The demand for increasing efficiency has led to the development and construction of higher operating temperature power plant. This condition may lead to more severe thickness losses in boiler tubes due to excessive corrosion process. Hence, the research to improve the corrosion resistance of the current operated material is needed so that it can be applied for higher temperature application. In this research, the effect of chromizing process on the oxidation behaviour of T91 steel was investigated under steam condition. In order to deposit chromium, mixture of chromium (Cr) powder as master alloy, halide salt (NH₄Cl) powder as activator and alumina (Al₂O₃) powder as inert filler were inserted into alumina retort together with the steel sample and heated inside furnace at 1050°C for ten hours under argon gas environment. Furthermore, for the oxidation process, steels were exposed at 700°C at different oxidation time (6h-24h) under steam condition. From FESEM/EDX analysis, it was found that oxidation rate of pack cemented steel was lower than the un-packed steel. These results show that Cr from chromizing process was able to become reservoir for the formation of Cr₂O₃ in high temperature steam oxidation, and its existence can be used for a longer oxidation time.