

Friction and Wear of Roll Materials for Hot Working Roll at High Temperatures

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Synopsis :

High-temperature friction and wear properties of hot working roll materials such as high-chromium cast iron, high-alloyed nickel grain cast iron and adamite cast steel have been investigated by using a twin-disc-type high temperature wear testing machine. When these materials are adopted in hot working rolls under some oxidative wear conditions, saving energy of rolling operation can be expected because of the decreasing friction coefficient, and roll costs also could be reduced because of better wear resistance. These roll materials must be as hard as possible to have better wear resistance. For that purpose, it is important that the matrix structure of these roll materials consist of an optimum volume fraction of carbides, decreasing retained austenite in the matrix by changing the austenite into martensite or bainite. It has been proved that the optimum volume fraction of carbides in the high-chromium cast-iron structure is more than 20% and that in the high-alloyed nickel grain cast iron structure is about 32%

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要旨

熱間圧延用ロール材、すなわち、高クロム鑄鉄、高合金ニッケル
合金鑄鉄およびマグネシウム鑄鉄の高温における摩擦と磨耗に

Table 1 Typical chemical composition of roll materials for hot working roll

(%)

C	Si	Mn	Ni	Cr	Mo
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① 0.24~0.40 m/s

② 0.72 m/s

③ 0.88 m/s



15 Heat disc temp. 800°C
Lead 100 tef

15 Heat disc temp. 800°C
Tef 100 tef

20

Heat disc temp. 800°C
T_{end} 100.1 °C

5.3 アダマイト鍍銀ローリ材の組織と腐蝕試験