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Load securing study

Transport of cars & trucks
on vehicle transporters



Load securing study regarding transport of cars & trucks on vehicle transporters

Since March 2017, TÜV SÜD Division Mobility, together with twelve industry partners, has been working with great effort to review the minimum load securing requirements for vehicle transporters and has gained new insights in this process.

Due to the further development of vehicle technology in all areas of vehicle transport, these studies were considered necessary from the point of view of all parties involved. These investigations were carried out in order to further develop the already high level in the area of vehicle transport.

The aim was to enable manufacturers, consignors, transporters and consignees to benefit from these developments and to define comprehensible and practicable load securing methods. The tests carried out by the working group and the resulting conclusions were submitted to the „Verein Deutscher Ingenieure“ (Association of German Engineers) in 2022 for the revision of the loading guideline VDI 2700 Part 8.1 „Securing of loads on road vehicles, securing of passenger cars and cargo minivans on vehicle transporters“ as of April 2009. The same applies to VDI 2700 Part 8.2 „Securing of loads on road vehicles, securing of trucks on vehicle transporters“ as of December 2010.

The VDI working group immediately started to revise VDI 2700 Part 8.1 & 8.2 and is already at a very advanced stage.

In order to provide all groups involved in the transport of motor vehicles on trucks with the possibility to deal with the resulting innovations in VDI 2700 Part 8.1 & 8.2 in the area of transport vehicles and load securing equipment in good time, all participating VDI working group members have agreed to create an information leaflet.

From the point of view of TÜV SÜD Division Mobility and the VDI working group members, the following points are important for the transport of cars and trucks in the future:



Web lashings:



The web lashings used for the transport of passenger cars must comply with DIN EN 12195-2 and meet the following minimum requirements:

- Standard to be applied: DIN EN 12195-2
- Elongation: $\leq 4\%$
- LC: 1,500 daN
- STF: 330 daN
- Webbing width: at least 35 mm
- ETA value of the web lashing/ anti-slip device configuration must be indicated on the label



The web lashings used for the transport of trucks must comply with DIN EN 12195-2 and meet the following minimum requirements:

- Standard to be applied: DIN EN 12195-2
- Elongation: $\leq 4\%$
- LC: 2,500 daN
- STF: 500 daN
- Webbing width: at least 50 mm
- ETA value of the web lashing/ anti-slip device configuration must be indicated on the label

Anti-slip device:

The web lashings must be equipped with anti-slip devices, e.g. hose-shaped. The anti-slip devices shall be designed in such a way that already during lashing, the webbing tension is distributed as evenly as possible in both directions preventing the web lashings from slipping off the wheel.

The web lashing may only touch the wheel via the anti-slip device. As a guideline value, at least half the circumference of the wheel (180°) shall be used. Removable anti-slip devices (adapters) can be applied to adapt them to different wheel sizes.

The anti-slip devices used must meet the following minimum requirements:

- ETA value ≥ 0.5
- Web lashing / anti-slip device configuration:
Web lashing only in combination with approved anti-slip device
- The following specifications must be indicated on the anti-slip device:
 1. Brand name / type designation of the anti-slip device
 2. Name of the manufacturer
 3. ETA value of the web lashing/ anti-slip device configuration

Multiple point lashing system for load securing devices in ramps:



Passenger car – unladen weight

**Securing forces of the fixing points
(plus 25% safety)**

0 - 1,500 kg

- 0° at least 500 daN
- 45° at least 500 daN
- 90° at least 500 daN

>1,500 - 4,500 kg

- 0° at least 700 daN
- 45° at least 700 daN
- 90° at least 600 daN



Truck – unladen weight

**Securing forces of the fixing points
(plus 25% safety)**

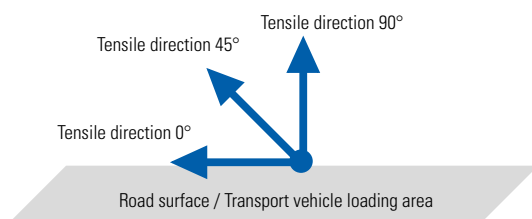
0 - 8,000 kg
when loading the truck from 0° - 25°

- 0° at least 1,000 daN
- 45° at least 1,000 daN
- 90° at least 1,000 daN

>8,000 - 20,000 kg
when loading the truck from 0° - 10°

>8,000 - 11,000 kg
when loading the truck from >10° - 25°

- 0° at least 1,500 daN
- 45° at least 1,500 daN
- 90° at least 1,400 daN



The securing forces of the fixing points may deviate from the upper specifications for some loading variants when transporting trucks.



Wheel chocks in combination with ramps:

- Height: Greater than or equal 1/6 of the tyre diameter, alternative wheel chock heights must be verified separately and approved by the body manufacturer
- Blocking force (BC) in horizontal direction car: ≥ 500 daN
- Blocking force (BC) in horizontal direction truck: $\geq 1,500$ daN
- Wheel chock only in combination with approved ramp

Dynamic friction coefficient of the ramp to car/ truck tyre:

- At least $\mu = 0,4$
- Longitudinal as well as transverse to the alignment of the ramp
- Surface conditions: wet and dry

Vehicle configuration:

The vehicle configurations must be designed for the acceleration forces occurring in accordance with DIN EN 12195-1 (in loaded condition).

We recommend the following procedure:

In order to be prepared for the necessary minimum requirements in the area of transport vehicle and load securing equipment in good time before the publication of VDI 2700 Part 8.1 & 8.2, TÜV SÜD Division Mobility recommends that all groups of people involved in transport operations with vehicle transporters, contact the manufacturers of the transport vehicles being used in order to find out to what extent these transport vehicles comply with the minimum requirements described above.

TÜV SÜD Division Mobility also recommends contacting the manufacturers of load securing devices to ensure that these devices, such as web lashings and anti-slip devices, also meet the minimum requirements mentioned above.

The testing specifications for the above indicated points will be issued in a separate guideline. These test specifications can be obtained from TÜV SÜD Division Mobility at that date.

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Would you like to know more?
We're here to help. Get in touch.

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