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**Guidelines for safe unloading, storage and transport of  
steel pipes protected by anti-corrosion coating**

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**izostal sa**

## 1. Introduction

Among the types of corrosion protection of steel pipes offered by Izostal S. A. these are the main:

- 1) Three layer polyethylene
- 2) Three layer polypropylene
- 3) Three layer polyethylene/polypropylene
- 4) DFBE dual layer
- 5) FBE single layer
- 6) LAYTEC® internal coating

Izostal S.A. as manufacturer and supplier ensures the correct anti-corrosion protection of pipes and their loading as well as the basic protection of pipes during the transport. This instruction is intended for other entities dealing with transport, storage and handling of goods. Steel pipes protected by anti-corrosion coating are prone to the number of damages that may occur during transport and storage:

- damage of anti-corrosion coating continuity,
- bending and local damage of pipe and coating surface,
- damage of bevelled pipe ends,
- flexion of pipes,

therefore, any handling of goods and storage should be conducted by professionally trained receiver's staff using the equipment that guarantees carrying out these works in a safe manner. Before starting the works related to unloading and storage of steel pipes you should get familiar with technical requirements of this instruction.

## 2. Loading and unloading of coated pipes on and from means of transport

Unloading of pipes from railway wagons and cars or other means of internal transport should be conducted using an overhead crane with spreader beam or a crane or using a vacuum pump, slings or hook slings. While using hook slings you should pay particular attention to protecting of pipe ends (bevelling) and use hooks with special inserts, which protect pipe ends from damaging. During unloading all activities should be carried out carefully, avoiding impacts, abrasion or rapid overload during movement of pipes.

## 3. Storage of coated pipes

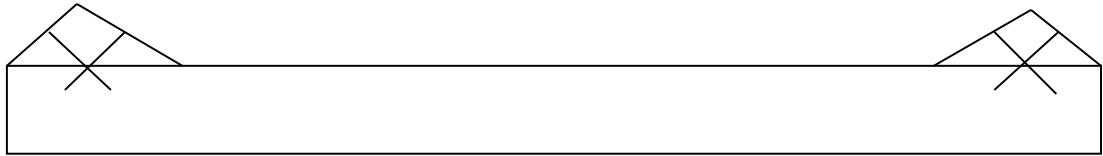
Coated pipes should be stored:

- on racks, putting them to the height that does not exceed upper edge of racks
- on properly protected piles in rectangular and collateral or pyramidal arrangement.

For securing coated pipes separators and wedges made of coniferous wood and without any defects affecting their durability should be used. Foundation for storage should be flat, hardened and without any stones and other elements that may damage coated surface of pipes.

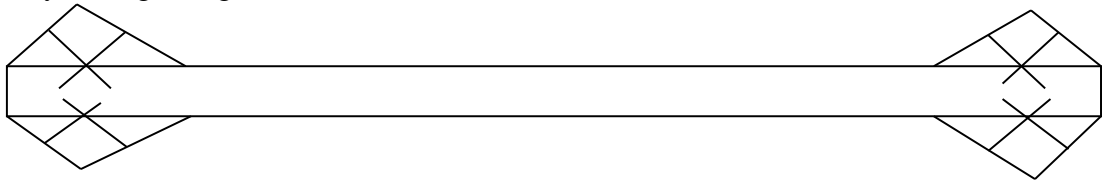
### Storage in rectangular and collateral arrangement (Fig. 3):

The lowest layer of each pile should be based on wooden separators (Fig. 1) with minimum cross-section 100 x 100 mm that are arranged at equal distances in the cross direction of longitudinal axis of pipes. Two outer separators should be placed within a distance at least 1,5 times longer than pipes diameter measured from the pipe ends and maximum 1,5 metres from their edges. The pipes with the length exceeding 8 - 14 m shall be supported at least in 4 points.



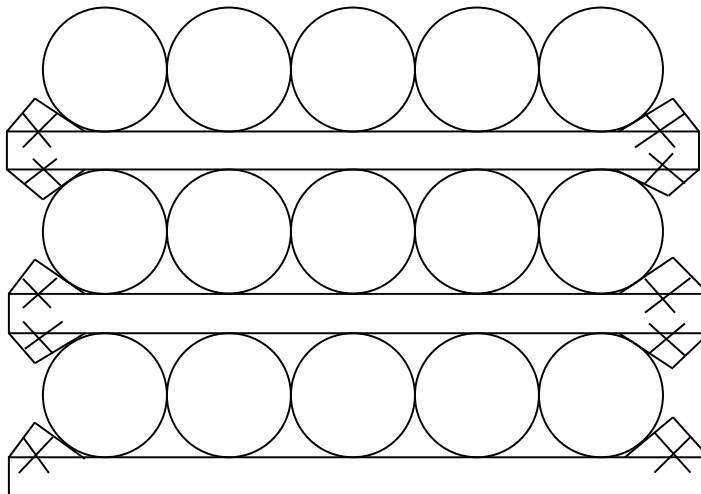
**Fig. 1.** Wooden separator with wedges

Separators having min 50 x 100 mm in section should be used for making the subsequent layers. The next layers have to be placed on intermediate bars having the same dimensions and protected by 4 wedges (Fig. 2).



**Fig. 2.** Wooden separator with 4 wedges

**The pile height in rectangular and parallel scheme cannot exceed 3m.**

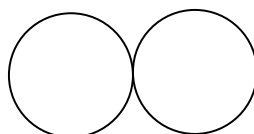


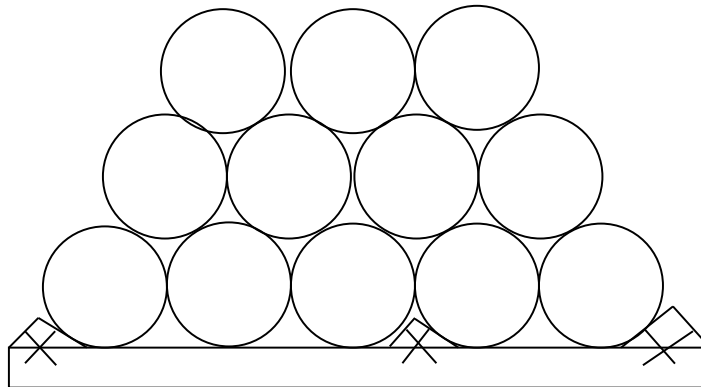
**Fig. 3.** Rectangular and parallel scheme

Storage in pyramidal arrangement (Fig. 4):

The lowest layer in a pile should be based on wooden separators (Fig.1) with minimum cross-section 100 x 100 mm that are arranged at equal distances in the cross direction of longitudinal axis of pipes. Two outer separators should be placed within a distance at least 1,5 times longer than pipes diameter measured from the pipe ends and maximum 1,5 metres from their edges. The pipes with the length exceeding 8 - 14 m shall be supported at least in 4 points. The next layers should be arranged in such a way that each pipe is placed between two pipes from the lower layer. In order to protect the pile, wedges should be placed every second pipe.

**The height of piles arranged in this way cannot exceed 4 metres.**





**Fig. 4.** Pyramidal scheme

#### **4. Transport, additional protection of pipes**

During transportation on loading surface the pipes must be fastened with straps with adjustable tension in a way, which prevents them from any movement. The carrier shall protect the pipes with at least 4 straps belting the whole load and 8 straps for keeping the tension. Tension of straps and load stability must be periodically checked during the transport. In order to additionally protect the pipes from longitudinal and lateral movement during transport, each layer should be separated by anti-slip mats. Depending on individual conditions, e.g. storage conditions, weather conditions (winter time), the pipes covered with anti-corrosion coating may be protected by belting piles using additional straps. The pipes covered with single layer epoxy coating should be protected with special care by putting them on wooden bars, which are lined with soft material and by separating each pipe, which shall prevent them from touching each other. For this purpose you may use rubber, paper, soft lining, etc. All installation and storage facilities (e.g. racks) used for storage and handling of pipes should be protected in a way that prevents coating of the pipes from damaging.

#### **5. Remarks**

During all activities described in this instruction, the appropriate regulations should be obeyed, especially health and safety as well as environmental regulations.