MANNESMANN
LINE PIPE
Ein Unternehmen der Salzgitter Gruppe

Declaration of the company Mannesmann Line Pipe GmbH regarding the conformity with the tested sample loading units

By signing this document, Mannesmann Line Pipe GmbH declares that the loading units loaded as per the documentation status of 18-20.04.2011, 24-25.06.2011, 27-28.10.2011, 24.03.2021, 08.05.2021, 02.09.2021 and 13.12.2023 do correspond with the tested and in the certificate no. Z20211106-1 certified loading units.

Mannesmann Line Pipe GmbH
In der Steinwiese 31
D-57074 Siegen
Tel.: +49 271 691-150
www.mannesmann-linepipe.com

Stamp/ Signature: i.V. i.V.

MANNESMANN
LINE PIPE
In der Steinwiese 31

Responsible representative of the manufacturer
(name)

Figure 1

TÜV SÜD Auto Partner
Dipl.-Ing. (FH) Thorsten Ludwig
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TÜV SÜD Auto Partner Certificate Z20211106-1

for the conformity of the loading and securing variants of Mannesmann Line Pipe GmbH with loading units of Mannesmann Line Pipe GmbH as documented on 18-20.04.2011, 24-25.06.2011, 27-28.10.2011, 24.03.2021, 08.05.2021, 02.09.2021 and 13.12.2023 according to the applicable guidelines for cargo securing in accordance with §§ 22 and 23 StVO, §§ 30 and 31 StVZO, DIN EN 12195-1 and VDI guideline 2700 ff.

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1. Basics:

The load units were tested based on the acceleration requirements of VDI 2700 and DIN EN 12195-1. Static friction tests in accordance with VDI 2700 Sheet 14 as well as static tensile tests with nailed wheel chocks were also carried out.

Acceleration in direction of travel 0.8 x g.
Acceleration in reverse direction of travel 0.5 x g.
Lateral acceleration 0.5 x g.

Test series:

11/04/18-1.1 to -1.3 of 18.04.2011, 11/04/19-1.1 to -4.4 of 19.04.2011
11/04/20-1.1 to -4.4 of 20.04.2011, 11/06/24-1.1 to -5.1 of 24.06.2011
11/06/25-1.1 to -4.1 of 25.06.2011, 11/10/27-1.1 to -4.1 of 27.10.2011
11/10/28-1.1 to -6.4 of 28.10.2011, 21/03/24-1.1 to -4.1 of 24.03.2021
21/05/08-1.1 to -4.1 of 08.05.2021, 21/09/02-1.1 to -9.1 of 02.09.2021

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2. Transport vehicle:

Platform vehicles with side wall with / without tarpaulin cover in accordance with DIN EN 12642 Code XL, platform vehicles with sliding tarpaulin in accordance with DIN EN 12642 Code XL. The floor of the transport vehicle must be free of dust and swept clean as well as frost-free. The body of the transport vehicle should comply with DIN EN 12642 Code XL. If the transport vehicle is equipped with a bulkhead according to DIN EN 12642 Code L, the bulkhead must be fitted with at least two lashing straps as with an artificial bulkhead for load weights that cause a bulkhead load of more than 5 tonnes.

3. Scope of application:

Pipe diameter:	114 to 610 mm
Max. pipe length:	18,200 mm
Max. load weight:	24,500 kg
Max. pipe layer weight:	7,700 kg when loading more than 3 load levels 11,500 kg when loading up to 3 load levels 17,600 kg when loading 1 load level

4. Specification tie-down lashing:

Web lashings:

- 50 mm polyester web lashing according to DIN EN 12195-2
- LC 2,500 daN
- S_{TF} 500 daN

6 x polyester web lashings as tie-down lashing over the load stacks (3,000 daN S_{TF} in total).
3 x polyester web lashings as tie-down lashing in the centre load level (1,500 daN S_{TF} in total).
2 x polyester web lashings as wrapping in the lower and rear third of the load unit.

The loading described above applies when the upper loading level is loaded to 100 %. When loading the upper load level to less than 100 %, it must be ensured that the polyester web lashings used apply sufficient tie-down lashing forces to the upper load level.

If this is not the case, the loading schemes shown in figure 2 or 3 must be applied for the lower load levels (from the second level from the top).
In addition, the upper load level (incomplete layer) must be lashed down with three further polyester web lashings.

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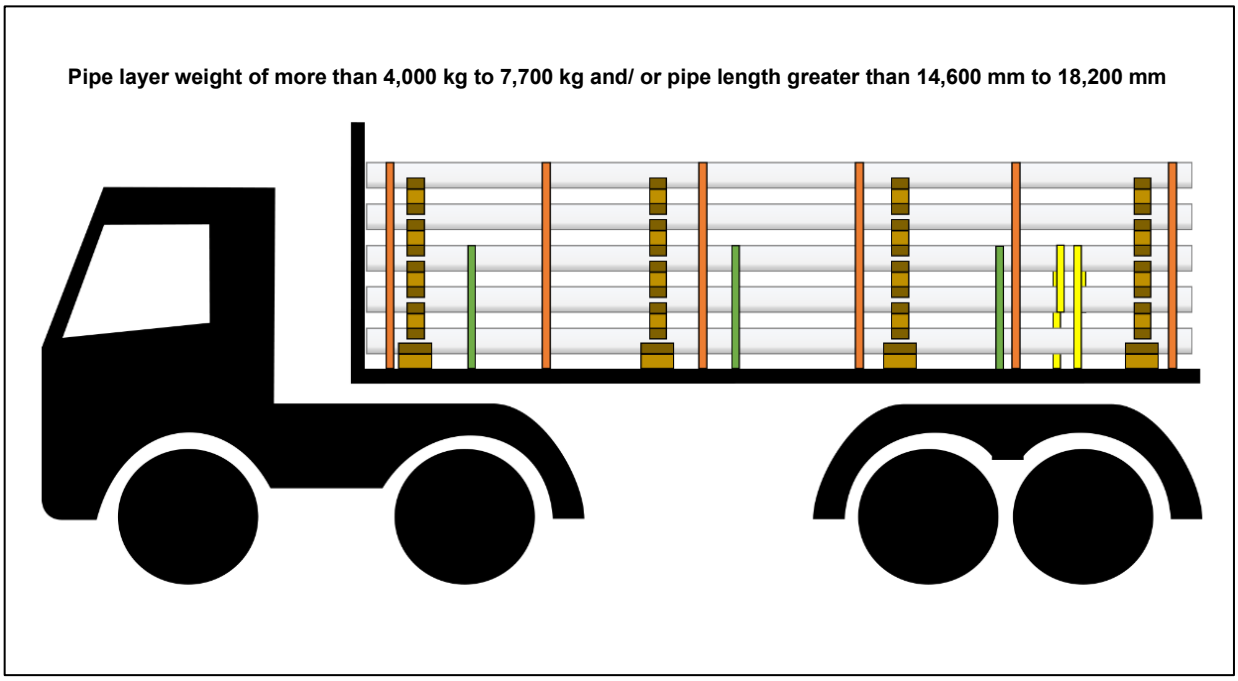

Figure 2

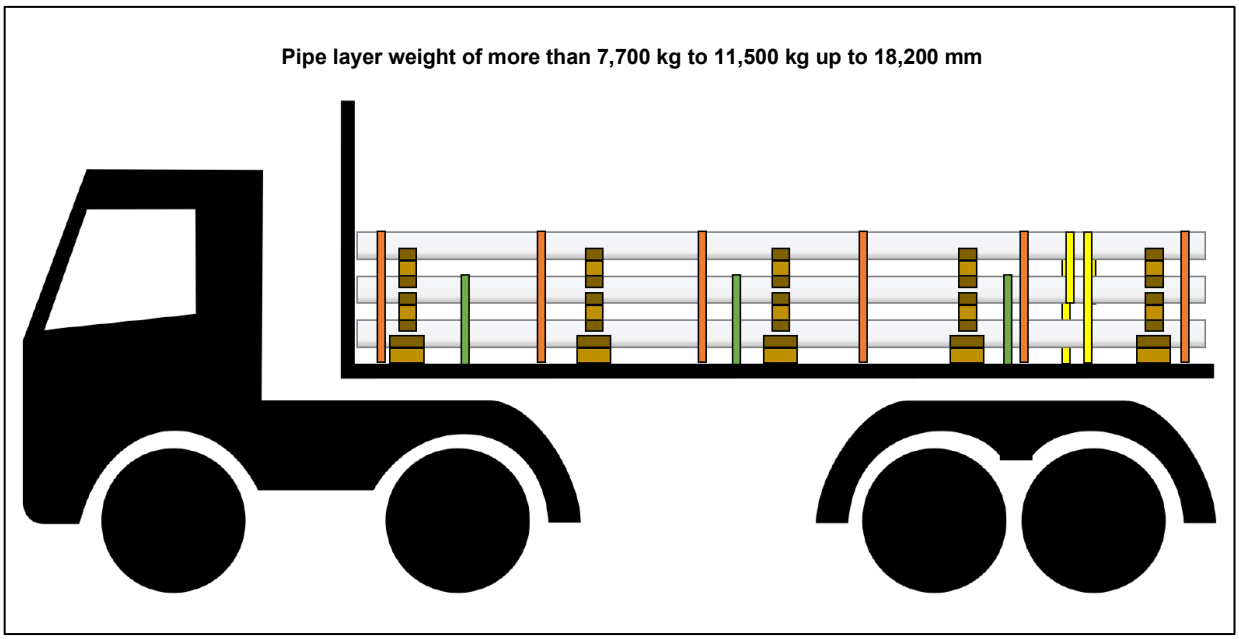

Figure 3

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5. Specification intermediate timbers:

1. Pipe layer weight up to 4,000 kg and pipe length up to 14,600 mm:
   - 3 interlayers and supporting beams per pipe layer
2. Pipe layer weight of more than 4,000 kg to 7,700 kg and/ or pipe length greater than 14,600 mm to 18,200 mm:
   - 4 interlayers and supporting beams per pipe layer
3. Pipe layer weight of more than 7,700 kg to 11,500 kg (max. 3 loading levels) up to 18,200 mm:
   - 5 interlayers and supporting beams per pipe layer
4. Pipe layer weight of more than 11,500 kg to 17,500 kg (max. 1 loading level) up to 18,200 mm:
   - 4 interlayers and supporting beams per pipe layer

Attention: It is essential to pay attention to the position of the last two contact points.
The maximum load capacity of the wheel chocks must be considered with regard to the number of intermediate layers.

Intermediate timbers:

- Min. 100 x 60 x 2,380 mm

  Alternative:
- Min. 150 x 50 x 2,380 mm

Floor timbers:

- Min. 160 x 140 x 2,380 mm

  Alternative:
- Min. 150 x 50 x 2,380 mm

Figure 4

Figure 5

The intermediate timbers or wheel chocks **must not** be damaged (e.g. see figures 5 and 7).

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6. Specification wheel chocks:

- Nailing: from the inside (according to TÜV SÜD documentation status, see figure 6)
- <= 406.4 mm pipe diameter:
  a. For intermediate timbers:
  Wheel chock type 3-SI 120 x 100 x 70 mm
  or wheel chock type 1HA 215 x 100 x 125 mm
  b. For floor timbers:
  Wheel chock type 4-SI 160 x 110 x 70 mm
  or wheel chock type 1-HA 215 x 100 x 125 mm
  c. For incomplete pipe layers: Wheel chock type 2-SI 170 x 100 x 50 mm
  or wheel chock type 1-HA 215 x 100 x 125 mm
- > 406.4 mm pipe diameter:
  a. Intermediate timbers: Wheel chock type 1 HA 215 x 100 x 125 mm
  b. Floor timbers: Wheel chock type 1-HA 215 x 100 x 125 mm
  c. For incomplete pipe layers: Wheel chock type 1-HA 215 x 100 x 125 mm

Figure 6

Figure 7

It is essential to ensure that no cracks appear in either the support timber or the wheel chock when applying the wheel chocks (see Figure 7).

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7. Securing in the direction of travel in the front:

The loading units of Mannesmann Line Pipe GmbH are to be loaded with positive locking lengthwise to the direction of travel against the stable bulkhead in accordance with DIN EN 12642 Code XL as well as to each other.

In case of a load-distribution-dependent loading with spaces in the direction of travel, additional safety measures must be taken. For example, the loading units lying forwards in the direction of travel can be secured with a 50 mm polyester web lashing in accordance with DIN EN 12195-2 LC 2,500 daN using head slings and secured forwards in the direction of travel with the lashing points located in the vehicle outer frame according to DIN EN 12640. The web lashing must be prevented from slipping off the front load units while the vehicle is in motion, e.g. by means of strap guides attached to the load units.

It is important to note that when using a head sling, an artificial bulkhead must be formed to prevent the load unit composite from breaking apart. Double-layer restraint tarpaulins with sewn-in web lashings according to the specifications of the test series listed above (see Figure 10) or stable locking beam systems in combination with a pallet for artificial bulkheads can be used, which grip the front surface of the load and prevent the load units from tipping over, breaking apart or slipping.

Figure 8

It is mandatory to prevent the Mannesmann Line Pipe GmbH load units from slipping on the transport vehicle. This must be ensured by anti-slip mats between the load units and the vehicle floor as well as between the load levels. The anti-slip mats used must have a coefficient of friction of at least μ = 0.7 and the loading floor as well as intermediate timbers must be swept clean and frost-free. The anti-slip mats must be placed under the load units on the intermediate layers transversely to the direction of travel. Small contact areas between the loading floor and the loading unit are to be ignored. Anti-slip mats with a thickness of 3 mm can be used, which correspond to the specifications of the test series mentioned above.

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In case of loading concrete-encased steel pipes, anti-slip mats between the individual layers can be omitted, as the material pairing of concrete on wood has a sufficient friction coefficient (μ = 0.74).

For additional stabilisation of the loading unit to the direction of travel, the entire load must be lashed down with 50 mm polyester web lashings according to DIN EN 12195-2 LC 2,500 daN and with S_{TF} 500 daN (see securing to the side).

Alternatively, other securing measures can be applied in accordance with DIN EN 12195-1 or VDI 2700 ff.

Figure 9

Figure 10

8. Securing in reverse direction of travel:

The Mannesmann Line Pipe GmbH load units **should** be loaded with positive locking longitudinally to the direction of travel to the stable rear portal in accordance with DIN EN 12642 Code XL as well as to each other.
If positive loading is not possible, the load units can stand freely to the rear.

It is mandatory to prevent the Mannesmann Line Pipe GmbH load units from slipping on the transport vehicle. This must be ensured by using anti-slip mats between the load units and the vehicle floor as well as between the load levels.

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The anti-slip mats used must have a friction coefficient of at least μ = 0.7 and the loading floor as well as the intermediate timbers must be swept clean and frost-free. The anti-slip mats must be placed under the load units on the intermediate layers transversely to the direction of travel. Small contact areas between the loading floor and the loading unit are to be ignored. Anti-slip mats with a thickness of 3 mm can be used, which correspond to the specifications of the test series mentioned above.

In case of loading concrete-encased steel pipes, anti-slip mats between the individual layers can be omitted, as the material pairing of concrete on wood has a sufficient friction coefficient (μ = 0.74).

For additional stabilisation of the loading unit to the rear, the entire load must be lashed down with 50 mm polyester web lashings according to DIN EN 12195-2 LC 2,500 daN and with S_{TF} 500 daN (see securing to the side).

Alternatively, other securing measures can be applied in accordance with DIN EN 12195-1 or VDI 2700 ff.

Figure 11

Figure 12

Figure 13 It is not necessary to cover the wheel chock surfaces with anti-slip mats

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9. Securing to the side:

The loading units of Mannesmann Line Pipe GmbH must be loaded with positive locking lengthwise to the direction of travel onto the wheel chocks of the stable intermediate layers.

It is imperative that the loading units of Mannesmann Line Pipe GmbH are prevented from slipping on the transport vehicle.
This must be ensured by using anti-slip mats between the load units and the vehicle floor as well as between the load levels. The anti-slip mats used must have a coefficient of friction of at least μ = 0.7 and the loading floor as well as the intermediate timbers must be swept clean and frost-free. It is not necessary to place anti-slip mats on the interior wheel chock surfaces.

The anti-slip mats must be placed transversely to the direction of travel under the load units on the intermediate layers (it is not necessary to cover the wheel chock surfaces with anti-slip mats). Small contact areas between the loading floor and the loading unit are to be ignored. Anti-slip mats with a thickness of 3 mm can be used, which correspond to the specifications of the test series mentioned above.

In case of loading concrete-encased steel pipes, anti-slip mats between the individual layers can be omitted, as the material pairing of concrete on wood has a sufficient friction coefficient (μ = 0.74).

For additional stabilisation of the loading unit in the direction of travel, the entire load must be lashed down with 50 mm polyester web lashings according to DIN EN 12195-2 LC 2,500 daN and with S_{TF} 500 daN (see Figure 8).

6 x polyester web lashings as tie-down lashing over the load stacks (3,000 daN S_{TF} in total).
3 x polyester web lashings as tie-down lashing in the centre load level (1,500 daN S_{TF} in total).
2 x polyester web lashings as wrapping in the lower and rear third of the load unit.

The loading described above applies when the upper loading level is loaded to 100 %. When loading the upper load level to less than 100 %, it must be ensured that the polyester web lashings used apply sufficient tie-down lashing forces to the upper load level.

If this is not the case, the loading schemes shown in figure 2 or 3 must be applied for the lower load levels (from the second level from the top). In addition, the upper load level (incomplete layer) must be lashed down with three further polyester web lashings.

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Wheel chock types:

Wheel chock type	Nail type	Quantity of nails	Maximum force	Maximum load weight to be secured per wheel chock in one direction (direction of travel left or right)
Type 1-HA	Ribbed nail 3,8 x 120 mm	3 inside	600 daN	1,200 kg
Type 1-HA	Wire nail 4,6 x 130 mm	2 outside	300 daN	600 kg
Type 1-HA	Wire nail 4,6 x 130 mm	3 inside	900 daN	1,800 kg
Type 2-SI	Ribbed nail 2,8 x 90 mm	3 from above	300 daN	600 kg
Type 3-SI	Ribbed nail 2,8 x 90 mm	3 inside	400 daN	800 kg

Table 1

With regard to the top layer, it is essential to ensure that the loaded pipes of the top layer do not exceed the layer weight according to Table 1 (depending on the wheel chock type) when using five intermediate timbers with one wheel chock each on the left and right side in the direction of travel.

Type 1-HA

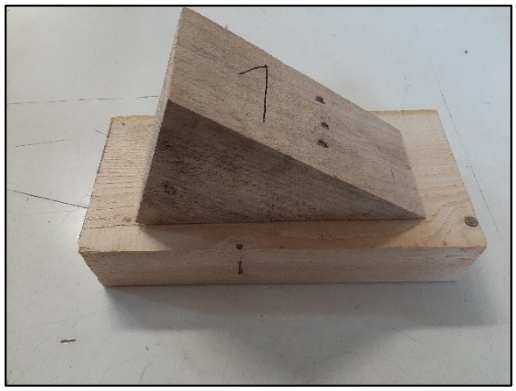

Figure 14

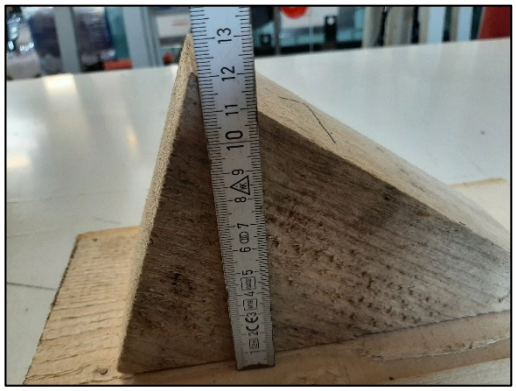

Figure 15

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Type 1-HA

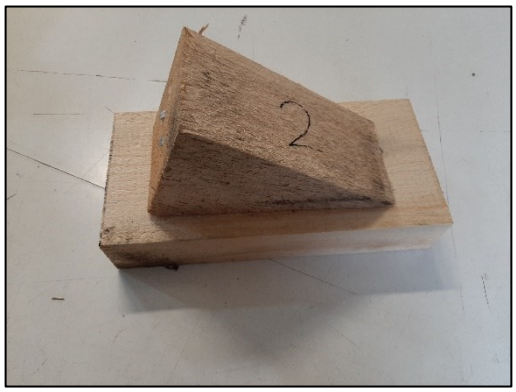

Figure 16

Figure 17

Type 1-HA

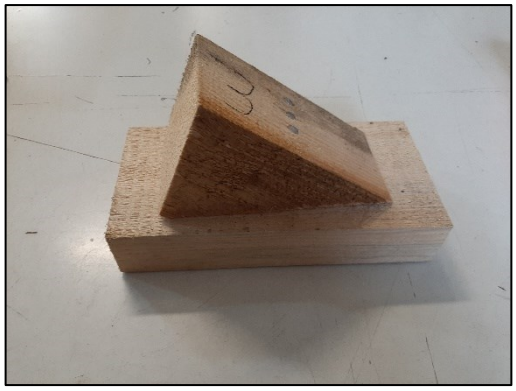

Figure 18

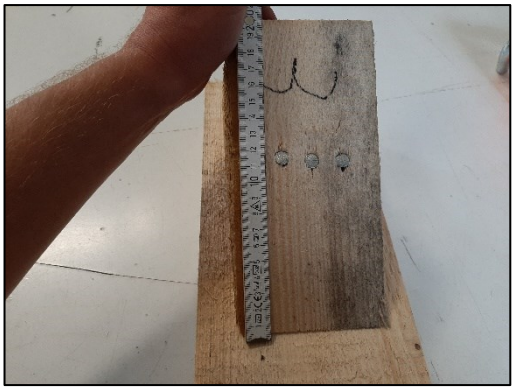

Figure 19

Type 2-SI

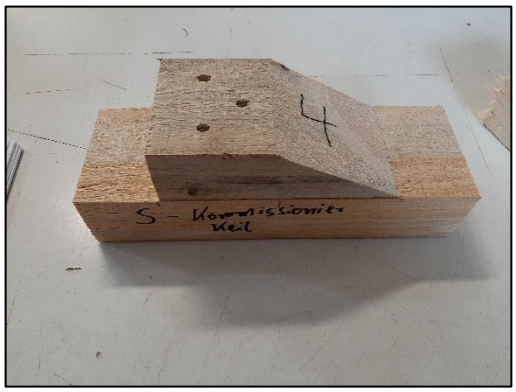

Figure 20

Figure 21

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Type 3-SI

Figure 22

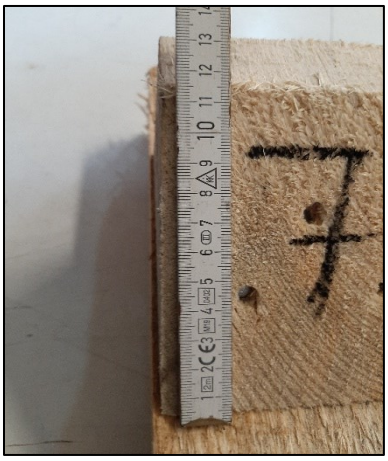

Figure 23

Type 4-SI

To secure the wheel chock type "Type 4-SI" to floor timbers, 5 nails type "ribbed nail 2.8 x 90 mm" are driven in from the inside. It is important to ensure that the nails are driven in as shown in Figure 24 and are located between 40 and 70 mm from the tip of the wheel chock. The ribbed nails must be inserted at least 40 mm into the floor interlayer wood.

Figure 24

It is mandatory that all wheel chocks are positioned in the intermediate layers in such a way that a minimum pre-tensioning force is created when placing the pipes. The wheel chocks must not split during lashing down. Within the load levels, no lateral clearance is permitted between the pipes in relation to each other or between the pipes and the wheel chocks. The dimension between the wheel chock contact points must not be greater than the sum of the pipe outside diameters (including coating) of a load level.

Alternatively, other securing measures can be applied in accordance with DIN EN 12195-1 or VDI 2700 ff.

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Figure 25

Figure 26

Figure 27

Figure 28

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10. General provisions and validity of the certificate:

This certificate is only valid until legal regulations or standards are revised and as long as the loading units are in the tested condition. It also expires when it is returned or withdrawn.

TÜV SÜD Auto Partner
Metelen, 14.12.2023

Expert for load securing
Daniel Niehenker

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