

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
Adherence of Marking		
AS 81531	Print shall be legible ⁽¹⁾ after 20 rubs	Pass
Tensile Strength,		
N/mm (lb./inch-width)	2.977 N/mm (17lb./inch) Min.	7.294 N/mm (41.68 lb./inch), Pass
Elongation		
ASTM D 3759	50% Minimum	131.8%, Pass
Adhesion to Aluminum dry		
ASTM D 3330		
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
Adhesion to printed layer dry		
ASTM D 3330		
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
Resistance to high pressure hose		
5 minutes water jet application	The label shall remain firmly fixed to the pipe. No cracking, peeling, or wrinkling of the over-lamination. All marking shall remain legible ⁽¹⁾	Pass
Weathering resistance		
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. Colors shall show no appreciable fading or loss of legibility such as to make the markings unserviceable Marking shall remain legible ⁽¹⁾ after the test	Pass
Adhesive stability		
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

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Technical Performance

	Requirements	Results
Colorfastness to hydraulic fluid		
Immersion in Skydrol 500 B4 at 23°C (73°F) x 168 hours followed by dry storage.	The label shall remain firmly fixed to the pipe. No cracking, peeling, or wrinkling of the over-lamination All marking shall remain legible ⁽¹⁾ .	Pass
Low Temperature		
3 immersion cycles of 2 hours in liquid Nitrogen	No deterioration such as cracking, wrinkling, or other defects that affect the serviceability Marking shall remain legible ⁽¹⁾ after the test.	Pass
Heat Resistance		
163°C (325°F) for 100 hours.	No deterioration such as cracking, wrinkling, or other defects that affect the serviceability. Marking shall remain legible ⁽¹⁾ after the test.	Pass
Corrosive Properties		
163°C (325°F) x 144 hours / 20cl 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

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Fluid exposure

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

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

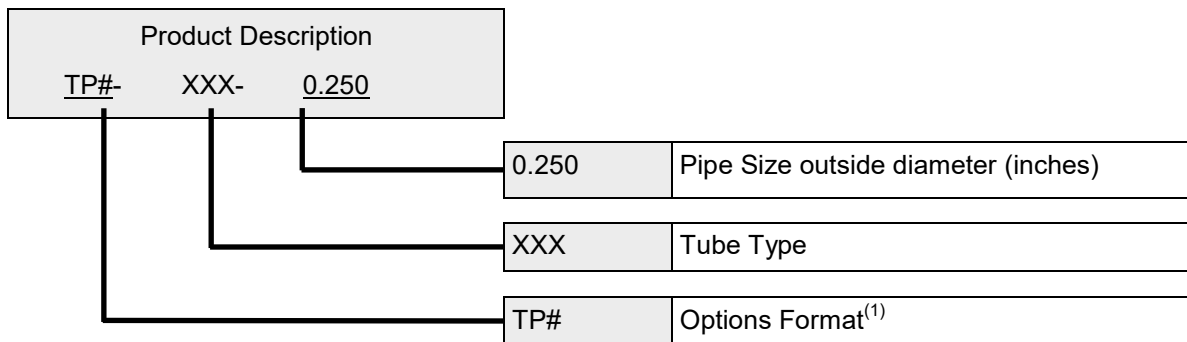
(1) According to TE doc 411-121002

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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

⁽¹⁾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)



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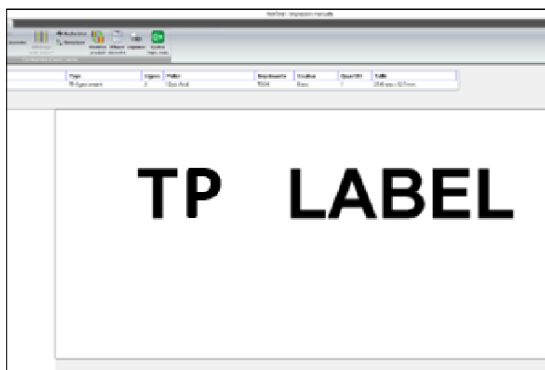


Printer information

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

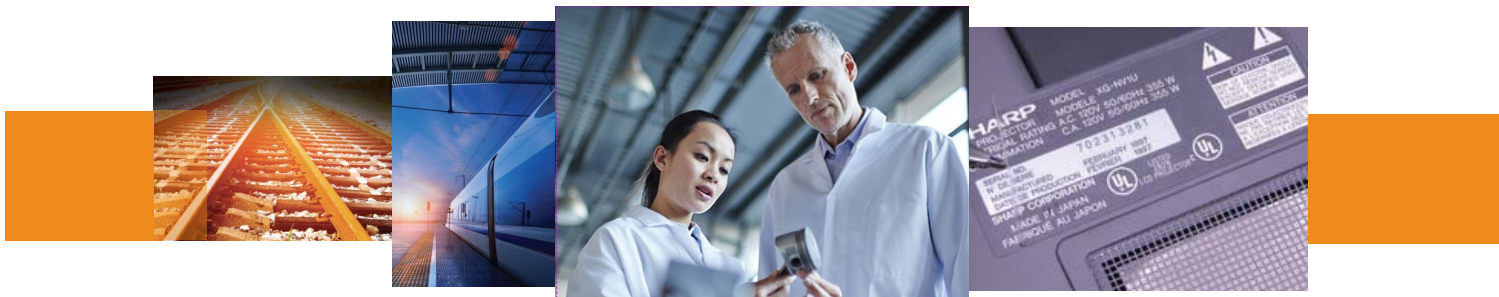


Software

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.



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