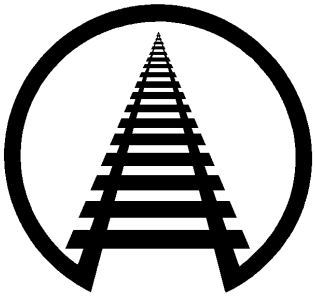
General Information Series No. 838

Unitizing with Stretch Wrap or Film, Stretch Wrap Roping, Shrink Netting, or Shrink Film

(CCLG Part 1 (1/14): Section 5.4 (revised)) (CCLG Part 6 (1/14): Section 4.6 (revised)) (Cancels GIS 816)

Approved by
DAMAGE PREVENTION & FREIGHT CLAIM COMMITTEE
Association of American Railroads



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General Rules

The General Rules relating to personal safety and the safe operation of trains, contained in AAR Circular Nos. 42-N and 43-G or supplements thereto, issued by the Association of American Railroads, **must be observed**.

These loading rules and/or practices apply to shipments transported in the USA, Canada and Mexico.

The loading methods in individual closed car loading publications issued by the Damage Prevention and Loading Services Section of the Association of American Railroads are minimum standards that have been evaluated and approved. These minimum standards offer practical guidelines on the subjects covered. Since these are minimum standards, it may be necessary to supplement these methods in some instances.

Securement standards in AAR closed car loading publications are intended for safe transit of the rail car from origin to destination and prevention of lading and equipment damage. These standards do not address unloading practices.

This approval may be withdrawn if the loads using these methods exhibit consistent load failure during actual shipments.

Loading and bracing methods not presently approved may receive consideration for approval and publication under Section II - Evaluation of New Loading and Bracing Methods and Materials for Closed Cars, Trailers or Containers of ***General Information Bulletin No. 2, "Rules and Procedures for Testing of New Loading and Bracing Methods or Materials"****. Submit requests to Closed Car Loading Rules Manager, dpls@aar.com.*

CAUTION: Car rocking motion caused by the lift equipment entering and/or exiting the rail car may cause unsupported packages or articles with a higher center of gravity to fall to the floor. Minimize access to the car. Exercise caution when inside a partially loaded car. Lift operators should stay on lift equipment, whenever possible, while inside a partially loaded car.

General

Cars must be inspected by shipper at loading point to verify that cars are in suitable condition. Car interiors must have, but are not limited to, sound roofs, sides, floors, and endwalls; and operable, snug-fitting doors. Any exception is cause for the car to be rejected.

It is important that boxcars are clean and free from protruding nails, brads, staples, temporary anchor plates, fragments of steel strap, old blocking etc. Some projections of lining or anchor devices may require covering with sheets of corrugated fiberboard taped in place.

Referenced paragraphs may be found in the Closed Car Loading Guide (CCLG) Part 1, *Minimum Loading Standards for Freight in General Purpose Boxcars*, January 2014 and Closed Car Loading Guide (CCLG) Part 6, *Minimum Loading Standards for Prepared Food and Similarly Packaged Products in Closed Cars*, February 2014.

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1.0 Stretch Wrap or Film, Stretch Wrap Roping, Shrink Netting, and Shrink Film Characteristics and Application

1.1 Stretch Wrap or Film

1.1.1 Stretch wrap or film may be used to unitize boxed freight, bagged freight, or other units of shipping to attach the units to a pallet or slip sheet. See Figure 1. Stretch wrap material is to meet standards as outlined in American Society for Testing and Materials - 4649 (current version).

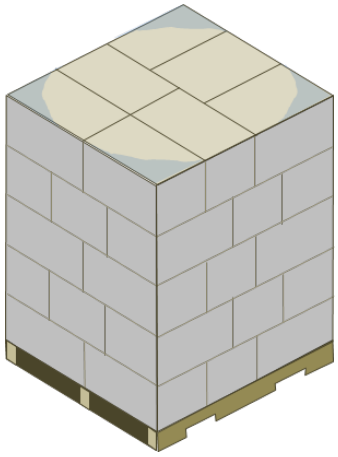

Figure 1
Stretch wrap or film

1.1.2 Stretch wrap is properly applied when wrap is elongated, applied under tension, and conforms to the units being wrapped. Stretch wrap creates a compressive force around the shipping unit to create load containment called film force to load. Film force to load is the amount of force applied by the film to a load (shipping unit) in providing load containment, measured by determining the force required to pull the film a set distance away from the load (shipping unit). (ASTM 4649)

1.1.3 Stretch wrap comes in gauges (thickness) from 30 – 150 gauge measured in mils or microns. The gauge selected is to be based on the weight of the entire unit, height of the entire unit, density of the shipping units, product type, and inherent stability.

- The most common stretch film wrapping recommendation is 80-gauge wrap.
- Pallets over 1,600 lbs. are recommended to use a minimum 80-gauge wrap.

1.1.4 Stretch wrap can be applied either by hand or machine application.

- Machine application increases the load containment and application consistency. Film elongation should be between 100% to 300%. (ASTM 4649) Machines are be calibrated to the type and gauge of film and calibration checked and maintained per manufacturer's instructions.
- If wrap is hand applied, recommended to use pre-stretched film with between 20% - 150% film elongation. (ASTM 4649)
- Film elongation is achieved with pre-stretch or post-stretch. Pre-stretched film or wrap is film that has been mechanically stretched close to its ultimate breaking point. Post-stretch is the stretch in the film created by the film tension between the film roll and load being wrapped.

1.1.5 Wrap the entire unit with at least three successive layers of film and have a minimum of 50% overlap coverage of each layer of wrap. Film must come over the top of the unit and contact a minimum of 3 inches of the shipping pallet.

- Ensure there is equal load containment measured at the top, middle, and bottom of the unit per stretch wrap manufacturer's recommendations based on weight of the entire unit, height of the entire unit, density of the shipping units, product type, and inherent stability.
- Load containment can be measured by using a weight scale or by the application machine. Reference ASTM 4649.
- Ensure there is no loose film or wrap and that the film tail is secured to the unit.
- Additional unitization methods, such as corner boards or strapping, may be needed if units are extremely light, extremely heavy, or if there is pallet under-hang.

1.2 Stretch Wrap Roping

1.2.1 The stretch wrap roping application method can be used to unitize palletized products to the pallet. Pallet Grip® or similar products can be used for stretch wrap roping applications.

1.2.2 The stretch wrap is rolled into a tight film rope, or cable, at the top of the pallet base and secured around all four corners of the pallet (See Figure 2).

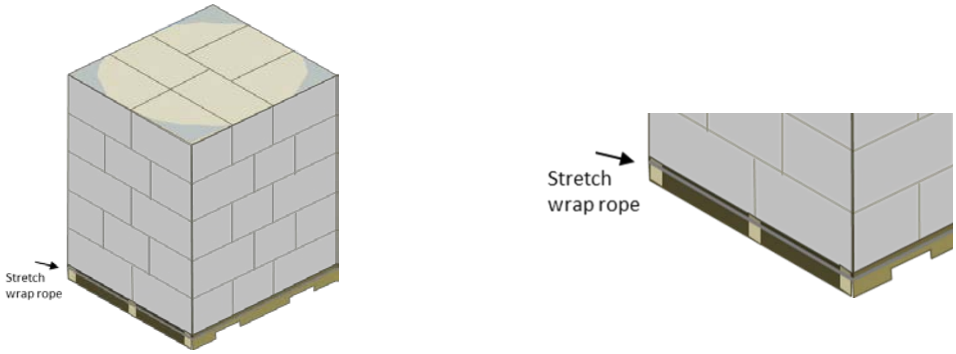

Figure 2
Stretch wrap rope

1.2.3 Stretch wrap must encompass all layers of the unit.

1.2.4 Apply three successive wraps of film around each layer of the unit with a unit weight of 1,000 lbs. or less and four successive wraps of film around each layer of the unit with a unit weight over 1,000 lbs.

1.3 Stretch Netting and Shrink Film

1.3.1 Stretch netting is used to unitize goods requiring ventilation, such as produce, or irregularly shaped units having exposed carton corners. Follow manufacturer's application recommendations. Additional unitization methods, such as corner boards or strapping, may be needed to maintain unit stability.

1.3.2 Shrink film is a heavy gauge polymer plastic, generally tube-shaped material for unitizing applications, that is placed over a pallet and shrunken tight with heat or ultra-violet rays. Shrink wrap is commonly used as an overwrap on many types of packaging, including cartons, boxes, beverage cans and pallet loads and may be used to stabilize the products, unitize them, keep them clean, or add tamper resistance. Follow manufacturer's application recommendations.

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General Information Series Publications

754 Wood Bins Braced by Disposable Inflatable Dunnage Bags and Lengthwise Fillers (CCLG Part 7) (10/16)
755 55-Gallon Steel Drums on Pallets Secured with Cordstrap® Barriers in 40-ft ISO Containers (Nonhazardous Materials only) (ILG Method I-6) (11/16)
759 Revision to Paragraph 2.5, Distribution of Weight Crosswise in Cars (CCLG Part 10) (2/17)
760 Incomplete Layers of Plywood Secured in Boxcars with Nonmetallic Straps (CCLG Part 3) (2/17)
765 Wood Bins Braced by Disposable Inflatable Dunnage Bags and Shock-Gard® Lengthwise Void Fillers (CCLG Part 7) (7/17)
768 Gearboxes Mounted on Sleds in 20 ft. Long ISO Containers (ILG Method E-23) (9/17)
778 Split Loads of 58 in. Diameter Roll Pulpboard on End Using Rubber Mats when Stowed in Trailers Having Large Metal Plates Approximately 9 ft. in Length at the Nose (ILG Method E-23) (3/18)
781 Wood Bins Braced by Disposable Inflatable Dunnage Bags and BIN-PAK or M-PAK Lengthwise Void Fillers (CCLG Part 7) (4/18)
782 Plastic Intermediate Bulk Containers with Disposable Inflatable Dunnage Bags and Lengthwise Void Fillers – Schoeller Allibert (CCLG Part 7) (4/18)
783 Cased Goods Secured by Tuff Wrap™ D.I.D. Bags (ILG Method F-4) (4/18)
784 Cased Goods Secured by S.A.M. D.I.D. Bags (ILG Method F-4) (5/18)
786 Aluminum Coils on Platforms/Skids Loaded on Rubber Mats & Secured by Two Floor Anchored Web Straps & Supplemental Securement Straps (CCLG Part 9) (6/18)
787 Universal Storage Containers Loaded in 53 ft. Intermodal Containers (ILG Method H-15) (6/18)
791 DRUM-PAK® Dunnage for Open Head Drums in Cushioned Boxcars (CCLG Part 7) (6/18)
794 Peat Moss, Bagged or Baled, in Cushioned Boxcars (CCLG Part 8) (8/18)
795 Coiled Metal on Platforms/Skids in Boxcars (CCLG Part 9) (8/18)
797 Split Loads of 58 in. Diameter Roll Pulpboard on End Using Rubber Mats when Stowed in Trailers Having Large Metal Plates Approximately 9 ft in Length at the Nose (ILG Method E-19) (11/18)
798 Intermodal Loads Secured with TyGard DS™ (ILG Method B-9) (11/18)
799 46 in. to 57 in. Diameter Roll Paper on End Using Rubber Mats (ILG Method E-21) (12/18)
800 54 in. Diameter Paperboard on End Using Rubber Mats (ILG Method E-22) (12/18)
803 Stretch Film Roping of Steel Coils and Coil Loading Methods for Railroad Shipments (CCLG Part 9) (12/18)
810 Reinforced Longitudinal Void Fillers for Plastic, Metal or Wood Intermediate Bulk Containers with Tomato Products (CCLG Part 7) (4/19)
811 Plastic Intermediate Bulk Containers with Disposable Inflatable Dunnage Bags - Horen (CCLG Part 7) (6/19)
814 Bales of Wood Pulp in Boxcars (CCLG Part 8) (6/19)
815 Doorway Protection for Baled Paper and Wood Pulp Products in Boxcars (CCLG Part 8) (6/19)
817 Case Goods Secured by Stopack Max Blocker D.I.D Bags (ILG Method F-5) (9/19)
822 Palletized or Crated Auto Parts Secured by Web Strap Assemblies in 53 ft. Containers (ILG Method H-16) (9/19)
823 Plywood and Similar Panels Products – Loading Doorway Areas (CCLG Part) (10/19)
824 Case Goods Secured by Stopak Blocker D.I.D Bags (ILG Method F-6) (10/19)
825 Loading Bundled Ingots with Open Doorways (CCLG Part 10) (10/19)
826 Building Brick in Closed Cars – Incomplete Layer Securement – Woodpack Walls (Litco) (CCLG Part 5) (11/19)
827 Drum Layer Separators for Intermodal Shipments (Hazardous or Nonhazardous) (ILG Methods: B-3; B-8; B-9 (GIS 798); G-2; G-3; I-1; I-2; I-3; & I-4 (GIS 792)) (11/19)
828 44 in. Diameter Paper Roll in 50 ft. Cushioned Boxcars Using Horizontal Airbags (CCLG Part 2) (12/19)
829 39 in. Diameter Paper Rolls in 50 ft. Cushioned Boxcars Using Vertical Airbags (CCLG Part 2) (12/19)
830 72 in. Diameter Paper Rolls Loaded in 60 ft. Cushioned Boxcars with 16 ft. Double Plug Doors Secured with Double-S Straps (CCLG Part 2) (2/20)
831 Metal Intermediate Bulk Containers with Disposable Inflatable Dunnage Bags and Lengthwise Void Fillers – Goodpack USA (CCLG Part 7) (3/20)
832 47 in. Diameter Roll Paper Loaded in 60 ft. Cushioned Boxcar with Plug Doors. (CCLG Part 2) (4/20)
833 Double Layer Loads of Hazardous or Nonhazardous Materials Secured with Cordstrap® Barriers in a 20-ft Container (ILG Method I-4) (4/20)
834 Hazardous or Nonhazardous Loads Secured with Cordstrap® Barriers in 40-ft Containers (ILG Method I-5) (4/20)
835 Double Layer Loads of Nonhazardous Materials Secured with HLASH RHS Securement System in a 20-ft Container (ILG Method I-7) (4/20)
836 Wood Bin Containers for Shipping Liquid or Paste Products in Boxcars (CCLG Part 7) (5/20)
837 54 in. Diameter Roll Paper Loaded in 50 ft. Boxcars (CCLG Part 2) (5/20)
838 Unitizing with Stretch Wrap or Film, Stretch Wrap Roping, Shrink Netting or Shrink Film (CCLG Part 1; CCLG Part 6) (6/20)