

## Лекция 4

### Sleepers

The two lines of steel rails of a track have to be fastened to supports resting on a bed of broken stone ballast spread over the «formation» or «subgrade». These supports have an important function in determining the behavior of the track. Various stresses caused by the passage of trains have to be transmitted to the formation. In the first period of railway construction these sleepers were designed simply to keep the rails apart from each other so the quality requirements to these supports were not very high. With the increasing speed of trains, increasing loads on the track and constant progress in railway construction (e.g. rails were welded into long lengths), these quality requirements also increased. The material of which the supports are made must have a large number of different properties. The main property required today is a long life span and high resistance to biological or mechanical destruction.

When the support is arranged transversally to the rails it is called a «sleeper» (in Northern America a «tie» or a «crosstie»).

The material for sleepers may be wood (either hard- or softwood), steel and reinforced concrete. Before laying in the track wooden sleepers should be treated with creosote or other special liquids. Such treatment increased the life span of wooden ties.

On some railroads steel sleepers are also used.

1. Переведите текст письменно.

2. Переведите следующие фразы на английский язык по образцу.

Образец: Скорость поезда

перевод

1) Speed of the train

2) The train speed

Рельсы пути, длина рельса, тип скрепления, распределение нагрузки, качество балласта, конструкция пути, строительство железной дороги, свойства материала, срок службы шпал.

3. Перепишите и переведите предложения, подчеркните сказуемое.

Very long rails cannot be laid by manual labour.

Rails have to be of such lengths that they can be carried in the longest standard wagons.

There are several methods that may reduce rail wear.

- A railway track has to be kept in such condition that trains may run over it safely.
- A track gang should inspect a railway track and track structures all year round.
- The ballast of crushed rock or gravel must be cleaned regularly.
- Switches are necessary where vehicles have to be moved from one track to another.
- Faults in steel rails may not appear on the surface.
- A rail with a hidden defect may break suddenly.
- Hidden defects in rails can be detected with the help of a new device.

4. Подготовьте устное сообщение по теме ( 10-15 предложений).