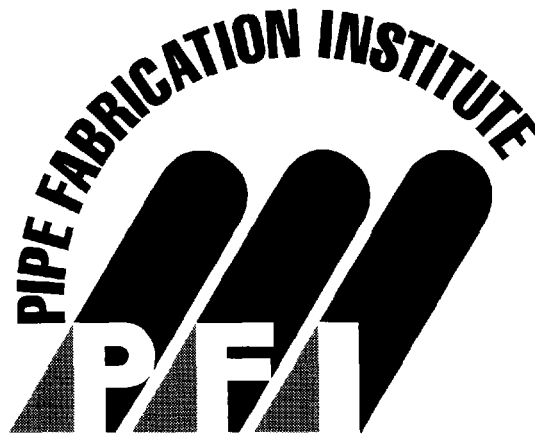


PFI Standard ES-37
(Revised March 1997)

STANDARD FOR LOADING AND SHIPPING OF PIPING ASSEMBLIES

Prepared by
Pipe Fabrication Institute Engineering Committee



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STANDARD FOR LOADING AND SHIPPING OF PIPING ASSEMBLIES

1.0 Scope

- 1.1 This Standard establishes the minimum requirements for the loading of prefabricated piping assemblies on full truckloads to minimize or prevent damage during subsequent shipment.
- 1.2 The loading and shipping methods described in this Standard are considered minimum protection. Due to the infinite possibilities of size and configuration of piping assemblies additional measures may be necessary for certain types of fabrication subject to agreement between the customer and the fabricator.
- 2.1.6 When carbon steel and stainless steel materials are loaded on the same transportation, non-contact separation between such materials shall be provided.
- 2.1.7 Small assemblies, loose material, or supports may be packaged (i.e., boxed, crated or palletized) for protection and security during shipment.
- 2.1.8 Over-width, over-height, or over-length loads require special consideration subject to agreement between the customer, fabricator, and the carrier.

2.0 Loading

- 2.1 Procedures for loading normally include the following:
 - 2.1.1 A bottom layer of dunnage is placed at regular intervals across the bottom loading surface.
 - 2.1.2 Spools of infinite configuration are loaded and placed in the best possible way to prevent movement and damage during shipment. Large diameter or heavy wall fabrication should always be placed on the bottom of the load with smaller and lighter weight materials placed on top of the load.
 - 2.1.3 It is recommended that slings of fabric construction be used for loading fabricated piping.
 - 2.1.4 When possible, spools of a "straight" configuration should be loaded in a layered manner with dunnage placed between each layer.
 - 2.1.5 Major abrasive contact points between painted spools should be protected by placing a protective material such as plastic foam, rubber, or wood between the spools to minimize damage. Particular care should be taken to protect and prevent contact between machined surfaces such as the gasket sealing area of flanges.

3.0 Shipping

- 3.1 Final securing and tie down of the load is the responsibility of the carrier.
 - 3.1.1 It is recommended that slings of fabric construction be used for securing fabricated piping. Chains or metal slings (i.e., cable) may be used provided sufficient measures are taken to prevent damage (or carbon steel contamination of stainless materials) to pipe assemblies.
- 3.2 An itemized packing list should accompany each shipment of fabricated piping assemblies.

4.0 Safety

- 4.1 Lifting equipment should be inspected as required by jurisdictional statute or company requirements.
 - 4.1.1 All slings and lifting equipment should be checked prior to each use for any visual damage.
- 4.2 Equipment operators and riggers should be properly trained and familiar with equipment and standard hand signals.

A current index of the latest revised ES Standards and Technical Bulletins is available from the Pipe Fabrication Institute.

PFI Standards and Technical Bulletins are published to serve proven needs of the pipe fabricating industry at the design level and in actual shop operations. Hence, such needs are continually considered and reviewed by the Engineering Committee of the Pipe Fabrication Institute to provide recommended procedures which have been demonstrated by collective experiences to fulfill requirements in a manner for Code compliance. However, as the PFI Standards are for minimum requirements the designer or fabricator always has the option of specifying supplementary conditions in the form of requirements beyond the scope of the PFI publications.