LOADING RECOMMENDATIONS FOR

PAPER COILS STANDING UPRIGHT

Requirements for vehicle and floor
Depending on the specific cargo, the right vehicle has to be used with a corresponding superstructure and devices for securing the load. The floor must be swept clean and as dry as possible. The load rating of the cargo floor must be sufficient and, as necessary, proven.

Lashing points for securing the load
Lashing points on vehicles must comply with DIN EN 12640. A sufficient number of lashing points must be available. The lashing points must be laid out in a manner that they can withstand the stress (traction force). The manufacturer's instructions must be followed.

Displacement of the load, friction force, securing the load
The friction force counteracts any displacement of the load. It depends on the weight force of the load and on the sliding friction coefficient of the material combination, e.g. paper coil and perforated floor plates of the truck: as per VDI 2700 sheet 9 = μ 0.3 Standing paper coils are usually loaded with a positive fit up against the front end wall. Lashing straps are also used and lashed down with preload force of at least 500 daN using longhandled ratchets.
Please note that in most cases, the load will not be adequately secured with the sliding friction coefficient stated above of μ 0.3.
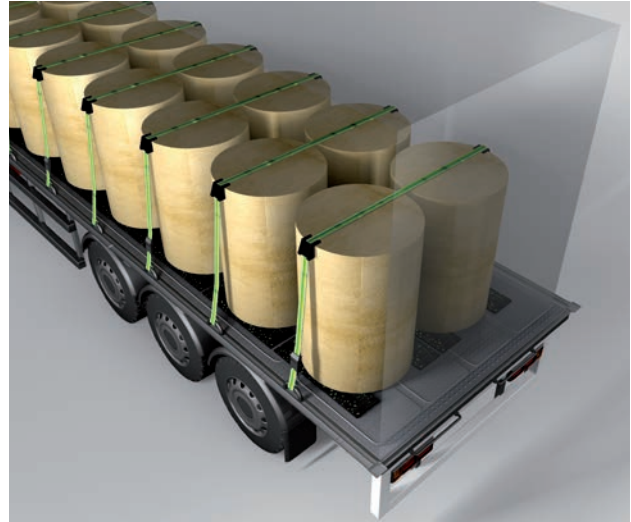
Please also note that even when taking account of the load rating of the front end wall with a total positive fit with no gaps, the paper coils still have to be strapped down when using **REGUPOL Anti-Slip Mats** even if theoretically no additional securing is necessary. After all, consideration also has to be given to dynamic vertical movements and the risk of the paper coils tipping over.

This loading recommendation is a typical example for the efficacy of **REGUPOL Anti-Slip Mats** and the way that their use can reduce the number of necessary lashing straps.
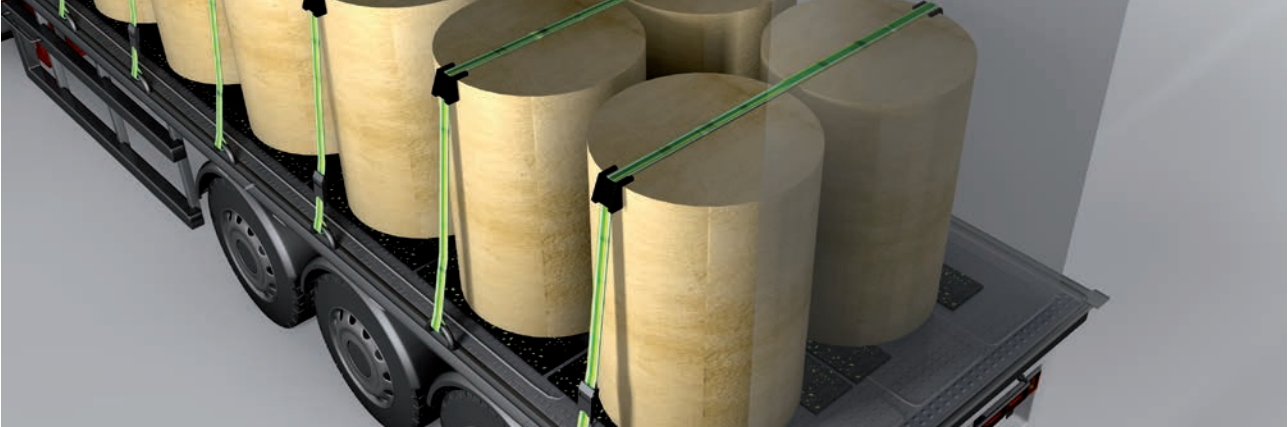

The anti-slip mats must be at least 150 mm wide and 3 mm thick. The length of the mat depends on the diameter of the coils. The anti-slip mats are positioned under the paper coils so that approx. 1 cm of mat can still be seen from the outside.

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Example for calculating how to secure a load of upright paper coils without taking account of the load rating of the front end wall

Preload force

$$F_T = \frac{(c_x - \mu_D)}{\mu_D \cdot \sin\alpha} \cdot \frac{F_G}{K}$$

Number of lashing straps without anti-slip mat

c_x = 0,8
μ_D = 0,3 (without anti-slip mat)
$\sin\alpha$ = 1
F_G = 20.000 daN
K = 1,8

$$F_T = \frac{(0,8 - 0,3)}{0,3 \cdot 1} \cdot \frac{20.000}{1,8}$$

F_T = 18.519 daN

$$X = \frac{18.519}{500}$$

X = 37,0378 $\underline{X \approx 38}$

For a preload force of 500 daN per lashing strap, altogether 38 lashing straps are needed here without anti-slip mats.

Number of lashing straps with anti-slip mat

c_x = 0,8
μ_D = 0,6 (with anti-slip mat)
$\sin\alpha$ = 1
F_G = 20.000 daN
K = 1,8

$$F_T = \frac{(0,8 - 0,6)}{0,6 \cdot 1} \cdot \frac{20.000}{1,8}$$

F_T = 3.704 daN

$$X = \frac{3.704}{500}$$

X = 7,407 $\underline{X \approx 8}$

When anti-slip mats are used to increase the sliding friction coefficient to μ 0.6, this reduces the number of lashing straps to 8.

Disclaimer

These loading recommendations for slip-resistant materials ("Anti-slip mats") have been developed with great care by **REGUPOL BSW GmbH**. Nevertheless, the recommendations contained in them are only intended as guidelines and should not be regarded as any guarantee for complete safety. It is the duty of the drivers to ensure correct load security!

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