion at 23°C) | SAE-AMS-DTL-23053 | 7.25 - 14 MPa |

### Thermal

| Properties | Test Method | Typical Value |
|---|---|---|
| **Heat shock** (4hrs at 250°C) | SAE-AMS-DTL-23053 | Pass. (no dripping, cracking or flowing) |
| **Elongation after heat ageing** (4hrs at 158°C) | SAE-AMS-DTL-23053 | ≥400% |
| **Copper corrosion** (168hrs at 158°C) | SAE-AMS-DTL-23053 | Pass |
| **Stability against copper** (168hrs at 158°C) | SAE-AMS-DTL-23053 | Pass |
| **Low temperature flexibility** (4hrs at -55°C) | SAE-AMS-DTL-23053 | No cracking |
| **Flammability** | UL 224 | VW-1 pass |

## Technical Datasheet

**Standard Colours**
Yellow and White | Other colours upon request

**Material**
Radiation cross linked polyolefin | Shrink Ratio 3:1

**Operating Temperature**
-40℃ up to +135℃

**Minimum Shrink Temperature**
+85℃

**Mark Permanence**
SAE AS81531:1998, point 4.6.2.

**Chemical and Solvent Resistance**
MIL-STD-202F method 215J

**Standard**
UL 224 125℃ 600V VW-1 (recognised file E203950)
CSA 125℃ 600V Certified (certified file 220127)
SAE-AMS-DTL-23053/5 Class 1&3

**Storage**
Store in original packaging. Recommended storage environment is +10℃ to +25℃ and 45-55% relative humidity.

**Printing Method**
Thermal Transfer

**Packaging**
Supplied on printer ready reals.
Inner cores are sized to allow loading inside most printers.
Edge perforations as standard to allow easy removal of markers

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# FHM-C Mil-spec printable continuous heat shrink tubing

fastMARK FHM-C continuous is designed to meet the wire and cable marking needs of customers with high performance requirements. Made from durable, flame retardant, radiation crosslinked heat-shrinkable polyolefin, the marks are permanent immediately after printing and remain legible even when exposed to abrasion, aggressive cleaning solvents and military fuels & oils. Printer ready flattened tubing, supplied on spools.

## Standard Colour Options

| Part Number (WHITE) | Part Number (YELLOW) | Tubing Diameter | Reel Size | Cable Range (mm²)* |
|---|---|---|---|---|
| FHM-C-024-30M-9 | FHM-C-024-30M-4 | 2.4 | 30M | |
| FHM-C-032-30M-9 | FHM-C-032-30M-4 | 3.2 | 30M | 0.50 to 1.00 |
| FHM-C-048-30M-9 | FHM-C-048-30M-4 | 4.8 | 30M | 1.00 to 4.00 |
| FHM-C-064-30M-9 | FHM-C-064-30M-4 | 6.4 | 30M | 4.00 to 6.00 |
| FHM-C-095-30M-9 | FHM-C-095-30M-4 | 9.5 | 30M | 6.00 to 16.00 |
| FHM-C-127-30M-9 | FHM-C-127-30M-4 | 12.7 | 30M | 16.00 to 35.00 |
| FHM-C-190-30M-9 | FHM-C-190-30M-4 | 19.0 | 30M | 35.00 to 120.00 |

(*based upon BS6231 cable)

## Technical Data

SAE AS81531:1998 4.6.2
SAE-AMS-DTL-23053/5 Class 1&3
MIL-STD-202 Method 215J
Ui224 VW-1 recognised file E203950
CSA certified file 220127

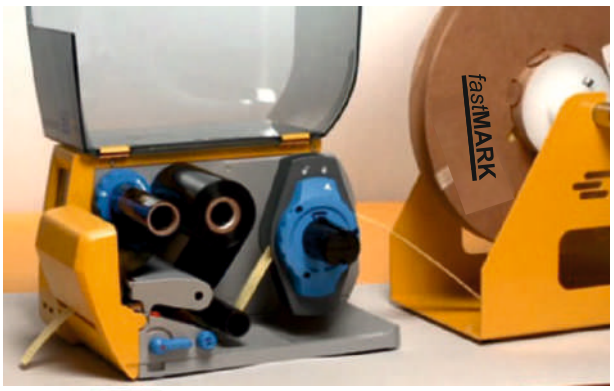
| | |
|---|---|
| Operating temperature | -40°C to +135°C |
| Minimum shrink temperature | +85°C |
| Shrink ratio | 3:1 |

## Colour options

| | |
|---|---|
| FHM - C - XXX - 30M - 0 | BLACK |
| FHM - C - XXX - 30M - 2 | RED |
| FHM - C - XXX - 30M - 3 | ORANGE |
| FHM - C - XXX - 30M - 5 | GREEN |
| FHM - C - XXX - 30M - 6 | BLUE |
| FHM - C - XXX - 30M - 7 | VIOLET |
| FHM - C - XXX - 30M - 8 | GREY |

## Printer Ribbon Part Numbers

| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |
| FTI-HLD-CSO-110X300M-WH | WHITE |
| FTI-HXX-CSO-105X300-BK | BLACK |
| FTI-X-CSO-100X300-BK | BLACK |




Perforator and cutter attachments available for your EOS2 Printer & T200-IDENT

EOS2-CUTTER (Cutter)
T200-IDENT-CUTTER (Cutter)
T200-IDENT-PERFORATOR (Perforator)

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# FHM-C Mil-spec printable continuous heat shrink tubing

The FHM-C printable heat shrink tubing is manufactured from flame retardant, self-extinguishing, flexible polyolefin tubing optimised for thermal transfer printing. Suitable for high performance wire identification in aerospace, military and defence applications. The product is UL 224 VW-1 recognised, CSA certified and complies to AMS-DTL-23053/5 Class 1&3.

## Physical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Tensile strength** | ASTM D 638 | ≥14 N/mm² |
| **Elongation at break** | ASTM D 638 | ≥400% |
| **Longitudinal change** | SAE-AMS-DTL-23053 | 0% - -2% |
| **Specific gravity** | ASTM D 792 | 1.34g/cm³ |
| **Secant modulus** | ASTM D 882 | 65 Mpa |

## Electrical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Dielectric strength** | UL 224 | 15 kV/mm² |
| **Volume resistivity** | ASTM D 876 | 3.1 x $10^{14}$ Ω cm |
| **Voltage rating** | UL 224 | 600V |
| **Die-electric voltage resistance** (2.5kV x 60s) | UL 224 | Pass. No breakdown. |

## Chemical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Fungus resistance** | ASTM G 21 | Pass. No growth. |
| **Fluid resistance** (after 24hrs immersion at 23°C) | SAE-AMS-DTL-23053 | 7.25 - 14 MPa |

## Thermal

| Properties | Test Method | Typical Value |
|---|---|---|
| **Heat shock** (4hrs at 250°C) | SAE-AMS-DTL-23053 | Pass. (no dripping, cracking or flowing) |
| **Elongation after heat ageing** (4hrs at 158°C) | SAE-AMS-DTL-23053 | ≥400% |
| **Copper corrosion** (168hrs at 158°C) | SAE-AMS-DTL-23053 | Pass |
| **Stability against copper** (168hrs at 158°C) | SAE-AMS-DTL-23053 | Pass |
| **Low temperature flexibility** (4hrs at -55°C) | SAE-AMS-DTL-23053 | No cracking |
| **Flammability** | UL 224 | VW-1 pass |

# Technical Datasheet

## Standard Colours

Yellow and white.

Other colours upon request.

## Material

Radiation cross linked polyolefin.
Shrink ratio 3:1

## Operating temperature

-40°C up to +135°C.

## Minimum shrink temperature

+85°C.

## Specifications

### Mark permanence

SAE AS81531:1998, point 4.6.2.

### Chemical and solvent resistance

MIL-STD-202F method 215J.

### Standard

UL 224 125°C 600V VW-1
(recognised file E203950)

CSA 125°C 600V Certified
(certified file 220127)

SAE-AMS-DTL-23053/5 Class 1&3

## Storage

Store in original packaging. Recommended storage environment is +10°C to +25°C and 45-55% relative humidity.

## Printing method

Thermal transfer

## Packaging

Flattened tubing supplied on spools.

Standard spool sizes:

100M spools for sleeve sizes from 024 to 190.

50M spools for sleeve sizes from 254 to 381.

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## FHZ zero halogen heat shrinkable wire markers

**fastMARK** FHZ sleeves are ideal for applications where limited fire hazard characteristics are critical. The zero halogen material coupled with low smoke and low toxic fume emissions make this product ideal for use in enclosed space such as mass transit, marine and industrial installations. Marks are permanent immediately after printing and remain legible even when exposed to abrasion, aggressive cleaning solvents.

### Ordering information

| Part Number (WHITE) | Part Number (YELLOW) | Diameter x Length | Pack Size | Cable Range (mm²)* |
|---|---|---|---|---|
| FHZ-1K-024050-9 | FHZ-1K-024050-4 | 2.4 x 50 | 1000pcs | <0.5 |
| FHZ-1K-032050-9 | FHZ-1K-032050-4 | 3.2 x 50 | 1000pcs | 0.50 to 1.00 |
| FHZ-1K-048050-9 | FHZ-1K-048050-4 | 4.8 x 50 | 1000pcs | 1.00 to 4.00 |
| FHZ-1K-064050-9 | FHZ-1K-064050-4 | 6.4 x 50 | 1000pcs | 4.00 to 6.00 |
| FHZ-1K-095050-9 | FHZ-1K-095050-4 | 9.5 x 50 | 1000pcs | 6.00 to 16.00 |
| FHZ-1K-127050-9 | FHZ-1K-127050-4 | 12.7 x 50 | 1000pcs | 16.00 to 35.00 |
| FHZ-1K-190050-9 | FHZ-1K-190050-4 | 19.0 x 50 | 1000pcs | 35.00 to 120.00 |
| FHZ-250-254050-9 | FHZ-250-254050-4 | 25.4 x 50 | 250pcs | 120.00 to 185.00 |
| FHZ-250-381050-9 | FHZ-250-381050-4 | 38.1 x 50 | 250pcs | 185.00 to 400.00 |

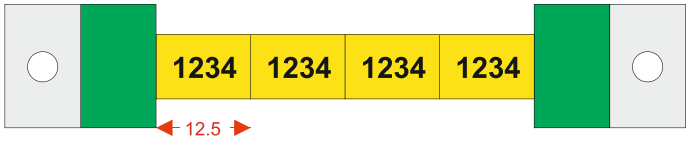
(*based upon BS6231 cable)

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


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


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


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




### Sleeve length options

| | |
|---|---|
| FHZ-X-XXX050-X | 1 x 50.0mm sleeves per 50mm strip |
| FHZ-X-XXX025-X | 2 x 25.0mm sleeves per 50mm strip |
| FHZ-X-XXX017-X | 3 x 16.6mm sleeves per 50mm strip |
| FHZ-X-XXX012-X | 4 x 12.5mm sleeves per 50mm strip |

### Colour options

| | |
|---|---|
| FHM-X-XXX050-0 | BLACK |
| FHZ-X-XXX025-2 | RED |
| FHZ-X-XXX017-3 | ORANGE |
| FHZ-X-XXX012-4 | YELLOW |
| FHZ-X-XXX050-5 | GREEN |
| FHZ-X-XXX050-6 | BLUE |
| FHZ-X-XXX050-9 | WHITE |

| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |
| FTI-HXX-CSO-105X300-BK | BLACK |
| FTI-X-CSO-100X300-BK | BLACK |

Inner Core Design :- Sized to the same width as the carrier allowing markers to be loaded directly within the printer.
Write-on side carrier :- You can hand write information relating to the printed markers directly on the side carrier. Also shows part number and QA code.
Perforated edges :- Remove markers without the need to remove the coloured side tapes. This lead to less mess and a faster install time.

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# FHZ halogen free thermal printable heat shrink tubing

fastMARK FHZ printable heat shrink tubing is manufactured from halogen free, flame retardant, heat shrinkable polyolefin tubing optimised printing 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 | 13 N/mm² |
| **Elongation at break** | ASTM D 638 | 200% |
| **Longitudinal change** | SAE-AMS-DTL-23053 | ≤+5% , ≤-10% |
| **Specific gravity** | ASTM D 792 | 1.4g/cm³ |
| **Water absorption** | ASTM D 570 | ≤15% |

## Chemical

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

## Electrical

| Properties | Test Method | Typical Value |
|---|---|---|
| **Dielectric strength** | ASTM D 2671 | 20 kV/mm² |
| **Volume resistivity** | ASTM D 257 | $10^{14}$ Ω cm |

## Thermal

| Properties | Test Method | Typical Value |
|---|---|---|
| **Heat shock** (4hrs at 175°C) | ASTM D 2671 | Pass. (no dripping, cracking or flowing) |
| **Heat ageing** (168hrs at 150°C) | ASTM D 638 | Elongation 100% |
| **Low temperature flexibility** (-30°C) | ASTM D 2671C | No cracking |
| **Flammability** | ASTM D 635 | Pass (flame retardant) |

## Compliance on fire behaviour

| Standard | Flame propogation | Toxicity | Smoke density | Low oxygen index |
|---|---|---|---|---|
| **BS 6853** | ISO 4589-2 (ANNEX A) | BS 6853 Ap B1 / NF X 70-100 | BS 6853 D8.3 | ISO 4589-2 |
| **NF F-16 101** | NF T 51-071 / NF C 20-455 | NF X 70-100 | NF X 10-702 | ISO 4589-2 |
| **NFPA130** | ASTM 162 | BSS 7239 | ASTM 662 | |
| **EN 45545-2** | DIN 60332-1-2 | NF X 70-100 | EN 61034-2 | ISO 4589-2 |
| **DIN 5510-2** | DIN 54837 | DIN ISO 5659 | DIN ISO 5659 | |
| **UNI CEI 11170-3 cl LR4** | ISO 11925-2 : 2010 | NF X 70-100 | NF X 10-702 | |

# Technical Datasheet

**Standard Colours**
Yellow and White | Other colours upon request

**Material**
Radiation cross linked polyolefin | Shrink Ratio 2:1

**Operating Temperature**
-30℃ up to +105℃

**Minimum Shrink Temperature**
+90℃

**Mark Permanence**
SAE AS81531:1998, point 4.6.2.

**Chemical and Solvent Resistance**
MIL-STD-202F method 215J

**Standard**
BS 6853 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 System). | NFPA130 (To Meet Boeing Toxicity Test)

**Storage**
Store in original packaging. Recommended storage environment is +10℃ to +25℃ and 45-55% relative humidity.

**Printing Method**
Thermal Transfer

**Packaging**
Supplied on printer ready reals.
Inner cores are sized to allow loading inside most printers.
Edge perforations as standard to allow easy removal of markers

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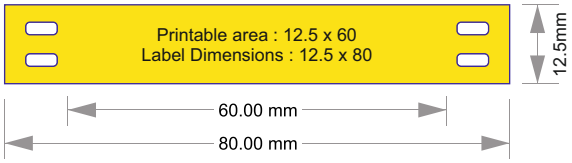
# FCM-ZH Tie-on Cable Markers (continues format)

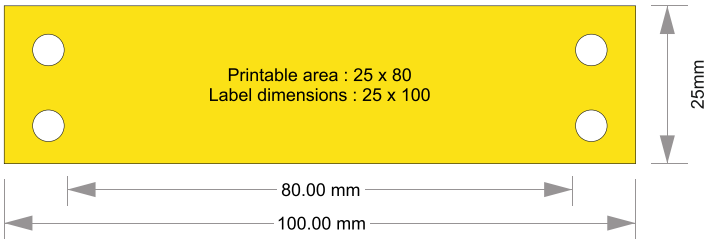
**fastMARK** FCM-ZH cable markers are designed to be the perfect solution for fast, permanent and cost effective marking of cable, conduit, pipes and valves. The die-cut cable tie slots make application of printed markers both quick and simple. The product is manufactured from industry leading LFH material them idea for applications where low smoke, low toxicity and zero halogen properties are critical.

## Ordering information

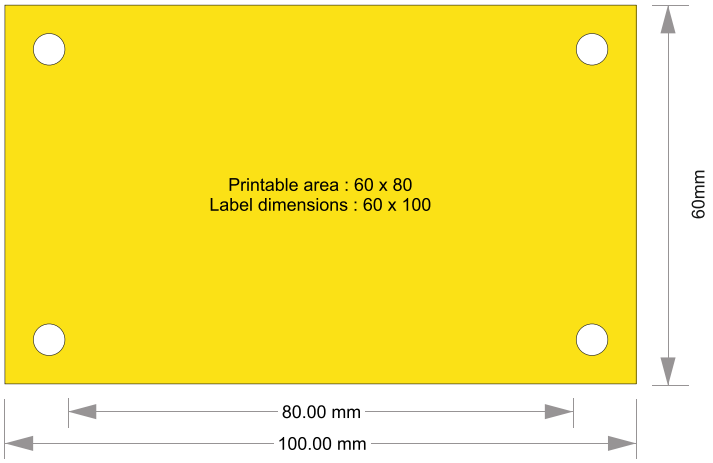
| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-500-012060-4-NEL | YELLOW | 500pcs |
| FCM-ZH-500-012060-9-NEL | WHITE | 500pcs |
| FCM-ZH-500-012060-2-NEL | RED | 500pcs |
| FCM-ZH-500-012060-5-NEL | GREEN | 500pcs |
| FCM-ZH-500-012060-6-NEL | BLUE | 500pcs |



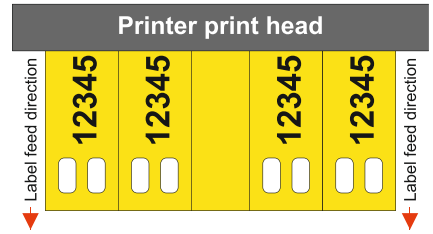

| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-500-025080-4-NEL | YELLOW | 500pcs |
| FCM-ZH-500-025080-9-NEL | WHITE | 500pcs |



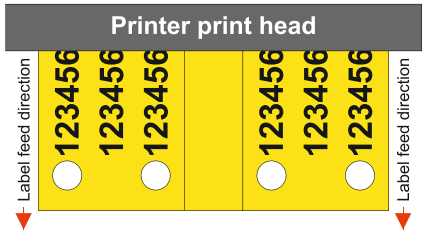

| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-250-060080-4-NEL | YELLOW | 250pcs |




This above FCM cable markers feed through your desktop printer at 90 degrees to the print head as shown below.



FCM-ZH-500-012060-X-NEL is presented 4 label across



FCM-ZH-500-025080-X-NEL is presented 2 label across

FCM-ZH-500-060080-X-NEL is presented 1 label across

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# FCM-ZH Thermal Printable Tie-on Cable Markers (continues format)

The FCM continuous format cable markers are manufactured from Low Fire Hazard, UV stabilised, cross-linked polyolefin cable markers, assembled in a narrow edge leading format. Consisting of a continuous strip formed into punched tie on cable markers, die-cut fixing holes and perforated edges for easy removal.

## Test results

| Properties | Test Method | Typical Value |
|---|---|---|
| **Tensile strength** | ASTM D2671 | 7 Mpa minimum |
| **Mould growth** | BS EN 60068-2-10 | Rating 2 maximum |
| **Oxygen index** | BS EN ISO 4589-1 1996 | 34 minimum |
| **Smoke emission, A0** | BS6853:1999 Annex D.8.3. | 0.017 maximum |
| **Toxic fume, R** | NF X 70-100 | <1 |
| **LUL toxic fume** | 1-085 A3 Fire safety performance | No halogens, Phosphorus, Sulphur or Nitrogen above trace level |
| **Colour fastness** | BS 2782 Pt5 Method 540B | No colour change |
| **UV resistance - Tensile strength** | >90% of original | Pass |
| **UV resistance - Ultimate elongation** | >40% of original | Pass |
| **Print adherence dry rub** (20 rubs, 4Kg load) | SAE AS 5942 | Legible, pass |
| **Heat ageing** (175°C, 168 hours then 20 rubs, 4Kg load) | SAE AS 5942 | Legible, pass |
| **Heat shock** (225°C, 4 hours then 20 rubs, 4Kg load) | SAE AS 5942 | Legible, pass |
| **Aircraft fuel** (ISO 1817 Liquid B) | 40°C, 24 hours, 25 wipes | Legible, pass |
| **Hydraulic fluid** (NATO H520) | 50°C, 24 hours, 25 wipes | Legible, pass |
| **Phosphate Ester** (ISO 1817 fluid 103) | 70°C, 24 hours, 25 wipes | Legible, pass |
| **Silicon hydraulic fluid** (NATO S1714) | 50°C, 24 hours, 25 wipes | Legible, pass |
| **De-icing fluid** (Iso Propyl Alcohol) | 40°C, 24 hours, 25 wipes | Legible, pass |

## Technical Datasheet

**Standard Colours**
Yellow and White
(also red, blue, green on small sizes)

**Material**
Radiation cross linked polyolefin

**Operating Temperature**
-40℃ up to +105℃

**Minimum Shrink Temperature**
+90℃

**Mark Permanence**
SAE AS81531:1998, point 4.6.2.

**Chemical and Solvent Resistance**
MIL-STD-202F method 215J

**Standard**
BS 6853 vehicle category 1a. | EN 45545-2 (Rail Rolling Stock)
LU 1-085:A3 (Compliant). | NF F 16-101 (French Rolling Stock).
SAE As5942 3.4.1

**Storage**
Store in original packaging. Recommended storage environment is +10℃ to +25℃ and 45-55% relative humidity.

**Printing Method**
Thermal Transfer

**Packaging**
Supplied on printer ready reals.
Inner cores are sized to allow loading inside most printers.
Edge perforations to allow easy separation of markers.

| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |
| FTI-HLD-CSO-110X300M-WH | WHITE |
| FTI-HXX-CSO-105X300-BK | BLACK |
| FTI-X-CSO-100X300-BK | BLACK |

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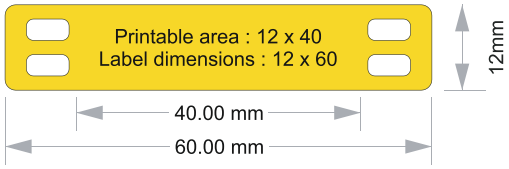
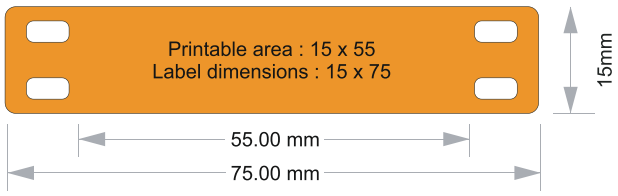
# FCM-ZH Tie-on Cable Markers (ladder format)

**fastMARK** FCM-ZH cable markers are designed for marking of cable, conduit, pipes and valves. The ladder format presents markers in an organised fashion for ease of instillation on site style using the pre-cut cable tie slots. The products is manufactured from industry leading UL94-V0 LFH material making them ideal for applications where low smoke, low toxicity and zero halogen properties are critical.

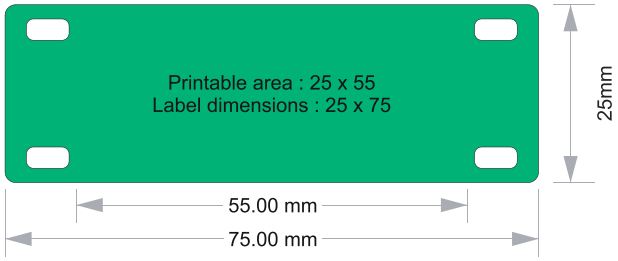



| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-1K-012040-4 | YELLOW | 1000pcs |
| FCM-ZH-1K-012040-9 | WHITE | 1000pcs |
| FCM-ZH-1K-012040-2 | RED | 1000pcs |
| FCM-ZH-1K-012040-3 | ORANGE | 1000pcs |
| FCM-ZH-1K-012040-5 | GREEN | 1000pcs |
| FCM-ZH-1K-012040-6 | BLUE | 1000pcs |
| FCM-ZH-1K-012040-0 | BLACK | 1000pcs |

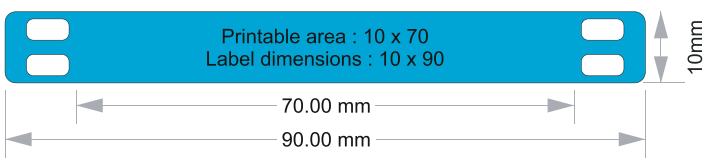

| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-1K-012055-4 | YELLOW | 1000pcs |
| FCM-ZH-1K-012055-9 | WHITE | 1000pcs |
| FCM-ZH-1K-012055-2 | RED | 1000pcs |
| FCM-ZH-1K-012055-3 | ORANGE | 1000pcs |
| FCM-ZH-1K-012055-5 | GREEN | 1000pcs |
| FCM-ZH-1K-012055-6 | BLUE | 1000pcs |
| FCM-ZH-1K-012055-0 | BLACK | 1000pcs |




| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-1K-015055-4 | YELLOW | 1000pcs |
| FCM-ZH-1K-015055-9 | WHITE | 1000pcs |
| FCM-ZH-1K-015055-2 | RED | 1000pcs |
| FCM-ZH-1K-015055-3 | ORANGE | 1000pcs |
| FCM-ZH-1K-015055-5 | GREEN | 1000pcs |
| FCM-ZH-1K-015055-6 | BLUE | 1000pcs |
| FCM-ZH-1K-015055-0 | BLACK | 1000pcs |




| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-500-025055-4 | YELLOW | 500pcs |
| FCM-ZH-500-025055-9 | WHITE | 500pcs |
| FCM-ZH-500-025055-2 | RED | 500pcs |
| FCM-ZH-500-025055-3 | ORANGE | 500pcs |
| FCM-ZH-500-025055-5 | GREEN | 500pcs |
| FCM-ZH-500-025055-6 | BLUE | 500pcs |
| FCM-ZH-500-025055-0 | BLACK | 500pcs |




| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-1K-010070-4 | YELLOW | 1000pcs |
| FCM-ZH-1K-010070-9 | WHITE | 1000pcs |
| FCM-ZH-1K-010070-2 | RED | 1000pcs |
| FCM-ZH-1K-010070-3 | ORANGE | 1000pcs |
| FCM-ZH-1K-010070-5 | GREEN | 1000pcs |
| FCM-ZH-1K-010070-6 | BLUE | 1000pcs |
| FCM-ZH-1K-010070-0 | BLACK | 1000pcs |

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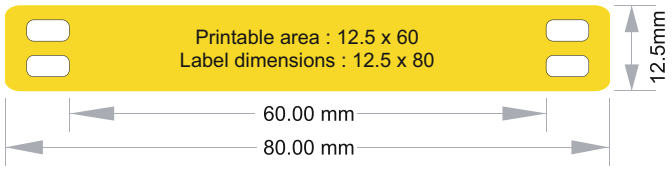
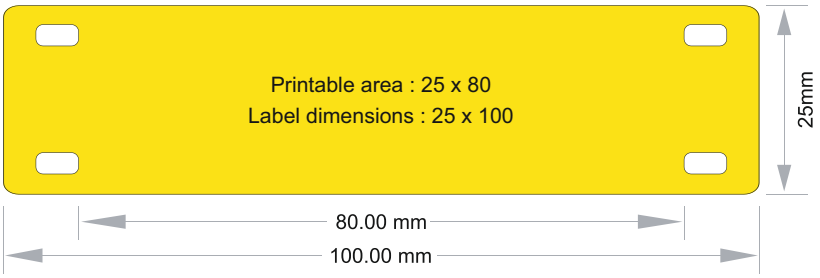



| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-500-012060-4 | YELLOW | 500pcs |
| FCM-ZH-500-012060-9 | WHITE | 500pcs |
| FCM-ZH-500-012060-2 | RED | 500pcs |
| FCM-ZH-500-012060-3 | ORANGE | 500pcs |
| FCM-ZH-500-012060-5 | GREEN | 500pcs |
| FCM-ZH-500-012060-6 | BLUE | 500pcs |
| FCM-ZH-500-012060-0 | BLACK | 500pcs |




| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-ZH-500-025080-4 | YELLOW | 500pcs |
| FCM-ZH-500-025080-9 | WHITE | 500pcs |
| FCM-ZH-500-025080-2 | RED | 500pcs |
| FCM-ZH-500-025080-3 | ORANGE | 500pcs |
| FCM-ZH-500-025080-5 | GREEN | 500pcs |
| FCM-ZH-500-025080-6 | BLUE | 500pcs |
| FCM-ZH-500-025080-0 | BLACK | 500pcs |

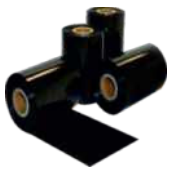
## **FCM-ZH** Thermal Printable Tie-on Cable Markers (ladder format)

The FCM-ZH ladder format cable marker manufactured from Low Fire Hazard, UV stabilised, cross-linked polyolefin cable markers, assembled in a narrow edge leading format. Consisting of continuous strip formed into punched tie on cable markers, die-cut fixing holes and perforated edges for easy removal.

### Test results

| Properties | Test Method | Typical Value |
|---|---|---|
| **Tensile strength** | ASTM D2671 | 7 Mpa minimum |
| **Mould growth** | BS EN 60068-2-10 | Rating 2 maximum |
| **Oxygen index** | BS EN ISO 4589-1 1996 | 34 minimum |
| **Smoke emission, A0** | BS6853: 1999 Annex D.8.3. | 0.017 maximum |
| **Toxic fume, R** | NF X 70-100 | <1 |
| **LUL toxic fume** | 1-085 A3 Fire safety performance | No halogens, Phosphorus, Sulphur or Nitrogen above trace level |
| **Colour fastness** | BS 2782 P 5 Me hod 540B | No colour change |
| **UV resistance - Tensile strength** | >90% of original | Pass |
| **UV resistance - Ultimate elongation** | >40% of original | Pass |
| **Print adherence dry rub** (20 rubs, 4Kg load) | SAE AS 5942 | Legible, pass |
| **Heat ageing** (175℃, 168 hours then 20 rubs, 4Kg load) | SAE AS 5942 | Legible, pass |
| **Heat shock** (225℃, 4 hours then 20 rubs, 4Kg load) | SAE AS 5942 | Legible, pass |
| **Aircraft fuel** (ISO 1817 Liquid B) | 40℃, 24 hours, 25 wipes | Legible, pass |
| **Hydraulic fluid** (NATO H520) | 50℃, 24 hours, 25 wipes | Legible, pass |
| **Phosphate Ester** (ISO 1817 fluid 103) | 70℃, 24 hours, 25 wipes | Legible, pass |
| **Silicon hydraulic fluid** (NATO S1714) | 50℃, 24 hours, 25 wipes | Legible, pass |
| **De-icing fluid** (Isopropyl Alcohol) | 40℃, 24 hours, 25 wipes | Legible, pass |

| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |
| FTI-HLD-CSO-110X300M-WH | WHITE |
| FTI-HX-CSO-105X300BK | BLACK |



## Technical Datasheet

### Standard Colours
Yellow and white (also red, orange green, blue and black

### Material
Radiation cross linked polyolefin.

### Operating temperature
-40°C up o +105°C.

### Specifications
Mark permanence
SAE AS-5942

Chemical and solvent resistance
MIL-STD-202G method 215K

Standard
EN45545-2 Class HL3 R22-23
NF F 16-101
London Underground
1-085 A3
BOEING BSS 7239
UNI CEI 11170-3 (LR4)
DIN 5510-2
BS6853: 1999 vehicle catagory 1 a

### 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 allow easy separation of markers.



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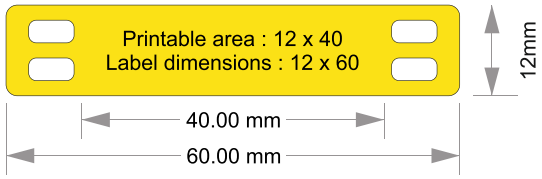
# FCM-X Tie-on Cable Markers (ladder format)

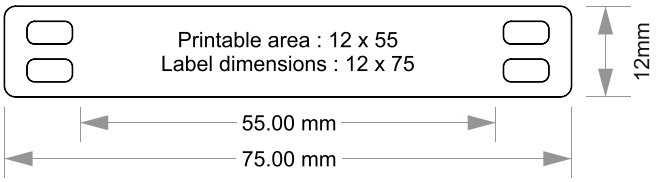
**fastMARK** FCM-X cable markers are designed for marking of cable, conduit, pipes and valves. The ladder format presents markers in an organised fashion for ease of instillation on site style using the pre-cut cable tie slots. The products is manufactured from industry leading UL94-V0 LFH material making them ideal for applications where low smoke, low toxicity and zero halogen properties are critical.

## Ordering information

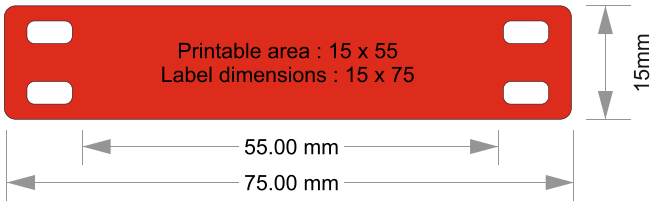
| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-X-1K-012040-4 | YELLOW | 1000pcs |
| FCM-X-1K-012040-9 | WHITE | 1000pcs |
| FCM-X-1K-012040-2 | RED | 1000pcs |
| FCM-X-1K-012040-3 | ORANGE | 1000pcs |
| FCM-X-1K-012040-5 | GREEN | 1000pcs |
| FCM-X-1K-012040-6 | BLUE | 1000pcs |
| FCM-X-1K-012040-0 | BLACK | 1000pcs |



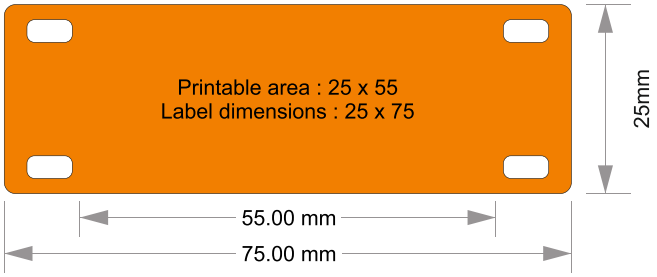

| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-X-1K-012055-4 | YELLOW | 1000pcs |
| FCM-X-1K-012055-9 | WHITE | 1000pcs |
| FCM-X-1K-012055-2 | RED | 1000pcs |
| FCM-X-1K-012055-3 | ORANGE | 1000pcs |
| FCM-X-1K-012055-5 | GREEN | 1000pcs |
| FCM-X-1K-012055-6 | BLUE | 1000pcs |
| FCM-X-1K-012055-0 | BLACK | 1000pcs |



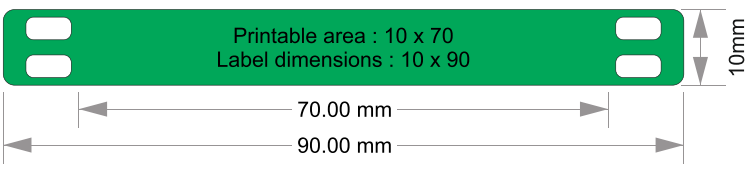

| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-X-1K-015055-4 | YELLOW | 1000pcs |
| FCM-X-1K-015055-9 | WHITE | 1000pcs |
| FCM-X-1K-015055-2 | RED | 1000pcs |
| FCM-X-1K-015055-3 | ORANGE | 1000pcs |
| FCM-X-1K-015055-5 | GREEN | 1000pcs |
| FCM-X-1K-015055-6 | BLUE | 1000pcs |
| FCM-X-1K-015055-0 | BLACK | 1000pcs |




| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-X-500-025055-4 | YELLOW | 500pcs |
| FCM-X-500-025055-9 | WHITE | 500pcs |
| FCM-X-500-025055-2 | RED | 500pcs |
| FCM-X-500-025055-3 | ORANGE | 500pcs |
| FCM-X-500-025055-5 | GREEN | 500pcs |
| FCM-X-500-025055-6 | BLUE | 500pcs |
| FCM-X-500-025055-0 | BLACK | 500pcs |




| Part Number | Colour | Pack Size |
|---|---|---|
| FCM-X-1K-010070-4 | YELLOW | 1000pcs |
| FCM-X-1K-010070-9 | WHITE | 1000pcs |
| FCM-X-1K-010070-2 | RED | 1000pcs |
| FCM-X-1K-010070-3 | ORANGE | 1000pcs |
| FCM-X-1K-010070-5 | GREEN | 1000pcs |
| FCM-X-1K-010070-6 | BLUE | 1000pcs |
| FCM-X-1K-010070-0 | BLACK | 1000pcs |



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# FCM-X Thermal Printable Tie-on Cable Markers (ladder format)

The FCM-X ladder format cable markers are manufactured from halogen free, flame retardant thermoplastic polyether-polyuethane material. The base compound material fulfills the requirements of UL94-V0.

## Test results

| Properties | Test Method | Typical Value |
|---|---|---|
| **Hardness** | DIN 53505 | 58 Shore D |
| **Density** | DIN 53479 | 1.27g/cm$^3$ |
| **Tensile strength** | DIN 53504 | 30 MPa |
| **Elongation at break** | DIN 53504 | 400% |
| **Stress at 20% elongation** | DIN 53504 | 13 Mpa |
| **Stress at 100% elongation** | DIN 53504 | 19 Mpa |
| **Stress at 300% elongation** | DIN 53504 | 33 Mpa |
| **Tear strength** | DIN 53515 | 110 N/mm |
| **Abrasion loss** | DIN 53516 | 30 mm$^3$ |
| **Compression set at room temperature** | DIN EN ISO 815 | 30% |
| **Compression set at +70°C** | DIN EN ISO 815 | 45% |
| **Tensile strength** (stored in water at 80°C for 42 days) | DIN 53504 | 20 MPa |
| **Elongation at break** (stored in water at 80°C for 42 days) | DIN 53504 | 400% |
| **Charpy V-notch impact test at +23°C** | DIN EN ISO 815 | 50 k/jm$^3$ |
| **Charpy V-notch impact test at -30°C** | DIN EN ISO 815 | 3 k/jm$^2$ |

## Weathering Performance

| | | |
|---|---|---|
| **UV lamp : UV340** | Light 60° irradiation 0.76 W/m$^2$ for a duration of 8 hours. Spray duration -15 minutes. Condensation 50° for a duration of 3 hours 45 minutes. | No visible change |
| **Xenon lamp : XENON340** | Light 65° irradiation 0.50 W/m$^2$ for a duration of 1 hours 42 minutes. Light and spray irradiation 0.60 W/m$^2$ for a duration of 8 minutes. | No visible change |
| **Notes** | Accelerated weathering testing was conducted within a laboratory using UV wet/dry cycle weathering simulation equipment. Duration of the test was 500 hours which equates to 10 years exposure within a typical northern European environment. | |

# Technical Datasheet

**Standard Colours**
Yellow and White
(also red, orange, green, blue, black.)

**Material**
Thermoplastic polyether-polyurethane

**Operating Temperature**
-25℃ up to +80℃

**Mark Permanence**
SAE AS81531:1998, point 4.6.2.

**Chemical and Solvent Resistance**
MIL-STD-202F method 215J

**Storage**
Store in original packaging. Recommended storage environment is +10℃ to +25℃ and 45-55% relative humidity.

**Printing Method**
Thermal Transfer

**Packaging**
Supplied on printer ready reals.
Inner cores are sized to allow loading inside most printers.

| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |
| FTI-HLD-CSO-110X300M-WH | WHITE |
| FTI-HX-CSO-105X300BK | BLACK |

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# FIM fastMARK Thermal insert-Markers

fastMARK FIM is a two-part system allowing the creation of permanently printed markers which are then inserted into clear carriers and subsequently mounted on to the wire or cable. The printed strips can be replaced post-termination when re-labelling is required and the clear carrier gives added protection from dust and grime. Carriers are available in a number of sizes to cover a wide range of cable diameters.

## Product Properties

Markers: Polypropylene zero halogen film, 250 micron
Carriers: PVC clear
Resistant to water, humidity, alcohol, oil, grease and miscellaneous cleaning agents.
Applications: Electrical panel builders, junction box. cabinet and post-termination labelling applications.

## Temperature Ratings

Operating temp. range
-40°C to +90°C (-40°F to +194°F)

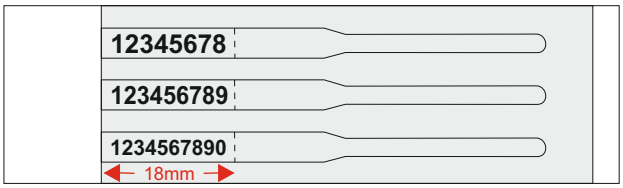
## Insert Marker Dimensions

30mm long x 4mm high
18mm long x 4mm high

## FIM Insert Markers - Standard Colour Options

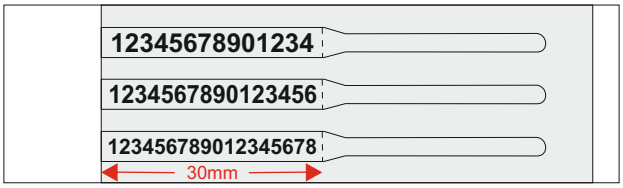
| Part Number (18mm) | Pack Size | Colour |
|---|---|---|
| FIM-3K-004018-9 | 3000pcs | WHITE |
| FIM-3K-004018-4 | 3000pcs | YELLOW |

**18mm insert markers** - font size examples are shown opposite
10 point Arial with up to 8 digits
9 point Arial with up to 9 digits
8 point Arial with up to 10 digits




| Part Number (30mm) | Pack Size | Colour |
|---|---|---|
| FIM-3K-004030-9 | 3000pcs | WHITE |
| FIM-3K-004030-4 | 3000pcs | YELLOW |

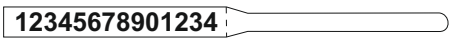
**30mm insert markers** - font size examples are shown opposite
10 point Arial with up to 14 digits
9 point Arial with up to 16 digits
8 point Arial with up to 18 digits



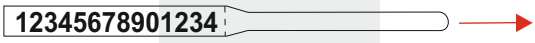

| 18mm Clear Carriers | Pack Size | Colour | Carrier Cable Range |
|---|---|---|---|
| FIM-C-3K-PV01-018 | 3000pcs | CLEAR | 0.5mm² to 2.5mm² |
| FIM-C-3K-PV02-018 | 2000pcs | CLEAR | 2.5mm² to 4mm² |
| FIM-C-3K-PV03-018 | 1000pcs | CLEAR | 4mm² to 10mm² |
| FIM-C-3K-PV04-018 | 500pcs | CLEAR | 10mm² to 25mm² |
| **30mm Clear Carriers** | | | |
| FIM-C-3K-PV01-030 | 1000pcs | CLEAR | 0.5mm² to 2.5mm² |
| FIM-C-3K-PV02-030 | 1000pcs | CLEAR | 2.5mm² to 4mm² |
| FIM-C-3K-PV03-030 | 1000pcs | CLEAR | 4mm² to 10mm² |
| FIM-C-3K-PV04-030 | 500pcs | CLEAR | 10mm² to 25mm² |

(*based upon BS6231 Tri-Rated)

**Step 1:** Print the insert marker




**Step 2:** Pull through clear carrier




**Step 3:** Align and snap off guide tail


| Printer Ribbon Part Numbers | Ribbon Colour |
|---|---|
| FTI-Y-CSO-110X300-BK | BLACK |

**Non-standard Colour options**

| Part Number (18mm) | Part Number (30mm) | Colour |
|---|---|---|
| FIM-3K-004018-2 | FIM-3K-004030-2 | RED |
| FIM-3K-004018-5 | FIM-3K-004030-5 | GREEN |
| FIM-3K-004018-6 | FIM-3K-004030-6 | BLUE |

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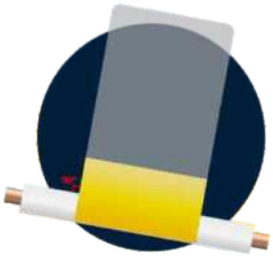
# LSW Wrap-around Horizontal Labels

## Durable selflaminated protection marker

**TECHNICAL DATA SHEET**

Revision Number. 1.3
Last Edited 30. jun. 2021



UL recognised wrap-around horizontal labels.
Extremly quick and easy to print and apply and gives the printed label protection with self-laminating function.

The labels are printed using thermal transfer printing technology and desiged for many applications where ID of parts are required espicially in data centres.

Cost-effective way to label wires and cable when installations don't have to survive the very toughest environmental conditions.

Typical usage.
LSW labels can be applied indoors as self-laminating wrap-around labels that sit flat around cables for a tidy finish or as flagging labels that stand out from cables so that maintenance technicians can sort them with ease. Their ability to withstand exposure to oil, solvents and water makes them ideal for, industrial, commercial, telecom, electrical, electronics and automotive applications.
The pressure sensitive adhesive bonds well to a variety of surfaces.Special formulated pressure sensitive adhesive meet the demanding requireme nt for wire harness labelling.

The labels have detection holes for use with thermal transfer printers fixed sensor or movable sensor

### STANDARD COLORS

### MATERIAL
Frosty 3.5 mil clear vinyl film. Backed with a 50lb. kraft release liner.

### ADHESIVE
Solvent based permenent pressure sensitive acrylic adhesive.

### APPLICATION MIN TEMPERATURE
Application Temperature Min. 10°C (50°F)

### SERVICE TEMPERATURE RANGE
-20°F to 176°F (-29°C to 80°C)

### RECOMMENDED RIBBON
FTI-Y - FTI-M

### SMUGDE & SCRATCH RESISTANCE
Good Smear / scratch Resistance

### RESISTANCE TO SOLVENTS
Excellent. Not recommended in use with acetic acid 25-50% at 140°F (60°C)

### REACH - ROHS COMPLIANT
Yes

### RECOMMENDED PRINTERS
CAB - EOS - SQUIX - A4+M Series

### HALOGEN FREE
No

### UL/ CSA CERTIFICATION
This product "vinyl film" meets the requirements as stated in UL 969
UL file number PGGU2.MH10170

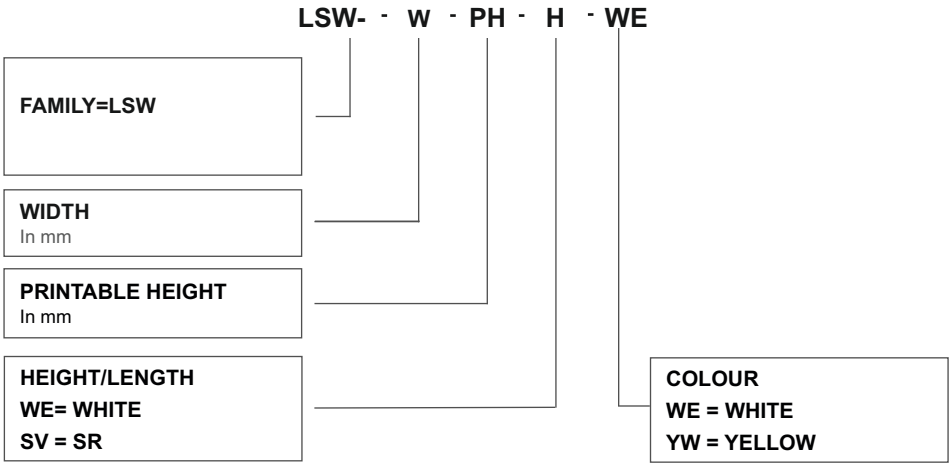
### STORAGE STABILITY
From date of manufacture 12 months. Cool and dry in original packaging. Recommended temperature: 70-75°F - 21-25°C - 40-50% RH - Relative Humidity defined by FINAT. Prolonged storage at higher temperatures and / or higher humidity will shorten shelf life.

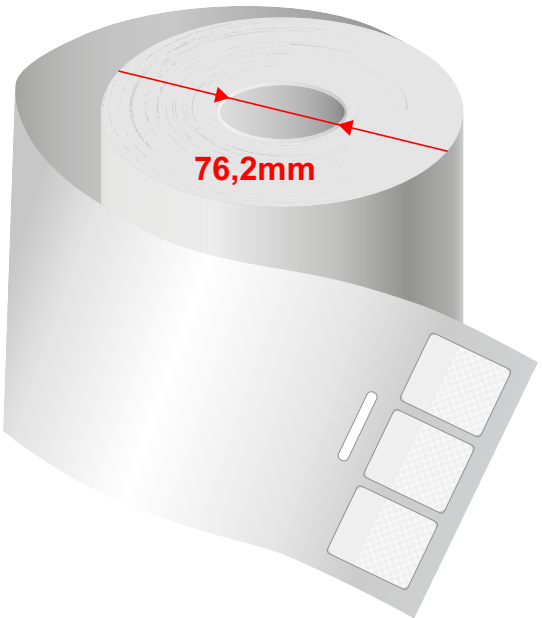
### APPLICATIONS
Developed to be used in normal Industry, Wind Power, Commercial, Construction, Electrical, Telecom and industrial signs etc.

# Ordering Info - Part Number Example LSW-127-095-190-WE

**PART NUMBER EXAMPLE -**

## Product code



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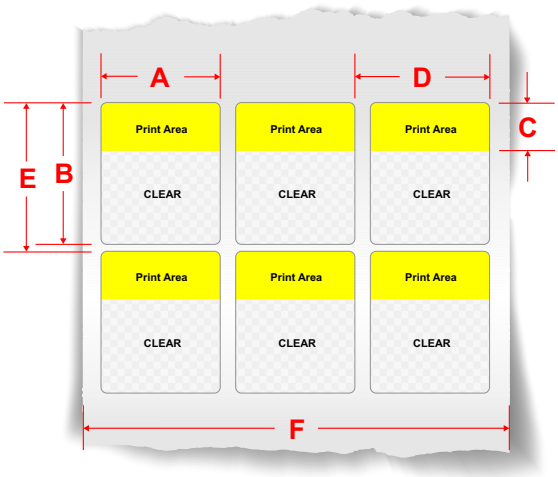


| PRODUCT CODE | APPLICATIVE DIAMETER | LINES ACROSS | WIDTH A | HEIGHT B | PRINT HEIGHT C | D | E | LINER WIDTH F | PCS / ROLL |
|---|---|---|---|---|---|---|---|---|---|
| | mm | pcs | mm | mm | mm | mm | mm | mm | pcs |
| LSW-127-095-190-WE | 2-3 | 4 | 12,7 | 19,05 | 9,53 | 15,24 | 24,05 | 63,50 | 5,000 |
| LSW-127-095-254-WE | 3-5 | 4 | 12,7 | 25,4 | 9,53 | 15,24 | 30,40 | 63,50 | 5,000 |
| LSW-127-127-317-WE | 3-6 | 4 | 12,7 | 31,75 | 12,7 | 15,24 | 36,75 | 63,50 | 5,000 |
| LSW-127-127-365-WE | 4-7 | 5 | 12,7 | 36,50 | 12,7 | 16,81 | 41,50 | 85,09 | 10,000 |
| LSW-190-095-238-WE | 2-4 | 4 | 19,05 | 23,81 | 9,52 | 20,32 | 28,81 | 85,09 | 10,000 |
| LSW-190-127-444-WE | 5-10 | 4 | 19,05 | 44,45 | 12,70 | 20,32 | 49,45 | 85,09 | 5,000 |
| LSW-203-127-365-WE | 4-7 | 4 | 20,32 | 36,50 | 12,70 | 20,32 | 41,50 | 85,09 | 10,000 |
| LSW-203-127-381-WE | 4-8 | 4 | 20,30 | 38,10 | 12,70 | 22,90 | 43,10 | 94,90 | 10,000 |
| LSW-250-250-750-WE | 8-15 | 4 | 25,0 | 75,0 | 25,0 | 28,0 | 80,00 | 59,00 | 2,500 |
| LSW-254-095-190-WE | 2-3 | 2 | 25,40 | 19,05 | 9,53 | 27,94 | 24,05 | 58,42 | 5,000 |
| LSW-254-095-254-WE | 3-5 | 2 | 25,40 | 25,40 | 9,53 | 27,94 | 30,40 | 58,42 | 5,000 |
| LSW-254-127-365-WE | 4-7 | 3 | 25,40 | 36,50 | 12,70 | 27,40 | 41,50 | 86,00 | 5,000 |
| LSW-254-190-571-WE | 6-12 | 2 | 25,40 | 57,15 | 19,05 | 27,40 | 62,15 | 59,00 | 2,500 |
| LSW-254-254-952-WE | 11-22 | 3 | 24,40 | 95,25 | 25,40 | 27,30 | 100,25 | 85,09 | 2,500 |
| LSW-254-381-1333-WE | 15-30 | 1 | 25,40 | 133,35 | 38,10 | | 138,35 | 30,48 | 500 |
| LSW-254-381-1524-WE | 18-36 | 2 | 25,40 | 152,40 | 38,10 | 27,94 | 157,40 | 55,88 | 1,000 |
| LSW-254-381-1889-WE | 24-48 | 3 | 25,40 | 188,90 | 38,10 | 27,90 | 193,90 | 87,30 | 1,000 |
| LSW-381-095-254-WE | 3-5 | 1 | 38,10 | 25,40 | 9,53 | | 30,40 | 43,18 | 2,500 |
| LSW-381-127-381-WE | 4-8 | 1 | 38,10 | 38,10 | 12,70 | | 43,10 | 43,18 | 2,000 |
| LSW-444-095-254-WE | 3-5 | 1 | 44,45 | 25,40 | 9,53 | | 30,40 | 49,53 | 2,500 |
| LSW-444-127-381-WE | 4-8 | 1 | 44,45 | 38,10 | 12,70 | | 43,10 | 49,53 | 2,000 |
| LSW-444-190-810-WE | 10-19 | 1 | 48,30 | 81,00 | 19,05 | 50,80 | 86,00 | 54,00 | 1,000 |
| LSW-483-381-1510-WE | 18-35 | 2 | 48,30 | 151,00 | 38,10 | 50,80 | 156,00 | 105,10 | 1,000 |
| LSW-508-127-365-WE | 4-7 | 2 | 50,80 | 36,50 | 12,70 | 50,80 | 41,50 | 107,60 | 2,500 |
| LSW-508-191-572-WE | 6-12 | 2 | 50,80 | 57,20 | 19,10 | 50,80 | 62,20 | 107,60 | 2,500 |
| LSW-508-254-952-WE | 11-22 | 1 | 50,80 | 95,25 | 25,40 | | 100,25 | 55,88 | 1,000 |
| LSW-508-381-1524-WE | 18-36 | 1 | 50,80 | 152,40 | 38,10 | | 157,40 | 55,88 | 500 |
| LSW-508-381-1778-WE | 22-44 | 1 | 50,80 | 177,80 | 38,10 | | 182,80 | 55,88 | 500 |
| LSW-508-381-1889-WE | 24-48 | 2 | 50,80 | 188,90 | 38,10 | 53,30 | 193,90 | 110,10 | 1000 |
| LSW-635-190-571-WE | 6-12 | 1 | 63,50 | 57,15 | 19,05 | | 62,15 | 68,58 | 1000 |

# General Values for thermal transfer vinyl Film.

## THERMAL TRANSFER PRINTABLE FILM

| PHYSICAL PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Adhesive thickness | ASTM D 3652 | 0,8.0,8 mil Aprox 20-23 micron ± 0,1 (3) |
| Facestock thickness Mils / Microns | ASTM D 3652 | 3.5 mil Aprox 89 micron ± 10% |
| Dimentional Stability (%) | MD | 0,5 |
| Applied Shrinkage: 24 hour dwell time on aluminum panel then 24 hours at 160°F (71°C) | TD | 0,5 |
| Dimensional stability | On aluminium panel at 160°F (71°C) for 24 hr. | MD: 0.5 |
| | | TD: 0,5 |

## FILM THERMAL PROPERTIES

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Service Temperature Range | ..... | --20°F to 176°F (-29°C to 80°C) |

## ADHESIVE PHYSICAL - Special formulated pressure sensitive adhesive meet the demanding requirement for wire harness labeling

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| High initial tack | ASTM D 2979 | 250 (gm/sq cm) |
| Expected Shear | ASTM D 3654 Method A | a. 1 hr. dwell b. 1sq.in. surface c. 4 lb. load |
| Adhesive Type | ..... | Permanent pressure sensitive acrylic adhesive |
| Ultimate peel from material below | ASTM D 903 ( modified for 72 hour dwell time) | Oz/In (N/m) |
| Acrylic | | 60 (660) |
| Ceramic Tile | | 22 (242) |
| Glass | | 54 (594) |
| Stainless Steel | | 47 (517) |
| Painted Metal | | 59 (649) |
| Polypropylene | | 14 (154) |
| Expected shear (hours) | ASTM D 3654 Method a (1 hour. dwell, 1 sq.in 4 lb. load) | 15 |
| Tack (g) | Astm D 2979 | 500 |
| | | |

## WATER IMMERSION -

75 hour water immersion + 24 hour recovery versus 72 hour at RT on SS panel ( 24 hour dwell time on SS panel beofre immersion in water).
**Result.**
**No visual change or adhesion loss.**

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## LINER DATA

| PROPERTIES | COLOUR | TYPICAL VALUE |
|---|---|---|
| Supercalendered release kraftliner paper | White | 50lb |

## ENVIRONMENTAL UV AND USE

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| The clear vinyl film is not recommended for life outdoor applications. | The durability is based on European exposure conditions. Actual performance life will depend on substrate prepartion, exposure conditions and maintenence of the marking | A durability of 1 year (vertical exposure) can be expected.<br>No visual effect. Good contrast and visibility |

## TYPICAL VALUES

**The listed technical data are typical values and give indications about the performance of the material only. They are not intended for specification purpose.**

## PERFORMANCE OF THE PRODUCT

**The performance of the product should always be tested in the actual application conditions. Our recommendations are based on our most current knowledge and experience. As our products are used in conditions beyond our control, we cannot assume any liability for damage caused through their use. Users of our products are solely responsible that the product is suitable for its intended application, and have determined such at their sole discretion. Users must comply with any applicable legislation and/or testing requirements for the finished article, and are responsible for bringing their products to market.**
**This publication does not constitute any warranty, express or implied, and is intended only for the recipient and cannot therefore be transferred to any third party. We cannot assume any liability for the use of our products in conjunction with other materials.**

## CHEMICAL RESISTANCE -

Test method ASTM D 896 at relative temperature.
1. Five cycles with 10 minutes immersed in solvent.
2. 30 minutes recovery time on stainless steel panel
3. 24 hr recovery after last cycle versus 75 hour on stainless steel panel at relative temperature with 24 hour dwell time on the stainless steel panel before immersion.

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Windex cleaner | ASTM D 896 | No visual change or adhesion loss |
| Isopropyl alcohol | ASTM D 896 | No visual change, 15% adhesion loss |
| Mineral spirit | ASTM D 896 | No visual change, 15% adhesion loss |
| Gasoline | ASTM D 896 | Edge penetration, 40% adhesion loss |
| Toulene | ASTM D 896 | No visual change or adhesion loss |
| Oil (SAE 10W-30) | ASTM D 896 | No visual change or adhesion loss |
| Acetic acid (5%) | ASTM D 896 | No visual change or adhesion loss |
| Deionized water | ASTM D 896 | No visual change or adhesion loss |
| Northwoods TM buzz saw terpene | ASTM D 896 | No visual change |
| Formula 409 | ASTM D 896 | Minor disruption |
| Brake fluid | ASTM D 896 | Film deterioration and complete adhesion loss |

## APPENDIX 1 - CHEMICAL PERFORMANCE

**Note:** is not recommended for use in harsh organic solvents such as methyl ethyl ketone, acetone, or 1,1,1-trichloroethane and ecetic acid above 25%

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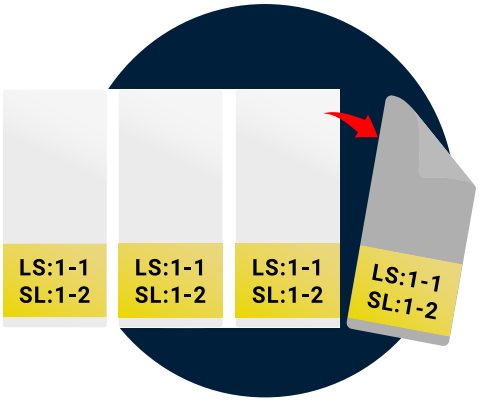
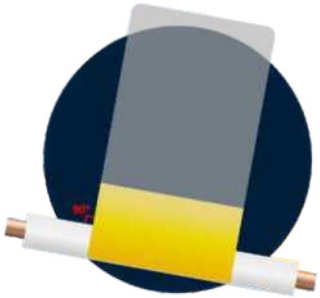
# Assembly Instructions after printing

**1 - TAKE THE PRINTED MARKER OF THE LINER**



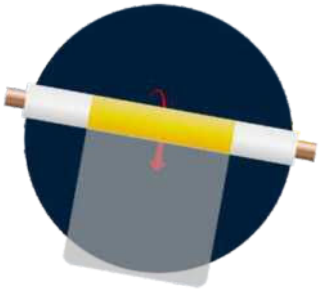

**2 - POSITION THE MARKER 90 DEGREES ON THE CABLE**

- Use the adhesive area in end of marker to adhere to the cable



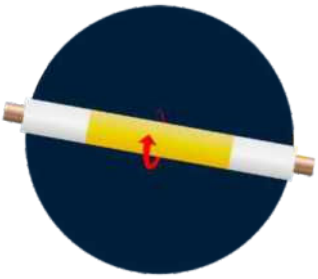
**2 - WRAP AROUND THE CABLE**

- Use the adhesive area in end of marker to adhere to the adhesive area over the print area so it laminate to itself



**4 - CONTINUE WRAP-AROUND**

- Continue to wrap-around the marker until you reach the end. Be carefully not to touch the adhesive at the end.



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# WAT

# Wrap & Turn markers

**TECHNICAL DATA SHEET**

Revision Number. 1

Last Edited 26. apr. 2021


In-door Wrap & Turn is a self-laminating cable and wire marker identification solution which can move and rotate on a wire or cable after installation allowing to see the printed info from any angle. Save time and material cutting the cable into length first and reposition the label along the cable after termination.
Extremely quick and easy to print and apply and gives the printed label protection with the clear over laminating on-site. A special feature is the extra perforation in-build to cut of the length of the marker if required for smaller cables. Saves inventory not having many sizes to carry and leaves the final marker without residue from hands.
* Available in three sizes.
* Other sizes and colours can be produced to RAL and Pantone on request.

The Wrap & Turn are printed using thermal transfer printing technology and desiged for many applications where ID of cables and wires are required.

Printing is quicker, more e翩□cient and cost effective, while the results are durable and long lasting identification solution combined with the unique feature of rotating the label after termination.

Identify : Patch Cables, Fibre Optic Cables, standard cables and wires, and many more applications

Key Features
* High scratch and rub resistance
* Excellent Thermal Transfer printablility
* Labels can easily be repositioned and rotate for visibility from any angle
* Install labels without disconnection for increased productivity and cost savings
* Professional look with sharp and crisp durable legends
* Ideal in constrained spaces and cable installations
* Enhanced resistance to chemicals
* Extra perforation in-builld for less mounting time on smaller diameter cables

## STANDARD COLORS

## COLORS ON REQUEST

## MATERIAL
Top-coated thermal transfer printable polyester film with a radiation cured UV acrylic adhesive. Backed with a glassine release liner.

## ADHESIVE
Radiation Cured UV Acrylic adhesive. See Environmental usage.. 8 years.
Application Temperature Min. 5°C (41°F)

## SERVICE TEMPERATURE RANGE
-20°C to 130°C (-20°F to 266°F)
Short term 1 hour 170 °C (338°F)

## RECOMMENDED RIBBON
FTI-Y - FTI-M black

## SMUGDE & SCRATCH RESISTANCE
Good Smear Resistance

## RESISTANCE TO SOLVENTS
Excellent - Test report available

## REACH - ROHS COMPLIANT
Yes

## APPLICABLE PRINTERS
Thermo Transfer Printers

## HALOGEN FREE
Yes

## FLAMMABILITY ASTM D1000
Average burntime less than 10 seconds -Self-extinguising

## STORAGE
From date of manufacture 2 years. Cool and dry in original packaging. Recommended temperature.70-75°F - 21-25°C - 40-50% RH - Relative Humidity defined by FINAT

## APPLICATIONS
Developed to be used in normal Industry, Wind Power, Commercial, Construction, Electrical, Telecom and industrial signs etc.

## ENVIRONMENTAL INFO

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| The clear polyester film is ideal for extended life indoor and outdoor applications. PET polyester film provides UV light resistance and long term aging resistance | The durability is based on European exposure conditions. Actual performance life will depend on substrate prepartion, exposure conditions and maintenence of the marking | A durability of 8 years (vertical exposure) values used at Swisscom in Switzerland<br>No visual effect. Good contrast and visibility |

| SPECIAL PROPERTIES POLYESTER FILM | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| The polyester film meets the requirements as stated in ASTM D1000 - Selfextinguising | ASTM D1000 | Pass. Less buring time than 10 seconds |

| SPECIAL PROPERTIES POLYESTER FILM | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| The clear polyester film are resistant to most aliphatic solvents, mineral oils, fats and fuels- Short exposure times for ketones and esters do not result in any chnges | Internal Testing | See test result test report.<br>Table 1. |

# General Values for thermal transfer PP Film.

## THERMAL TRANSFER CLEAR PRINTABLE FILM

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Substance - | DIN 536 | 32 g / $m^2$ |
| Facestock thickness - | DIN 534 | Aprox 23 micron ± 10% |

## FILM THERMAL PROPERTIES

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Service Temperature Range - | ..... | -20°C - 130°C (-20°F to 266°F) |
| Short Term Temperature 1 hour - | ..... | 170°C (338°F) |

## ADHESIVE PHYSICAL Good resistance to chemicals and solvents

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| High initial tack | FTM 1 Glass | 12 N/N25mm (OZ/INCH) |
| Peel Adhesion 90°C | FTM 1 24hr | 23N/25mm |
| Adhesive Type | Solvent Acrylic | |
| Adhesive Weight | FTM 12 | 25 g/$m^2$ |

## LINER DATA ----

| PROPERTIES | COLOUR | TYPICAL VALUE |
|---|---|---|
| Supercalendered Kraftliner paper thickness | White | approx. 65 micron thickness ISO 536 |
| Basis Weight | | 80 g / $M^2$ ISO 534 |

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## APPENDIX 1 - PERFORMANCE DATA CLEAR POLYESTER

**Note: the following technical data should be considered representative or typical only and should not be used for specification purposes.**
Peel Adhesion:
FTM1: 180°, 300 mm/min, dwell time: 24 hours

| SURFACE | N/25MM (OZ/INCH) |
|---|---|
| Glass | 12,0 |

# Ordering Info - Part Number Example

**PART NUMBER EXAMPLES** Wrap and Turn 20x14x45mm clear polyester

## Product code

**WAT- - 200 - 140 - 450 WE**

**FAMILY=WAT**
Wrap And Turn

**A- WIDTH**

**C- PRINT HEIGHT**

**B - HEIGHT**

**COLOUR**
**WE= WHITE**
**YW = YELLOW**

# Colors RAL - Pantone

| Color Name | RAL | Pantone |
|---|---|---|
| Sulphur Yellow | 1016 | 604 |
| Pure Red | 3028 | 185c |
| Sky Blue | 5015 | 3015 |
| Pure Green | 6037 | 355c |
| Signal White | 9003 | 705 |

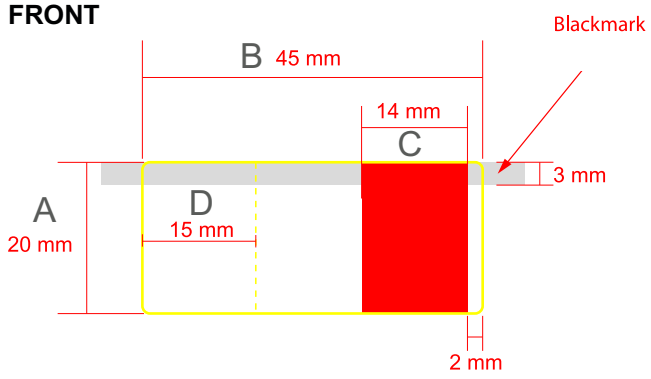
# Drawing info  Size 20x14x45mm

**CABLE DIAMETER FROM - Ø 4,45MM**

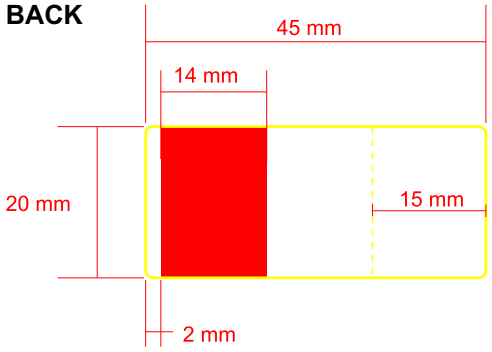
**USAGE: FIBER OPTIC CABLES**

| Product Code | Applicative Wire Diameter mm | Markers Across | Width A mm | Height B mm | Printable Height C mm | Tear O ffLength D mm | PCS / Roll |
|---|---|---|---|---|---|---|---|
| WAT-200-140-450-xx | 4,45 | 1 | 20 | 45 | 14 | 15 | 2500 |

**FRONT**




**BACK**



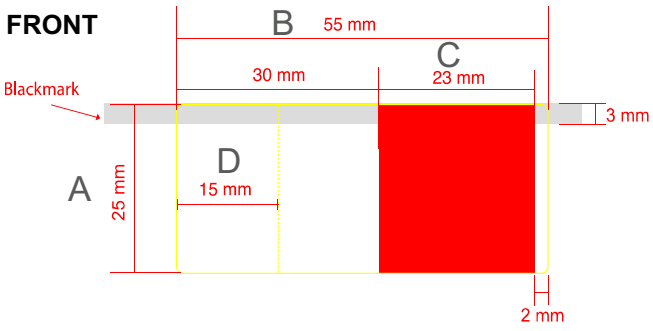

# Drawing info  Size 25x23x55mm

**MAX CABLE DIAMETER FROM - Ø 7,3MM**

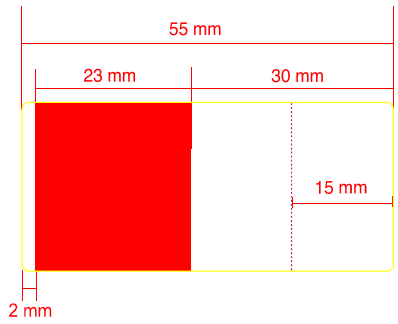
**USAGE: PATCH CABLES**

| Product Code | Applicative Wire Diameter mm | Markers Across | Width A mm | Height B mm | Printable Height C mm | Tear O ffLength D mm | PCS / Roll |
|---|---|---|---|---|---|---|---|
| WAT-250-230-550-xx | 7,30 | 1 | 25 | 55 | 23 | 15 | 2500 |

**FRONT**




**BACK**



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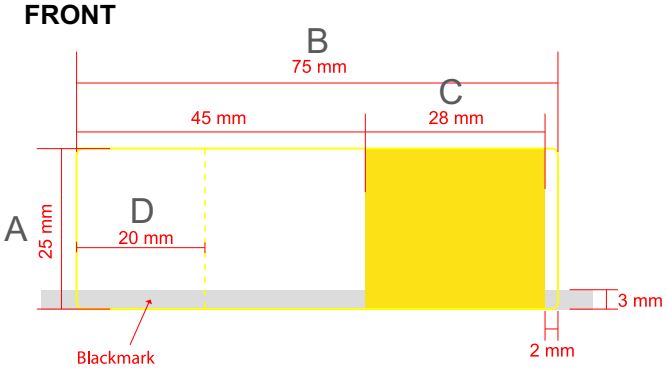
# Drawing info Size 25x28x75mm

**CABLE DIAMETER FROM - Ø 8,90MM**

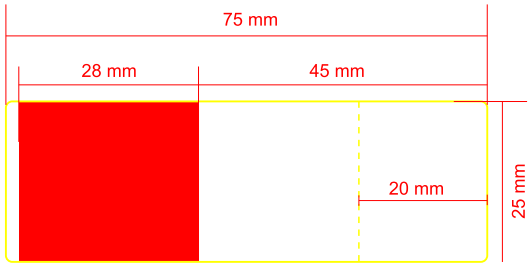
**USAGE: OTHER STANDARD CABLES**

| | | |
|---|---|---|
| **Product Code** | WAT-250-280-750-XX | |
| **Applicative Wire Diameter mm** | 8,90 | |
| **Markers Across** | 1 | |
| **Width A mm** | 25 | |
| **Width A mm** | 75 | |
| **Printable Height C mm** | 28 | |
| **Tear Off Length D mm** | 20 | |
| **PCS / Roll** | 2500 | |

**FRONT**




**BACK**




## Table 1. Immersion test report results

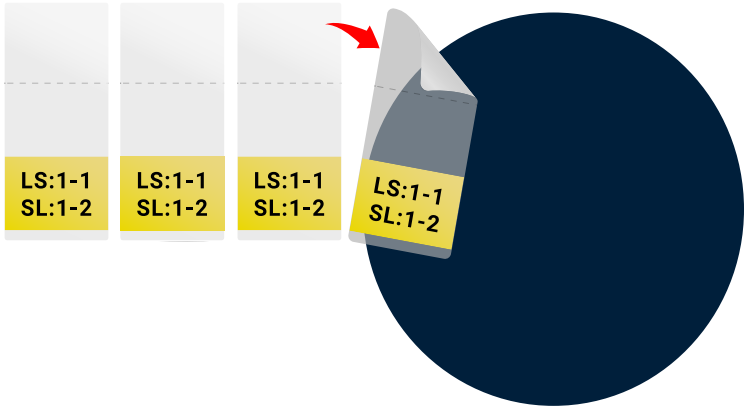
| Chemical Reagent | Substrate / Adhesive | Thermal Transfer Printed Legend / Ribbon FTI-I | Thermal Transfer Printed Legend / Ribbon FTI-M |
|---|---|---|---|
| Table 1. : 1 hour curing time adhesive | | | |
| Acetone | Complete Slip | Dissolved | Dissolved |
| Augas 100 LL | Complete Slip | No Effect | Partly Dissolved |
| Denaturered Sprits - Ethanol, Butanon | Partly Slip | No Effect | No Effect |
| Demineralisered Water | No Effect | No Effect | No Effect |
| Glycol Propylen -Deicing | No Effect | No Effect | No Effect |
| Glycol Ethylen - Deicing | No Effect | No Effect | No Effect |
| Hexane | Complete Slip | No Effect | No Effect |
| Hydraulic Oil | No Effect | No Effect | No Effect |
| IRM 902 | No Effect | No Effect | No Effect |
| IRM 903 | No Effect | No Effect | No Effect |
| Isopropyl Alcohol | Partly Slip | No Effect | No Effect |
| Jet A-1 | Complete Slip | No Effect | No Effect |
| Kerosene | No Effect | No Effect | No Effect |
| Motoroil - SAE30 | No Effect | No Effect | No Effect |
| MEK - Ethyl Methyl Ketone | Complete Slip | Dissolved | Dissolved |
| Sodium Hydroxide 7% | No Effect | No Effect | No Effect |
| Propanol | Partly Slip | No Effect | No Effect |
| Petroleum Benzin | Complete Slip | No Effect | Partly Dissolved |
| Pentosin FFL-4 Clutch Transmission Oil | No Effect | No Effect | No Effect |
| Petroleum | Partly Slip | No Effect | No Effect |

## Table 1 continued.. Immersion test report results

| Chemical Reagent | Visual Observation | | |
|---|---|---|---|
| | Substrate / Adhesive | Thermal Transfer Printed Legend / Ribbon FTI-I | Thermal Transfer Printed Legend / Ribbon FTI-M |
| Cleaning Gasoline - Heptane - Hexane | Complete Slip | Dissolved | Partly Dissolved |
| Hydrochloric 7% | No Effect | No Effect | No Effect |
| Skydrol | Partly Slip | No Effect | No Effect |
| Toluene | Complete Slip | Dissolved | Dissolved |
| Universal Cleaner for Plastics KH-541-3 | Complete Slip | No Effect | Partly Dissolved |
| Universal Cleaner Orange | No Effect | No Effect | No Effect |

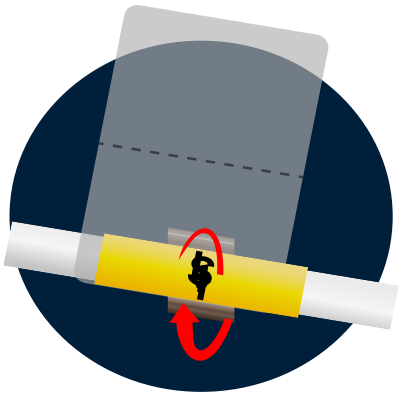
## Assembly Instructions after printing

**1 - TAKE THE PRINTED MARKER OF THE LINER**



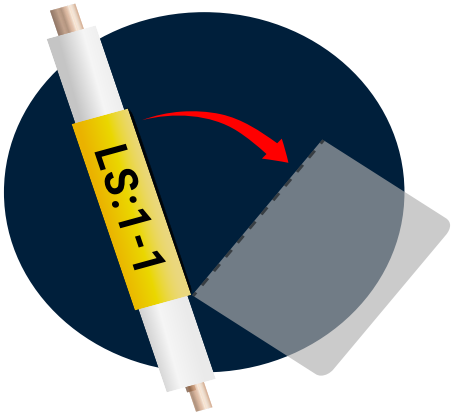

**2 - WRAP AROUND THE CABLE**

- Use the adhesive area in end of marker to adhere to the adhesive area over the print area



**3 - TEAR OFF EXCESS PART**

- Tear o ffthe excess part




**4 - POSITION THE MARKER**

- Position the marker by moving it along the cable and turn to desired view of the printed text

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## Technical data sheet

# LSPP – Panel Plates

The LSPP Panel Plates are thermal transfer printable plates which replaces engraved signs. The marking is quicker, more effective and even more cost effective than conventional engraved signs and also offers durability and high adhesion strength. Panel Plates are available in white and metalized, but can be offered in many other colours and dimensions upon request.

**DIMENSIONAL DATA**

| Part | Dimension | Material | Qty | Unit |
|---|---|---|---|---|
| LSPP-027x0125 | 27x12,5 mm. | PET | 1000 | Roll |
| LSPP-027x015 | 27x15 mm. | PET | 1000 | Roll |
| LSPP-027x018 | 27x18 mm. | PET | 1000 | Roll |
| LSPP-035x015 | 35x15 mm. | PET | 1000 | Roll |
| LSPP-035x018 | 35x18 mm. | PET | 1000 | Roll |
| LSPP-045x015 | 45x15 mm. | PET | 1000 | Roll |
| LSPP-048x019 | 48x19 mm. | PET | 1000 | Roll |
| LSPP-050x015 | 50x15mm. | PET | 1000 | Roll |
| LSPP-060x030 | 60x30 mm. | PET | 1000 | Roll |
| LSPP-070x018 | 70x18 mm. | PET | 500 | Roll |
| LSPP-080x060 | 80x60 mm. | PET | 500 | Roll |
| LSPP-090x045 | 90x45 mm. | PET | 500 | Roll |
| LSPP-100x030 | 100x30 mm. | PET | 500 | Roll |
| LSPP-100x050 | 100x50 mm. | PET | 500 | Roll |
| LSPP-105x140 | 105x140 mm. | PET | 500 | Roll |
| LSPP-119x019 | 119x19 mm. | PET | 500 | Roll |
| LSPP-120x040 | 120x40 mm. | PET | 500 | Roll |
| Part | Dimension | Material | Qty | Unit |
| LSPP-040x030-H20 | 40x30 mm. Ø20 | PET | 1000 | Roll |
| LSPP-045x025-H20 | 45x25 mm. Ø20 | PET | 1000 | Roll |

**Colours**
White and metalized

Other colours available on request

**Material**
Top-coated thermal transfer printable Polyester film (PET) coated with a permanent pressure sensitive acrylic adhesive mounted with a compressible polyethylene foam carrier and backed with a glassine release liner.

**Operating temperature**
-40°C - +90°C

**Recommended ribbon**
FTI-Y ribbon

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## Technical data sheet

# LSPP – Panel Plates

### TECHNICAL DATA

| Physical propertes | Value | Test method |
|---|---|---|
| Thickness (micron) | 625 | ASTM D 3652 |
| Dimensional stability (%) | No shrinkage observed | On Al panel at 70°C for 24 hrs. |
| Adhesion properties | | |
| **Adhesion strength (N/mm)** | | |
| Polypropylene | 11N / 25mm | DIN EN 1939 after 24 hours at 21°C |
| Polyethylene | 5N / 25mm | DIN EN 1939 after 24 hours at 21°C |
| PVC | 29N / 25mm | DIN EN 1939 after 24 hours at 21°C |
| Steel | 38N / 25mm | DIN EN 1939 after 7 days at 38°C and 100% relative humidity |
| Shear strength | 40N / 625mm² | on steel according to DIN EN 1943, editon 1996, at 23°C ± 2°C |
| Peel strength | 40N / 25mm | on steel according to DIN EN 1943, editon 1996, at 23°C ± 2°C |
| Technical properties | | |
| Tensile strength | ≥ 150 Mpa | D.M. |
| | ≥ 15,29 Kg/mm² | D.M. |
| | ≥ 21710 p.s.i. | D.M. |
| Elongation | ≥ 70% | D.M. |
| Breaking strength | ≥ 187,5 N/cm | D.M. |
| | ≥ 19,1 kg/cm | D.M. |
| | ≥ 107,0 p.i.w. | D.M. |
| Electric breakdown | 13,5 kV | |
| | | |
| Expected exterior life | 2 years | |
| Min. application temperature | 10°C | |
| Storage ability | 2 years stored at 21°C and 50% relative humidity | |

**Recommended application temperature**
18°C to 35°C

**Liner material**
Silicone paper, thickness 0.08mm

Carrier material
Black polyethylene foam, thickness 0.45mm

**Packaging**
Continuous rolls on 3” cardboard core

Excellent resistance to ageing, weathering and UV-radiation

Extensive resistance to the influence of chemicals and solvents (domestic cleaners and polishing agents)

On account of its compressible and elastic foam carrier, the adhesive tape assures a perfect adaptation to surfaces by compensating for different expansion coefficients of the substrates that are joined

Suitable for indoor and outdoor applications on smooth and slightly rough surfaces

High initial adhesion
Premium final adhesion
Dimensional stable
Resistance to plasticizers

Applicable to rubber, fabrics, glass, ceramics, wood, PVC, PC, ABS, PE, PP, metal, spray painted metal, paper and cardboard

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# Raised Panel Plates

## Durable engraved sign making
## Engraved plate replacement

**TECHNICAL DATA SHEET**

Revision Number. 1
Last Edited 6. februar 2019

Verstile productline built with latest technology to consistently achieve superior results with exceptional quality. The panel plates are printed using thrmal transfer printing technology and desiged to replace engraved type plates. Printing is quicker, more e翻□ciant and cost effective, while the results are durable and long lasting and the foam adhesive are high tack. Adjust very well to rough or curved surfaces. Identify : cabinets, patch panels, components and more

* High scratch and rub resistance
* Name plate quality and faster than engraving
* Ware House Marking
* Professional look with sharp and crisp legends
* Gloss finish and foamed backed adhesive for strong holding for ueven surfaces

**Resistant to weak acids, greases, oils, salt spray, cleaners, detergents, and general industrial grime.

### STANDARD COLORS

### OTHER COLORS

### MATERIAL
Top-coated thermal transfer printable polyester film with a permanent pressure senditive acrylic adhesive mouted with a compressible foam carrier and backed with a glassine release liner.

### ADHESIVE
Solvent based permanent acrylic adhesive

### TEMPERATURE RANGE
-40°C to 90°C (-40°F to 180°F)
Application Temperature
18°C to 35°C

### RECOMMENDED RIBBON
FTI-Y black

FTI-HLD white

### SMUGDE & SCRATCH RESISTANCE
Good Smear Resistance

### RESISTANCE TO SOLVENTS
**

### ROHS COMPLIANT
Yes

### APPLICABLE PRINTERS
CAB - EOS - SQUIX - A4+M

### HALOGEN FREE
No

### UL CERTIFICATION
On - Request

### STORAGE
From date of manufacture 2 years. Cool and dry in original packaging. Recommended temperature.70°F - 21°C - 50% RH - Relative Humidity

Prolonged storage at higher temperatures and / or higher humidity will shorten shelf life.

### APPLICATIONS
Developed to be used in normal Industry, Wind Power, Commercial, Construction, Electrical, Telecom and industrial signs etc.

### ENVIRONMENTAL

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| TEST with XENON lamp,<br>XENON (340nm)<br>- Light 65 ° c irradiation 0.50 W/m²<br>duration xxx hours<br>- Light + Spray duration 0.60 W/m²<br>duration xxx min | Visual Inspection<br><br>Mark adherence | No creasing or cracking<br><br>No visual effect. Good contrast and visibility |

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| UV-A 340 nm 1000 hours Light 60 ° irradiation<br>0.76 W/m² power<br>duration 8 hours<br>- Spray duration 15 min.<br>- Condensation 50 ° duration 3,45<br>hour. | Visual Inspection<br><br>Mark adherence | No creasing or cracking<br><br>No visual effect. Good contrast and visibility |

# Ordering Info - Part Number Example

**PART NUMBER EXAMPLES** Raised Panel Plates LSPP 45x15mm white

## Product code

**LSPP- - 045 - 015 - WE**

**FAMILY=LSPP**
Raised Panel Plates

**WIDTH**
In mm

**LENGTH**
In mm

**COLOUR**
**WE= WHITE**

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# General Values for thermal transfer PP Film. Gloss clear -White- Silver

## THERMAL TRANSFER PRINTABLE FILM

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Dimensional stability | FTM 14 - 48 hours at 70°C on aluminium | <1 mm |
| Facestock thickness | FTM 12 | 50 micron ± 10% |
| Adhesive | FTM 12 | 21 gsm ± 10% |
| Chemical resistance | AATCC 8 gray scale 1=poor 5 = superior | 3.5 |
| Elongation at break | DIN 53455 | 150 % |

## FILM THERMAL

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Service Temparature Range | ..... | -40° - 149°C |

## ADHESIVE PHYSICAL - High initial tack - shear strength - Good UV and ageing - good resistance to to the influence of chemicals and solvents

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| High initial tack - shear strength - Good UV | | |
| Resistance to platicizers | DIN EN 1939 on steel after 7 days storage at 70°C | 13N/25mm |
| Peel strenth on lacquer | DIN 1939 - room temp - 24 hours storage | 39N/25 mm |
| Hydrolysis resistance here excellent clarity, water, chemical or temperature resistance is required | Peel strength according to DIN EN 1939 after 7 days storage at 38°C, 100/ RH on<br><br>Steel<br>Polypropylene | <br><br><br>38N/25 mm<br>30N/25mm |

## ADHESIVE THERMAL - MODIFIED ACRYLIC ADHESIVE

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Operating Temparature | ..... | -40° - +90° |
| Labelling Temperature Min | | 10°C |
| Max Temperature | | 90°C |
| | | |

## SPECIFIC FOAM DATA - POLYETHYLENE FOAM

| PROPERTIES | TEST METHOD | TYPICAL VALUE |
|---|---|---|
| Tack min - shear strength | DIN EN 1943 - 23°C on steel | 40,0 N / 625mm $^2$ |
| Tack Max - Peel strength | DIN EN 1939 - 23°C on steel | 45.0 N /25mm |
| Shore hardness | ASTM D2240 | 44 |
| Compression force | (ISO 3386-1) | 56kPa at 10% compression |
| Compression force | (ISO 3386-1) | 410 kPa at 50 % compression |
| Rest deformation | (ISO 1856-C) | 1 % at 25% compression: after 24h after release |
| Hygroscopicity | ISO 2896 | less than 1 % |

## LINER DATA - POLYETHYLEN FILM

| PROPERTIES | COLOUR | TYPICAL VALUE |
|---|---|---|
| Polyethylen film | White | approx. 0,08 mm thickness |
| Total thickness Liner - Foam - Adhesive | | approx 0,53 mm |

# **fastMARK** Commercial Grade Vinyl Tapes

fastMARK Vinyl is a superior quality intermediate grade vinyl available in a wide range of colors with five standard width options of 0.5 inch, 1 inch, 2 inch, 3 inch, 4 inch on 50 meter roll. It is suitable for signage applications onto flat or slightly curved surfaces. fastMARK Vinyl has a solvent-free permanent acrylic adhesive.

**Standard Colors :** White, Black, Gray, Blue, Green, Yellow, Orange, Red, Purple, Brown, Pink.

**Face Material :** 70 Micron calendered vinyl **|** **Adhesive :** Solvent free permanent acrylic **|** **Liner :** 140gsm kraft liner

**Operating Temperature :** -30℃ up to +110℃ **|** **Application Temperature :** +5℃ up to +60℃

**Flamability :** Fire Rating - Class B **|** **Print Method :** Thermal Transfer

**Storage :** Store in original packaging. Recommended storage environment is +15℃ to +25℃ and 50% relative humidity

| Properties | Test Method |
|---|---|
| **Tensile strength** | 50N/25mm MD / 48N/25mm TD nominal |
| **Elongation at break** | 180% MD nominal |
| **Thickness** (vinyl face film) | 70 micron nominal |
| **Shrinkage** | Minimal |
| **Adhesion to glass** | 20 mins 10N/25mm nominal / 24 hours 20N/25mm nominal |



Recommended Printer : cab Squix4/300
: cab EOS2/300

Recommended Ribbon : FTI-HX-CSO-053X300BK
: FTI-HX-CSO-110X300BK
: FTI-HLD-CO-110X300WH
: FTI-Y-CSO-110X300BK

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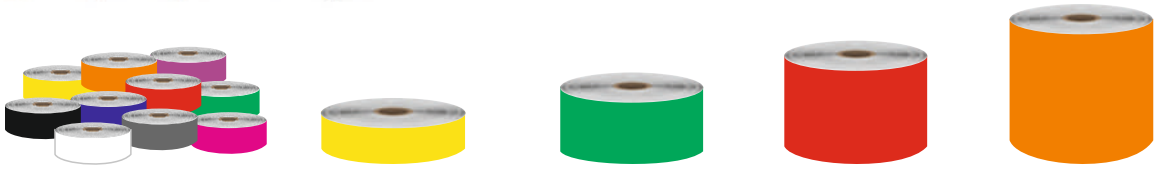
# fastMARK Commercial Grade Vinyl Tapes


Recommended Printer : cab Squix4/300
: cab EOS2/300
Recommended Ribbon : FTI-HX-CSO-053X300BK
: FTI-HX-CSO-110X300BK
: FTI-HLD-CO-110X300WH
: FTI-Y-CSO-110X300BK



| COLOUR | 25mm (1") | 50mm (2") | 75mm (3") | 100mm (4") |
|---|---|---|---|---|
| WHITE | FV1-2001 | FV2-2001 | FV3-2001 | FV4-2001 |
| BLACK | FV1-2002 | FV2-2002 | FV3-2002 | FV4-2002 |
| GRAY | FV1-2004 | FV2-2004 | FV3-2004 | FV4-2004 |
| BLUE | FV1-2006 | FV2-2006 | FV3-2006 | FV4-2006 |
| GREEN | FV1-2007 | FV2-2007 | FV3-2007 | FV4-2007 |
| YELLOW | FV1-2008 | FV2-2008 | FV3-2008 | FV4-2008 |
| ORANGE | FV1-2009 | FV2-2009 | FV3-2009 | FV4-2009 |
| RED | FV1-2010 | FV2-2010 | FV3-2010 | FV4-2010 |
| PURPLE | FV1-2011 | FV2-2011 | FV3-2011 | FV4-2011 |
| BROWN | FV1-2012 | FV2-2012 | FV3-2012 | FV4-2012 |
| PINK | FV1-2013 | FV2-2013 | FV3-2013 | FV4-2013 |