

# LOAD RESTRAINT GUIDELINE

## Bright Bar: Oiled and bundled

### 1. This guideline applies to:

- Oiled Bright Bar, with round or hexagonal cross section, bundled and banded in similar length loads, and loaded in a single layer.

A bundle of oiled bright bars has a coefficient of static friction  $\mu_s = 0.23$ ; tested according to EN 12195-1: 2003 Annex C.

*This restraint system is based on a coefficient of dynamic friction of 0.18.*

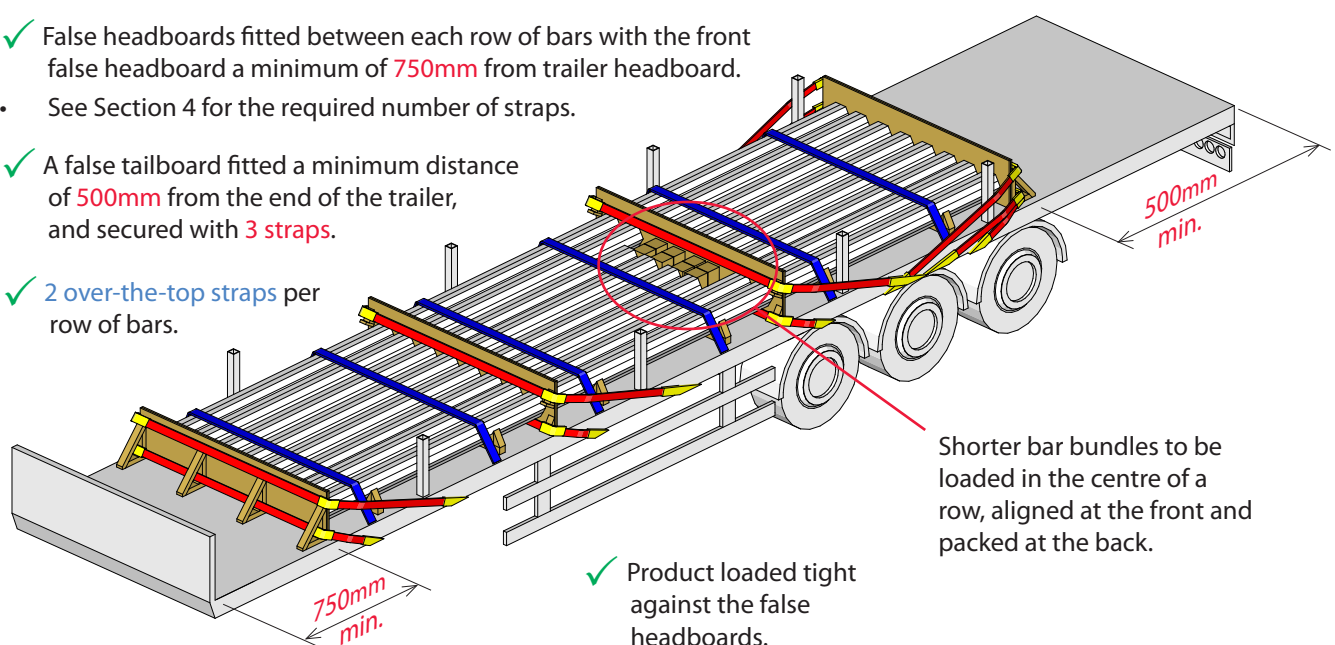
### 2. Essential requirements

- All restraints must be webbing straps with a minimum lashing capacity of 2000 daN and must be compliant with EN 12195-2:2001.
- Edge protection must be fitted to straps around false headboards and chassis frame.
- False headboards must be manufactured from first grade plywood. See Section 7.
- Base dunnage must be a single layer of square section timbers with secure triangular chocks or steel pegs. See Section 8.

### 3. Overview of restraint system

Typical full load consisting of 3 rows of 8 bundles across the trailer:

- ✓ False headboards fitted between each row of bars with the front false headboard a minimum of 750mm from trailer headboard.
- See Section 4 for the required number of straps.
- ✓ A false tailboard fitted a minimum distance of 500mm from the end of the trailer, and secured with 3 straps.
- ✓ 2 over-the-top straps per row of bars.



*This Load Restraint Guideline is designed to be compliant with the forces stated in EN 12195-1:2010 and VDI 2700.*

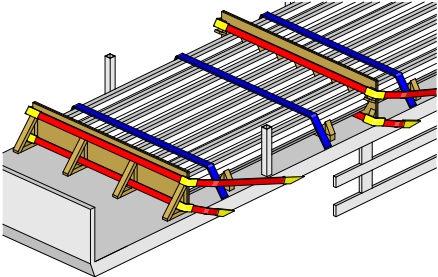
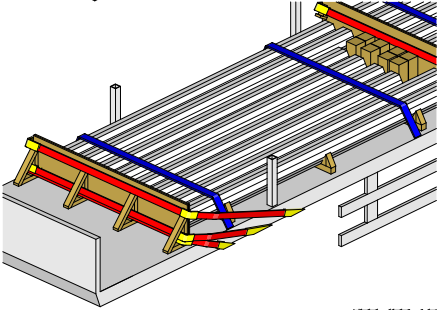
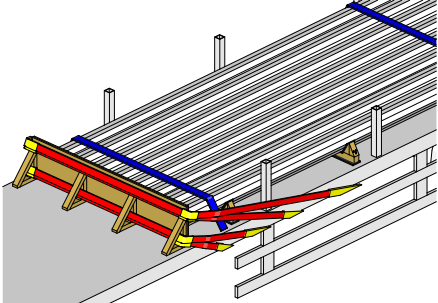
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### 4. Restraint requirements

Table 1 below shows the number of straps required on each false headboard and the anti-slip matting requirements for different bar lengths in each row of a load.

**Table 1: False headboard strapping requirements and anti-slip matting requirements**

Bar length	Strapping arrangement	Headboard straps per row	Anti-slip matting
Up to 4m		2	For export loads only. #
4.1 to 6m		3	For export loads only. #
6.1 to 8m		4 *	Applied to both sides of timbers for all loads.

\* Loads above 24 tonnes in a single row require 4 LC 2500 daN straps on the front false headboard.

# Export loads that are loaded on wax paper to protect the trailer bed from oil contamination require anti-slip matting to be fitted between the timber dunnage and the wax paper to prevent the timbers sliding sideways.

It is recommended that loads which transit Germany are fitted with anti-slip matting on both sides of the timbers, irrespective of whether or not wax paper is used.

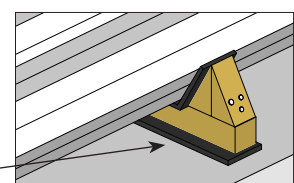
**Note:** As shown in Section 3 all loads also require:

- ✓ A tailboard with 3 straps (minimum LC 2000 daN).
- ✓ 2 straps over-the-top of each row of bars (minimum LC 2000 daN).

#### Anti-slip matting detail for bars above 6m

Where specified, anti-slip matting with a minimum friction coefficient of 0.6 is to be fitted underneath the base timber dunnage, and attached to the top face of the dunnage.

Anti-slip matting applied to both sides of base timbers.

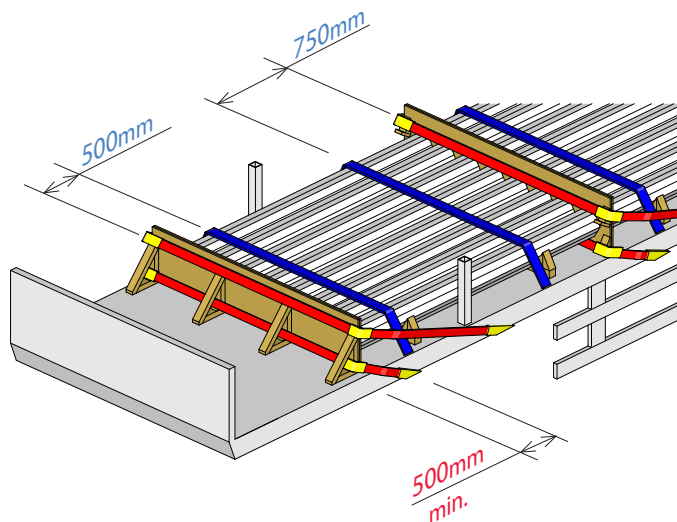


**When the Severe Winter Weather Warning is in force anti-slip matting must be applied to all loads on both sides of the timbers.**

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### 5. Lashing positions



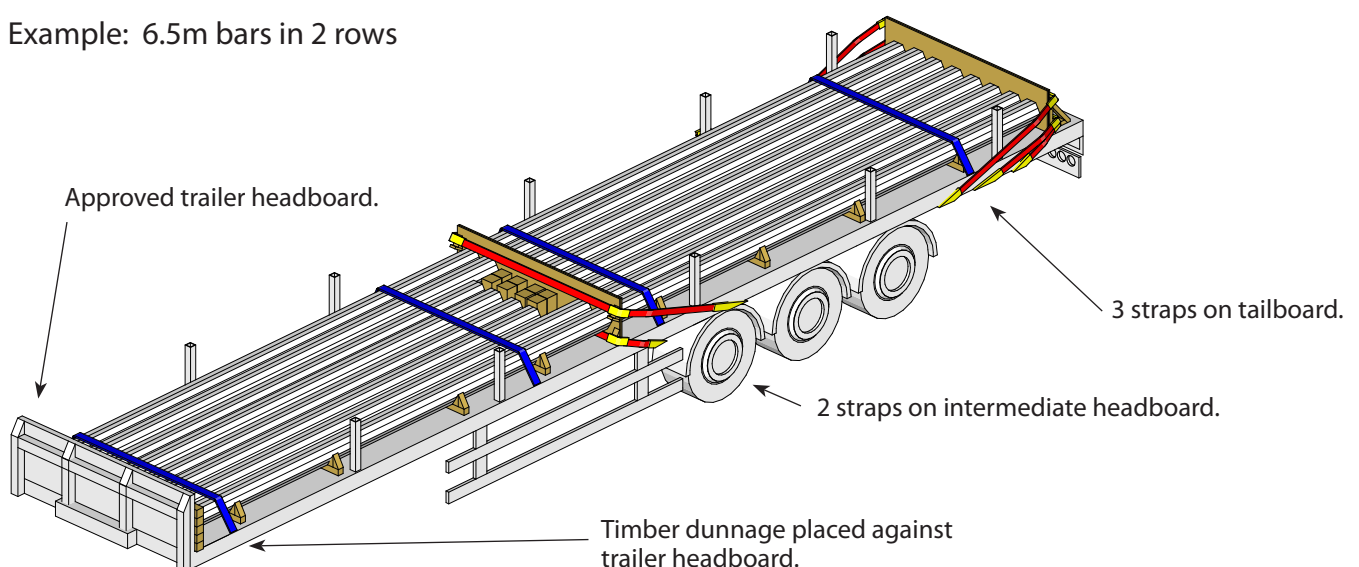
- ✓ Front **over-the-top strap** approximately 500mm from the front of the product.
- ✓ Rear **over-the-top strap** approximately 750mm from the back of the product.
- ✓ Lower **headboard strap** anchored back a **minimum of 500mm**.
- ✗ Do not attach more than one headboard strap to the same lashing point.

Note: The over-the-top strap may be applied to the same lashing point as the false headboard strap for this Load Restraint Guideline.

### 6. Blocking option - using trailer headboards

- Specialised trailers, approved by Tata Steel Load Restraint Engineers, or trailers with headboards manufactured to EN 12642 Code XL, can be loaded with product against the trailer headboard to provide forward restraint.
- Timber dunnage must be placed against the trailer headboard to spread the load.
- Tailboard and base dunnage requirements remain the same as shown in Sections 3 and 8.
- Intermediate headboards to be strapped back with 2 straps.

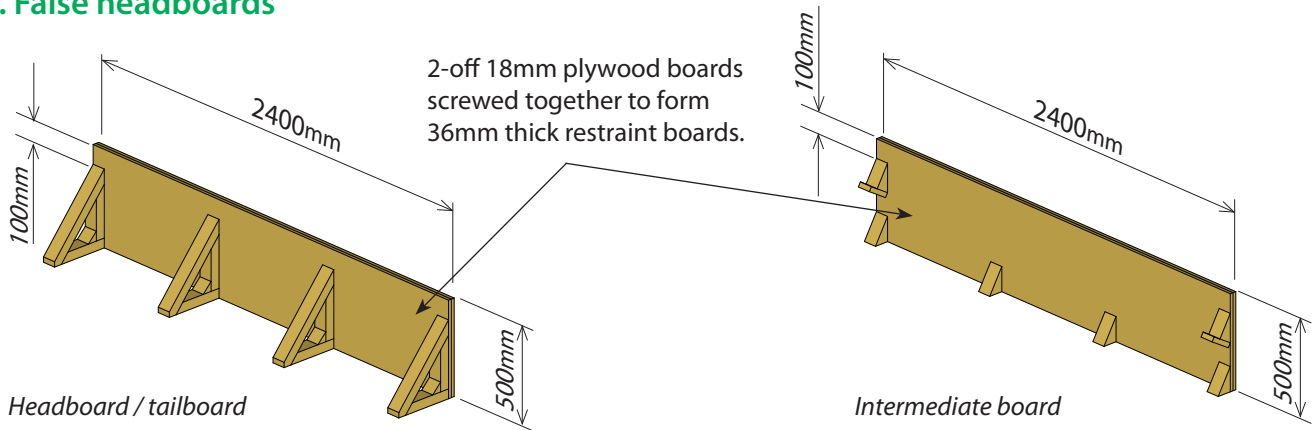
Example: 6.5m bars in 2 rows



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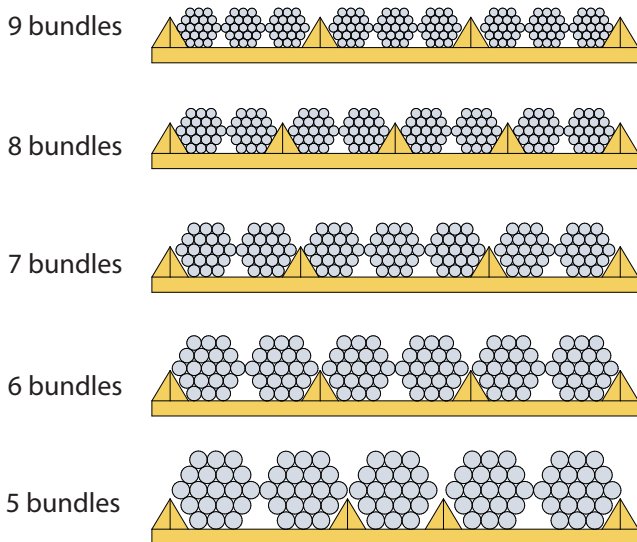
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### 7. False headboards



### 8. Base dunnage considerations

#### 8.1 Bundle configurations

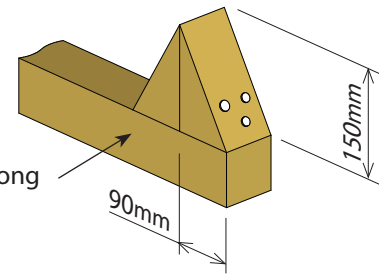


Note: Maximum of 3 bundles between chocks / pegs.

#### 8.2 Base dunnage options

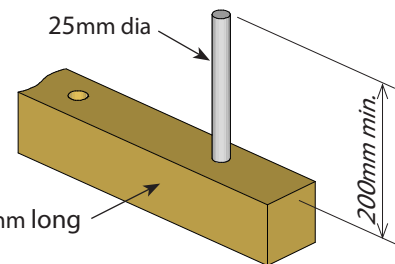
##### Wooden chocks

75 x 75mm x 2400mm long softwood.



##### Steel pegs

100 x 100mm x 2400mm long hardwood.

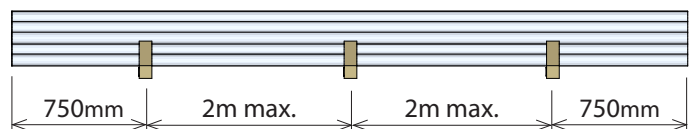


#### 8.3 Number and spacing of base timbers

The number of base timbers required under a row of bars is specified below. Front and rear base timbers are to be placed approximately 750mm from the ends of the bars, and the remaining timbers spaced evenly along the row.

Up to 3.5m long bars	2 timbers
3.5m to 5.5m bars	3 timbers
5.5m to 7.5m bars	4 timbers
Above 7.5m bars	5 timbers

Example: 5m bars



Note: Maximum of 2m between base timbers.

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