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journal or publication title	Science reports of the Research Institutes, Tohoku University. Ser. A, Physics, chemistry and metallurgy
volume	24
page range	137-137
year	1972
URL	http://hdl.handle.net/10097/27655

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Abstract

Various properties of cast irons are finally determined by oxygen, sulfur and trace elements contained in them. Effects of oxygen, sulfur and trace elements on the graphitizing tendency of cast irons were shown quantitatively on the structural diagram. The law of oxygen and sulfur concerning the graphitizing tendency of cast irons was shown on the structural diagram. The contents of oxygen and sulfur to give the best quality to gray cast iron are 20~30 ppm and 150~300 ppm respectively. The mass effect of gray cast iron can be quantitatively shown by $\partial K/\partial \phi$. It was shown from the structural diagram that trace elements affect the graphitizing tendency of gray cast iron. As methods to express the quality of cast iron, σ^2_B/K^2-HB and $K \cdot HB - \sigma_B$ were proposed utilizing the K value.

* The 1574th report of the Research Institute for Iron, Steel and Other Metals. Published in the Transactions of the Japan Institute of Metals, **12** (1971), 422.