

TURKISH PETROLEUM CORPORATION (TPAO)

PACKAGING TECHNICAL SPECIFICATION FOR CASING, TUBING AND ACCESSORIES

Scope of Work

This packaging specification defines how the casing, tubing and accessories shall be packed which are going to be purchased by TPAO. Specification also defines how the items shall be transferred and aims to prevent casing damages during transportation. The specification is applicable to the basic requirements of the packaging of casings and tubings produced by pipe supplier.

General Terms and Conditions

Pipe supplier or their agents should provide proper supervision at the time of loading and unloading of water carriers to guard against improper or insufficient wooden wedge, inadequate bracing to prevent shifting during lurching of the ship, stowing pipe in or adjacent to bilge water, injurious chemicals or other corrosive material, dragging pipe along the pile and permitting couplings or thread protectors to hook together or strike the edge of a hatch opening or bump against the ship rail as per API RP 5C1 latest edition 6.1. Transportation.

Pipe supplier shall strictly work in accordance with the packaging technical specifications, HSE regulations and relevant standards. The loading and shipment shall be designed to prevent end damage, abrasion, peening and fatigue cracking, and shall comply with any rules, codes, standards or recommended practices, which are applicable.

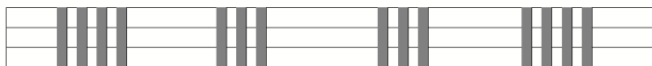
Pipe supplier shall select one of the proper packaging methods listed below.

- A. Bundle system
- B. Wooden frame / rack system
- C. Bumper rings for 16” and larger pipes (Sling rope can be used as a packing method for tubulars with a diameter of 16”).

Technical Specifications

A. Bundle System:

1. All pipes shall be packaged bundle or wooden frame / rack system.
2. The number of steel straps on the bundle must be at least 14 pieces.
3. When 14 straps are to be used, the placement of these steel straps should be placed from a total of 4 points equal distances from each other, 4 pieces at end points and 3 in the middle.



Strap Placement - 4x3x3x4

4. Galvanized steel straps with min 32 mm width and 0.9 mm thickness shall be used with suitable precision method. Pipe supplier shall be responsible to use high strength steel strips by considering size and weight of the casing/tubing.

5. The weight of each bundle or frame shall not exceed 5 tonnes.
6. Pipes must be placed on bed timbers on the same level and in suitable spacing and ensure the ends of the pipes at one side align to each other.
7. Wood wedges or other means shall properly be added for pipes in piling of yard layers (including square stacks) to prevent pipes from rolling.
8. Each bundle shall be furnished with minimum three (3) tags, resistant to wear and weathering (in a plastic bag), that will include the following; serial number, manufacturers name or mark, customer's name or mark (TPAO), purchase order number, date of manufacture, outer diameter (OD, inches), mass designation, grade, type of thread and the gross weight of the bundle.
9. Pipes of the same type OD, wall thickness, group strength should be placed at the same bundle.
10. Under no circumstances shall bare in loose packaging shall be accepted (Bulk packaging shall not be accepted.)
11. Packaging system should be stacked and its design allows for easy lifting by forklift, slings, or endless slings.
12. If possible, rope can be attached to the tube heads and end sections of 7", 9 5/8", and 13 3/8" casings before bundling.

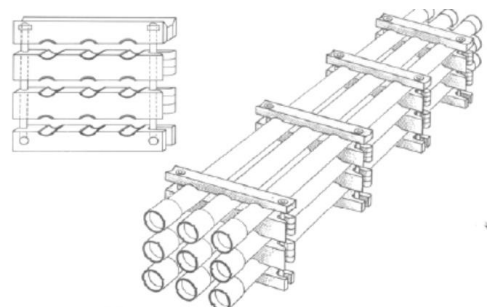
B. Wooden Frame / Rack System:

1. Wooden frame is a system of wooden segments which allow securing pipes in a consistent and indivisible load. Each segment is connected and secured to the next with straps or bolt.
2. Wooden racks shall be strapped by minimum 4 steel straps layers that separated by wooden frames along with the casing length. However, packaging could be secured with bolts linking both ends of sturdy bars passing through the upper and lower sections of each frame as an option.



Steel strips / Bandes

Wooden Packing Frame Application With Steel Strip Systems



Wooden Packing Frame With Securing Bolts

Sling ropes;

1. Sling ropes shall be used for each wooden rack or bundle to provide safe loading and unloading operations.
2. Two sling ropes will be used for each bundle for getting better lifting and loading safety.
3. Plastic cords, nylon straps or wires are not accepted for bundling.
4. Brand new sling ropes to be used for loading at the first time shall be left on the bundle/frame of the casings/tubings until they reach their final destination.Brand new sling ropes to be used for unloading at the first time shall be left on the frame/racks and protected by a sealed bag (Each sling ropes shall be used for one loading or unloading at a time). Pipe supplier shall provide sealed bag.



Sling Ropes on Bundle / Frame System During Loading/Unloading

5. Sling ropes must be designed for heavy lifting and heavy duty applications with a direct load capacity of minimum 5 tonnes.
6. Sling ropes must be installed to according to bundle / frame.
7. Pipe supplier shall submit the certificates of sling ropes to be used in the packaging of the casing to TPAO before loading and obtain approval.
8. All slings shall be in a good condition and capable of handling the weight of the casing frame.
9. At least two endless slings shall be placed around the bundle or frame to ease the handling operations.

C. Bumper Rings For 16" and Larger Tubulars:

1. High-quality bumper rings shall be used to provide additional protection when packing casing larger than 16".
2. Each casing 16" and bigger than 16" joint must have at least 3 bumper rings at the same distance from each other. To protect and prevent loosening the thread protectors during transportation.
3. Bumper rings must provide superior protection against metal-to-metal contact, be easy to install and remove, and prevent corrosion by creating additional space.
4. Protective bumper rings should protect the casings during storage and transportation.
5. Bumper rings must be larger than the diameter of the coupling and thread protector installed on the each pipe.

6. Pipe supplier can use rope instead of bumper ring. However, ropes are not preferred as they quickly wear out and can trap contaminants.



Bumper Rings

7. Contractor shall provide a total of 24 “blind end hooks” which conform to proper casing protector, during transportation of 16” and larger diameter casings for each shipment (no pointed hooks shall be used).
8. Blind end hooks shall have plastic/rubber absorbers component which prevents damaging of casing/tubing threads during loading/unloading.
9. Pipe supplier shall submit the certificates of blind end hook to be used in the packaging of the casing to TPAO before loading and obtain approval.



Example of Blind End Hooks Application

Storage at Vessel:

1. Pipe supplier shall take necessary precautions to prevent damaging of tubulars during transportation.
2. No pipe is allowed to be stowed in direct contact with bare steel parts of the vessel. Tubulars must be kept free of any direct contact to any obstructions (such as, but not limited to: manholes, bolts, lashing hooks container fittings, cell guides or other cargos).
3. The casings stacked at the bottommost shall be stacked on the ship using sufficient number of wooden wedges. Casings shall not be stacked on board in **mixed** diameter.
4. Pipe supplier takes due care not to place any other load on the casings belonging to TPAO.

5. After loading process, the casings shall be covered with a waterproof tarpaulin to protect them from sea water.



Vessel Storage Examples

Other Matters:

1. At the loading port, the Contractor shall have a loading inspection report made by a accredited inspection company. This report shall be submitted together with the transport documents. The inspection report shall include photographs showing how tubulars were loaded on board and how the tubulars were stacked in the port area and the states clearly damage condition of the pipes.
2. Contractor awarded the tender is obliged to have technical personnel for counter inspection at the relevant port in Turkey during delivery and to have the pipes with alleged damage checked at the port.