

# TP TAPE LABELS

## Pipe labels

### Technical Datasheet

TTDS-028 Revision 6

October 2024

TP Tape is a system designed for use as a thermal transfer printable, self-laminating identification label for various types of tubes found in the aerospace, defence and marine industry.

TP tape labels are made from a clear polyester and a colored printable coating with a high performance acrylic adhesive. They are supplied as die-cut wraparound labels or continuous rolls on a paper release liner and they meet the requirement of the TE Connectivity RW-2526.

This cost and time saving system allows you to print on a unique range of pre color-coded labels on demand thus eliminating the need to use maintenance paints, hot-stamps and etching tools.

TP tape products are available as part of a complete identification system. The system comprises of specific printers, thermal transfer ribbons and WINTOTAL software.



# TP TAPE LABELS

## Features

- Thermal transfer printable
- Self-laminated to protect printed information
- Color-coded to meet MIL-STD-595B requirements
- Available in die-cut or continuous formats to cover all ranges of tube diameters

## Temperature rating

- Operation Temperature Range: -40°C to 163°C (-40°F to 325°F)
- Minimum application temperature: 10°C (50°F)

## Applications

- Aerospace and Defense
- Industrial
- Electrical
- Electronics

## Design for Environment

- Does not contain any RoHS (EU 2015/868) substance
- Does not contain any California Prop 65 substances
- No restricted substances as listed in the Toxic Substances Control Act
- Further information and a downloadable declaration covering RoHS and REACH compliance can be found at the TE Product Compliance Support Centre:

<http://www.te.com/usa-en/utilities/product-compliance.html>

## Shelf life

- Two years when following good commercial storage practice detailed below.

## Storage

- Product should be stored in the original packaging, with any plastic covers which were included during shipping.
- Store out of direct sunlight in a clean, dry, dust free, environment.
- Product should be stored at approximately 21°C (70°F) and 50% R.H.

## Specifications and approvals

- RW-2526
- MIL-STD-595B
- MIL-STD 101B
- MIL-STD-1247

Where possible, TE have tested product as a finished item, including the print. Operational tests are followed by an assessment of mark adherence to validate fit form and function. Further details can be found in TE standard RW-2526.



# TP TAPE LABELS

## Typical Label Thickness

- Label (including adhesive): 0.061 mm (0,0024 inch)
- Liner: 0.079 mm (0.0031 inch)

## Technical Performance

|  | Requirements   | Results                           |
|--|--|-----------------------------------|
| <b>Adherence of Marking</b>                          |  |                                   |
| AS 81531   | Print shall be legible <sup>(1)</sup> after 20 rubs  | Pass                              |
| <b>Tensile Strength,</b>                             |  |                                   |
| N/mm (lb./inch-width)                                | 2.977 N/mm (17lb./inch) Min.   | 7.294 N/mm (41.68 lb./inch), Pass |
| <b>Elongation</b>                                    |  |                                   |
| ASTM D 3759  | 50% Minimum  | 131.8%, Pass                      |
| <b>Adhesion to Aluminum dry<br/>ASTM D 3330</b>      |  |                                   |
| 5 minutes dwell                                      | 0.218 N/mm (20 oz/inch) Min.   | 0.463 N/mm (42 oz/inch), Pass     |
| 72 hours dwell                                       | 0.383 N/mm (35 oz/inch) Min.   | 0.613 N/mm (56 oz/inch), Pass     |
| <b>Adhesion to printed layer dry<br/>ASTM D 3330</b> |  |                                   |
| 5 minutes dwell                                      | 0.164 N/mm (15 oz/inch) Min.   | 0.277 N/mm (25 oz/inch), Pass     |
| 72 hours dwell                                       | 0.328 N/mm (30 oz/inch) Min.   | 0.460 N/mm (42 oz/inch), Pass     |
| <b>Resistance to high pressure hose</b>              |  |                                   |
| 5 minutes water jet application                      | The label shall remain firmly fixed to the pipe. No cracking, peeling, or wrinkling of the over-lamination.<br><br>All marking shall remain legible <sup>(1)</sup>   | Pass                              |
| <b>Weathering resistance</b>                         |  |                                   |
| ASTM D 6551 for 96 hours with water spray            | 0.547N/mm (50) minimum peel strength. No visible deterioration such as cracking, peeling, chalking, or blistering.<br>Colors shall show no appreciable fading or loss of legibility such as to make the markings unserviceable<br>Marking shall remain legible <sup>(1)</sup> after the test | Pass                              |
| <b>Adhesive stability</b>                            |  |                                   |
| ASTM D 6551 for 20 hours with no water spray         | 0.219 N/mm (20 oz/inch) Min.   | Pass                              |

(1) According to TE doc 411-121002

Where possible, TE have tested product as a finished item, including the print. Operational tests are followed by an assessment of mark adherence to validate fit form and function. Further details can be found in TE standard RW-2526.



# TP TAPE LABELS

## Technical Performance

|   | Requirements  | Results |
|---|---|---------|
| <b>Colorfastness to hydraulic fluid</b>   |   |         |
| Immersion in Skydrol<br>500 B4 at 23°C (73°F) x 168 hours<br>followed by dry storage. | The label shall remain firmly fixed to the pipe. No cracking, peeling, or wrinkling of the over-lamination<br><br>All marking shall remain legible <sup>(1)</sup> . | Pass    |
| <b>Low Temperature</b>  |   |         |
| 3 immersion cycles of 2 hours<br>in liquid Nitrogen                                   | No deterioration such as cracking, wrinkling, or other defects that affect the serviceability<br>Marking shall remain legible <sup>(1)</sup> after the test.        | Pass    |
| <b>Heat Resistance</b>  |   |         |
| 163°C (325°F) for 100 hours.  | No deterioration such as cracking, wrinkling, or other defects that affect the serviceability.<br>Marking shall remain legible <sup>(1)</sup> after the test.       | Pass    |
| <b>Corrosive Properties</b>   |   |         |
| 163°C (325°F) x 144 hours / 20cl<br>water vapor / Parr pressure vessel.               | The identification tape shall not cause surface corrosion or stress corrosion cracking of the materials to which it is applied.                                     | Pass    |

## Fluid exposure

| Test   | Requirement                  | Typical Peel strength results |
|--|------------------------------|-------------------------------|
| Distilled water 24 hours x 23°C (73°F)                                     | 0.328 N/mm (30 oz/inch) Min. | 0.604 N/mm (55 oz/inch), Pass |
| Aircraft fuel JP8 (MIL-T-83133) 72 hours x 23°C (73°F)                     | 0.328 N/mm (30 oz/inch) Min. | 0.389 N/mm (35 oz/inch), Pass |
| Lubrication oil (MIL-L-7808) 24 hours x 93°C (200°F)                       | 0.438 N/mm (40 oz/inch) Min. | 0.572 N/mm (52 oz/inch), Pass |
| Aircraft hydraulic oil OM15 (MIL-H-5606) 72 hours x 23°C (73°F)            | 0.438 N/mm (40 oz/inch) Min. | 0.565 N/mm (52 oz/inch), Pass |
| Hydraulic fluid OX19 (MIL-H-83282C) 72 hours x 23°C (73°F)                 | 0.328 N/mm (30 oz/inch) Min. | 0.622 N/mm (57 oz/inch), Pass |
| Engine and gearbox oil OX27 (MIL-L-23699C) 72 hours x 23°C (73°F)          | 0.493 N/mm (45 oz/inch) Min. | 0.641 N/mm (58 oz/inch), Pass |
| Engine corrosion inhibitor fluid O133 (MIL-L-6081C) 72 hours x 23°C (73°F) | 0.438 N/mm (40 oz/inch) Min. | 0.576 N/mm (52 oz/inch), Pass |
| Skydrol 500 B4 72 hours x 23°C (73°F)                                      | 0.383 N/mm (35 oz/inch) Min. | 0.470 N/mm (43 oz/inch), Pass |
| Deicing fluid IPA S737/AL11 72 hours x 23°C (73°F)                         | 0.328 N/mm (30 oz/inch) Min. | 0.376 N/mm (34 oz/inch), Pass |
| Tri-n-butyl Phosphate 72 hours x 23°C (73°F)                               | 0.218 N/mm (20 oz/inch) Min. | 0.256 N/mm (23 oz/inch), Pass |
| Skydrol LD 4 72 hours x 23°C (73°F)  | 0.383 N/mm (35 oz/inch) Min. | 0.451 N/mm (41 oz/inch), Pass |

(1) According to TE doc 411-121002

Where possible, TE have tested product as a finished item, including the print. Operational tests are followed by an assessment of mark adherence to validate fit form and function. Further details can be found in TE standard RW-2526.



# TP TAPE LABELS

## Fluid exposure

| Fluid ingress - on Aluminum pipe                  | Requirement   | Results                   |
|---|---|---------------------------|
| Distilled water 24 hours x 23°C (73°F)            | Print legible <sup>(1)</sup> , C3 minimum<br>No color change<br>Edge attack no greater than 3.2mm | C10 <sup>(1)</sup> , Pass |
| Aircraft Fuel JP8 24 hours x 23°C (73°F)          |   | C10 <sup>(1)</sup> , Pass |
| Lubrication Oil, Mil-L7808 24 hours x 23°C (73°F) |   | C10 <sup>(1)</sup> , Pass |
| Aircraft Oil, MIL-H-5606 24 hours x 23°C (73°F)   |   | C10 <sup>(1)</sup> , Pass |
| Hydraulic Fluid OX19 24 hours x 23°C (73°F)       |   | C10 <sup>(1)</sup> , Pass |
| Engine Oil OX27 24 hours x 23°C (73°F)            |   | C10 <sup>(1)</sup> , Pass |
| Corrosion inhibitor, O133 72 hours x 23°C (73°F)  |   | C10 <sup>(1)</sup> , Pass |

| Aggressive Fluid Ingress - on various substrates<br>168 hours (7 days) x 23°C (73°F) | Requirement   | Results                   |
|--|---|---------------------------|
| Skydrol 500 B4   | Print legible <sup>(1)</sup> , C3 minimum               | C10 <sup>(1)</sup> , Pass |
| Aircraft Fuel JP8  | No color change   | C10 <sup>(1)</sup> , Pass |
| Lubricating Oil (MIL-L-7808)   | The label shall remain firmly attached to the substrate | C10 <sup>(1)</sup> , Pass |

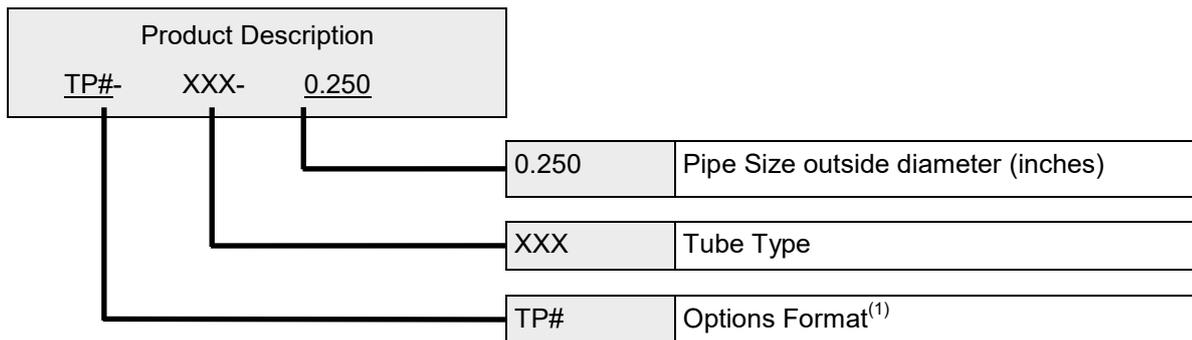
(1) According to TE doc 411-121002

Where possible, TE have tested product as a finished item, including the print. Operational tests are followed by an assessment of mark adherence to validate fit form and function. Further details can be found in TE standard RW-2526.



# TP TAPE LABELS

## TP Ordering Information USA and Asia



| Label Width / inches (mm) | Label length / inches (mm) | Pipe Size outside diameter / inches (mm) | Quantity/roll | Order Code       |
|---------------------------|----------------------------|--|---------------|------------------|
| 2.5 (63.5)                | 2.464 (62.60)              | 0.250 (6.35)                             | 2000          | TP# -(XXX)-0.250 |
| 2.5 (63.5)                | 2.950 (74.90)              | 0.312 (7.92)                             | 2000          | TP# -(XXX)-0.312 |
| 2.5 (63.5)                | 3.445 (87.50)              | 0.375 (9.52)                             | 1500          | TP# -(XXX)-0.375 |
| 2.5 (63.5)                | 4.625 (112.40)             | 0.500 (12.70)                            | 1500          | TP# -(XXX)-0.500 |
| 2.5 (63.5)                | 5.409 (137.40)             | 0.625 (15.88)                            | 1000          | TP# -(XXX)-0.625 |
| 2.5 (63.5)                | 6.391 (162.30)             | 0.750 (19.05)                            | 1000          | TP# -(XXX)-0.750 |
| 2.5 (63.5)                | 7.250 (184.10)             | 0.875 (22.21)                            | 750           | TP# -(XXX)-0.875 |
| 2.5 (63.5)                | 8.000 (203.20)             | 1.000 (25.40)                            | 750           | TP# -(XXX)-1.000 |
| 2.5 (63.5)                | 10.318 (262.10)            | 1.250 (31.75)                            | 500           | TP# -(XXX)-1.250 |
| 2.5 (63.5)                | 12.281 (311.90)            | 1.500 (38.10)                            | 500           | TP# -(XXX)-1.500 |
| 2.5 (63.5)                | 14.250 (361.90)            | 1.750 (44.45)                            | 400           | TP# -(XXX)-1.750 |
| 2.5 (63.5)                | 100ft (30m)                | 2+ (50.8+)                               | 100ft (30m)   | TP# -(XXX)-CONT  |

### <sup>(1)</sup>Options Format (#)

- None Standard TP Tape
- 2 For a slit at 2 inches from the left edge (total width 2" / instead of 2.5")
- 3 For 1.1 turns of color-coded label around the pipe instead of 1.5 turns
- 4 For white printable area instead of yellow

## TP Ordering Information Europe

| Label 'Size' | Label length / inches (mm) | Label width / inches (mm) | Pipe Diameter (o/d) Range | Quantity/roll | Order Code        |
|--------------|----------------------------|---------------------------|---------------------------|---------------|-------------------|
| SIZE 1       | 2.464 (62.60)              | 2.500 (63.50)             | 4-8 mm                    | 2000          | TP-WEXXXXST-0.250 |
| SIZE 2       | 5.409 (137.40)             | 2.500 (63.50)             | 9-19 mm                   | 1000          | TP-WEXXXXST-0.625 |
| SIZE 3       | 12.281 (311.90)            | 2.500 (63.50)             | 20-38 mm                  | 500           | TP-WEXXXXST-1.50  |
| SIZE 4       | 14.250 (361.90)            | 2.500 (63.50)             | 39-45 mm                  | 400           | TP-WEXXXXST-1.75  |
| SIZE 4.5     | 14.875 (377.80)            | 2.500 (63.50)             | 46-54 mm                  | 300           | TP-WEXXXXST-2.125 |
| SIZE 5       | 100ft (30m)                | 2.500 (63.50)             | 55+ mm                    | 30 meters     | TP-WEXXXXST-CONT  |
| SIZE 6       | 100ft (30m)                | 2.500 (63.50)             | 55+ mm                    | 30 meters     | TP3-XXXXST-CONT   |

WE For white/slit production for European markets, use order code description: TP-WE(XXXX)ST-(size)



# TP TAPE LABELS

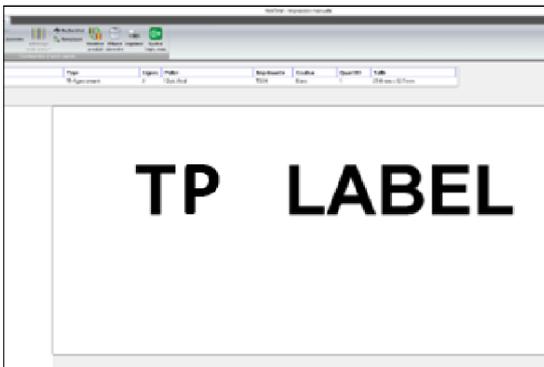


## Printer information

Print quality and print performance can only be guaranteed when specific TE printer and ribbons are used.

The current list of printers and ribbons can be found in TE document 411-121005 'Identification Printer Product Ribbon Matrix'. This document can be found in 'Access our Tools':

[https://www.te.com/commerce/DocumentDelivery/DDEController?Action=showdoc&DocId=Specification+Or+Standard%7F411-121005%7F32%7Fpdf%7FEnglish%7FENG\\_SS\\_411-121005\\_32.pdf%7F557721-000vvvvvv](https://www.te.com/commerce/DocumentDelivery/DDEController?Action=showdoc&DocId=Specification+Or+Standard%7F411-121005%7F32%7Fpdf%7FEnglish%7FENG_SS_411-121005_32.pdf%7F557721-000vvvvvv)



## Software

WINTOTAL software, available to download for a 14 days evaluation period from the Identification Printer Software page:

<https://www.te.com/usa-en/products/identification-labeling/printers-software-and-accessories/printing-software/wintotal.html?tab=pgp-story>

Contact a TE representative for further information.



## te.com

TE Connectivity, TE, TE Connectivity (logo) and Every Connection Counts are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2024 TE Connectivity Ltd. family of companies All Rights Reserved.

