

Gas Nitriding of Fe-C-Mn Alloy – A Thermodynamic Analysis

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Abstract

Some simple and fundamental ideas about steel nitriding process can be observed by the use of a thermochemical model which consists of a Fe-Mn-C alloy under a high pressure nitrogen atmosphere.

Thermochemistry can show us:

- (i) the interrelationship between carbon and manganese levels on the phases at the equilibrium state of the Fe-Mn-C-N system under a variable N activity
- (ii) the increasing carbon potential which, by its turn, can drive the 'up-hill' diffusion of the C dissolved in iron
- (iii) the phases which have to be taken into consideration when dealing with the N diffusion in solid iron.