



Specification for Tamper Evident Packaging

Document Number and Revision: 8218708 Rev 04

Overview

This specification defines the requirements for applying tamper evident seals to Oracle hardware packaged products.

Audience

Primary users of this document are Oracle Packaging Engineering, Oracle Manufacturing, External Manufacturers (EMs), Original Equipment Manufacturers (OEMs), Joint Design Manufacturing (JDM) and Repair Vendors (RVs).

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1 Scope of Products requiring Tamper Evident Packaging

This specification defines the Tamper Evident Packaging Seals used to secure Packaged Products with integrated pallets, individual shipping boxes or containers, ESD bags, and envelope mailers.

Scope includes the following packaged product categories:

All Oracle Racks (excluding Lenovo)

Servers

NICs (Host/Smart)

ROT

CPU (processors)

MB

Memory

Plus anywhere that Tamper Evident Packaging is specified on the Bill of Materials (BOM) by the Configurator.

2 Scope and Application of Tamper Evident Packaging

Proper application of Tamper Evident Seals per this specification shall also comply with all the requirements defined in the following specifications:

950-1685-XX Specification for Materials Used to Close, Seal and Secure Packaging

Defines the materials used to close, seal and secure packaging (box tape, banding, stretch wrap), as well as best practices for box taping.

950-3918-XX General Bagging Specification

8208016 General Packaging Envelope Mailer Specification

425-1019-XX Packaging and Palletization Requirements for Inbound/Inter-Plant/Outbound Shipments

PKG INST The product specific PKG INST drawing structured to the BOM in Fusion

3 Applicable Documents

All material specifications in this document shall meet or exceed the requirements established by the following reference documents.

- Uniform Freight Classification UFC-6000-B, Rule 41, Uniform Freight Classification Committee, Chicago, Ill.
- ASTM D2860-87 Test Method for Adhesion of Pressure-Sensitive Tape to Fiberboard at Constant Stress
- ASTM D3330-87 Test Method for Peel Adhesion of Pressure-Sensitive Tape at 180° Angle
- ASTM D3652-83 Test Method for Thickness of Pressure-Sensitive and Gummed Tapes
- ASTM D3654-88 Test Method for Holding Power of Pressure-Sensitive Tapes
- ASTM D3759-88 Test Method for Tensile Strength and Elongation of Pressure-Sensitive Tapes
- ASTM D3889-88 Test Method for Adherence to Linerboard to Pressure-Sensitive Tapes at Low Temp.

- ASTM D3950-87 Standard Specification for Strapping, Plastic and Seals
- ASTM D3953-87 Standard Specification for Strapping, Flat Steel and Seals

4 Applicable Tamper Evident Packaging Documents

- 914-1742-XX Oracle Global Supplier Engineering Environmental Specification – Product Compliance
- 990-1237-XX Oracle Corp: Restriction of Hazardous Substances (RoHS) Compliance and Declaration Policy
- 923-3763-XX Oracle WWWOPS Supplier Management: Packaging First Article Inspection Reporting (FAIR)
- EIA-556-B Annex A
- NIST SP 800-53: Physical Access Control (PE-3)
 - Tamper Resistance and Detection (SA-18, PW-3(5))
 - Component Authenticity (PE-3, SA-12, SI-7, SA-19)
 - Oracle and Defense Federal Acquisition Regulation Supplement (DFARS) Requirements
 - DFARS 252.246-7007 and 253.246-7008

5 General Requirements

This specification provides the basis for tamper evident packaging for Oracle packaged products.

As noted, this specification shall be used in combination with the packaged product specific PKG INST drawing that is structured to each PKG ASSY BOM. If there is a discrepancy regarding the quantity of Tamper Evident Seals required between this document and the BOM, the quantity of seals specified in this document shall take precedence.

6 Specification for Tamper Evident Packaging Materials

Tamper Evident Packaging is part of an overall solution to provide physical access control, tamper protection, resistance and detection. As well, Tamper Evident Packaging provides Chain of Custody safeguards for critical information systems, components and information technology products against a number of related threats including modification, reverse engineering, and substitution. Tamper resistance and/or tamper detection is essential for protecting information systems, components, and products during shipping and distribution. United States Government contracts as well as certain Oracle Customer requirements may require Tamper Evident Packaging of Oracle products. Additional US Government controls includes: PE-3, SA-12, SI-7.

7 Security Requirements for Tamper Evident Packaging Materials

Oracle has introduced tamper evident packaging within its Chain of Custody process. All Tamper Evident Packaging material (i.e., seals/labels, bands and clear rack bags) and the intellectual property (design) require enhanced Information Security Management and Physical security controls by all involved in the manufacturing, procurement and handling process. See 7.1 and 7.2 for requirements.

7.1 – Security Requirements for Tamper Evident Packaging

1. Henceforth, all Tamper Evident Packaging material shall be securely locked and stored during non-production hours i.e., such as end of shift, during breaks and close of business.
2. Physical inventory count shall be monitored for high rate of scrapping for inventory management and process verified for audit.
3. Label design, datasheet and any other Oracle proprietary document shall not to be released to third-parties, sub-tier or any other parties. Labels shall not be replicated, modified in any shape or form without consent from the approved Oracle Packaging Engineering.
4. As specified within the BOM of the tamper evident labels letter of authorization (LOA) is required from the Oracle sourcing manager prior to sample and production delivery of product from approved source on the AML.
5. Design related inquiry will be worked through the Oracle packaging engineer, the sourcing manager and scosecurityrequest_us_grp@oracle.com

7.2 – Scrapping Requirements – Please see PROC-10090 for the latest revision changes.

1. For security and traceability Oracle Manufacturing and Oracle EMs shall request approval through scosecurityrequest_us_grp@oracle.com prior to the destruction of Tamper Evident Packaging material.
2. Discarded labels shall be in a secure trash bin for final document destruction and shredding.
3. Recycle - ESD bags with tamper adhesion cannot be reused to support production hardware delivery in any form throughout the logistics lifecycle.
4. Serialized Tamper Evident labels needing to be replaced due to a defect (cosmetic, physical damage, lost/theft, etc) require a FA to hardware security. The FA shall include the details below:

Date
Label manufacturer
Purchase order
Part number details
QTY
Original SN and location
Replacement SN and location
Label failure description – cosmetic, damage, misapplication, lost/theft, duplicate, testing failure

Table: Tamper Evident Label Scrapping Requirement

8 Seal Material Requirements

Tamper evident seals must remain adhered and meet the print quality requirements for a period of 6 months under the following storage and transportation conditions:

REQUIREMENT	LIMITS	USE
Temperatures	from -40°C to 85°C	All master packs of finished goods whether over boxed in the distribution process or packed as a multi-pack by the supplier.
Humidity	up to 90%	
Normal	levels of artificial light and sunlight	

In accordance with global restrictions on hazardous substances, all materials which comprise the label, adhesive, and ink must be compliant with 914-1742, *Global Supplier Engineering: Environmental Specification - Product Compliance*. For more information refer to 990-1237, *Corp: Restriction of Hazardous Substances (RoHS) Compliance and Declaration Policy*. Even individual labels which do not have an Oracle part number, or which are a part of a set of labels, must adhere to these policies and specifications.

9 Testing

Labels must meet the requirements of Annex A of EIA-556-B. These requirements and tests are intended to ensure that labels and marks can withstand extended long-term exposure to a variety of indoor environments, remain affixed to products, and are readable and intact for the intended life of the packaging.

10 Tamper Evident Seal Adhesive

Tamper evident seal adhesive must adhere to the following materials such that the tamper evident residue layer (also called the tamper evident message layer) is legible and is not easily rubbed off:

- | | |
|---|-----------------------------------|
| - Corrugated Fiber Board, Kraft paper | (corrugated box) |
| - Conductive Corrugated Fiber Board | (black conductive corrugated box) |
| - Polypropylene | (tape) |
| - Polyethylene (w/ or w/o static-dissipative) | (envelope mailer, bag, sheet) |
| - Polyester | (band) |
| - Steel (including zinc plated) | (banding clip) |
| - Polyethylene terephthalate (PET) | (ESD bag) |

Clean substrate:

All material surfaces shall be free from oil, dirt, release agents, etc. prior to application of seals. Any surface contaminant will affect adhesion and the residue layer.

Application/Dwell Time:

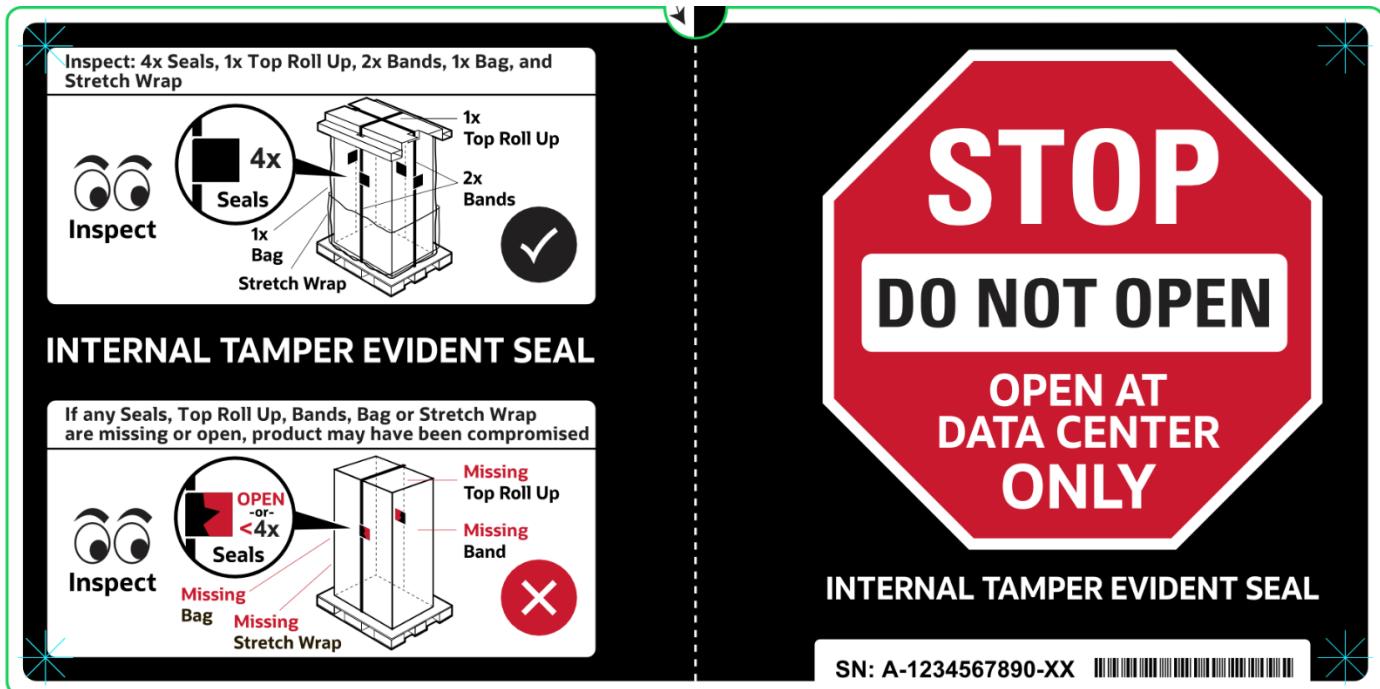
Sufficient application pressure and dwell time are required. Generally, tamper evident seal adhesive requires 24 hour dwell time at room temperature to bond the residue layer to the substrate (corrugated fiber board, conductive corrugated fiber board, polypropylene tape, polyethylene film (envelope mailer, bag or sheet), band, banding clip, ESD bag, envelope mailer).

11 Tamper Evident Seals

8221053: LBL, INTERNAL TAMPER EVIDENT SEAL, PACKAGING, SERIALIZED **A**

(for use on internal rack bands, [also used across manufacturers seam on top of rack bag when package assembly BOM does NOT include 8225311 TOP ROLL UP, see Figure 4])

8221053 replaces 8218143

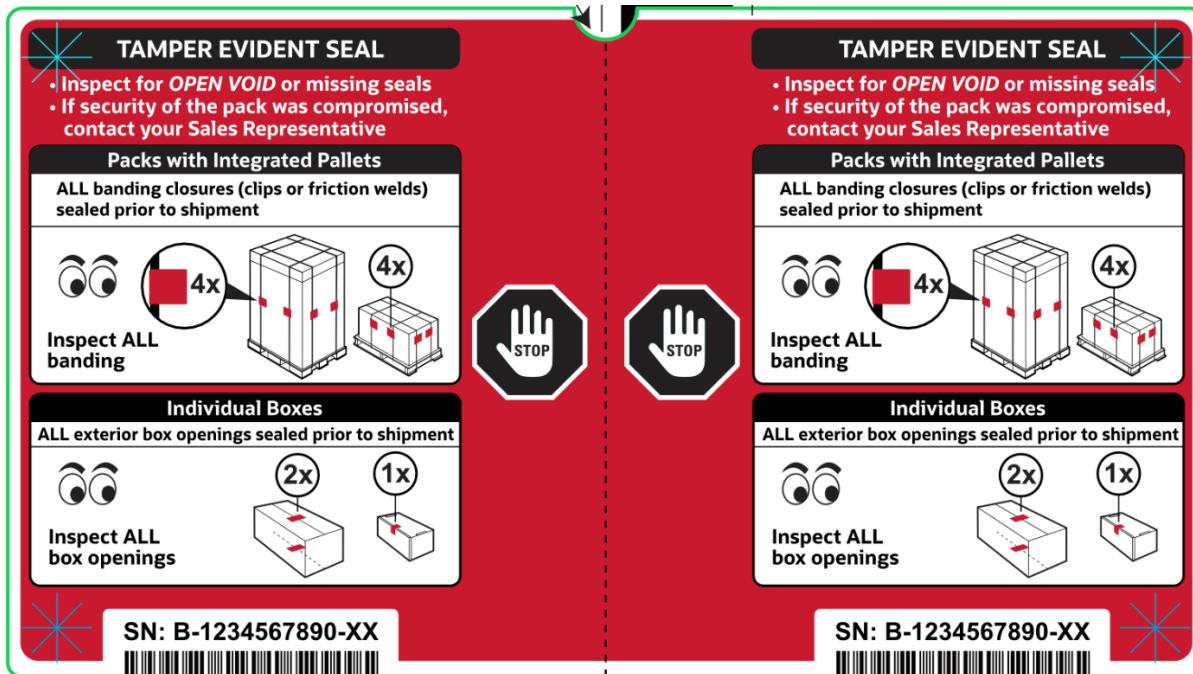


Specification for Tamper Evident Packaging

8221054: LBL, TAMPER EVIDENT SEAL, PACKAGING, SERIALIZED **B**

(use on external or internal boxes and external bands)

8221054 replaces 8212024 and 8209871



8221055: LBL, TAMPER EVIDENT SEAL, ESD BAG, SERIALIZED **C**

(for use with ESD bags, envelope mailers, bags and sheets)

8221055 replaces 8208210



Figure 1. Three Tamper Evident Seals (above on pages 7-8)

12 DC-DC Tamper Evident Seals

The two Tamper Evident Seals below were created for Data Center to Data Center (DC-DC) rack shipments, as well as Decommissioning racks from a Data Center to Reman. These seals are blue in color to distinguish them from the red seals (see pages 7 and 8) which are used exclusively for shipping packaged rack product from an Oracle Manufacturing site or from an Oracle EM.

The balance of this specification will refer to the red seals only. However, for Data Center to Data Center (DC-DC) rack shipments, or decommissioning racks to Reman, the blue Tamper Evident Seals shall be used:

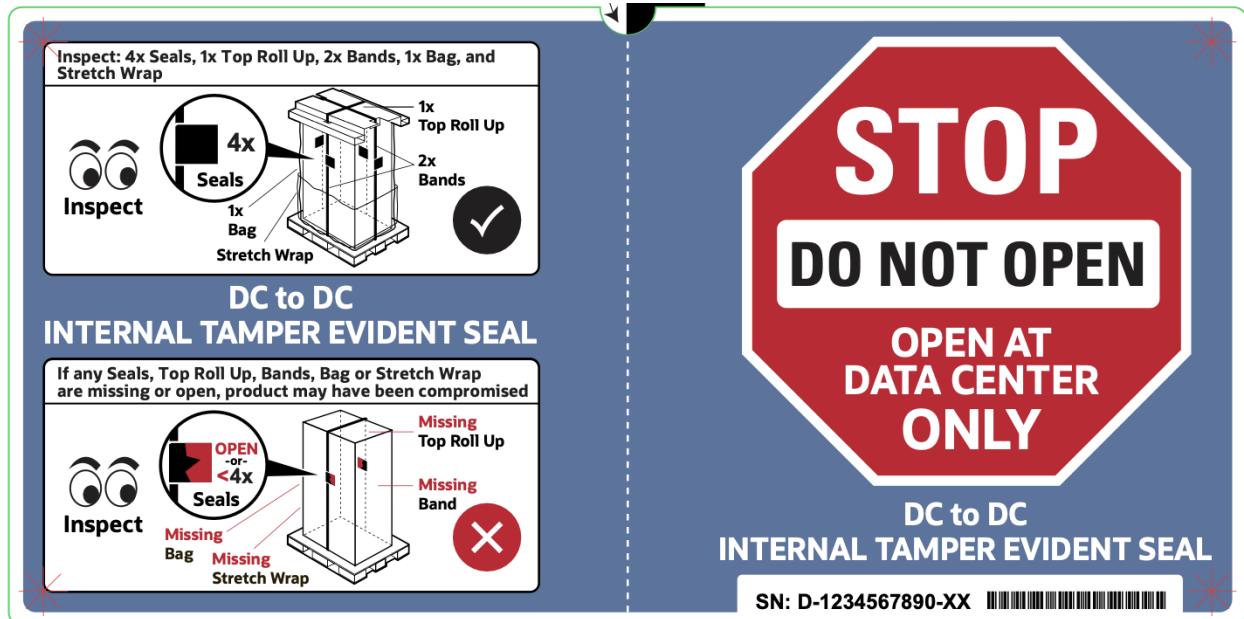
8218153 (**Red**) Internal Tamper Evident Seal shall be replaced with 8221056 (**Blue**)

8221054 (**Red**) Tamper Evident Seal shall be replaced with 8221058 (**Blue**)

8221056: LBL, INTERNAL TAMPER EVIDENT SEAL, PACKAGING (DC-DC) SERIALIZED D

(for use on internal rack bands (also used on rack bag, PKG ASSY C3 STD and C3 LONG excepted))

8221056 replaces 8219175



8221058: LBL, TAMPER EVIDENT SEAL, PACKAGING (DC-DC) SERIALIZED E

(use on external rack corrugated and external bands)

8221058 replaces 8219176

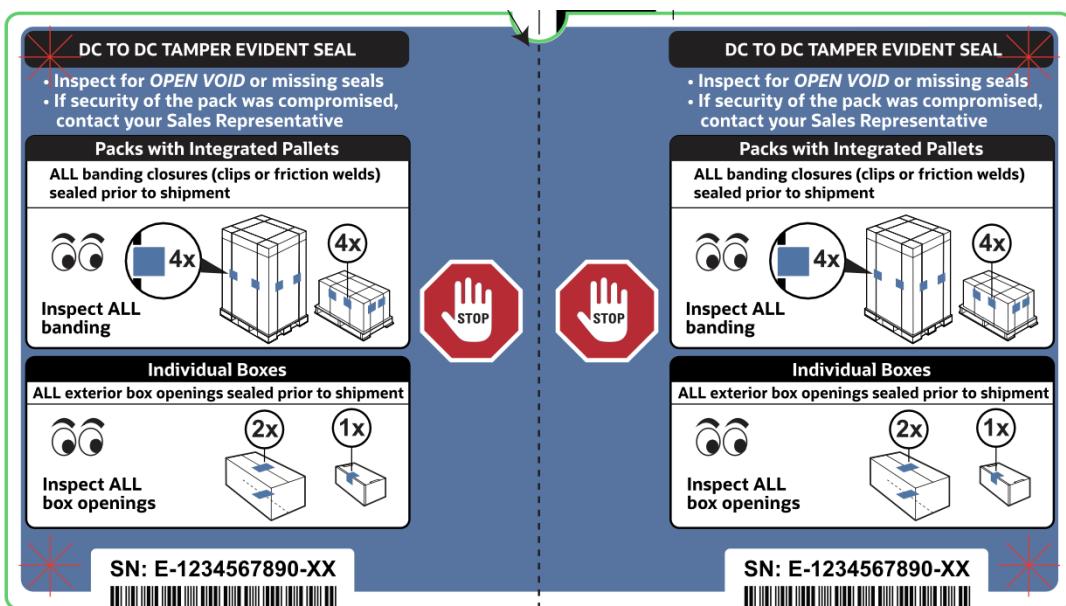


Figure 2. Two DC-DC Tamper Evident Seals

13 Application of Tamper Evident Seals on Oracle Packaging

1st layer of protection / External Packaging Tamper Evident Seal:

When specified on the BOM, a 1st layer of Tamper Evident seals is applied to the exterior of Oracle hardware packaging that provide evidence when the package has been opened. This consists of the minimum number of seals required to seal all the possible openings of a particular package. Each specific package type, and the requirements for sealing it, are described in detail in the balance of this document. This single layer of tamper evident packaging meets the minimum requirements for complying with US Government contracts.

2nd layer of protection / Internal Packaging Tamper Evident Seal:

In addition to this 1st layer of tamper evidence packaging applied to the exterior packaging (above), Oracle requires a 2nd layer of tamper evidence to the internal packaging for Oracle packaged products. This 2nd layer of tamper evident seals gives Oracle more confidence that the integrity of the packaged product has not been compromised, even if an exterior seal may have been opened or removed.

1st layer and 2nd layer of protection above, are used to refer to, or describe, the layers of tamper evident protection starting on the outside of the package moving inward toward the product. The **External Packaging** and Tamper Evident Seals on the outside of the package are opened first, before opening the **Internal Packaging** and 2nd layer Tamper Evident Seals.

However, when chronologically following the steps for packaging a product during ‘pack-out’, the **Internal** Package Tamper Evident Seals are applied before applying **Exterior** Package Tamper Evident Seals. For this reason, information throughout the balance of this document will chronologically present **2nd layer / Internal package seals** first, followed by **1st layer / External package seals** for each of the package categories.

Oracle packaged products can generally be grouped into the following categories when applying Tamper Evident Seals. Each of the categories below can be further broken down to **Internal** and **External** tamper evident seals:

- **Packages with Integrated Pallets** (including products ≥4RU/OU and Racks)
- **Individual Boxes or Cartons**
- **ESD Bags** (ESD and non-ESD bags)
- **Envelope Mailers**

14 Packages with Integrated Pallets

Reference	8221053: <u>Internal Tamper Evident Seal</u> (for use on internal rack bands [as an exception, it is also used across manufacturers seam on top of rack bag when package assembly BOM does NOT include 8225311 TOP ROLL UP, see Figure 4])
Reference	8221054: <u>External Tamper Evident Seal</u> (use on external or internal boxes and external bands)

Internal Package Seal of a packaged Rack

The quantity of **8221053 Internal Tamper Evident Seals** varies depending on which PKG ASSY is being used to package the rack:

PKG ASSY C3 (PKG ASSY C3 BOM includes 8225311 TOP ROLL UP)

The C3 package assembly BOM includes 8225311 TOP ROLL UP. When 8225311 TOP ROLL UP is structured to the package BOM, then **quantity 4, 8221053 Internal Tamper Evident Seals** are required.

Because the manufacturer's seam on the top of the rack bag is covered by 8225311 TOP ROLL UP, there is no need to add a 5th 8221053 Internal Tamper Evident Seal across the manufacturing seam on the top of the bag.



Figure 3. Rack with 8225311 TOP ROLL UP and qty 4, 8221053 Internal Tamper Evident Seals

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All other rack PKG ASSY: (rack PKG ASSY BOMs that do NOT include 8225311 TOP ROLL UP)

Oracle rack package assemblies used prior to PKG ASSY C3 do not include 8225311 TOP ROLL UP. If 8225311 TOP ROLL UP is NOT on the package BOM, then **quantity 5, 8221053 Internal Tamper Evident Seals** are required.

Because the manufacturer's seam on the top of the bag is exposed (without 8225311 TOP ROLL UP covering it), these packages require a 5th 8221053 Internal Tamper Evident Seal shall be applied 90 degrees across the manufacturing seam on the top of the bag (on the top of the rack). This Tamper Evident Seal shall be located between the two, triangular shaped, gusset folds of the bag (see figure 4 below).

Note, the PKG ASSY C3 will be phased-in on the following Oracle racks:

- C2
- Oracle Cabinet
- SRII
- Network (Rittal)

Until existing inventory of older rack package assemblies (without 8225311 TOP ROLL UP) are consumed, a 5th 8221053 Internal Tamper Evident Seal is required.

This will ensure that a bad-actor does not cut the bag seam and then slide the bag down over the rack to gain access to the product inside, and later re-seal the top of the bag.



Figure 4. 8221053 Tamper Evident Seal applied across the manufacturers seam on the top of the rack bag

With this one **exception** (above) which requires using qty 5, 8221053 Internal Tamper Evident Seals on older rack PKG ASSEMBLIES (that do not include 8225311 TOP ROLL UP) - The balance of this document describes how to apply Internal Tamper Evident seals to PKG ASSY C3 (which includes 8225311 TOP ROLL UP) and requires qty4, 8221053 Internal Tamper Evident Seals.

Specification for Tamper Evident Packaging

The **Internal Package Seal** on a rack requires the use of a bag, stretch wrap, TOP ROLL UP, banding and 8221053 Internal Tamper Evident Seals used in combination to securely seal the rack and prevent someone from accessing products configured inside the rack. The bag is clear, allowing ‘visual inspection’ of the rack, but not allowing physical contact with the product configured inside the rack without breaking this Internal Package Seal.

Bag and stretch wrap rack:

- After the rack is completely bolted to the pallet, cover the rack with a clear bag (see BOM). Then using stretch wrap, per 950-1685-XX, wrap around the bottom of the bag and the base of the rack frame. A minimum of 4 layers of stretch wrap shall be used to tightly seal the bag against the base of the rack. The stretch wrap shall also extend below, under and around the bottom of the rack frame, so that the stretch wrap and bag cannot be slid or pulled upward to gain access to the rack. Measuring from the base of the rack casters as they sit on the pallet, the stretch wrap shall be ≥ 15 inches and ≤ 18.5 inches ($\geq 38\text{cm}$ and $\leq 47\text{cm}$) high on the four vertical sides of the rack (see Figures 5 and 12). The stretch wrap should not be so tight however that it permanently bends or deforms the rack frame, (including side panels or doors if present). The only way to remove the bag and access the products configured inside the rack will be to cut or unwrap the stretch wrap and/or cut the bag.



Figure 5. Palletized, bagged and stretch wrapped rack

Add **TOP ROLL UP:**

- Depending on whether you're packaging a 600mm or 800mm wide rack, follow the illustrations printed on the 8225311 TOP ROLL UP to determine how to orient/fold the TOP ROLL UP when placing it on the top of the rack (see Figure 8).
- Align the 'RAMP ATTACH SIDE' artwork that is printed on the TOP ROLL UP, with the ramp attach end of the pallet (ramp attach for roll off).
- Align the TOP ROLL UP, front-to-back on the rack, by folding the small flap on the ramp attach end of the TOP ROLL UP over the top edge of the rack. The flat can be folded using 2 possible score lines – the outer score line is used to fold over the top edge of the rack door (if present), or the flap is folded around the rack frame using the inner score (when a rack is shipped without doors). (see Figures 6 and 7)



Figure 6. 8225311 TOP ROLL UP folded to fit a 600mm wide rack (flap folded over top of door for front-to-back alignment on rack)



Figure 7. 8225311 TOP ROLL UP shown on a 800mm wide rack (flap folded over rack frame for front-to-back alignment on rack)

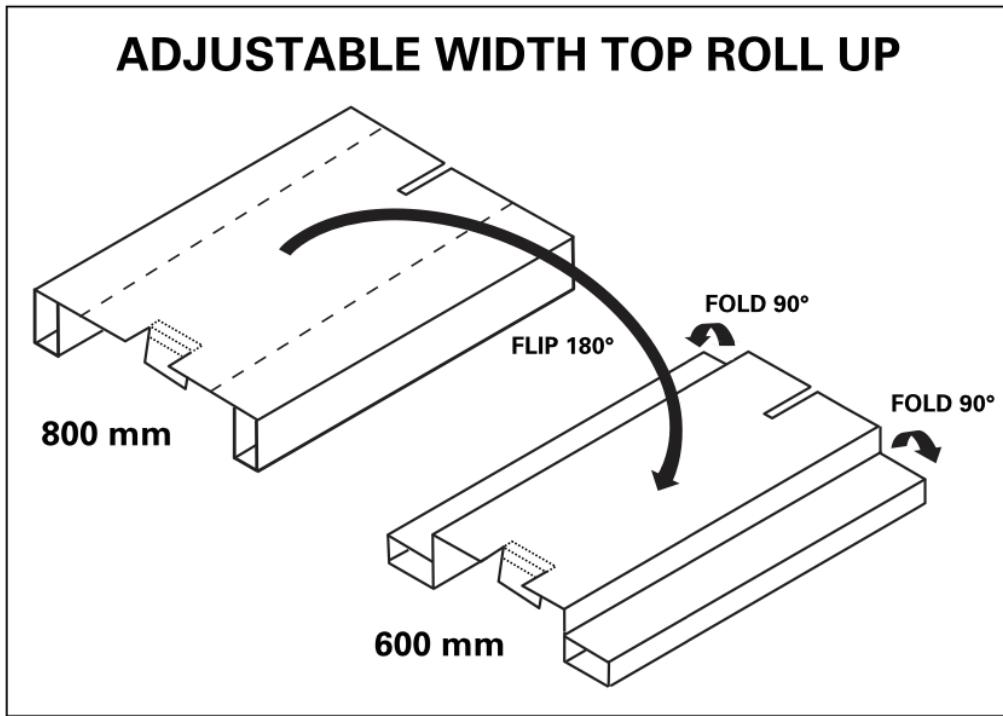


Figure 8. Illustration of how to apply 8225311 TOP ROLL UP to fit 800mm or 600mm wide racks

Band, per 950-1685-XX, using 2 bands at 90 degrees, completely encircle the bagged/stretch wrapped rack, including covering the top of the TOP ROLL UP:

- Each band shall be one continuous unbroken loop with a single banding closure (banding clip or friction weld) per band.
- Bands shall go around the bottom of the rack between the rack and the pallet (not around or through the pallet).
- The band that goes around the top, right side, bottom and left side of the rack shall also go through the die cut holes on the sides of the TOP ROLL UP, over/across the top of the TOP ROLL UP, and back down through the die cut hole on the opposite side of the TOP ROLL UP. (The bands shall encircle the top (flat portion) of the TOP ROLL UP, but NOT encircle the 'corrugated roll up tubes' on each side of the TOP ROLL UP) (see Figure 9 and 11).

This band shall have its banding closure (friction weld or clip) on the left side of the rack (as viewed from the end of the pallet where the ramps attach for roll off).

- The band that goes around the top, back, bottom and front of the rack shall go through the folded flap and slot on the ends of the TOP ROLL UP (see Figure 9, 10 and 11).

This band shall have its banding closure (banding clip or friction weld) located on the vertical surface of the rack that faces the 'ramp attach' side of the pallet (for roll off).

- Both banding seals shall be located **63 inches** or **160 cm** above the floor when the rack is sitting on the pallet (or **58 inches** or **148 cm** above the top deck of the pallet) (see Figure 12). The bands shall be roughly centered (left to right) and plumb on each of the vertical surfaces of the rack (adjust position as required to not interfere with anti-tilt bar hardware, or door latch/keypad if present). (see Figure 10)

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- The bands should be tight enough that they cannot be slid left-to-right or slid over the ends of the rack frame. The bands shall not be so tight however that they permanently bend or deform the rack frame, (or side panels or doors if present).
- All 4 vertical bands (on the front, rear, left and right vertical surfaces of the rack) shall have an 8221053 Internal Tamper Evident Seal.
 - Each of the 2 banding closures (clip or friction weld) shall have an 8221053 Internal Tamper Evident Seal applied to the band, completely covering the banding closure.
 - Two additional 8221053 Internal Tamper Evident Seals shall be applied to both bands on the same continuous banding loop, and at the same height, but on the *opposite* vertical panel of the rack.

A total of quantity 4, 8221053 Internal Tamper Evident Seals, are required.

- 8221053 Internal Tamper Evident Seals shall always be applied to the bands with the 'STOP DO NOT OPEN' artwork side of the seal 'flag' facing outward or away from the rack (see Figures 3, 4, 10, 11, and 12).

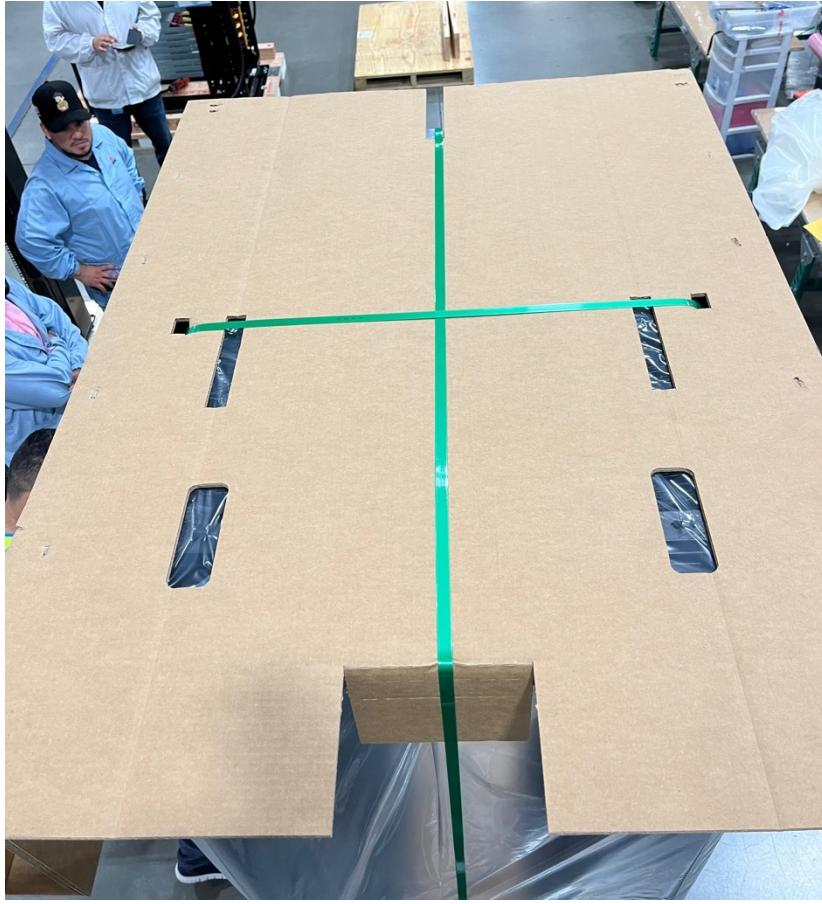


Figure 9. 8225311 TOP ROLL UP 2-way-banded encircling the bagged rack

Above photo viewed from opposite the 'RAMP ATTACH SIDE' artwork that is printed on the TOP ROLL UP

Specification for Tamper Evident Packaging



Figure 10. Front band placement adjusted for anti-tilt bar (top image), band adjusted for door latch hardware (bottom image)

For **Application of Tamper Evident Seals on Banding** see Steps 1 – 6 (pages 25-30):



Figure 11. Internal Tamper Evident Seal applied to palletized C3 rack

Four 8221053 Internal Tamper Evident Seals (2 on bands far side)



Figure 12. Bagged, stretch wrapped, TOP ROLL UP and banded rack with 8221053 Internal Tamper Evident Seals. Align band closures and 8221053 Internal Tamper Evident Seal flags at specified height. Stretch wrap at specified height.

Internal Package Seal of a packaged product $\geq 4\text{RU/OU}$ (but smaller than a Rack)

If a bag is used rather than a sheet, then the opening of the bag shall be folded over and sealed using 8221055 Tamper Evident Seal(s).

If a bag covers the product, but is not large enough to completely enclose the product on all 6 sides (e.g., $\geq 4\text{RU/OU}$), then that bag shall be treated similar to a rack bag and be sealed using stretch wrap, bands and 8221053 Internal Tamper Evident Seals. See **Internal Package Seal** of a Packaged Rack above.

External Package Seal of packaged product with an Integrated pallet ($\geq 4\text{RU/OU}$ including racks or any package with external banding)

Generally, any package with an integrated pallet (e.g., rack or packaged products 4RU/OU or larger), requires 4 way external banding, 4 bands total, 2 over the top of the corrugated through the length of the pallet, and 2 over the top of the corrugated through the width of the pallet.

Each band shall be one continuous unbroken loop with a single banding closure (banding clip or friction weld) per band.

Tamper Evident Seal Locations/Height on Packages with Integrated Pallets: Each band shall have a single banding closure (clip or friction welds) located on a vertical surface of the package. All 4 banding closures (clip or friction welds) shall be located on 2 adjacent vertical sides of the package. The height of the banding closure shall be located approximately half way up the vertical height of the package.

On rack packages, the **height** of the banding closure shall be aligned vertically approximately **42 inches** or **107 cm** above the floor (approximately **3.5 inches** or **9 cm** above the UNPACKING INSTRUCTIONS illustration boxes that are printed on the corrugated sleeves) (see Figure 14 and 16). Also on rack packages, the banding closure shall be located on the 'RAMPS ATTACH THIS SIDE' of the pallet, as well as on the vertical side of the package immediately to the left of the 'RAMPS ATTACH THIS SIDE' (both the pallet and the corrugated top cap are marked to indicate which side of the package the 'ramps attach' for de-skidding or roll-off) (see Figure 14).

All other packages with integrated pallets or bands, place tamper evident seal located approximately centered on vertical panels of package. See **HSC** (Half Slotted Container), **FT-DST** (Full Telescoping Design Style Tray Container) or **Double Cap (DST) + Sleeve or Tube** box styles below in **Application of Tamper Evident Seals on boxes** section below.

PACKS WITH INTEGRATED PALLETS

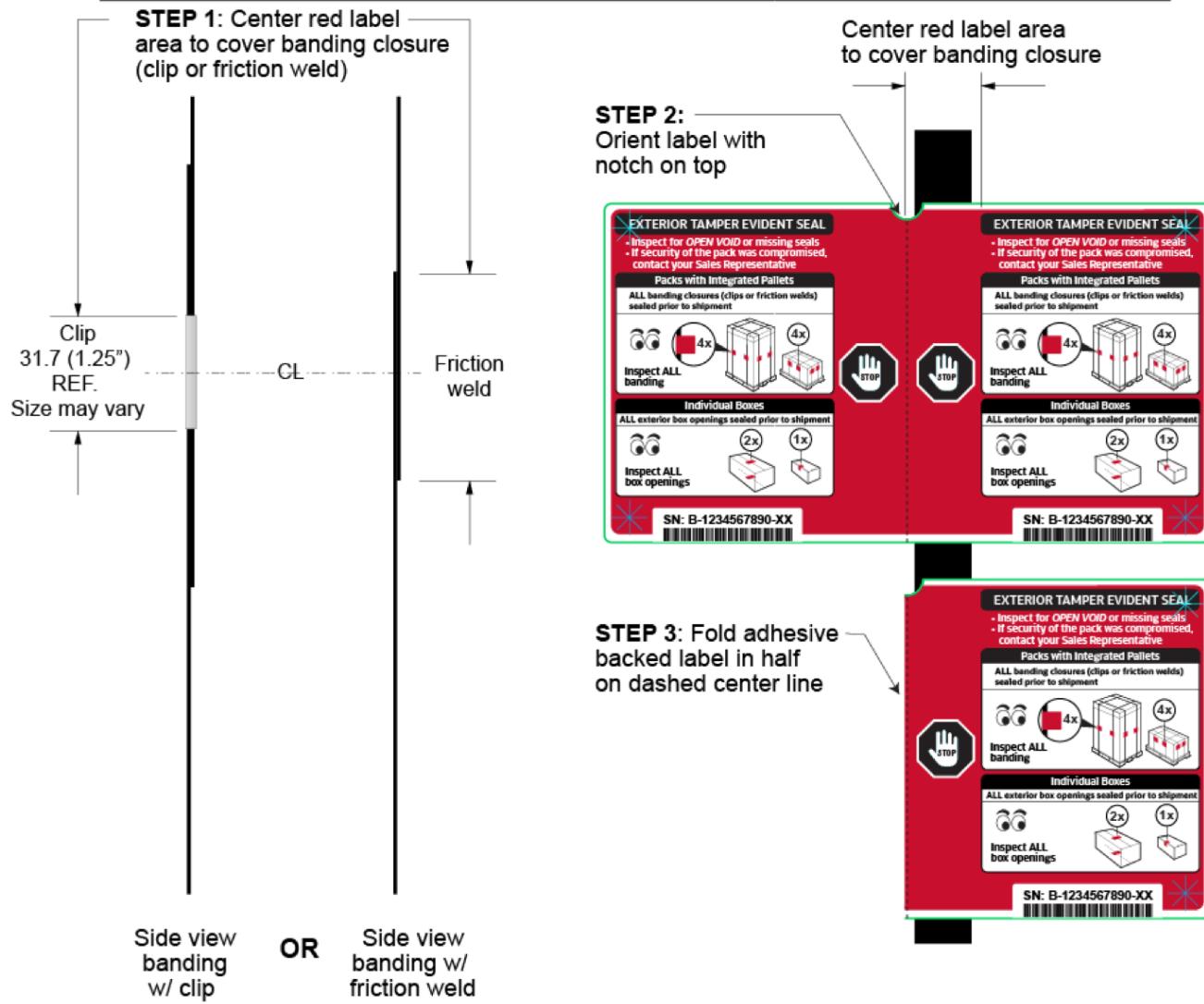


Figure 13. Image of 8221054 Internal Tamper Evident Seal placement over External band closure



Figure 14. Five 8221054 Tamper Evident Seals visible on the exterior of a packaged rack (4 on the band closures and 1 on sleeve)

Dimensions shown above are measured to the top of the pallet

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Corrugated Top Cap printed with 'RAMPS ATTACH THIS SIDE' indicates which side of the pallet to locate 2 of the 4 band closure. The 2 remaining band closures and Tamper Evident Seals are located on length panel of the pallet immediately to the left of the 'RAMPS ATTACH THIS SIDE' side of pallet.

Plastic connecting clip fasteners for corrugated fiberboard, a.k.a 'Corro-Clips':

A small number of Oracle packages use plastic clips to connect corrugated components together.

Examples:

- Corrugated fiberboard sleeves
- HSC - pallet/tray
- FT – DST
- Double Cap (DST) - Sleeve or Tube

Typically, plastic connecting clips are used in combination with 4-way banding. If so, then only the banding closures require tamper evident seals. See Figure 10 of a package below that uses Corro-Clips to connect the corrugated sleeves together (3 white Corro-Clips are visible along the vertical edge/corner of the corrugated sleeves).



Figure 15. qty 3, Plastic connecting clips on corrugated sleeves

However, if plastic clips are used without 4-way banding, then a 8221054 Tamper Evident Seal shall be applied over each of the plastic clips, bonding to both the clip and the corrugated. Oracle's preference is to add bands with tamper evident seals covering the banding closure vs. adding tamper evident seals over the plastic connector clips. 4-way banding is required anytime a packaged product is large enough for a human to fit inside.

Application of Tamper Evident Seals on Banding see Steps 1 – 6 below:

(Internal Tamper Evident Seal shown in top photos below / External Tamper Evident Seal shown in bottom photos below)

Step 1

Before peeling the seal from release liner, pre-fold the seal in half along the dotted line.



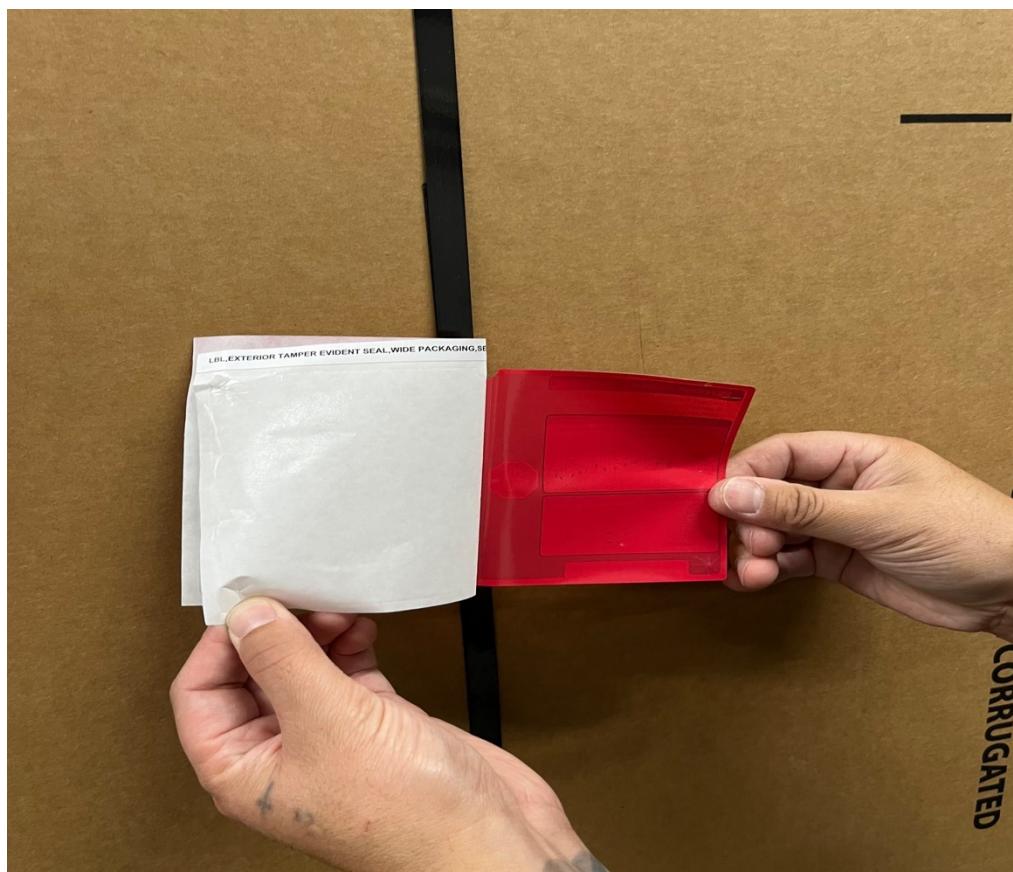
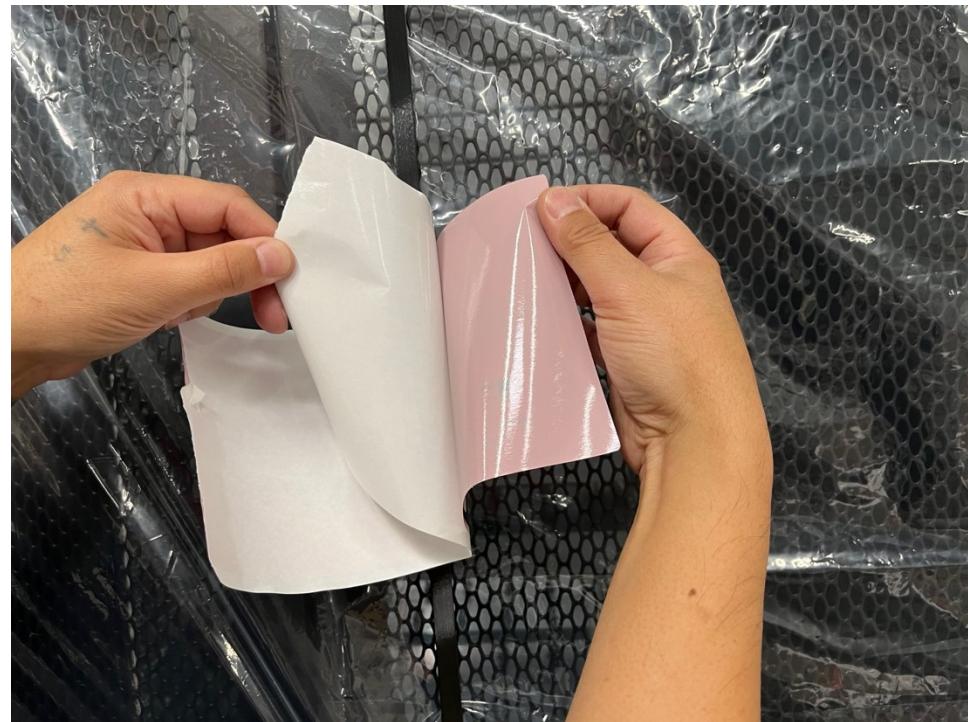
Step 2

Test positioning over banding seal (clip or friction weld). Do not remove the release liner yet.



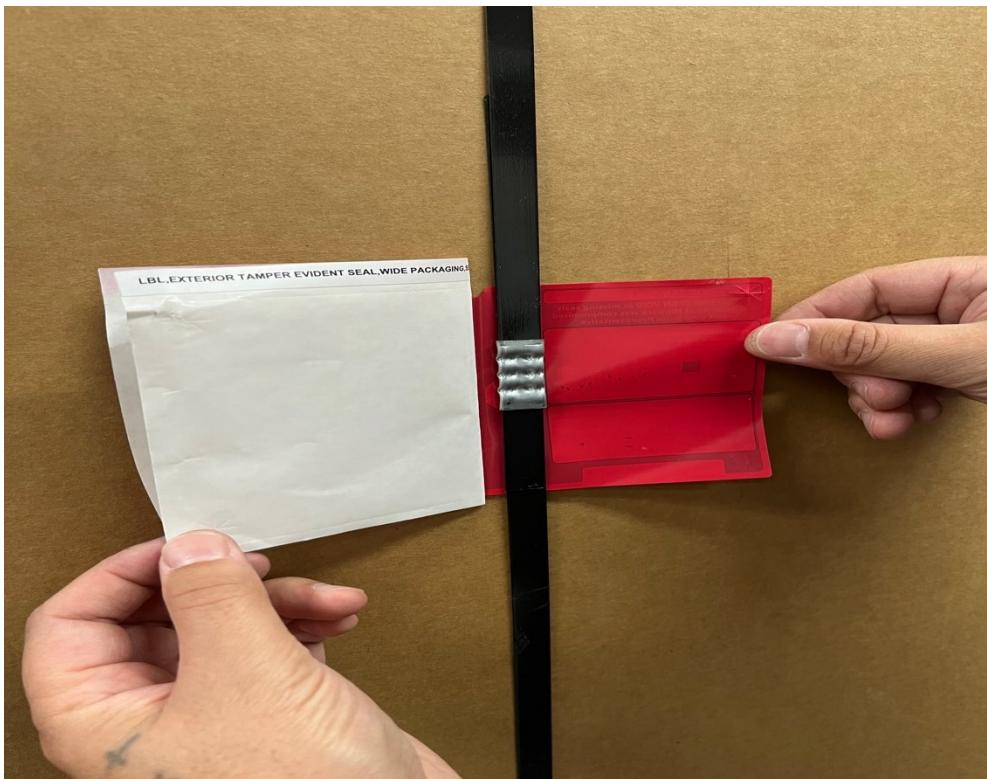
Step 3

Peel back the release liner from one half of the tamper evident seal



Step 4

With half of the seal's adhesive exposed, locate the banding closure (clip or friction weld) next to the dotted line and centered vertically on the seal. Bond the exposed seals adhesive to the far side of the band and band closure.



Step 5

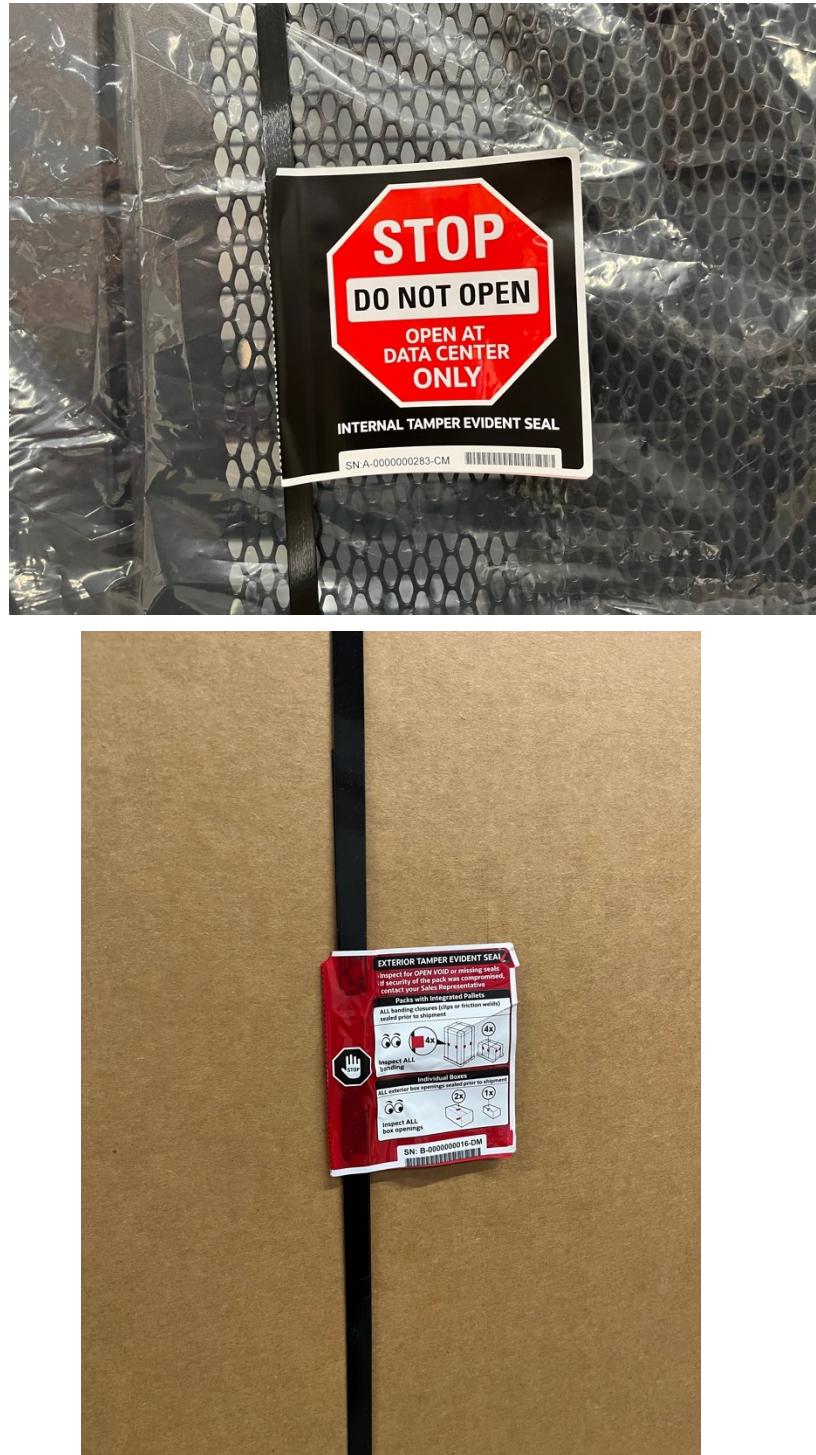
Slowly peel enough of the release liner away so that you can start to adhere the left half of the seal (the edge closest to the dotted line) to the front or outer surface of the band. Squeeze the band and the two halves of the seal between your fingers and thumb of your left hand. Using your right hand, slowly pull the release liner towards the right, drawing it across the rear half of the seal. As you do this, release your grip with your left hand, and using the palm of your left hand, slowly swipe across the top surface of the seal towards the right. Performing these actions in concert will help to flatten and bond both halves of the seal together with minimal wrinkles or air bubbles. This may require practice. The tamper evident seal 'flag' shall completely encompass the band and band closure. **Apply pressure to both sides of the seal, so the adhesive forms a good bond with both sides of the band and band closure, pushing out any air bubbles.** This will ensure that the residue message layer of the seal forms a good bond with the band and the band closure.



8212024: **Tamper Evident Seal** 'Flag' tips point toward the Left and Right when 2 are on the same panel

Step 6

Tamper evident seal properly applied to band and band closure



If a tamper evident seal is incorrectly applied to a band, band closure (clip or friction weld), then it may be required to completely replace that band, band clip (if used) and seal. Ultimately, each continuous unbroken band shall have a single closure, and a properly applied tamper evident seal covering that band closure (clip or friction weld) free of any OPEN VOID tamper evident residue from an improperly applied seal.

Anytime tamper evident seals are applied to vertical bands or vertical panels of the package, the text printed on the seal shall be parallel to the floor and read left to right, in the normal shipping orientation of the package.

Orientation of 8221053 Internal Tamper Evident Seal 'flags' when applied to bands:

Internal Tamper Evident Seals shall be applied to the bands, covering the stretch wrap and rack bag, with the 'STOP DO NOT OPEN' side of the folded seal 'flag' facing outward or away from the side of the rack.

Orientation of 8221054 Tamper Evident Seal 'flags' when applied to bands:

The tips of both tamper evident seal 'flags' on a single side of the package shall point toward each other. Flag tips shall point toward the center of the package panel to reduce the risk of the tamper evident seal 'flag' getting caught on something and being torn or damaged during distribution). (see Figures 14 and 16)

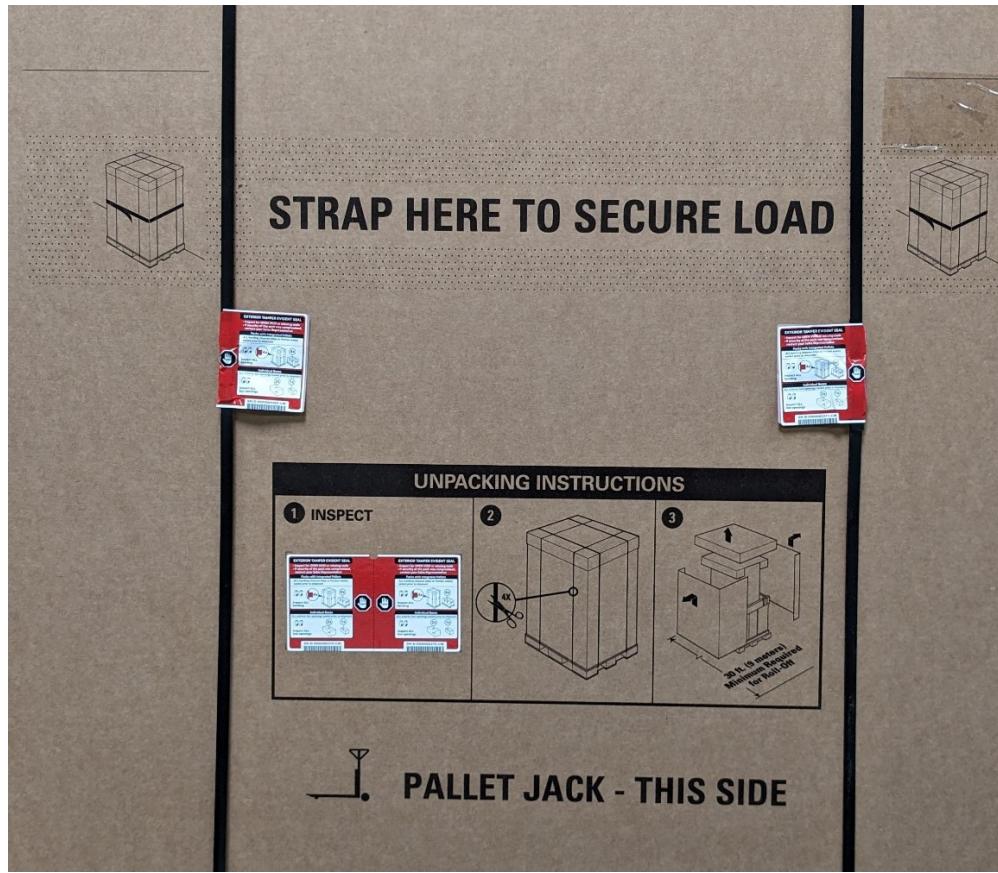


Figure 16. Tamper Evident seal 'flags', applied over banding closures (2 are visible in this photo, as well as a 3rd seal applied directly to the corrugated fiberboard in the 'INSPECT' box of the UNPACING INSTRUCTION illustrations).

Tamper Evident Seal on corrugated Unpacking Instructions: In addition to being applied over the band closure (clip or friction weld), a tamper evident seal 8221054 shall also be applied to the corrugated sleeve located within the printed tick marks of the UNPACKING INSTRUCTIONS in the step '1, INSPECT' panel of the Unpacking Instruction illustration. When the UNPACKING INSTRUCTIONS are printed on 2 panels of the Rack package, then a tamper evident seal shall be applied to the corrugated on both panels (see Figures 14 and 16).

15 Individual Corrugated Fiberboard Boxes

Reference 8221054: **Tamper Evident Seal** (use on external or internal boxes and external bands)

Reference 8221055: **Tamper Evident Seal** (for use with ESD bags, envelope mailers, bags and sheets)

Internal Package Seal of packages with internal boxes, bags or sheets

When products are packaged inside an individual carton or box, the package design oftentimes also specifies an **internal box, bag, or sheet** which shall be sealed with tamper evident seals to create an **Internal Package Seal**.

If the package design has an internal box, sealing this box is the preferred choice to create an **Internal Package Seal**. All openings of the internal box shall be taped closed using tape per 950-1685-XX, and then all box openings shall be sealed using 8221054 Tamper Evident Seals (see **Application of Tamper Evident Seals on containers or boxes** below).

If the package does not have an internal box, but there is an internal bag, the opening of the bag shall be folded over and sealed using 8221055 Tamper Evident Seal.

If the package does not have an internal box or an internal bag, but the package has a sheet, see instructions below for wrapping the product in the sheet, and securing it using 8221055 Tamper Evident Seals.

Internal Package Seal of a packaged products 1RU/OU - 3RU/OU

Products 1RU/OU – 3RU/OU in size are typically wrapped in a sheet. Once the product is wrapped on all sides with the sheet, then 8221055 Tamper Evident Seals shall be used to completely seal the sheet closed. Typically, quantity 3 tamper evident seals are sufficient to completely seal the sheet around the product.

Step 1

Center product on top of the sheet.



Step 2

Fold both length ends of the sheet over the product and seal closed with a 8221055 Tamper Evident Seal. 50% of the 8221055 Tamper Evident Seal adhesive shall be bonded to the end of the sheet, and the other 50% of the seal's adhesive shall be bonded to the surface of the sheet it is folding over top of. The tamper evident seal shall be generally centered on the top of the product, and oriented so the text reads left to right when viewed from the front of the product. The sheet shall be snuggly wrapped around the product on all 4 sides.



Step 3

Next, fold and close the remaining two sides of the sheet around the product – fold the sheet like you would if you were gift-wrapping a box (photo taken from the left side of the product).



Step 4

Wrap the 3rd side of the sheet over the top of the product



Step 5

Seal using a 2nd 8221055 Tamper Evident Seal



Step 6

Wrap the final side of the sheet over the top of the System and seal using a 3rd 8221055 Tamper Evident Seal. The 2nd and 3rd seals shall be oriented so the text on that seal reads left to right as viewed from the side the product that the seal is applied to.



External Package Seal

When tamper evident seals are specified on the BOM (or specified on an order by the Configurator), then all folded, closed, and taped box openings require a tamper evident seal.

See 950-1685-XX for best practices for properly taping each of the box styles listed below.

Unless a box has equal length and width dimensions, then the longest dimension of the box opening is considered the length. Generally, the minor (width or smaller) flaps of the carton are folded inward first, then the major (length or larger) flaps are folded over top of the minor flaps. Typically, the major flaps or openings of a box, are the opening(s) that shall be taped and tamper evident seal(s) shall cover to completely secure that specific box style.

As a general rule, the **minimum** number of tamper evident seals shall be used to completely “secure” the package from being opened without breaking a tamper evident seal.

After all box openings have been closed and sealed with carton sealing tape per 950-1685-XX, a tamper evident seal 8221054 shall be applied, across or at 90 degrees to the direction of the box closure tape, on each of the box openings. Since the tape is specified to be 3.0 inches wide, the tamper evident seal will cross the tape and adhere directly to the corrugated fiberboard box on both sides of the tape. The printed dotted line on the tamper evident seal shall be centered along the taped box flaps (see Figure 17). Generally, the tamper evident seal should be located centered on that panel of the carton.

Whenever possible, the tamper evident seal shall not cover any printed carton artwork, handling symbols or other labels. However, tamper evident seals should take precedence over printed carton artwork or handling symbols and may cover printed carton artwork if space is limited.

The 950-1419-XX Packaged Finished Goods Bar Code Identification Labels shall be applied after a box is taped and tamper evident seals have been applied. The 950-1419-XX Packaged Finished Goods Bar Code Identification Labels shall not be covered by the Tamper Evident Seal, or any other labels, tape or bands.

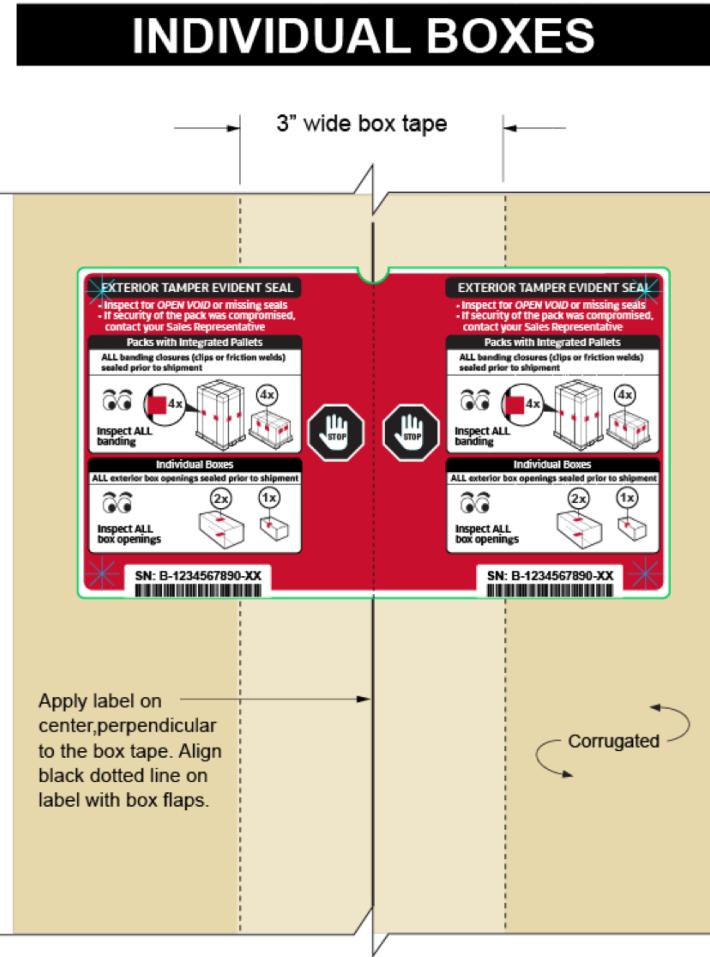


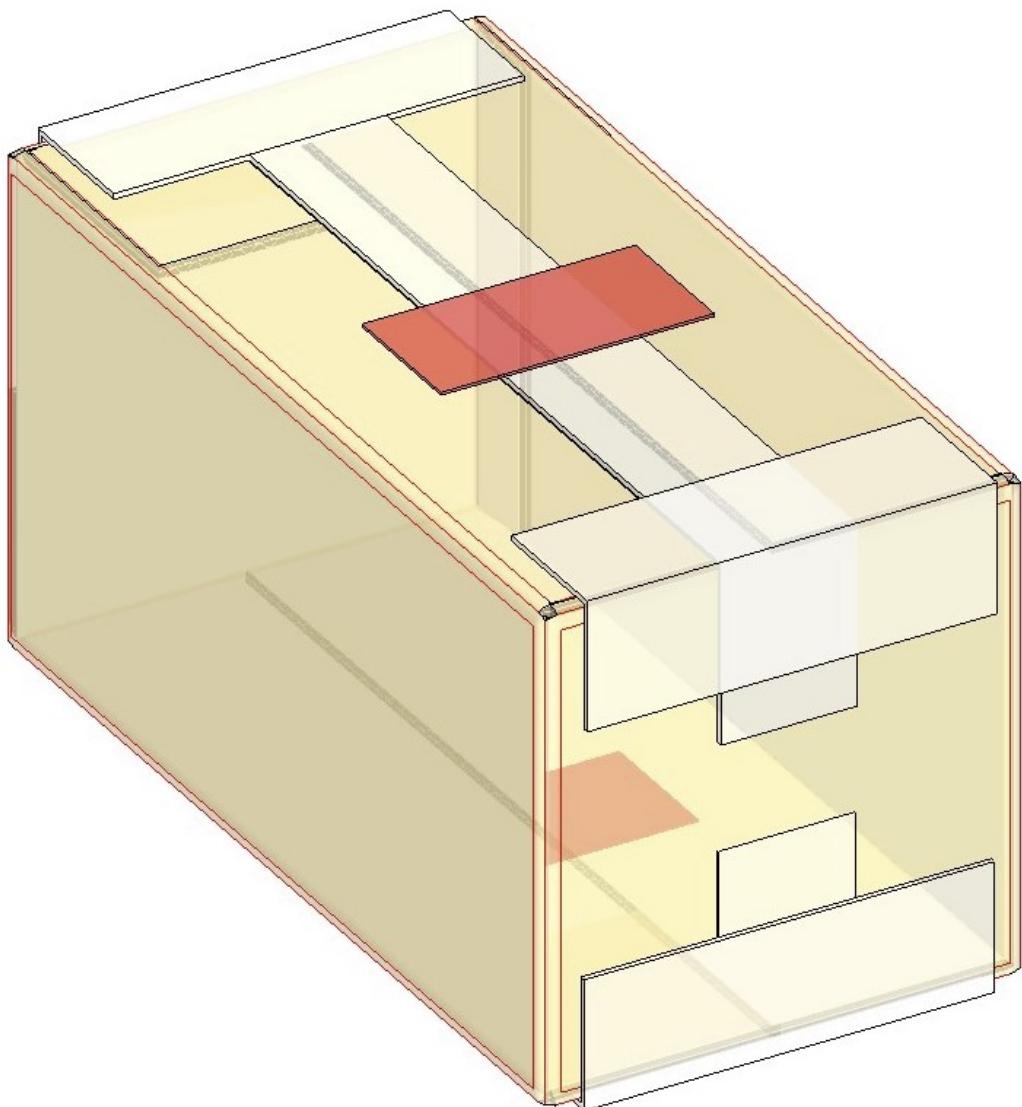
Figure 17. Illustration and Photo of Tamper Evident Seal Applied across the box tape on a RSC style box. Avoid covering printed carton artwork whenever possible.

Application of Tamper Evident Seals on containers or boxes (see specific box styles below)

Below are illustrations of Oracle's most used box styles. Each illustration is semi-translucent (to help show all sides of the box) and shows the minimum number of tamper evident seals required to secure the taped box openings or bands for that specific box style.

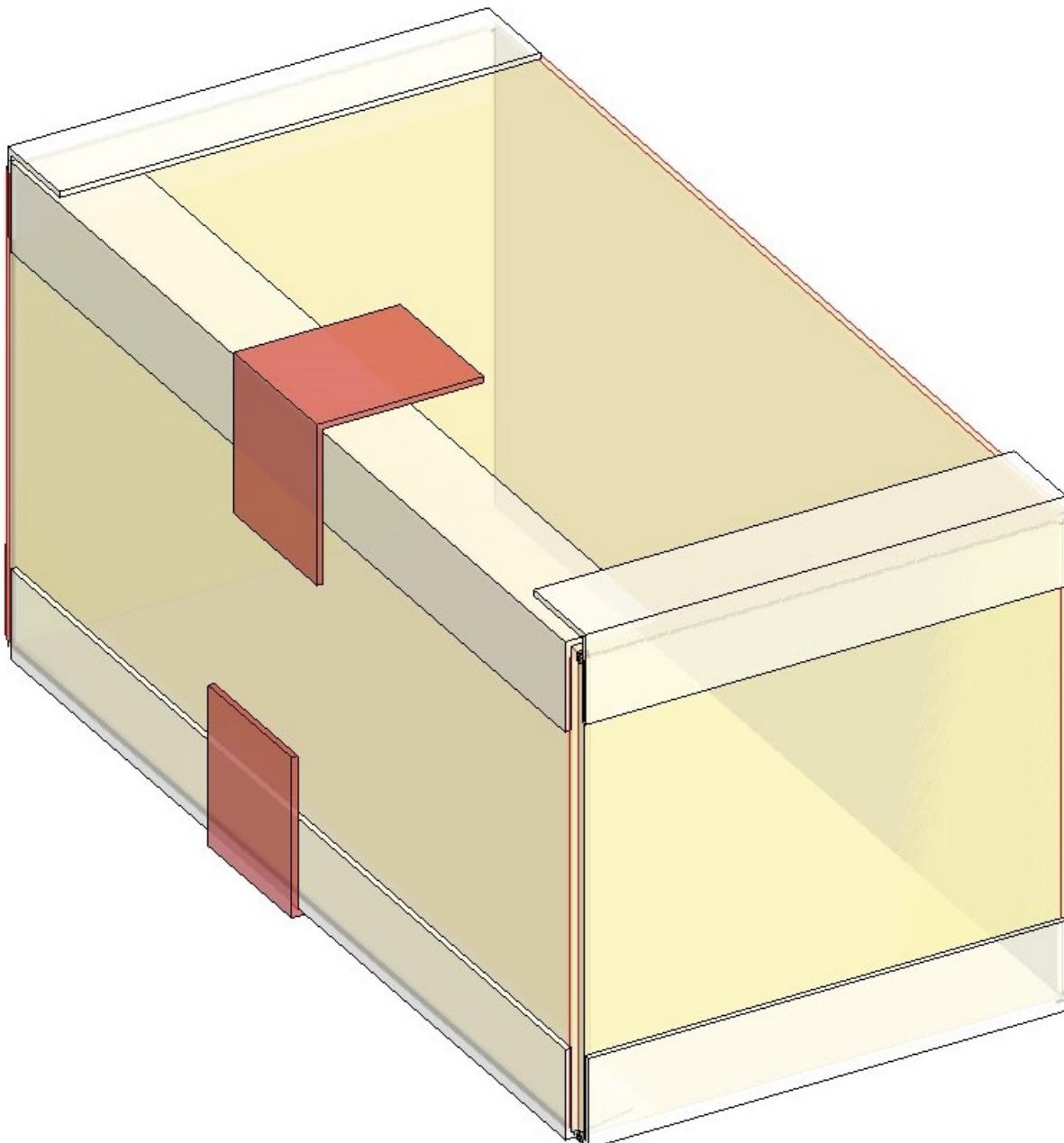
See 950-1685-XX for best practices for taping each of the different box styles below.

- **RSC** (Regular Slotted Container)
 - 2 box openings
 - Quantity 2, 8221054 tamper evident seals (top and bottom of box)



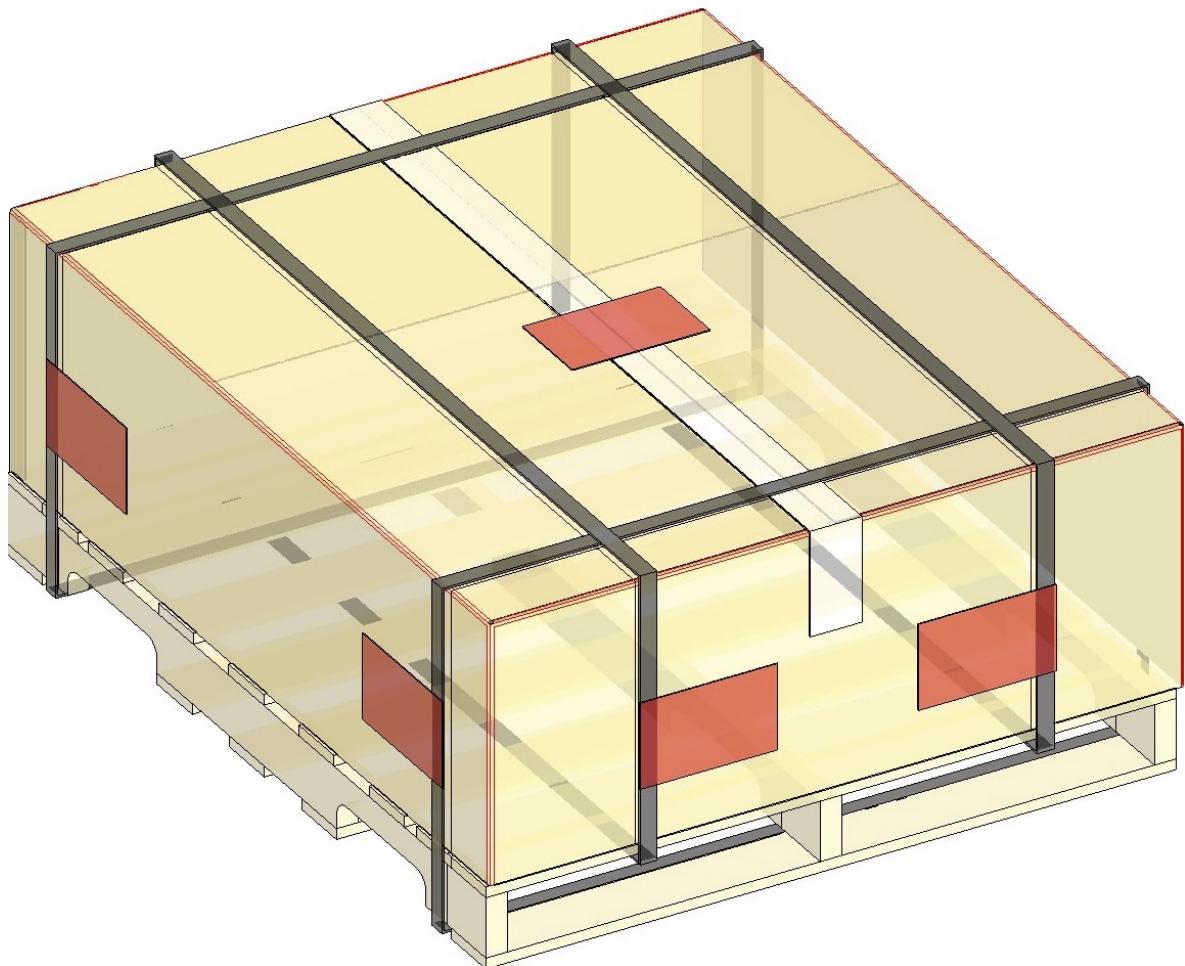
Specification for Tamper Evident Packaging

- **FOL** (Full Overlay Container)
 - 2 box openings (note: the FOL box below shows top and bottom box openings, not a left side opening)
 - Quantity 2, 8221054 tamper evident seals



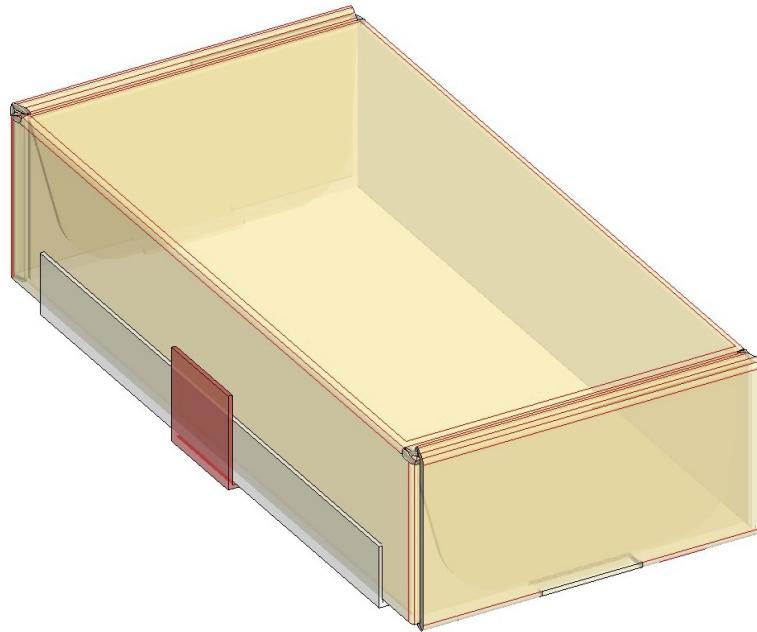
- **HSC (Half Slotted Container)**

- The top of a HSC box requires tape and qty 1, tamper evident seal to secure the box flaps. However, an HSC does not have bottom flaps, so 4 way banding is required to connect the HSC to an integrated pallet (4 bands total, 2 over the top of the HSC through the length of the pallet, and 2 over the top of the HSC through the width of the pallet). Each of the 4 band closures (clips or friction welds) requires a tamper evident seal.
- Quantity 5, 8221054 tamper evident seals

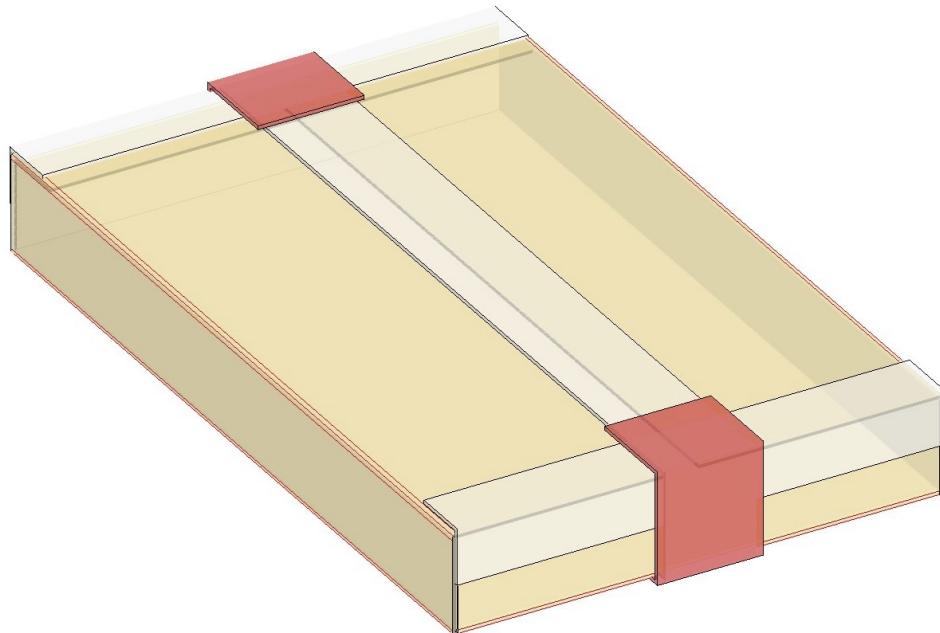


Specification for Tamper Evident Packaging

- **RTF (Roll End Tuck Front)**
 - 1 box opening
 - Quantity 1, 8221054 tamper evident seal

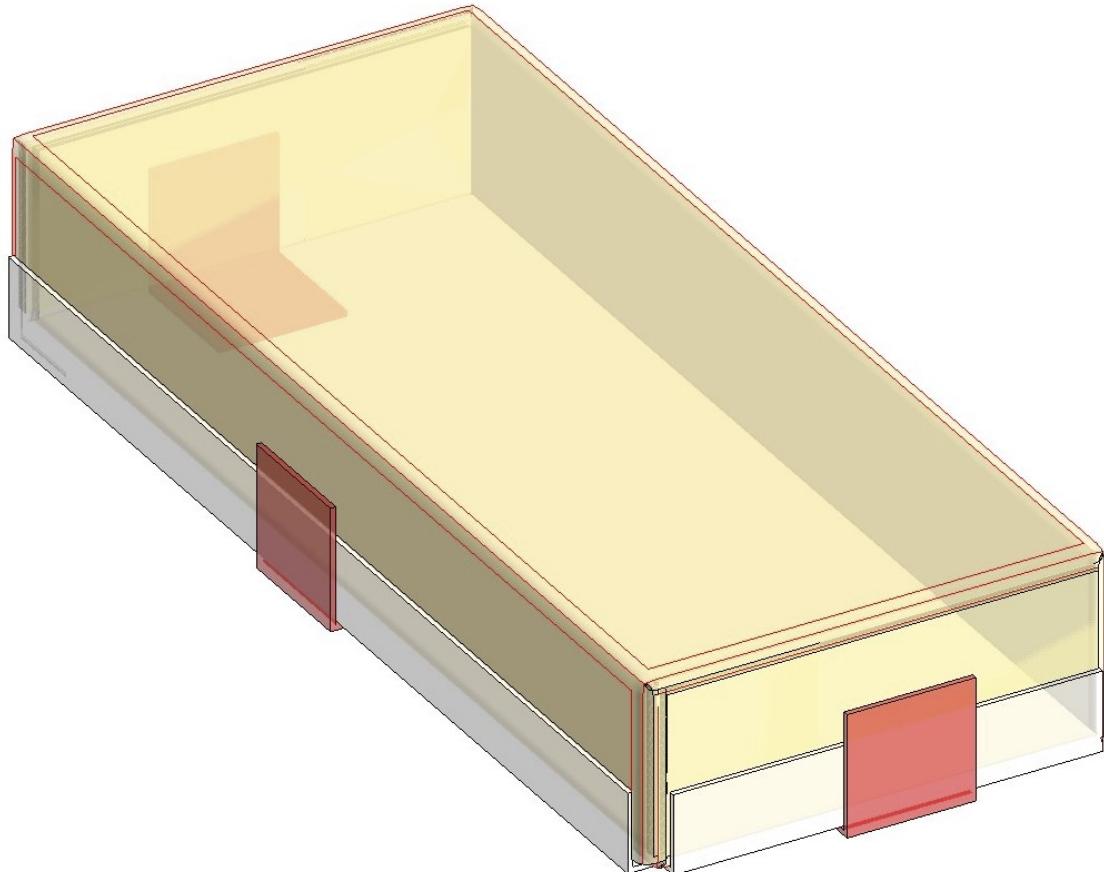


- **OPF (One Piece Folder)**
 - 4 flaps close on each other to create box 1 opening. However, 2 tamper evident seals are required to ensure this style box is secure. Seals should cover the intersection of longest taped seam and cover part of the taped seam on the smallest panels of box.
 - Quantity 2, 8221054 tamper evident seals



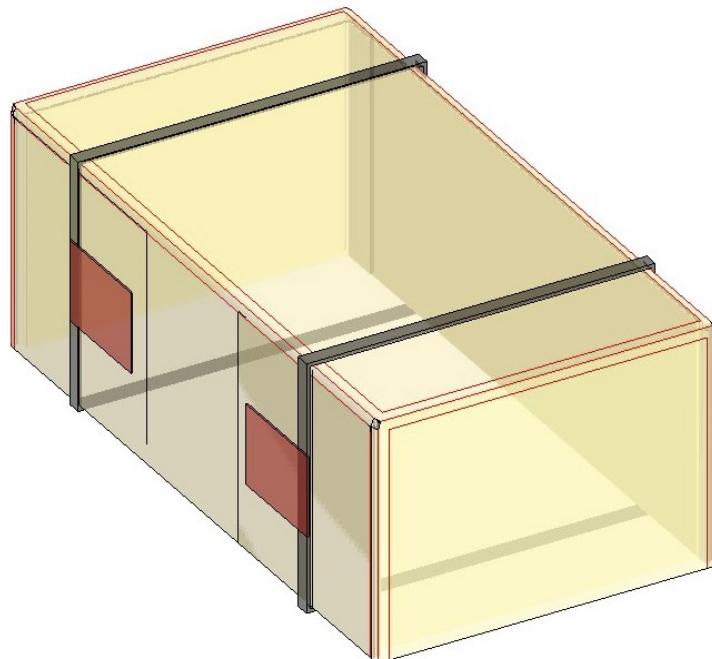
Specification for Tamper Evident Packaging

- **FPP (Five Panel Folder)**
 - 3 box openings
 - Quantity 3, 8221054 tamper evident seals
 - (1 seal on each of the end flaps, and 1 seal along the taped over-lapped major flaps)

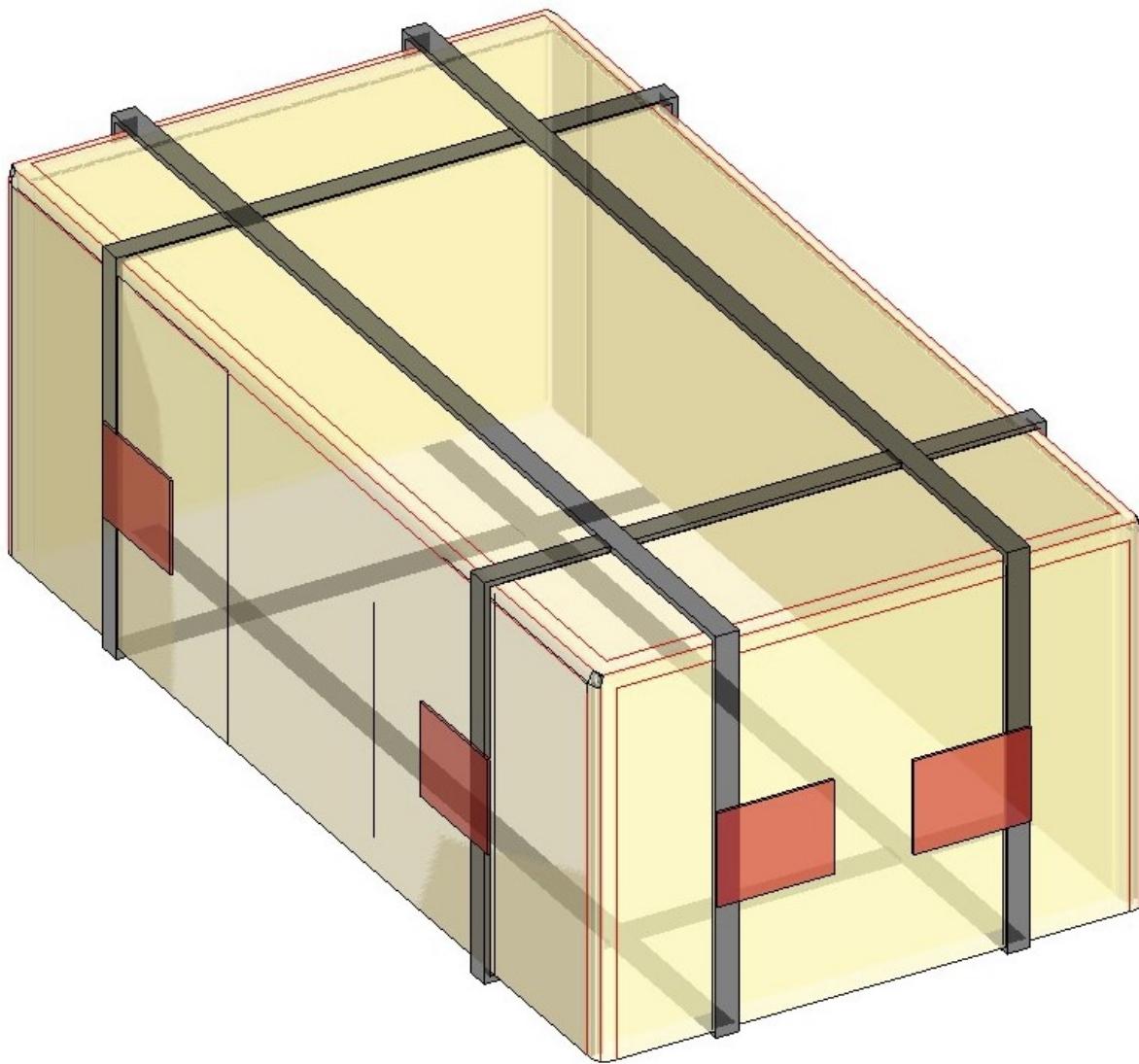


Specification for Tamper Evident Packaging

- **FT-DST** (Full Telescoping Design Style Tray Container – 2-piece box, bottom and telescoping lid)
 - Closure of a FT-DST style box should be closed using 2 bands (Refer to 950-1685-XX for banding specification) locate each band 'X' distance from the ends of the box (X dimension = depth of box + 25-75mm). Each of the 2 banding seals (clip or friction weld) requires a tamper evident seal located on a single vertical panel of the box.
4 bands and 4 tamper evident seals are required if the package is large enough for a human to fit inside (TSA rule). No box tape is required. 2 bands around the length of the box, and 2 bands around the width dimension of the box are required. Tamper evident seals on each of the band closures shall be located on 2 adjacent vertical panels of the box.
 - Quantity 2-4, 8221054 tamper evident seals (quantity of seals is dependent on box size, see above)



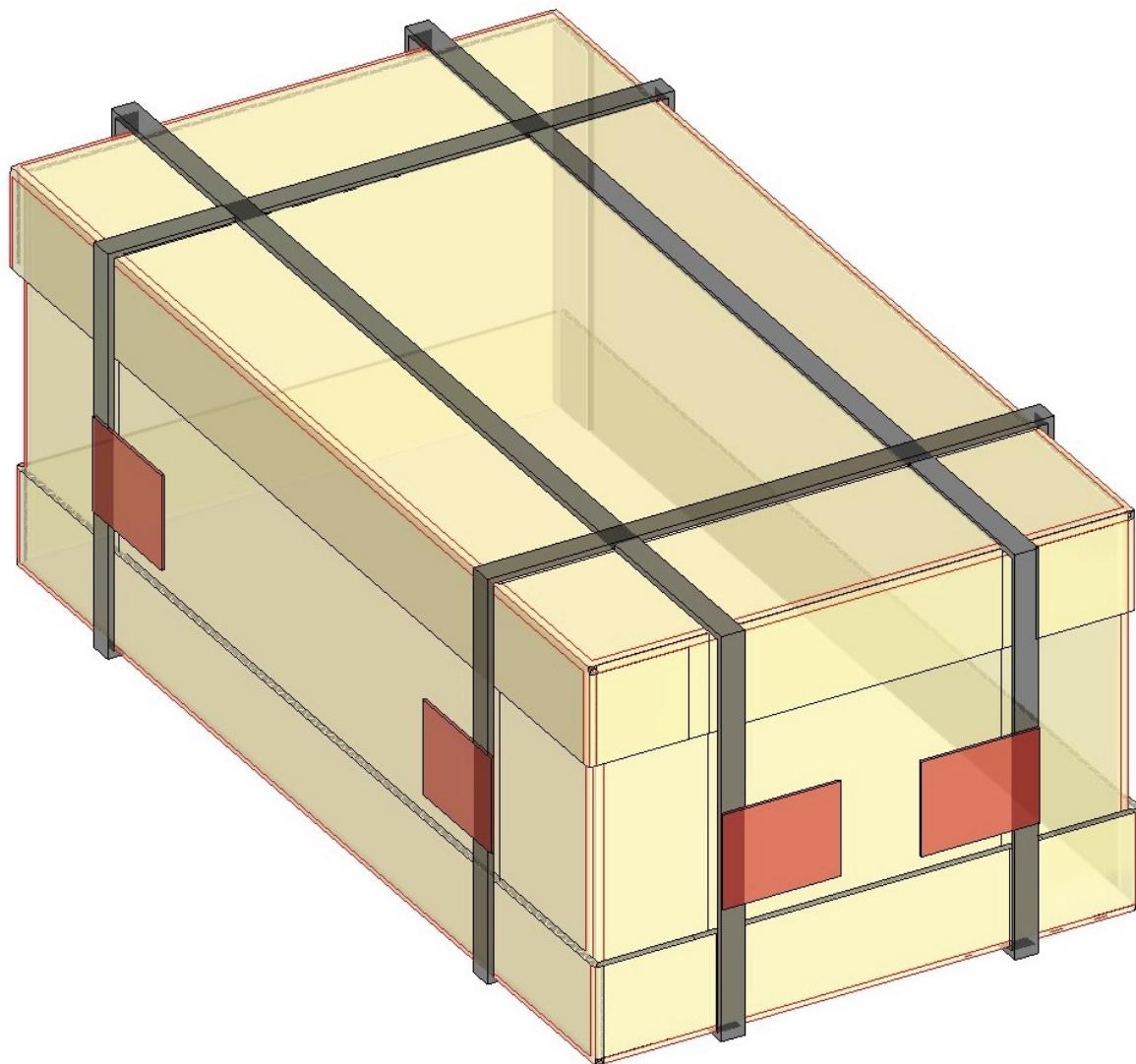
Small **FT-DST** requires quantity 2, 8221054 tamper evident seals (1 seal on each band closure)



Large **FT-DST** requires quantity 4, 8221054 tamper evident seals (1 seal on each band closure)

Specification for Tamper Evident Packaging

- **Double Cap (DST) + Sleeve or Tube** (Double Cap and Sleeve or Tube)
 - Typically, this style container ships with a pallet (or it can also ship without a pallet) and requires 2-way banding (4 bands total) to secure both DSTs to the Tube and/or pallet.
 - Quantity 4, 8221054 tamper evident seals (1 seal on each band closure, on 2 adjacent vertical panels of the tube)



Acceptable Container Closure:

As defined in 950-1685-XX, clear, pressure-sensitive carton sealing tape is the preferred material for closing all of Oracle's packaged product boxes. On an exception basis only (requiring approval by Oracle Packaging Engineering), the alternative carton closure materials listed below may be used, however they are **NOT ACCEPTABLE in combination with tamper evident seals:**

- Gummed Paper Tape
- Spot application of Hot Melt Adhesives
- Staples or Stitches (staples are acceptable only when used to create the 'manufacturer's joint' of a carton, or to construct a DST, however staples are NOT allowed as a box closure)

16 ESD Bags / Thermoform clamshells

Reference	8221055: Tamper Evident Seal (for use with ESD bags, envelope mailers, bags and sheets)
Reference	8221054: Tamper Evident Seal (use on external or internal boxes and external bands)

A tamper evident seal (8221055) was created for use on Electrostatic Sensitive Devices to close and secure ESD bags.

When required on the BOM (or specified on an order by the Configurator), this ESD-tamper evident seal is intended to replace the off the shelf, yellow, Electrostatic Sensitive Device label commonly used to close ESD bags.

Note: Application of a tamper evident seal on a black conductive corrugated fiberboard box shall follow the **Application of Tamper Evident Seals on boxes** instructions above. As a general rule, ESD bags are NOT required when a product is packaged inside of a black conductive corrugated fiberboard box.

ESD bags should be formed out of a single piece of film, with a bag manufacturer's heat welded seam on 2 sides of the bag. The 3rd side of the bag (opposite the bag opening) shall be the continuous piece of film - folded in half to create the bottom of the bag.

Internal Package Seal

After the product is placed in the bottom of the bag, the top of the bag shall be folded over the product to minimize any head-space in the top of the bag before applying the ESD tamper evident seal 8221055 to close and seal the bag. If the proper size bag is chosen, then a single ESD-tamper evident seal should be sufficient to prevent the product from being removed without either breaking the seal or cutting the bag. (see Figure 18).

Sometimes incoming, bulk packaged product is used by Oracle Manufacturing or EMs to build individual packaged product FRUs. If the incoming, bulk packaging already includes individually bagged product in ESD bags, these ESD bags can be passed-through and re-used in the FRU packaging, except when a tamper evident seal is required on the packaged product FRU BOM. When a tamper evident seal is required, then a new ESD bag shall be used in combination with the 8221055 tamper evident seal unless the incoming off the shelf Electrostatic Sensitive Device label and any label residue can be completely removed prior to applying the 8221055 tamper evident seal.



Figure 18. 8221055 Tamper Evident Seal on an ESD bag.

External Package Seal

A closed and sealed ESD bag shall be over-boxed for shipment. Refer to **Individual Cartons or Boxes** above for how to secure the external box.

17 Envelope Mailers

Reference 8221055: **Tamper Evident Seal** (for use with ESD bags, envelope mailers, bags and sheets)

Internal Package Seal

Envelope mailers are typically used only as external shipping packages vs. shipped inside of another package.

External Package Seal

Most Envelope Mailers have an integrated peel-and-stick self-adhesive closure. When required on the BOM (or specified on an order by the Configurator), a 8221055 tamper evident seal can be applied over the Envelope Mailer's sealed opening to provide tamper evidence protection. The tamper evident seal shall be centered across the Envelope Mailer's opening, with 50% of the seal covering the Envelope flap, and 50% of the seal material covering the body of the envelope.

Similar to ESD bags, the Envelope Mailers can be folded over the product to minimize the head space above the product in the envelope before the integrated peel-and-stick closure is sealed.

18 Inspection Criteria for Tamper Evident Seals and the Integrity of the Package:

The intent of including 'Inspection Criteria' in this section is primarily as reference for helping Oracle to decide whether or not a package product has been tampered with.

Shipper Responsibility: During shipment, the Shipper may need to inspect and record the integrity of the packaging and the tamper evident seals between different legs of the shipment, or after the shipment has been inspected and potentially opened by Customs. At any time that the tamper evident seals are opened or damaged, the Shipper shall record that event on the Shipper Declaration.

Customer Responsibility: The customer receiving the shipment shall inspect the tamper evident seals to ensure that the shipment was not opened in transit. If the seals are open, the customer should receive the shipment and document the integrity of the packaging/tamper evident seals with photographs and contact their Sales Representative to determine next steps.

'OPEN VOID' residue message layer: When a tamper evident seal has been peeled away, there is a red and white 'OPEN VOID' residue layer of the seal that is left behind on the packaging materials. When this residue message (or some portion of this message) is visible, it is an indication that the integrity of the package may have been compromised. However, if the 'internal' tamper evident seals and internal packaging are still intact, then the product should be secure.

Starburst die cuts: Starburst die cuts have been added in each of the 4 corners of the tamper evident seals. When seals are opened or torn away from the packaging materials that they are adhered to, the die cuts will cause the seal to 'splinter' or tear. Splintered or torn TE seals will be evidence that the seal may have been compromised and make it harder for someone to potentially re-adhere a seal after the seal has been opened.



Figure 19. Image of Tamper Evident Seal 'OPEN VOID' printed residue message layer that is left behind/adhered to the packaging materials when the seal is removed.

Inspect and Authenticate the Integrity of a package with an Integrated Pallet:

If any of the following conditions exist, then the security of the package may have been compromised:

- the OPEN VOID residue message is visible on 2 or more External band closures
- 2 or more External tamper evident banding closure seals are missing
- the OPEN VOID residue message is visible on 2 or more Internal tamper evident band seals encircling a bagged rack
- 2 or more External Internal tamper evident band closure seals or bag are missing
- if there are any banding closures (clips or friction welds) that are not covered with an intact tamper evident seal
- any single band that is not continuous and unbroken with a single banding seal covered by a single tamper evident seal (internal bands with 1 band closure and 2 tamper evident seals excepted)
- any band that has multiple band closures, splices, or banding seals that are not covered by a tamper evident seal
- the corrugated fiberboard container, box or bag has been cut or otherwise opened

(See Figure 19, 20 and 21 for OPEN VOID residue message appearance.)

It should be noted that individual instances of 'open void' or missing seals are not in and of themselves evidence of product compromise. It will be an aggregate. For example, if a tamper evident seal was damaged or torn away from an external band, but the remaining band closures are unopened unopened as evidenced by the OPEN VOID residue message still covering the banding closure, (clip or friction weld) and the band is continuous and unbroken without any additional banding closures that are not covered by a tamper evident seal on that same strap, then that strap was likely not opened, and just the seal was damaged. Or, if a package was opened by Customs, a Customs label or shipper Declaration should verify this and external seals may be broken or missing, but 2nd layer protective mechanisms should still be in place and package secure.

Ultimately determining package integrity may require a judgement call after reviewing all of the evidence.



Figure 20. Image of four bands and clips after Tamper Evident Seals removed, showing 'OPEN VOID' residue message

Inspect and Authenticate the Integrity of an Individual Container or Box:

If any of the following conditions exist, then the security of the package may have been compromised:

- the OPEN VOID residue message is visible (see Figure 19)
- the Exterior tamper evident seal and box tape below the seal has been cut
- a single tamper evident seal is missing on an individual carton
- the corrugated box has been cut open
- the Internal tamper evident seals, sheet, or bag are opened, or the bag or sheet is cut or no longer sealed

If a package was opened by Customs, then a Customs label or Shipper Declaration should verify this.

Typically, Customs will x-ray the packaged product without opening it. In the event when Customs does open the external tamper evident seals, Oracle has added internal tamper evident seals in combination with ESD bags, internal boxes, sheets, clear rack bags, stretch wrap, internal bands and banding seals which allows Customs to 'see' the product, without needing to breach the internal tamper evident seal. If Customs does open the internal tamper evident seal, Oracle requests that an Oracle or Expeditors representative be present to witness and attest to the opening event.

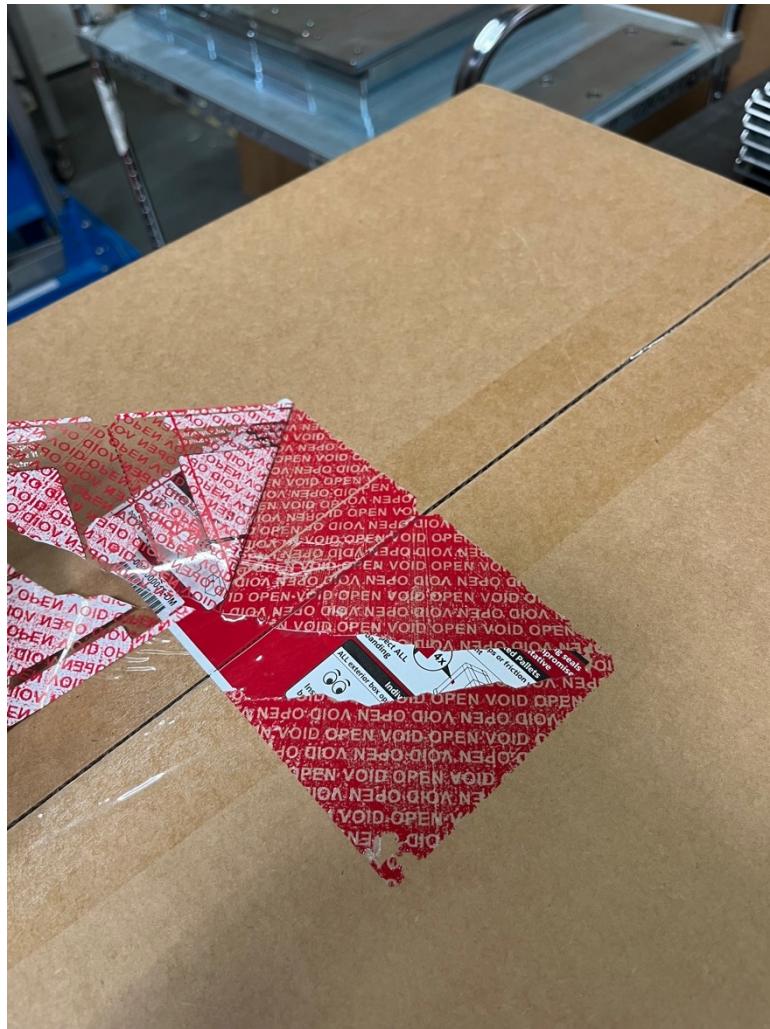


Figure 21. Image of 8221054 Tamper Evident Seal that has been peeled away revealing 'OPEN VOID' residue message adhered to the corrugated fiberboard and the box tape

Inspect and Authenticate the Integrity of a Sealed ESD Bag or Envelope Mailer:

If any of the following conditions exist, then the security of the package may have been compromised:

- the OPEN VOID residue message is visible, or a single tamper evident seal is missing
- the ESD bag or Envelope Mailer has been torn open, and/or re-sealed (heat welded)

If a package was opened by Customs, then a Customs label or shipper declaration typically verify this.



Figure 22. Opened ESD bag with tamper evident seal showing 'OPEN VOID' residue message

19 Revision History

REVISION	ECO NUMBER	DESCRIPTION	DATE
01	M56701	Initial Release	08/30/23
02	E61503	Add section 7.1, add DC-DC TE seals page 6	12/07/23
03	E61639	Corrected alias at the end of section 7	01/10/23
04	E63396	<p>Update with 5 new TE seal pn's, add serialization, starburst die cuts, artwork illustrations of C3 packaging. removed reference to 8208209 as it is already inactivated and no longer used anywhere.</p> <p>Review Version B: In the audience portion of the document, add callouts for OEM and JDM suppliers.</p> <p>Review Version C: fix errors to the artwork on the TE seals. Update JDM reference.</p>	1/14/25

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