

The invention concerns manufacturing process for making railway rail of steel with high content of carbon or low alloyed steel. A method for the thermal treatment of rail, including preliminary heating every cross section of rail made of steel and having head, web and foot, sequential or simultaneous heating or overheating of rail head and cooling every cross section of the rail. Heating every cross section of the rail is carried out sequentially or simultaneously up to the temperature exceeding the temperature of the end of austenite transformation of steel with obtaining uniform and homogenous austenite structure sequentially or simultaneously in every cross section of the rail, additional heating and overheating the rail head are carried out to temperature not exceeding 1050°C, preferably to the temperature not exceeding 1000°C, and it is performed in a way that average temperature of every cross section of the rail head exceed at least by 40°C the average temperature of the same cross section of foot, cooling every cross section of the rail is carried out sequentially or simultaneously at first to the temperature providing obtaining fine-grain structure in every cross section of the rail.