

RESEARCH AND PRODUCTION OF HIGH STRENGTH HOT ROLLED RIBBED STEEL BAR BS G460

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Abstract: Production process and quality, mechanical properties and service performance of BS G460 high strength hot rolled ribbed bar BS G460 by Vanadium alloying technology in Ma'anshan Steel is present in the paper. Factors that affect properties of the steel bar are also analyzed.

Key Words: BS G460 steel bar; FeV; micro-alloying; property

1 Introduction

As trend of construction industry, application of high strength hot rolled ribbed steel bar is a key to adjust structure of steel bars, enhance engineering quality and quicken technological advance of the sector. At present, high strength hot rolled ribbed steel bar of 400 MPa and 460 MPa grades are widely used in foreign construction sectors. Since high strength hot rolled ribbed steel bar is characterized by high strength, stable properties, large safe storage, excellent anti-seism and low steel consumption, it is more suitable for high, wide spanned and anti-seismic buildings than common buildings, which will bring vast economic and social benefit in resource, energy and environment protection.

To further enlarge international markets, meet their demands (such as Hong Kong market) and enhance international competitive power of steel bars produced in Ma'anshan Steel, high strength hot rolled ribbed steel bar of 460 MPa (referred to as BS G460 steel bar below) has been trial-produced according to Hong Kong construction standard CS2: 1995 and English standard BS

4449: 1988 since 1999. The quality certification of product by Hong Kong Civil Engineering Department was passed in 4, 2000 and vast production of hot rolled ribbed steel bar of 460 MPa for Hong Kong market began in 1, 2001 and about 17 million tons had been exported by the end of 2002.

2 Technical Requirement for BS G460

Requirement of smelting chemical composition and equivalent carbon content of 460 MPa steel bar in CS2:1995 and BS 4449:1998 is given in Table 1. Mechanical and process properties in table 2.

3 Production Route

The main production route of BS G460 in Ma'anshan Steel is: smelting in 50 t Converter → argon blowing and feeding aluminum line → 6 strand curved continuous casting machine 140bloom → rolling

Table 1 Chemical Composition (Smelting Analysis) and Equivalent Carbon Content

Brand	Chemical composition and equivalent carbon content / %				
	C	S	P	N	C _{eq}
BS G460	≤0.25	≤0.050	≤0.050	≤0.012	≤0.51