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Intermodal Cargo Securement for North American Rail Service



A Webinar Prepared Expressly for
IVODGA By:

**DAMAGE PREVENTION
AND LOADING SERVICES**

Intermodal Cargo Securement for N.A. Rail Service

The Association of American Railroads

Founded in 1934, AAR is the world's leading railroad policy, research, standard setting, and technology organization that focuses on the safety and productivity of the U.S. freight rail industry.

AAR Full members include the major freight railroads in the United States, Canada and Mexico.

AAR Damage Prevention & Loading Services (DPLS)

(DPLS) conducts testing for railroads, shippers and suppliers in establishing industry approved loading rules and standards for closed car shipments, **intermodal containers and trailers** (including hazmat), automobile shipments, and open top shipments.

AAR Bureau of Explosives (BOE)

The Bureau of Explosives (BOE) is a unique membership organization dedicated to helping carriers, shippers, and container manufacturers continually improve hazardous materials (hazmat) transportation safety.



Intermodal Cargo Securement for N.A. Rail Service

49 CFR § 174.55

§ 174.55 General requirements.

- (a) Each [package](#) containing a [hazardous material](#) being transported by rail in a [freight container](#) or [transport vehicle](#) must be loaded so that it cannot fall or slide and must be safeguarded in such a manner that other freight cannot fall onto or slide into it under conditions normally incident to transportation. When this protection cannot be provided by using other freight, it must be provided by blocking and bracing. For examples of blocking and bracing in [freight containers](#) and transport vehicles, see [Bureau of Explosives Pamphlet No. 6](#) and the [Intermodal Loading Guide for Products in Closed Trailers and Containers](#) (IBR, see [§ 171.7](#) of this subchapter).
- (b) Each [package](#) containing a [hazardous material](#) bearing [package](#) orientation [markings](#) prescribed in [§ 172.312](#) of this subchapter must be loaded within a [transport vehicle](#) or [freight container](#) to remain in the correct position indicated by those [markings](#) during transportation.
- (c) The doors of a [freight container](#) or [transport vehicle](#) may not be used to secure a load that includes a [package](#) containing a [hazardous material](#) unless the doors meet the design strength requirements of Specification M-930 (for freight containers) and M-931 (for trailers) in the AAR's specification for "Specially Equipped Freight Car and Intermodal Equipment" (IBR, see [§ 171.7](#) of this subchapter) and the load is also within the limits of the design strength requirements for the doors.



Intermodal Cargo Securement for N.A. Rail Service

DPLS Loading Rules and Standards

Circular 43-G, Rules Governing the Loading, Blocking, and Bracing of Freight in Closed Trailers and Containers for TOFC/COFC Service



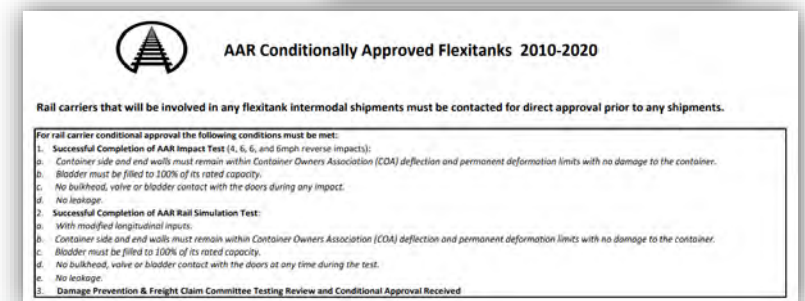
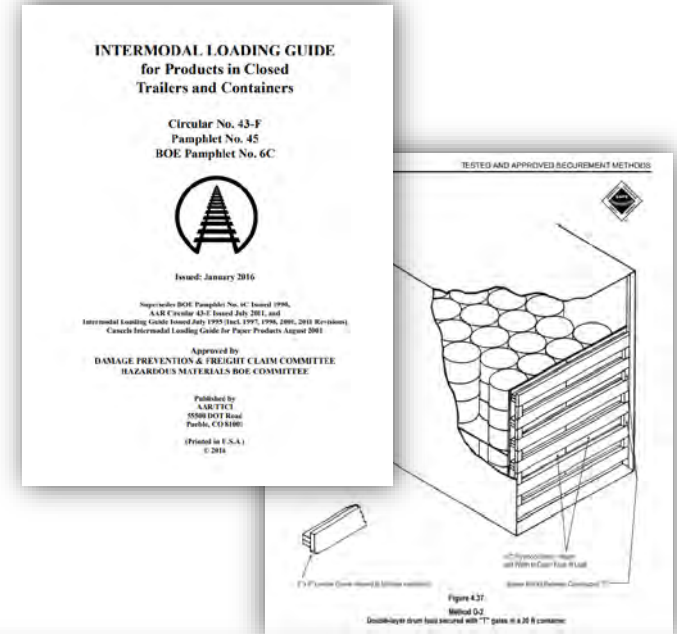
Intermodal Loading Guide (ILG) for Products in Closed Trailers and Containers (including HM)

General Information Series Updates – Provides new loading methods approved subsequent to the ILG latest revision

Flexitank Loading Information, including AAR Conditionally Approved Flexitanks

Note: hazardous materials are prohibited in flexitank service.

<https://aar.com/standards/IntermodalLoadingPublications.html>



Intermodal Cargo Securement for N.A. Rail Service

DPLS Loading Rules and Standards

Open Top Loading Rules

Section 1, General Rules for Loading All commodities

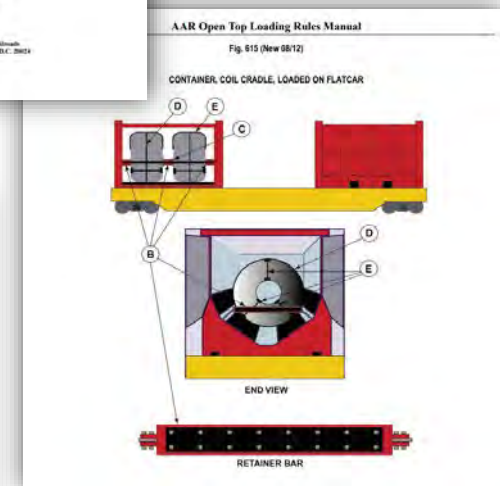
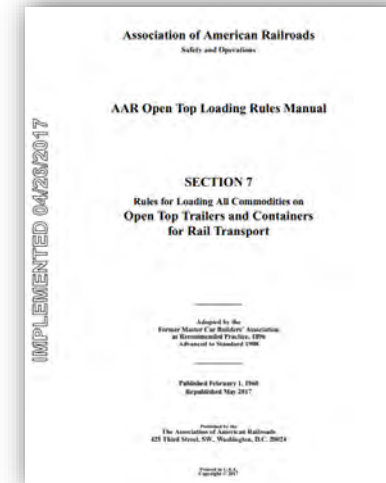
Section 7, Rules for Loading All Commodities on Open Top Trailers and Containers for Rail Transport

Online Library for the Open Top Loading Rules

<https://my.aar.org/OTLR/>

Open Top Loading Rules Link

<http://www.aar.com/standards/OpenTop.html>



Open Top Loading Rules Committee
ctr@aar.com

Association of American Railroads

Current as of May 27, 2020

This table corresponds with AAR Open Top Loading Rules, Section 1, Table 19.3

Manufacturer/ Distributor	Approved through (Mo/Yr)	Grade 6		Grade 7		Grade 8	
		AAR ID (Part No.)	MBS lb (N)	AAR ID (Part No.)	MBS lb (N)	AAR ID (Part No.)	MBS lb (N)
Corstrap USA Inc.	06/20	AAR-77 Corstrap 150 - Hooks (CDBH12, CDBH12 Extended and Ladder Buckles (HOB12C, HOB12N and Dynablock 12N-150)	X	AAR-77 Corstrap 200 - Hooks (CDBH12, CDBH12 Extended and Ladder Buckles (HOB12N and Dynablock 12N-200)	X	AAR-77 Corstrap 750 - Hooks (CDBH125LR Extended and CDBH13) and Ladder Buckles (HOB13N and Dynablock 13)	X
Carolina Strapping GateLASH	04/22	AAR-80 CS 8040 - Hook (CSB-9077 Extended and Ladder Buckles (CSB-9090, CSB-9091, and CSB-9093)	X	AAR-80 CS 8050 - CSB-9075 Ladder Hook CSB-9076 Ladder Hook CSB-9091 Ladder Buckle	X	AAR-80 CS 8070 CSB-9078 Extended Hook CSB-9079 Ladder Hook CSB-9095 Ladder Hook CSB-9096 Ladder Buckle	X
Southern Strapping Systems	12/18	AAR-78 AW177 - Ladder Buckle SSLB40	X	AAR-78 TY2-12K - Ladder Buckle SSLB40	X		
Southern Strapping Systems	12/18	AAR-87 SBS138 - Ladder Buckle SSLB40	X	AAR-87 SBS12K - Ladder Buckle SSLB40	X		

Transportation Technology Center, Inc. 55100 DOT Road, Pueblo, Colorado 81002
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BOE Loading Rules and Standards

BOE Pamphlet 6-C, last issued in 1986, incorporated into the Intermodal Loading Guide.

* In 2015, the AAR Hazardous Materials Committee delegated authority for approval of hazardous materials loading and securement to the AAR Damage Prevention & Freight Claim Committee.



Intermodal Cargo Securement for N.A. Rail Service

Tariff No. BOE-6000

Tariff No. BOE-6000 **contains all the hazardous materials regulations** currently issued by the US Department of Transportation. Unlike the US Code of Federal Regulations, which is published just once each year by the Government Printing Office, AAR updates and issues the Tariff No. BOE-6000 on a quarterly basis. Offered in print as either a complete book that is published, updated and issued each quarter or through quarterly updated supplements of the changes to the regulations. Also available in electronic versions that include both the US Regulations as well as Transport Canada's Dangerous Goods Regulations. Highlights include:

- Enhanced Hazardous Materials Table includes additional codes in Col. 1 of §172.101 Hazardous Materials Table identifying those materials that are hazardous substances or **marine pollutants** and added column for each entry linking it to the appropriate Emergency Response Guide.
- Restrictions, including **intermodal**, for hazardous materials acceptance and transportation by rail.
- Recommended placement of placards on containers and portable tanks.

<https://www.aar.org/boe/>



Intermodal Cargo Securement for N.A. Rail Service

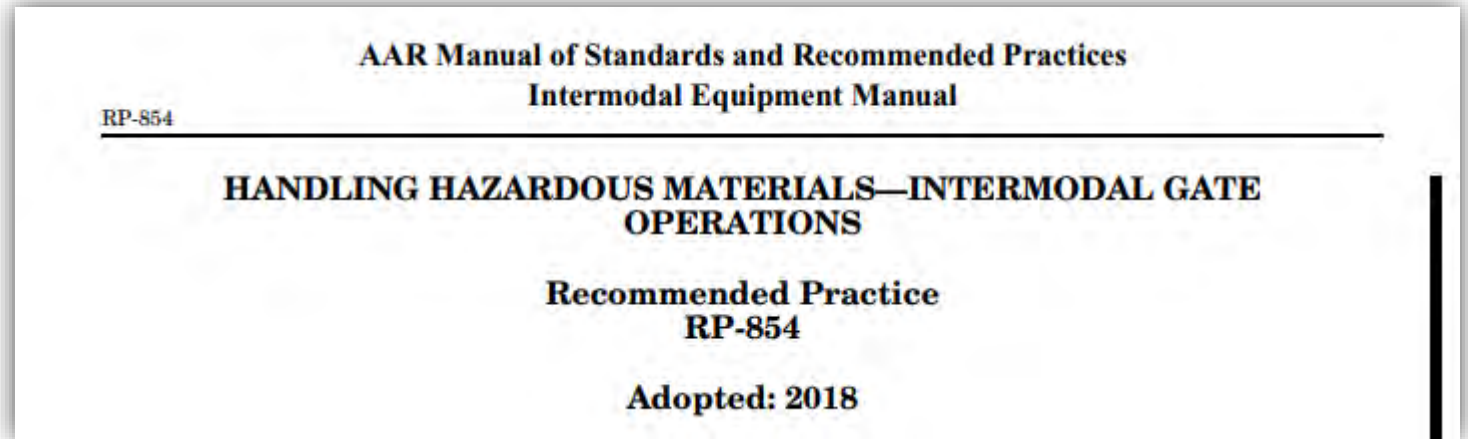
Other AAR Intermodal Information Resources:

MSRP Section I, Intermodal Equipment Manual

M-930, RP-854

<https://my.aar.org/>

- [AAR US Hazmat Instructions Rail BOE](#): Describes how to handle hazardous material shipments or incidents safely and efficiently, without delay, and in accord with local, state, and federal regulations in order to comply with Department of Transportation regulations.
- [AAR Intermodal Gate Operations BOE](#): Provides instructions for how gate clerks must handle trailers/containers (both freight and tank containers) transporting hazardous materials during intermodal gate operations.



Intermodal Cargo Securement for N.A. Rail Service



49 CFR Subchapter A – Applicability, General Requirements, and North American Shipments Section 171

- 171.8 **Electronic data interchange (EDI)** means the computer-to-computer exchange of business data in standard formats. In EDI, information is organized according to a specific format (electronic transmission protocol) agreed upon by the sender and receiver of this information, and transmitted through a computer transaction that requires no human intervention or retyping at either end of the transmission.”

49 CFR Subchapter C – Hazardous Materials Regulations Section 172

- 172.202 (b) “... Shipping descriptions for hazardous materials offered or intended for transportation by rail that contain all the information required in this subpart and that are formatted and ordered in accordance with recognized **electronic data interchange** standards and, to the extent possible, in the order and manner required by this subpart are deemed to comply with this paragraph.”

BNSF Load & Ride Solutions

IVODGA Dangerous Goods Cargo Securement Review

**DAMAGE PREVENTION
AND
LOADING SERVICES**

IVODGA
INTERNATIONAL VESSEL OPERATORS
DANGEROUS GOODS ASSOCIATION



<https://www.bnsf.com/ship-with-bnsf/intermodal/>

BNSF Railway – Load & Ride Solutions



Load & Ride Solutions provides a wide range of value-added services to support our customers, the BNSF Railway & the transportation industry, in every phase of the shipment life cycle!

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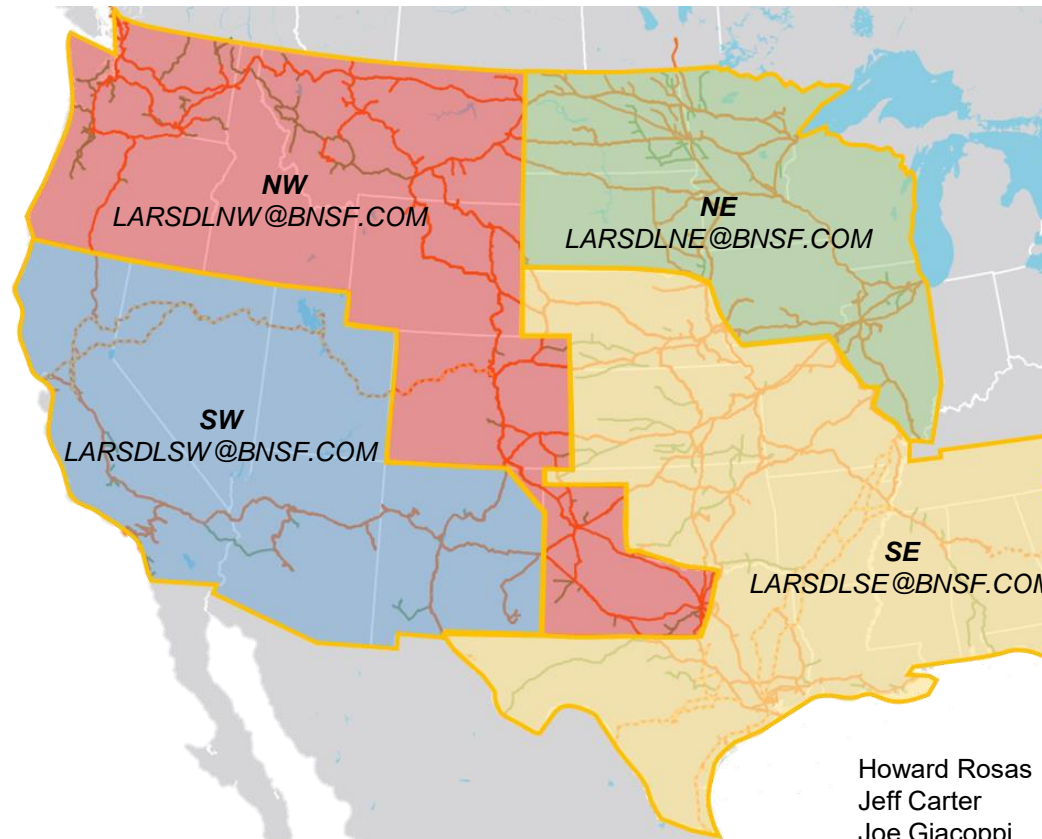
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Joe Giacoppi Director East

<https://www.bnsf.com/ship-with-bnsf/support-services/loading-and-shipment-safety.html>

BNSF Intermodal Program



In addition to DOT 49 CFR § 174.55, AAR and BOE Regulations, each N.A. Railroad has developed protocol for safely handling intermodal shipments.

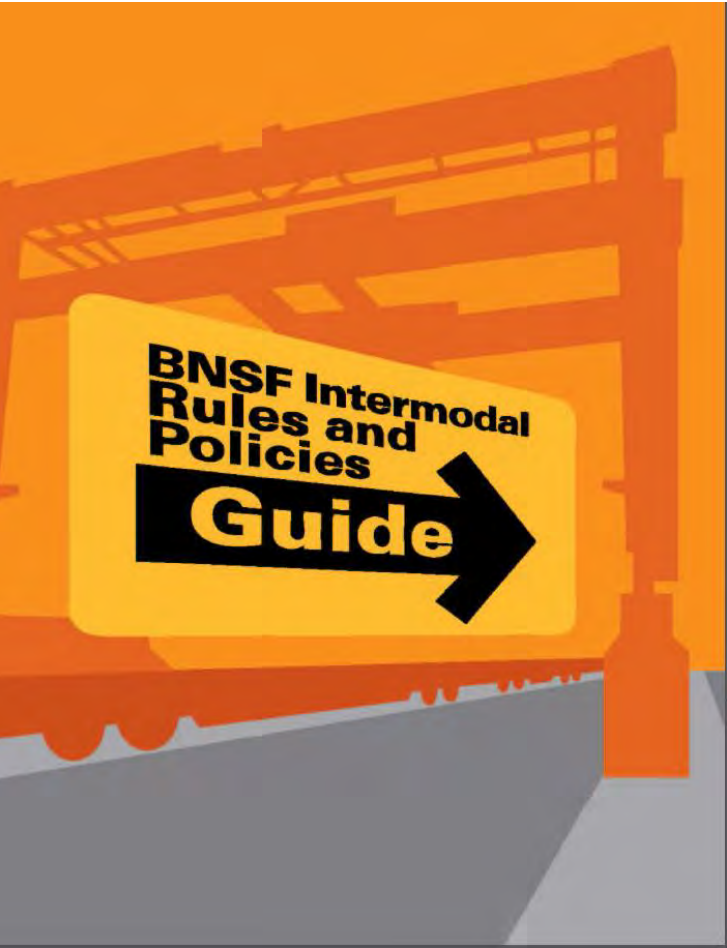


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BNSF IR&PG Focus Areas of Dangerous Goods:

- Item 7 Shipping Instructions- Special Pricing Authority, Detailed/Accurate STCC & Description, 2 hr delivery, 24 hr Emergency #, Complete Shipping Instructions & LARS Pre-approved Diagrams
- Item 10 Equipment- AAR Specifications M-931 (TOFC service and trailers), M-930 (COFC service and containers), M-943 (chassis provisions), and RP-931 (private owned trailers).
- Item 16 Temperature Controlled- Temperature of cargo vs other temperature conditions
- Item 17 Portable Tank Containers- Must conform to 49 CFR 172.101, 173 & 174.63 and AAR M-943 specifications.
- Item 19 Bulk Bladders/Flexi-Tanks- Non-Haz Shipments only

BNSF IR&PG Focus Areas of Dangerous Goods (Cont):

- Item 34 Prohibited Shipments- Hazmat in bulk bladders, Certain Haz Waste, Hazardous Materials, Explosives.
- Item 35 Restricted Shipments- Special Requirements: Ammo, Bulk products, Roll paper, Coil Metal, Hazmat. TCI, LTL, etc.
- Item 36 Hazardous Shipments- Restricted Commodity. Shipper must meet all Federal, State & Local Laws/Regs.
- Appendix E: Prohibited & Restricted Shipments (Detailed Cargo).

BNSF IR&PG Focus Areas of Dangerous Goods (Cont):

- Handling Distressed Shipments
- AAR Intermodal Loading Guide
- BNSF LARS Intermodal Loading Guide
- Cargo Securement (Dangerous Goods)
- Individual Assessment
- BNSF Testing / Ride Quality Program
- BNSF Experts & Training
- <https://www.bnsfhazmat.com/customer/customer-home/bnsf-intermodal-restrictions/>



BNSF Load & Ride Solutions has a simple approach. Understand normal rail transit movement & package the cargo accordingly. Secure the cargo from side-to-side & front-to-rear movements will be effective for safe, fluid & damage free movement!



QUESTIONS?

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BUILDING AMERICA®

August 18, 2020



Susana Lizcano, Ph.D., P.E.
Shipment Quality

Tim O'Brien
Hazardous Materials



32,100 Track Miles west
of the Mississippi

Approximately 99.8%
of our shipments
are delivered
damage-free

Hazardous Materials

- Hazardous Materials Guidance- DOT
- Intermodal Gate Operations
- Master Intermodal Transportation Agreement (MITA)
 - 520 Prohibited & Restricted Articles
 - 530 Hazardous Materials Shipments
 - 535 Shipments of Explosives

Hazmat Evaluation Table

Our [Hazmat Evaluation Table](#) outlines the Hazardous Materials Acceptance Guide for Union Pacific Railroad.

Examples

HazMat Evaluation Table

Example 1:

Union Pacific Hazmat Evaluation Table

Any material with a primary or secondary hazardous class of 6.1, radio active material, hazardous waste liquid or solid or defined in CFR 49, Parts 171-180 use **Private Equipment Only**

Hazardous material further described as Poisonous by Inhalation (PIH) or Toxic by Inhalation (TIH) are NOT acceptable for transportation by Union Pacific Railroad.

HAZARDOUS MATERIAL CLASS	DIVISION NAME	
<div><input checked="" type="radio"/> CLASS 1 - EXPLOSIVES</div> <div><input type="radio"/> CLASS 2 - GASES</div> <div><input type="radio"/> CLASS 3 - FLAMMABLE AND COMBUSTIBLE LIQUIDS</div> <div><input type="radio"/> CLASS 4 - FLAMMABLE SOLIDS AND REACTIVE SOLIDS/LIQUIDS</div> <div><input type="radio"/> CLASS 5 - OXIDIZERS AND ORGANIC PEROXIDES</div> <div><input type="radio"/> CLASS 6 - POISONOUS (TOXIC) MATERIALS AND INFECTIOUS SUBSTANCES</div> <div><input type="radio"/> CLASS 7 - RADIOACTIVE MATERIALS</div> <div><input type="radio"/> CLASS 8 - CORROSIVE MATERIALS</div> <div><input type="radio"/> CLASS 9 - MISCELLANEOUS HAZARDOUS MATERIALS</div>	<div><input checked="" type="radio"/> 1.1 - EXPLOSIVES(MASS EXPLOSION HAZARD)</div> <div><input type="radio"/> 1.2 - EXPLOSIVES(PROJECTION HAZARD)</div> <div><input type="radio"/> 1.3 - EXPLOSIVES(FIRE HAZARD)</div> <div><input type="radio"/> 1.4 - EXPLOSIVES(NO SIGNIFICANT BLAST)</div> <div><input type="radio"/> 1.5 - VERY INSENSITIVE EXPLOSIVES</div> <div><input type="radio"/> 1.6 - EXTREMELY INSENSITIVE DETONATING SUBSTANCES</div>	<div>HAZMAT SHIPPING INSTRUCTIONS</div> <div>Private Equipment Only: if shipped as hazardous waste.</div> <div>Packing Group II only:</div> <div><div>• Transportation requires special approval.</div><div>Request special approval for this move.</div></div>

Example 2:

HAZARDOUS MATERIAL CLASS	DIVISION NAME	
<div><input type="radio"/> CLASS 1 - EXPLOSIVES</div> <div><input type="radio"/> CLASS 2 - GASES</div> <div><input type="radio"/> CLASS 3 - FLAMMABLE AND COMBUSTIBLE LIQUIDS</div> <div><input type="radio"/> CLASS 4 - FLAMMABLE SOLIDS AND REACTIVE SOLIDS/LIQUIDS</div> <div><input type="radio"/> CLASS 5 - OXIDIZERS AND ORGANIC PEROXIDES</div> <div><input checked="" type="radio"/> CLASS 6 - POISONOUS (TOXIC) MATERIALS AND INFECTIOUS SUBSTANCES</div>	<div><input type="radio"/> 6.1 - POISONOUS MATERIALS</div> <div><input checked="" type="radio"/> 6.2 - INFECTIOUS SUBSTANCES</div>	<div>HAZMAT SHIPPING INSTRUCTIONS</div> <div>NOT ACCEPTABLE</div>



UPRR Hazardous Materials Management

Our Mission

- **HMM** is responsible for compliance with the DOT's Hazardous Materials regulations by continuously monitoring the ever changing regulatory climate.
- **HMM** aggressively works to **prevent** hazardous materials releases, actively **prepares** for **response** activities, responds as necessary, and works across all departments to **recover**.



UPRR Hazardous Materials Management

- **Prevention** – Prevent releases of hazardous materials in transportation.
- **Preparedness** - Develop internal and external assets for response and recovery.
- **Response** – Emergency response to releases to protect health minimize impact and stabilize the incident.
- **Recovery** – Progress incident to normal operations and to the point where closure work can begin



Shipment Quality (SQ)

Customer Satisfaction

Also known as “Damage Prevention”



- Safety is our first priority, “we help run the railroad safe & smooth”
- Support Union Pacific and our customers goal of “free damage transportation”
- Handle and prevent damage related claims
- Lead Continuous improvement initiatives to identify and eliminate the roots of damage
- Innovate to facilitate business growth

https://www.up.com/customers/shipment_quality/index.htm

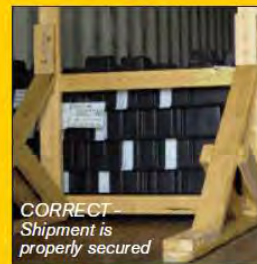


At your service

- Loading & Securement
- Field support
- Innovation

Remember "**SAFE LOAD**" when loading a container. The load is safe when you...

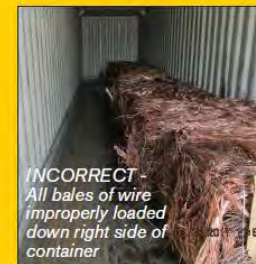
S



*CORRECT -
Shipment is
properly secured*

S - Secure the lading

A



*INCORRECT -
All bales of wire
improperly loaded
down right side of
container*

A - Always plan your load

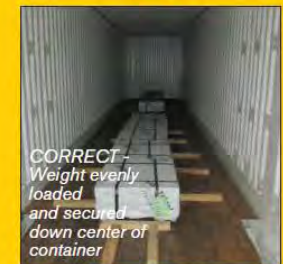
F



*CORRECT -
Proper use of
void filler and
air bag*

F - Fill the empty spaces

E



*CORRECT -
Weight evenly
loaded
and secured
down center of
container*

E - Evenly distribute weight

L



*CORRECT -
Weight evenly
loaded
and secured
down center of
container*

L - Look to ensure lading does not exceed 2,500 lbs. per linear foot

O



*INCORRECT -
Tension bars are
not AAR approved*

O - Only use AAR-approved dunnage

A



*INCORRECT -
Improper size
and application
of air bag*

A - Apply appropriate bracing and fill materials

D



*INCORRECT -
Improper use
of pallets*

D - Do not use pallets as fill material

Please visit our Shipment Quality Blocking and Bracing Website: www.up.com/customers/shipment_quality/Intermodal/helpful

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Keeping up with technology



Your Multi-Modal Auto Transport Solution

- Monitoring
- Testing
- Innovation
- Comprehensive Logistics



Thank you Questions?

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