

# LOAD RESTRAINT GUIDELINE

## Colorsteels sheet packs

### 1. This guideline applies to:

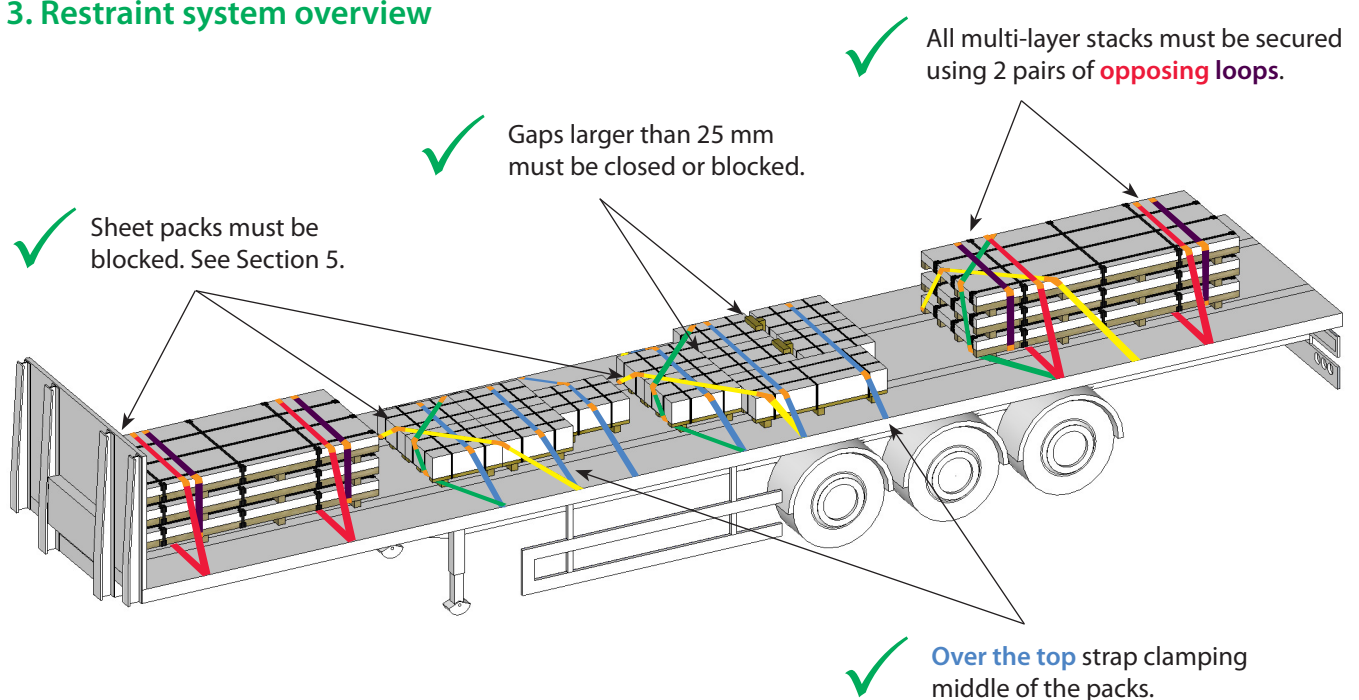
- Unitized packs of high or low friction sheets banded securely to wooden pallets.

The lowest friction factor for these products, determined as per EN 12195:2010-1 Annex B.1.2, is  $\mu = 0.31$ .

### 2. Essential requirements

- All restraints must be webbing straps compliant with EN 12195-2, minimum lashing capacity of 2000 daN.
- Edge protection must be used on cross-over straps and on all sharp edges.
- Product must be banded as per Section 7.
- No uncontrolled gaps in the load.
- Individual stack weight must not exceed 5 tonnes.
- Combined weight of packs stacked side by side must not exceed 8 tonnes.
- Maximum 5 packs per stack.

### 3. Restraint system overview



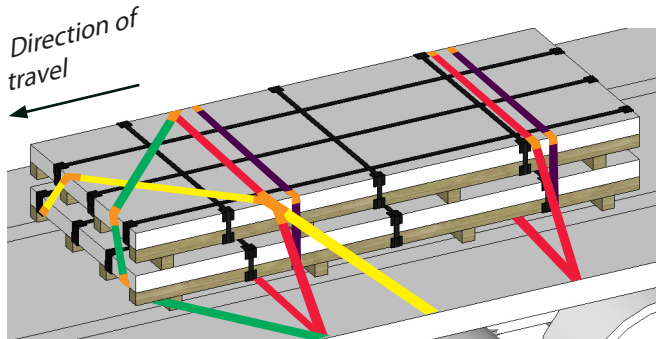
This Load Restraint Guideline is designed to meet the forces for road transport and sea crossing as stated in EN 12195-1:2010 and VDI 2700.

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### 4. Sideways restraint

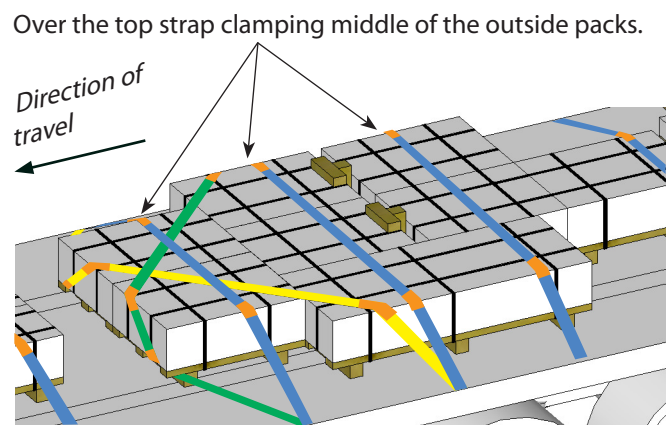
#### 4.1 Stacked sheet packs



- ✓ Stacks must be blocked in forward direction using one of the methods shown in Section 5.
- ✓ Each stack secured with 2 pairs of **opposing loops**.
- ✓ Maximum 5 tonnes per stack.
- ✓ Maximum 5 packs per stack.
- ✓ Combined weight of stacks when stacked side by side must not exceed 8 tonnes.

#### 4.2 Sheet packs loaded in single layer

- ✓ Packs must be blocked in forward direction using one of the methods shown in Section 5.
- ✓ Each row secured with one over the top strap minimum.
- ✓ Minimum of 1 over-the-top strap per 2.5 tonnes of sheet packs across a row.



**Cross-over** strap and **over-the-top** strap can be attached to the same lashing point.

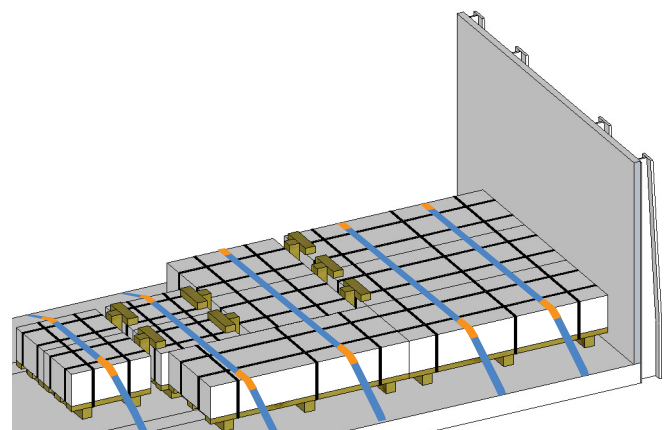
### 5. Forward restraint options

#### 5.1 Blocking to headboard option

**Table 1: Trailer headboard - EN12642**

Trailer type	Permissible payload
Code L or equivalent*	10 t
Code XL or equivalent*	28 t

\* See Technical Information Sheet TIS-0010



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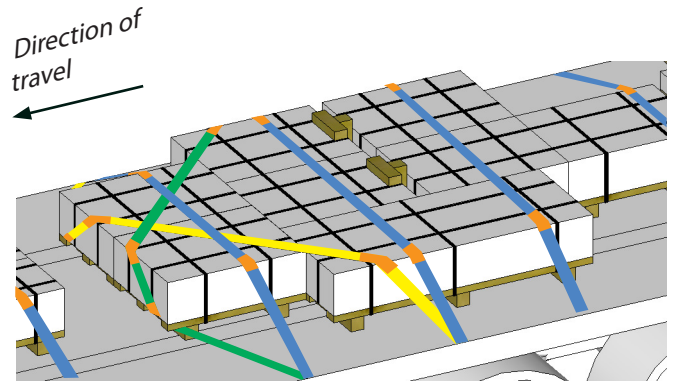
## Colorsteels sheet packs

### 5.2 Cross-over straps option

- ✓ Front of packs aligned with cross-over restraints.
- ✓ Cross-over restraint covering all front packs.

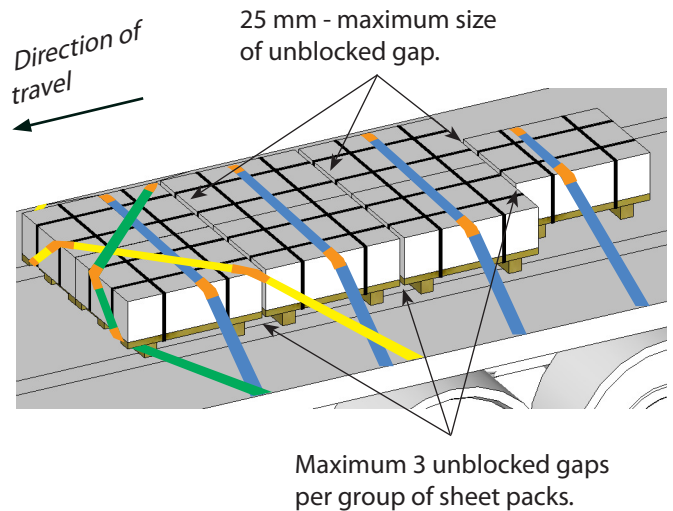
**Table 2: Cross-over restraint capacities**

Number of restraints	Permissible payload per pair of cross-over lashings
1 pair of webbing lashings	10 t



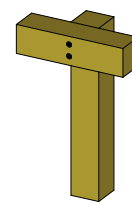
### 6. Controlling gaps

- ✓ Gaps larger than 25mm (1") must be blocked or closed.
- ✓ Maximum number of unblocked gaps is 3 per group of sheet packs.



#### 6.1 Example of vertical dunnage - 'T' block\*

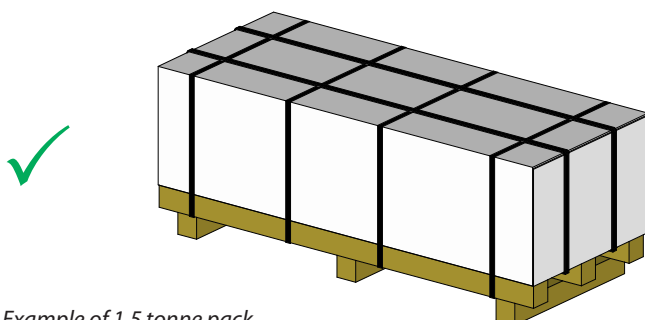
- Used for blocking gaps between stacks.
- Can be positioned from floor removing the need to access the bed of trailer.
- Length dependant on the height of material stack.
- Timber section dependent on required gap size.



**Note:**  
\*Refer to TIS-0007 for more options.

### 7. Unitizing sheet packs

Table 3 shows the minimum number of packaging bands (steel or plastic) required to fully unitize sheet packs:



Example of 1.5 tonne pack.

**Table 3: Minimum number of packaging bands required to unitize sheet pack.**

Weight of pack	Number of bands
Up to 1 tonne	4
Up to 1.5 tonne	6
Up to 2 tonnes	8
Up to 2.5 tonnes	10
Up to 3 tonnes	12

Calculated for banding pre-tension of 175 daN.

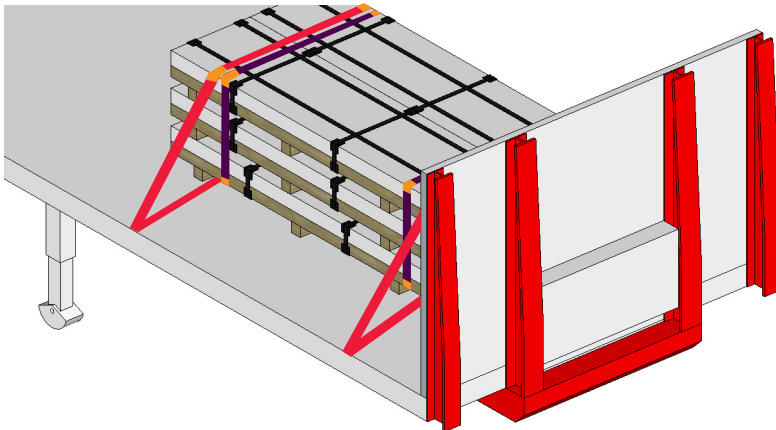
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### 8. Equipment

#### 8.1 Headboard requirements

When trailer headboards are used as part of the load restraint system they must be capable of providing adequate blocking force. For more information refer to Technical Information Sheet TIS-0010 Trailer Headboards.



Fahrzeugaufbau entspricht	<b>EN 12642-XL</b>
Voertuigopbouw voldoet aan norm	
Vehicle body in compliance with	2008
LAG TRAILERS N.V.	

Typical plaque on a trailer manufactured to EN 12642 code XL.

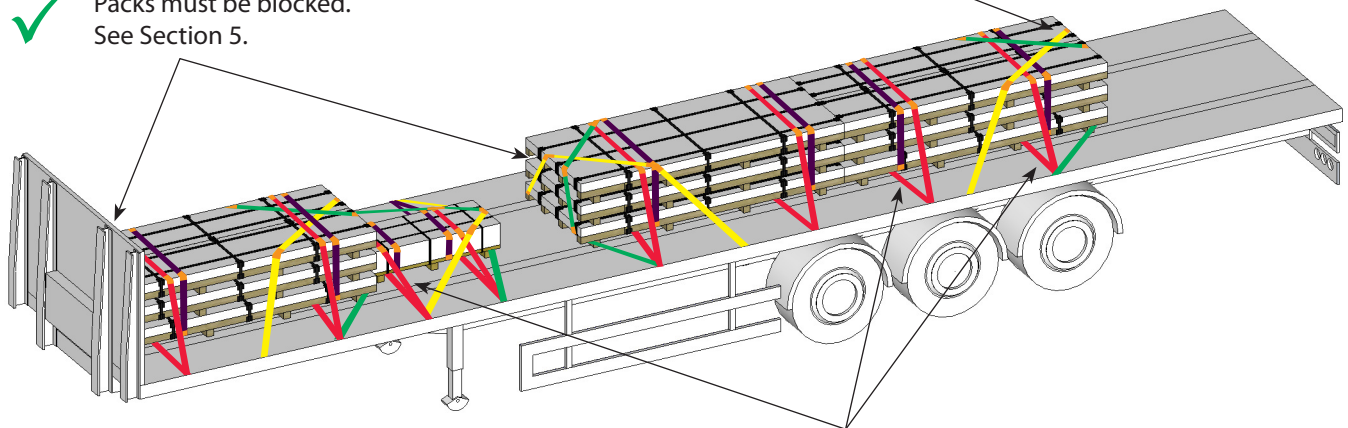
Trailers with headboards rated to EN 12642 code XL will provide up to 13.5 tonnes of blocking force and will therefore, be suitable for blocking a full load of sheet packs.

### 9. Export loads



✓ Rear **cross-over** straps applied to the packs.

✓ Packs must be blocked. See Section 5.



✓ Each row of packs and/or stacks must be secured with 2 pairs of **opposing loops**.

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