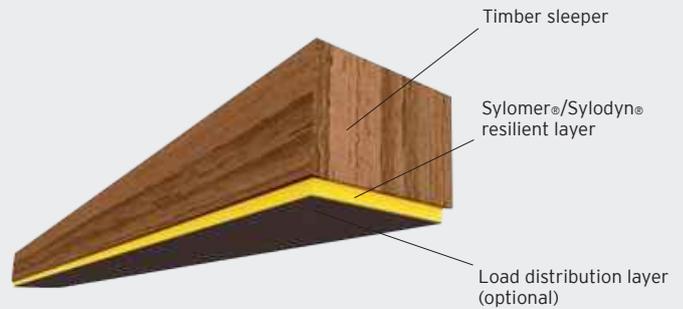


Installation Guideline

Under Sleeper Pads for Timber Sleepers

1. Transport and Storage of Under Sleeper Pads (USP)

- Always transport in original packaging
- Damaged packaging shall be immediately repaired (using plastic foil and adhesive tape)
- Storage should be in a dry environment in original packaging
- Protection from direct sunlight is preferred
- Once the original packaging is removed, USP must be kept dry
- Temperatures below -20°C and above $+50^{\circ}\text{C}$ should be avoided
- Do not stack pallets and parcels
- USP are subject to normal thermal expansion/shrinking. This physical effect is completely reversible
- Storage conditions (and temperature) should match installation conditions; in case of big temperature differences between storage and production area, it's recommended to condition/temper USP for at least 24 h
- Shelf life of Getzner USP is not limited: if stored correctly, the USP can stay in storage for years to be installed at any later point in time.



2. Fastening of Under Sleeper Pads

There are various ways to fasten under sleeper pads on timber sleepers. In the following document two possibilities are described. Additionally it is also possible to glue the pads.

2.1 Fastening with staples

For the staples a minimum size is recommended to ensure a durable and proper fastening of the pad on the timber sleeper. To avoid effects of corrosion the staples should be made of stainless steel.

Recommended dimensions of the staples:

- Width: 10 - 20 mm
- Length: 30 mm
- Material: stainless steel



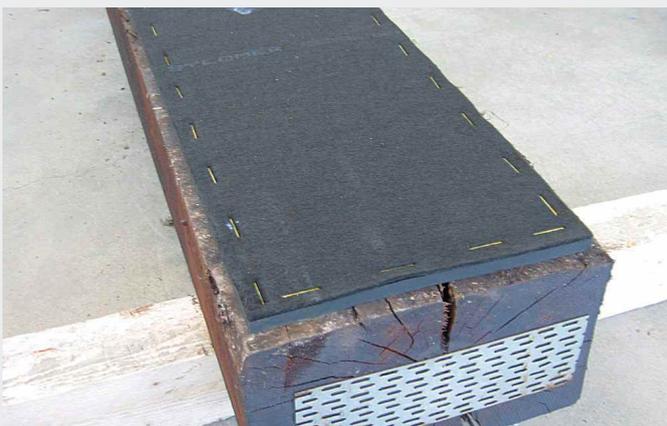
Installation Guideline Under Sleeper Pads for Timber Sleepers



The staples can be applied using a conventional stapling device.



The staples should be placed with a spacing of 4 to 5 cm between each other.



The staples should be placed around the under sleeper pad with a distance of 1 cm to the edge.

Installation Guideline

Under Sleeper Pads for Timber Sleepers



2.2 Fastening with nails

An alternative to the mentioned staples are nails. To avoid damage of the material and the protection layer, nails with large nail heads should be used.

Recommended dimensions of the nails:

Nail head diameter: mind. 5 mm

Length: mind. 30 mm

Material: stainless steel



Driving the nails into the material has to be performed very carefully to ensure that the resilient layer is completely attached to the timber sleeper and not penetrated and damaged by the nails.

The nails can be applied using a conventional pneumatic nailing machine.

The nails should not be driven too far into the resilient layer to avoid damaging it. The spacing between the nails should not be more than 6 cm.



To ensure a proper fixation of the under sleeper pad in the middle of the timber sleeper, at least one additional line of nails should be applied throughout the length of the pad.

Installation Guideline

Under Sleeper Pads for Timber Sleepers

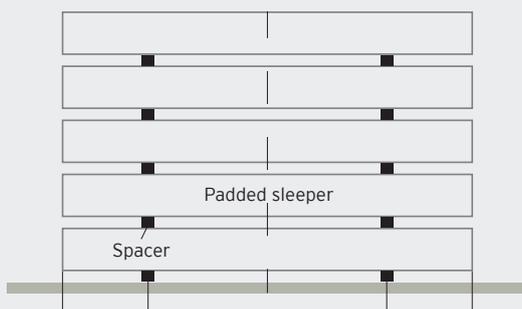


3. Storage of Padded Sleepers

Usually padded timber sleepers are stacked on top of each other and stored outside.

The stacking capacity of padded sleepers is generally limited by the static load limit of the material. The maximum amount of sleepers to be stacked is determined by a laboratory test procedure (according to the standard EN 16730).

Specific values for the maximum number of stacked sleepers are dependent on the sleeper weight and the size of the spacer that is used between the sleepers because both determine the specific load on the elastic material. The wooden spacers resting on the rail seats between any two sleepers should be as wide as possible, a minimum of 100 mm is absolutely required. The exact amount of sleepers that can be stacked depends on the USP type and the sleeper type.



4. Transport of Padded Sleepers

Attention has to be paid during transportation to avoid mechanical damage.

5. Lifetime and Recycling

USP made from Sylomer® and Sylodyn® materials are long-lasting elastomers. The lifetime of the USP matches the lifetime of the sleeper, which means: no USP has to be exchanged prior to the exchange of the sleeper.

At the end of the lifetime of a padded timber sleeper the USP can be peeled off the sleepers mechanically and be thermally recycled. Unused USP or pieces thereof can be recycled in standard plastics waste containers. All our materials are non-hazardous to the environment.

