EFFECT OF MULTI-PASS HOT ROLLING ON RECRYSTALLISATION BEHAVIOUR OF FERRITIC STAINLESS STEEL TYPE 409

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Abstract : The aim of this research is to study the effect of interrupted deformation on the recrystallisation behaviour of ferritic stainless steel type 409. Hot rolling schedules have been performed on an experimental rolling mill using rectangular slabs of this ferritic stainless steel.The research has been carried out using material of ferritic stainless steel type 409, which contains precipitates, initially using experimental rolling of small slabs and quantitative optical metallographic techniques with one pass only. Stainless steel type 409 displays a slower rate of recrystallisation than other ferritic stainless steels and this is attributed to the presence of titanium.The effects of static recovery and full static recrystallisation between two passes on subsequent recrystallisation kinetics have been investigated. In this stainless steel, when recovery occurs between the passes, subsequent recrystallisation is retarded compared with that for a single pass of the combined strain. Increasing the recovery time increases the retardation of recrystallisation even more. Also it has been found that when recrystallisation is complete between the two passes, the rate of subsequent recrystallisation after the second deformation was considerably accelerated.

Keywords : ferritic stainless steel type 409, precipitates, hot rolling, dynamic recovery, static recovery, static recrystallization.