

ABSTRACT OF THE DISCLOSURE

OXIDATION OF LOW CHROMIUM STEELS

The present invention is a process for forming protective films on an alloy substrate by: oxidizing an alloy comprising iron and chromium in an oxygen containing atmosphere, said alloy containing from about 5 to about 15 wt% chromium, at a temperature of from about 200°C (473°K) to about 1400°C (1673°K), more preferably 300°C (573°K) to 600°C (873°K) wherein the partial pressure of oxygen in said oxygen containing atmosphere is above or equal to the dissociation pressure of Fe_3O_4 and FeO below or equal to the dissociation pressure of Fe_2O_3 within the specified temperature range, and for a time sufficient to effect the formation of a film comprising iron-chromium oxide (FeCr_2O_4) spinel on the surface of said alloy. In a further embodiment, the film may additionally contain Silicon.