Study on the corrosion behavior of Cl^- on 20# steel in high salinity wastewater containing H_2S and CO_2

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Abstract The sewage from the No. 2 Combined Station of Tahe Oilfield has the characteristics of high salinity, high chloride ion concentration, high water temperature, and a small amount of H_2S and CO_2 gas, which is highly corrosive. Using dynamic corrosion weight loss, electrochemical, SEM, EDS and other test methods, the effect of high concentration of Cl^- on the corrosion of 20# steel in wastewater containing H_2S and CO_2 was studied. The research shows that: in the sewage containing H_2S and CO_2, high concentration of Cl^- has obvious promoting effect on the corrosion of 20# steel. Within the research range, no critical concentration that causes the rapid change of the corrosion rate of 20# steel has been found; The competitive adsorption and strong permeability of S^{2-} obviously affect the structure of the corrosion product, and will cause a large area of the corrosion product film to fall off; with the increase of Cl^- concentration, the falling off and formation of the 20# steel corrosion product film alternately occur, and the corrosion At the same time, the corrosion current showed a general trend of increasing, and the corrosion potential did not change significantly.

Keywords corrosion; Cl^-; 20# steel; electrochemical