

LOAD RESTRAINT GUIDELINE

Square billets and small blooms

1. This guideline applies to:

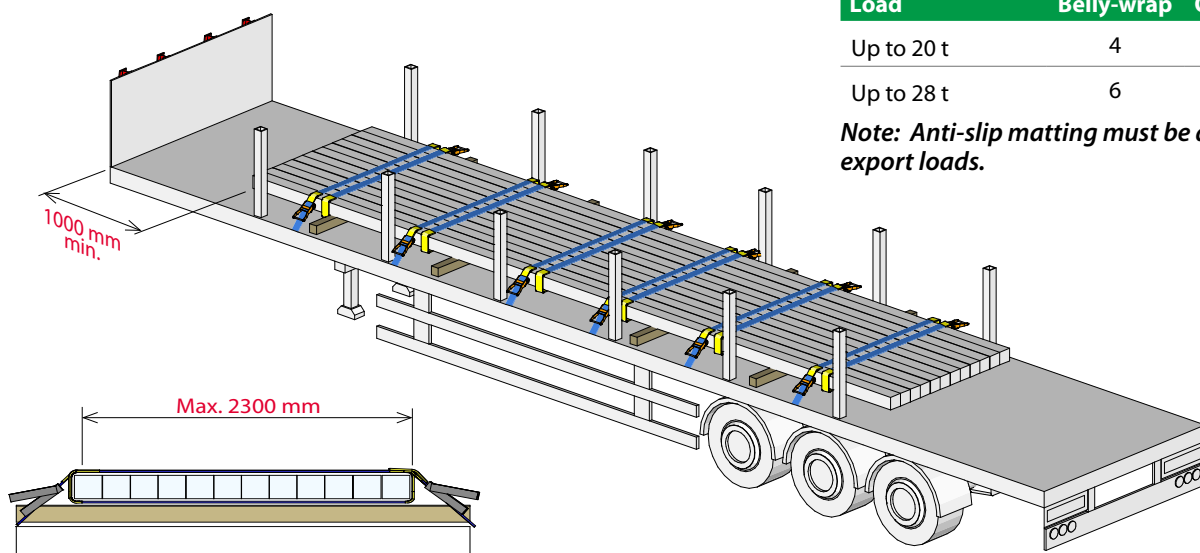
- Square billets and small blooms up to 283 x 230 mm cross-section.
- Typically loaded one or two layers high (75 x 75 mm billets may be loaded 3 layers high).
- Minimum length of short billets covered by this guideline is 2.1 meters.

The lowest static friction factor for billets on timber dunnage, determined as per EN 12195-1: 2003 Annex C, is $\mu_s = 0.6$.

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 in contact with the product and chassis frame. See TIS-0005.
- Lashing points must be rated to a minimum of 2000 daN.
- Base dunnage must be a single layer of square section timber with minimum cross section of 75 x 75 mm. Larger timber cross-sections should be used to facilitate loading with forklifts.
- Each layer of billets must have the same cross section and similar length.
- Load width must not exceed 2300 mm with no uncontrolled gaps between individual bars. See Section 6.
- Product must be placed centrally across the width of the trailer.
- Side pins. 6-off recommended. (*Omitted for clarity on some images*).

3. Overview of tie-down restraint system



Note: Tensioners applied to both sides of the belly-wrap.

Table 1: Minimum number of straps

Load	Belly-wrap	Over-the-top
Up to 20 t	4	0
Up to 28 t	6	0

Note: Anti-slip matting must be applied to all export loads.

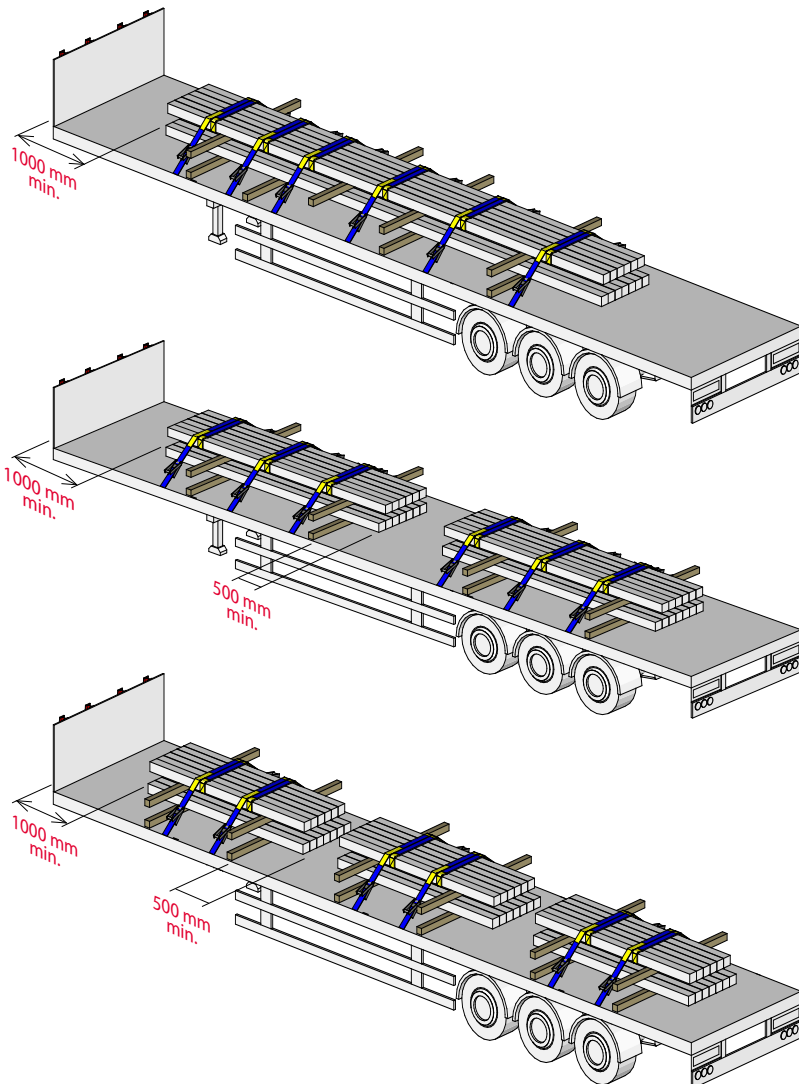
This Load Restraint Guideline has been designed to meet the forces for road transport stipulated in EN 12195-1:2010 and VDI 2700. The restraint system has been validated by inclination tests as per EN 12195-1:2010 Annex D.2, and emergency braking dynamic tests.

LOAD RESTRAINT GUIDELINE

Square billets and small blooms

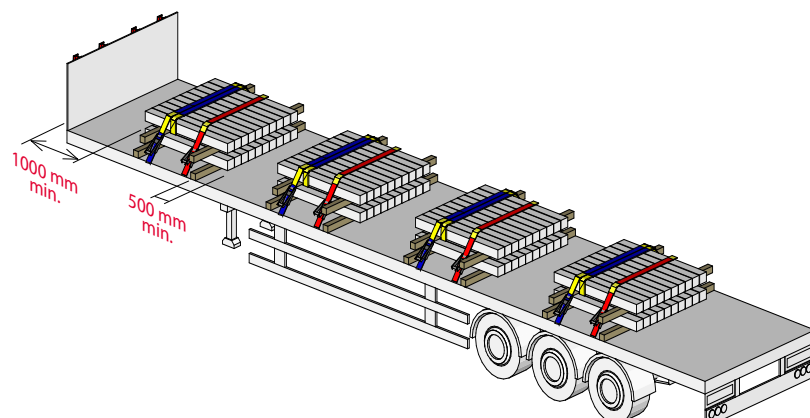
4. Tie-down restraint system

4.1 Product length over 3 meters



- ✓ Each layer of product must be placed on square section timber dunnage - minimum 4 off.
- ✓ Product must be configured over two layers when a single layer load exceeds a width of 2300 mm.
- ✓ Product must be split as evenly as possible between two layers with no less than 40% of the load in the top layer.
- ✓ Intermediate dunnage must be a minimum of 75 x 75 mm square section and span the full width of the product below it.
- ✓ Allow the rear of each row of billets to extend beyond the timber bearers by at least 500 mm.
- ✓ Product must be positioned at least 1000 mm from the trailer headboard.
- ✓ No gaps between individual billets across the trailer width.
- ✓ Restraints must be divided equally amongst the stacks of billets on the trailer with a minimum of 2 per stack.
- ✓ Tensioners must be applied to both sides of the belly-wrap.

4.2 Product length up to 3 meters



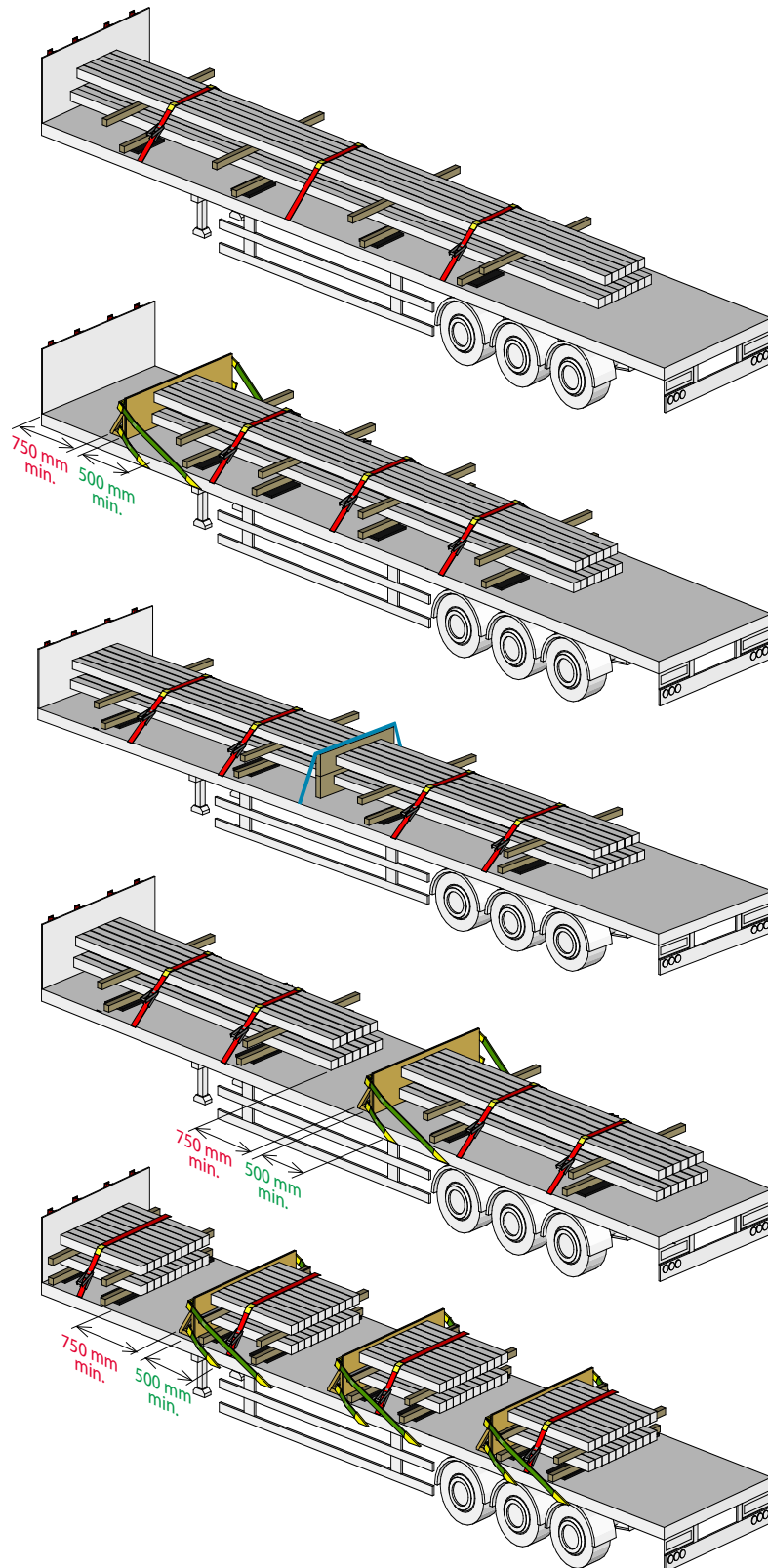
- ✓ Allow the rear of each row of billets to extend beyond the timber bearers by 500 mm.
- ✓ Apply 1 belly-wrap around the top layer of each row.
- ✓ Belly-wrap is to be applied to the front of each row of billets.
- ✓ Tensioners must be applied to both sides of the belly-wrap.
- ✓ 1 strap over-the-top of each row.

During the Severe Winter Weather advisory periods, apply anti-slip matting to both sides of the timber dunnage.

LOAD RESTRAINT GUIDELINE

Square billets and small blooms

5. Direct restraint system



- ✓ Anti-slip matting applied between base timbers and trailer deck.
- ✓ Product must be positioned as close as possible to the trailer / false headboard.
- ✓ Product must be configured over two layers when a single layer load exceeds a width of 2300 mm.
- ✓ Intermediate dunnage must span the full width of the product below it and be a minimum of 75 x 75mm square section.
- ✓ Allow a minimum gap of 750 mm in front of each false headboard.
- ✓ 2 straps must be applied across the top and bottom of the false headboard and lashed back a minimum of 500 mm.
- ✓ 2 or more stacks can be butted up to each other with secure dividing timbers between each stack.
- ✓ 2 or more stacks can be separated by false headboards allowing a minimum gap of 750 mm from the stack in front.
- ✓ Additional edge protection must be applied at the edges of the false headboard and trailer side rave if applicable.
- ✓ Apply over-the-top straps as shown.
 - Up to 3m - 1 strap per pack.
 - 3.1 to 6m - 2 straps per pack.
 - Over 6m - 3 straps per pack.

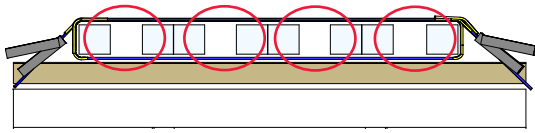
Note: The over-the-top strap may be applied to the same lashing point as the false headboard strap for this guideline.

False headboards are expected to exceed 30kg in weight and require a 2-man operation for safe positioning.

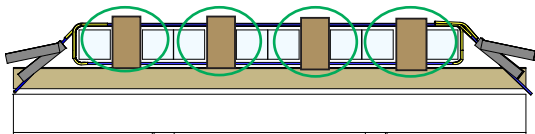
LOAD RESTRAINT GUIDELINE

Square billets and small blooms

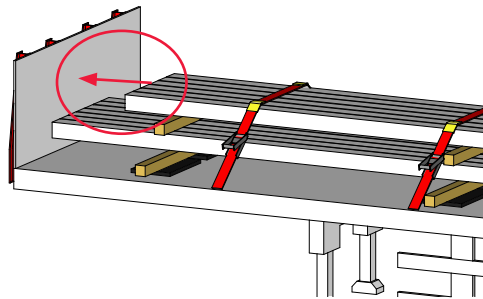
6. Load gaps



X Incorrect loading. Individual billets must be loaded without gaps across the trailer width.

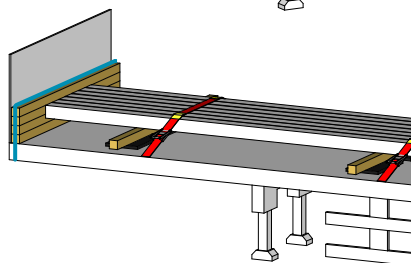
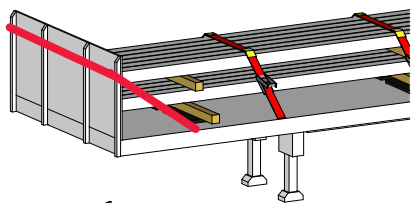
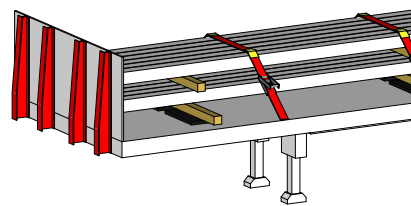


✓ Billets may be loaded with gaps across the trailer width, provided the gaps are controlled using timbers.



X Incorrect loading. All layers of the product must be up to the trailer headboard / false headboards when using direct restraint system.

7. Specifications for direct restraint

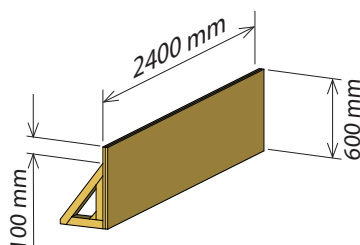


Trailer headboards must be capable of providing a minimum of 5 tonnes of restraint. This may be achieved from any of the following:

- EN 12642 Code L or XL rated headboard.
- Headboard constructed from 4 vertical supports each with 2 weld runs of 145mm.

Where the above specification has not been met or cannot be verified, the existing trailer headboard must be lashed back on both sides as shown.

Where trailer headboard ratings are unknown or rated Code L, timbers must be placed between the product and headboard and secured adequately.



False headboards are constructed from 2 sheets of 18 mm plywood boards to form a 36 mm thick false headboard.

Care has been taken to ensure that the contents of this publication are accurate, but Tata Steel Europe Limited and its subsidiaries do not accept responsibility or liability for errors or information that is found to be misleading.