

**METAL STRIP PACKAGING STANDARD**

**1.0 SCOPE**

This standard covers the Americas Region general packaging requirements for traverse wound and pancake coiled metal strip materials.

**2.0 PURPOSE**

The purpose of this standard is to clearly define to a vendor the preferred packaging requirements for Molex metal strip raw materials.

**3.0 REFERENCE DOCUMENTS**

**3.1 REFERENCE DOCUMENTS**

- 2090580042 Individual Metal Strip, Wire, Rod, Bar and Tube Specifications
- ES-40000-7010 General Standard for Pallets
- ES-40000-7012 General Standard for Labeling
- 2090580043 Geometric Conditions and Tolerances for Metal Strips
- 2090580044 Metal Strip Surface Conditions and Requirements

**3.2 ORDER OF PRECEDENCE**

In the event of a conflict between this standard and selected reference documents above, the order of precedence shall be as follows:

1. Purchase Order
2. Individual Metal Strip, Wire, Rod, Bar and Tube Specifications
3. This standard

**4.0 DEFINITIONS**

**P.I.W. (Specific Coil Weight):** Pounds per inch of width. This refers to how much a coil weighs based on the width of material (i.e. a 400 P.I.W. coil that is 10 inches wide weighs 4000 lb.). 7 kg/mm is approximately equal to a 400 P.I.W.

**Runner:** This applies to 4" x 4" construction lumber that the pallet platform is built on. The runners support the weight of the pallet on the floor, and allow the package to be transported by a fork-lift device.

**Casting Heat:** Unique identity assigned to a singular cast product that will be subsequently processed as a continuous element. Casting heats are frequently characterized by a unique trace number that is assigned to a singular or body of chemical compositions that represent its unique starting identity.

**Master Bar:** Material from the same unique casting heat that has been processed as a continuous element to yield homogeneous physical properties. Once broken, the continuous elements must reflect a change in the master bar number while being traceable to the original casting heat number.

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CHANGE NO.	849682						
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REV APPR BY	DANIEL MOLLA	DATE	2026/04/15	QMD	ENGINEERING STANDARD	000	209058
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**Spooling:** This term is utilized when wire, which has a cast drawn into it, is wound onto a flanged drum (the spool). The terminology is such that: *Wire is spooled.*

**Reeling:** The term is utilized when flat wire or slit strip is traverse wound onto a flanged drum (the reel) with the appropriate tension and inter-spacing. The terminology is such that: *Flat wire and strip are reeled.*

**Coiling:** This term is utilized when a single element of strip or flat wire is layer wound on its self in the same plane with a specific starting inside diameter. This process yields a product that when observed laying flat in a horizontal plane resembles a pancake. Hence the terminology, "*Pancake Coil*".

**Payoff Direction:** This term indicates the direction in which the material travels when the package is unwound.

**Weld Dogleg:** This term refers to butt-welding two strips together. Two strips are welded together at an included angle, resulting in strip camber.

**Label Slitting Map:** The label slitting map describes what element of the slitter head is located in the master coil. The purpose is for containment and problem solving.

**5.0 PROCEDURES**

**5.1 GENERAL PACKAGING**

This document contains the standard minimum requirements for packaging metal strip products supplied to Molex, but is not all inclusive. The ultimate responsibility for the integrity and suitability of all packaging remains with the supplier. In the event of processing issues, the Molex plant and supplier will work together to document and implement any necessary changes. Refer to the appendices for additional plant requirements and deviations from the General Standard.

**5.1.1 MINIMUM PACKAGING REQUIREMENTS: TRAVERSE WOUND**

**See appendix A, C, & D**

- a) There shall be a maximum of two heats per reel.
- b) There will be a maximum of 2 reels per pallet. One single reel per pallet on 454 kg (1000 lb) per order is allowable.
- c) Wooden reels must be steel rimmed. No particle board allowed. Plastic reels are optional.
- d) Wooden pallets shall not be constructed of "green" lumber. Preferred fastening method is with screws or bolts. No metal protrusions on the bottom of the runners are allowed.  
See ES-40000-7010 in the Appendices for additional requirements.
- e) Pallets must be individually numbered for each shipment (i.e. pallet 1 of 4, pallet 2 of 4, etc.). The pallet number shall be located on a tag attached to the pallet, with the material supplier's name, location where manufactured, and tare weight of the pallet.
- f) Acceptable reel maintenance level: There shall be a reel maintenance criteria which checks that for rim feed, both flanges are to the same diameter within 1.60 mm (1/16") Ref.
- g) Flanges must be concentric with no detectable flat spots.

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- h) Flanges must be perpendicular to the core of the reel.
- i) The distance between outside pallet runners to be a minimum of 533 mm (21”), with 3 runners to a pallet.
- j) Reels shall be shrink wrapped, then paper covered.
- k) Burr direction and payoff direction shall be specified.
- l) Maximum gross weight of pallet: 1360 kg (3,000 lb.).
- m) Maximum gross reel weight: 907 kg (2000 lb.).
- n) Maximum package height (floor to top): 1168 mm (46”).
- o) Minimum runner height: 102 mm (4”).
- p) Maximum center runner width: 76 mm (3”).
  
- q) Reel flanges shall be separated between two reels with a 50 mm (2”) minimum gap.
- r) There must be a 76 mm (3”) minimum gap between the material and the pallet.
- s) All reeled materials must be slit and welded in the same direction
- t) *Optional:* If required by plant, a sample 1.8 meter (6 ft) strip of material shall be included with the shipment, easily accessible, and wrapped around the reel and on top of the paper protecting the material).

**5.1.2 MINIMUM PACKAGING REQUIREMENTS: PANCAKE COILS**  
**See appendix B**

- a) Maximum pallet size: 1219 mm x 1219 mm (48” x 48”).
- b) Coil O.D. shall be a minimum of 50 mm (2”) less than the width of the pallet.
- c) Wooden pallets shall not be constructed of “green” lumber. Preferred fastening method with screws or bolts. No metal protrusions on the bottom of the runners are allowed.  
 See ES-40000-7010 in the Appendices for additional requirements.
- d) Maximum package height: 812 mm (32”).
- e) Maximum gross weight: 1360 kg (3000 lb.)
- f) Multiple coils: payoff to be in the same direction.
- g) Do not mix heats from pallet to pallet; one heat per pallet.  
 Pallets must be individually labeled and numbered for each shipment (i.e. pallet 1 of 4, pallet 2 of 4, etc.). The pallet number shall be located on an end pallet runner, with the material supplier’s name, location where manufactured, and tare weight of the pallet.
- h) Minimum width between outside runners; 533 mm (21”).
- i) Maximum width of center runner; 76 mm (3”).
- j) Minimum runner height; 102 mm (4”).
- k) Stencil supplier name and tare weight on each pallet.
- l) Certification and a packing slip is required for each shipment.
- m) Wooden block spacers shall be moisture barrier wrapped.
- n) I.D. cores may be necessary to hold the I.D. dimension when handling the material at the Molex manufacturing plant.
- o) Round pallets are acceptable, but must not exceed 1219 mm (48”) diameter.
- p) Payoff direction to be clockwise
- q) *Optional:* Edges of square pallet to have 45 degree x 152 mm (6”) corners.

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**5.2 LABELING AND IDENTIFICATION**

**5.2.1 END-OF REEL IDENTIFICATION: TRAVERSE WOUND**

*See appendix D*

**5.2.2 LABELING AND IDENTIFICATION: TRAVERSE WOUND AND PANCAKE COILS**

Each reel or coil shall have the following information stated on a label(s). Refer to ES-40000-7012 section 5.3 for label application requirements.

(See appendices A and B)

- a) Label Slitting Map (master coil number, weld number, winder number, reel/coil number)
- b) Molex Material Number (also referred to as Molex EDP #, Molex P/N)
- c) Molex Purchase Order number.
- d) Actual net weight of the material.
- e) For pancake coils only, each coil must reference the Molex P/N, supplier master coil number, and supplier cut number, located on the I.D. and O.D. tails of the material strip.

**5.2.3 PACKING SLIP: TRAVERSE WOUND AND PANCAKE COILS**

A packing slip is required for each shipment, identifying the net weight (kg) of each pallet. *(See appendix A and B).*

**5.2.4 CERTIFICATION: TRAVERSE WOUND AND PANCAKE COILS**

Certification is required for each shipment and must include.

- a) Molex Document Number and Revision (if applicable)
- b) Molex Material Number (also referred to as Molex EDP #, Molex P/N)
- c) Molex Purchase Order number
- d) Lot number
- e) Quantity (net weight)
- f) Date shipped
- g) UNS Alloy No. and chemical composition
- h) Physical and Mechanical properties (Tier 1: actual variables data) including
  - ❖ Strip width and thickness dimensions (mm)
  - ❖ Tensile (MPa)
  - ❖ Yield (MPa)
  - ❖ % Elongation (%)
  - ❖ Average Grain size (µm)\*
  - ❖ Plating finish, composition and thickness
  - ❖ Bending (passing r/t)
  - ❖ Electrical Conductivity (IACS%)
  - ❖ Surface Roughness (Ra, µm)\*
- i) Geometric properties (Tier 2: attribute data, ref. 2090580043) including
  - ❖ Edge Burr
  - ❖ Camber
  - ❖ Coil Set
  - ❖ Die Exit Twist\*

*\*: Applicable when called out in the Purchase Order, Individual Metal Strip Specification (or Part Number), or Material Alloy Specification.*

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**5.3 WELDS**

**5.3.1 DIMENSIONS AND NUMBER OF WELDS**

The following table specifies the maximum number of welds for traverse wound reels based on specific width categories. (*See Appendix D*)

Strip Width (mm)	454 kg Reel	907 kg Reel	1360 kg Reel
6.35-12.69	8 Welds	16 Welds	24 Welds
12.70-18.99	4 Welds	8 Welds	12 Welds
19.00-25.39	3 Welds	6 Welds	9 Welds
25.40-37.99	2 Welds	4 Welds	6 Welds
38.00-50.79	1 Weld	2 Welds	3 Welds
>/= 50.80	1 Weld	2 Welds	3 Welds

Strip Width (inch)	1,000 lb Reel	2,000 lb Reel	3,000 lb Reel
.250- .499	8 Welds	16 Welds	24 Welds
.500- .749	4 Welds	8 Welds	12 Welds
.750- .999	3 Welds	6 Welds	9 Welds
1.000-1.499	2 Welds	4 Welds	6 Welds
1.500-1.999	1 Weld	2 Welds	3 Welds
>/= 2.000	1 Weld	2 Welds	3 Welds

**5.3.2 WELD CRITERIA**

- a) Weld thickness will equal the strip thickness at the specified tolerance on the Molex material specification.
- b) Weld width will equal the strip width at the specified tolerance on the Molex material spec.
- c) There shall be no visible voids.
- d) Weld dogleg equals the strip camber to the specified tolerance on the Molex material spec.
- e) Welding process must produce material that bends around a 76 mm (3") dia. mandrel without any visible cracking.

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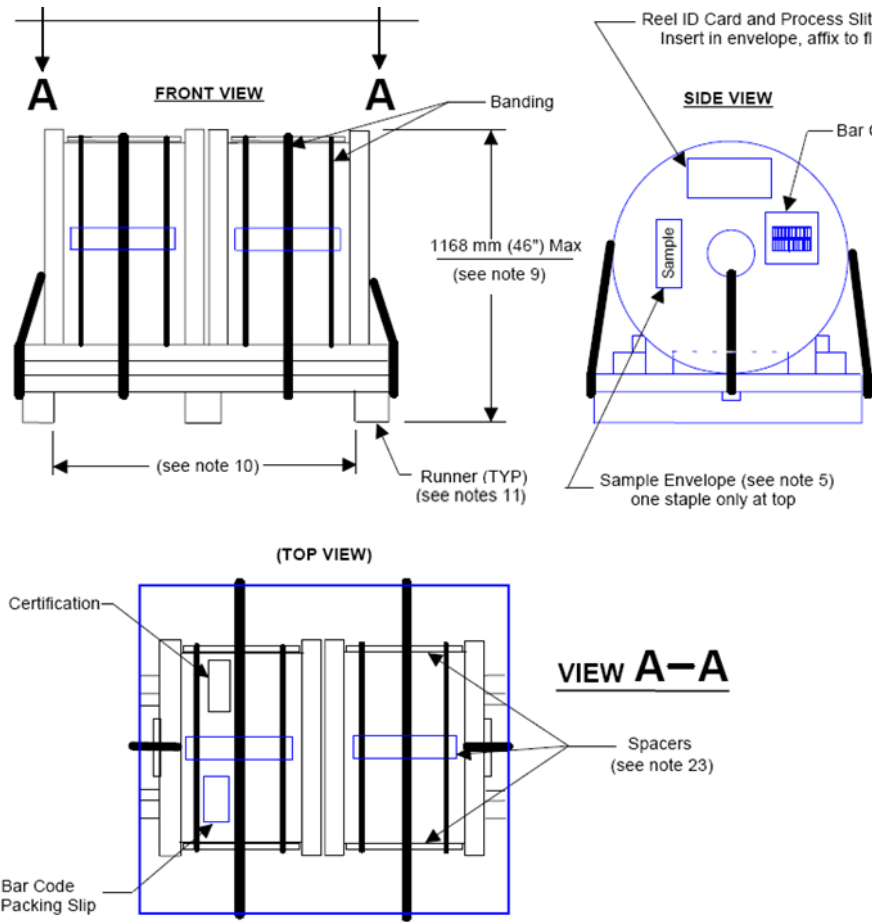
**6.0 SUMMARY OF CHANGES**

Document ID# Change from **ES-40000-5008** ⌚ **2090580045**.

5.2.4: Additions of “Actual Variable Data” vs “Attribute Data”.

- Included: Electrical conductivity, surface roughness, edge burr, camber, coil set, plating thickness, UNS Alloy No.
- Added the reference of **2090580043** for new geometric requirements and **2090580044** for surface condition requirements.

**Appendix A**



**PACKAGING REQUIREMENTS**  
(see also 5.0)

1. Maximum pallet size: 1219 mm x 1219 mm (48"x48")
2. Two bands around each reel.
3. One band through I.D.
4. 380 mm (15") sample in envelope.
5. Reel I.D. card with peel-off backing.
6. Maximum gross weight: 1360 kg (3000 lbs).
7. Maximum gross spool weight: 907 kg (2,000 lbs).
8. Maximum package height: 1168 mm (46").
9. Minimum width between outside runners: 533 mm (21").
10. Minimum runner height: 102 mm (4").
11. Maximum center runner width: 76 mm (3").
12. Outside flanges must be separated between two reels with a 50 mm (2") minimum gap.
13. There must be a 76 mm (3") minimum gap between the material and the pallet to accommodate a sling.
14. The minimum distance between the material and the inside surface of the flange must be 3.2 mm (1/8").
15. Stencil supplier name and tare weight by difference on packing slip for each pallet:
  - \* material weight alone
  - \* pallet weight
  - \* reel weight
16. Maximum of 2 reels per pallet.
17. Shrink wrap, then paper cover with the burr direction and payoff clearly marked.
18. Certification is required on each pallet, and an ID label on every reel.
19. Attach a minimum 1830mm (6ft) sample of material to the spool or skid for incoming testing such as camber etc...
20. Each reel must be slit and welded in the same direction (ie burr and set in the same direction).
21. There shall be 2 heats maximum per reel.
22. Three homosote or wooden spacers, @ 90 degrees apart.
23. No metal protrusions are allowed on bottoms of runners.

**TRAVERSE WOUND PACKAGING: DIMENSIONS AND REQUIREMENTS**

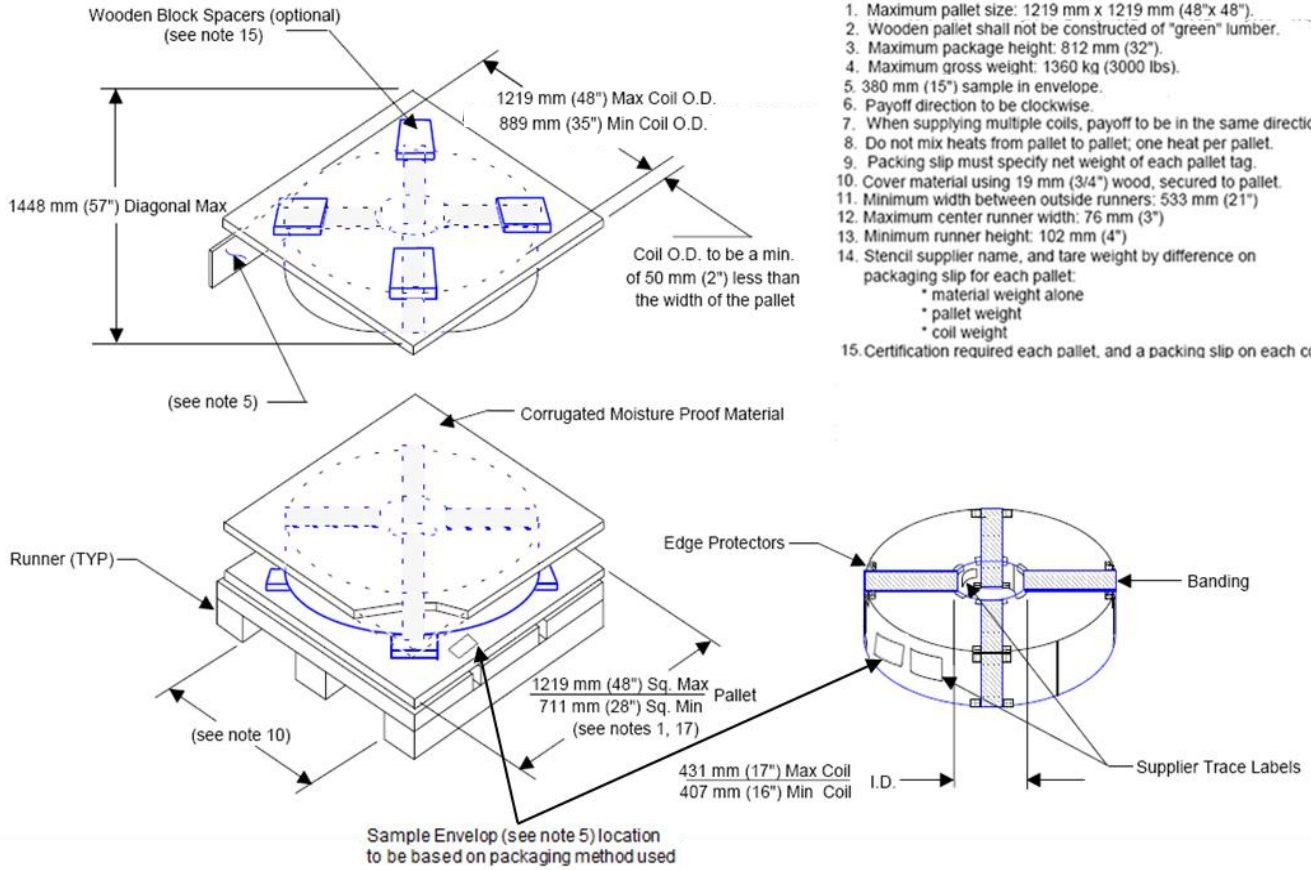
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**Appendix B**

**PACKAGING REQUIREMENTS**  
(also see 5.0)

1. Maximum pallet size: 1219 mm x 1219 mm (48"x 48").
2. Wooden pallet shall not be constructed of "green" lumber.
3. Maximum package height: 812 mm (32").
4. Maximum gross weight: 1360 kg (3000 lbs).
5. 380 mm (15") sample in envelope.
6. Payoff direction to be clockwise.
7. When supplying multiple coils, payoff to be in the same direction.
8. Do not mix heats from pallet to pallet; one heat per pallet.
9. Packing slip must specify net weight of each pallet tag.
10. Cover material using 19 mm (3/4") wood, secured to pallet.
11. Minimum width between outside runners: 533 mm (21")
12. Maximum center runner width: 76 mm (3")
13. Minimum runner height: 102 mm (4")
14. Stencil supplier name, and tare weight by difference on packaging slip for each pallet:
  - \* material weight alone
  - \* pallet weight
  - \* coil weight
15. Certification required each pallet, and a packing slip on each coil.

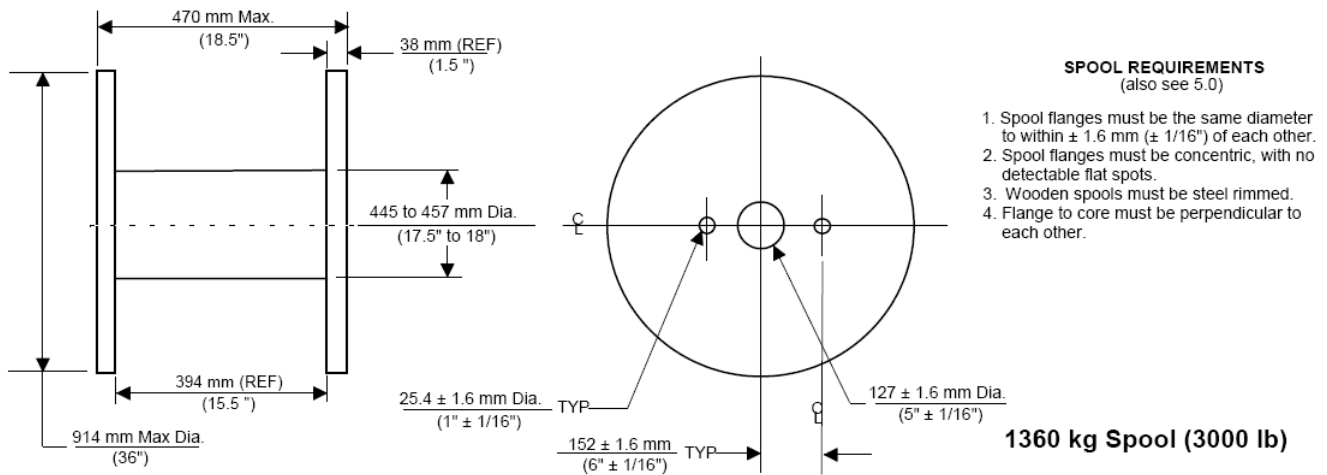
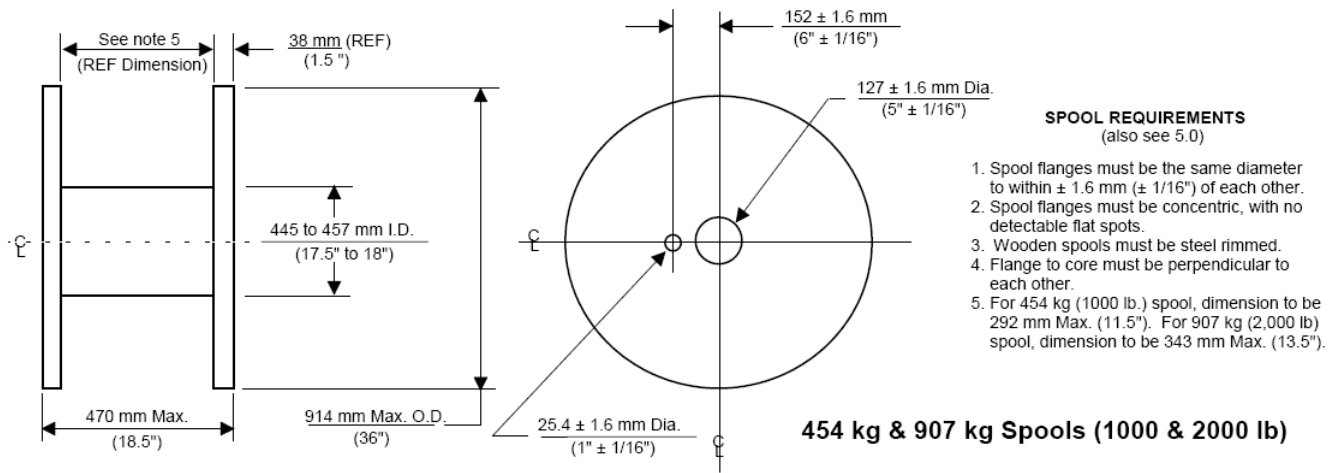


**PANCAKE COIL PACKAGING: DIMENSIONS AND REQUIREMENTS**

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**Appendix C**



**REEL DIMENSIONS AND REQUIREMENTS**

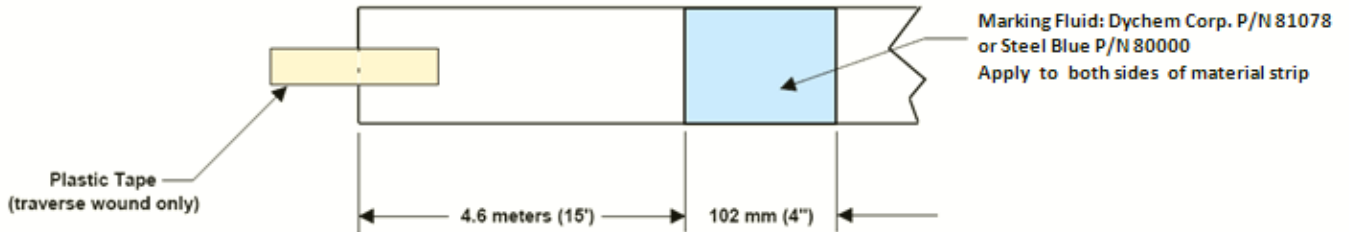
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**Appendix D**

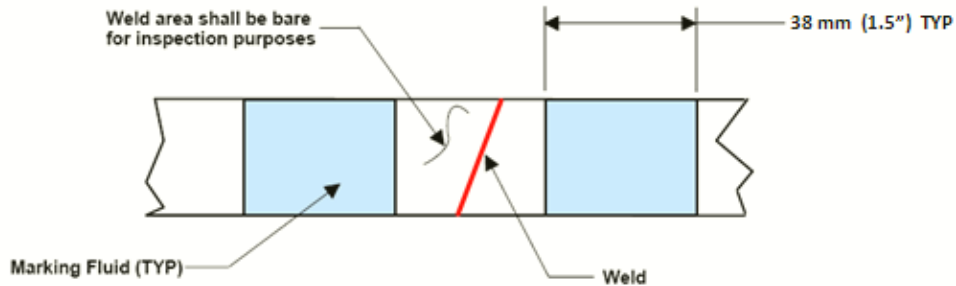
**END OF REEL IDENTIFICATION**

(also see 5.2)



**WELD IDENTIFICATION**

(also see 5.3)



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