

Doncaster Concrete Sleeper Factory



The factory uses semi-automated production methods to drive down the cost of sleepers. Around 400,000 of the 700,000 to 1,000,000 sleepers required by Network Rail each year will come from this factory.

PRODUCTION METHOD

- Sand, cement powder, two sizes of crushed rock and chemical additives are stored in large indoor silos and tanks
- Large, precisely-machined, wheeled moulds, each containing eight sleeper casting cells, are arranged on four long casting lines, which extend down the production hall
- Either six or eight heavy duty steel strands are strung down the lines, depending on the type of sleeper. Each strand is tensioned with a force of 7.5 tonnes
- Concrete is made, to a precisely controlled mix, in the batching plant. Water used can be heated to help control the process.
- Fresh concrete is poured into a delivery skip, which travels quickly overhead down the production hall
- Concrete is poured into a casting machine, which straddles the moulds then poured into moulds which are mechanically vibrated
- This process continues until all four lines of

moulds of around 1,400 sleepers have been filled

- The concrete is covered and left to cure overnight. Heating pipes maintain temperature control. Temperature is monitored throughout the curing process
- Concrete strength is thoroughly checked
- A high speed saw cuts the steel strand which has securely bonded to the concrete
- Each mould is moved forward and the sleepers removed. They are then turned over, fitted with rail fastenings then fed on conveyors to an initial outdoor stockpile
- The moulds are cleaned, oiled with a release agent and fitted with cast-in shoulders, before being moved back to the casting line

QUALITY CONTROL

- Extensive checks are carried out on incoming raw materials and components in the on-site laboratory
- Various bend and crush tests are carried out on concrete cubes and beams

- Whole sleepers are transferred to the laboratory and subjected to checks on external dimensions and the inclination of surface faces
- Sample sleepers are also subjected to positive and negative bend tests

STOCKYARD AND TRAINS

- New sleepers are transferred into the main stockyard by a large gantry crane, which is also used to load the trains
- Two 350-metre long sidings are adjacent to the stacks of new sleepers
- A raised walkway gives loading staff safe access to railway wagons
- The gantry crane is equipped with a range of clamps to suit various wagon loading patterns
- New sleepers can also be loaded onto lorries for road deliveries
- A large area is available for grading and stacking used sleepers.
- Lighting will allow loading and unloading to be undertaken safely after dark