

Properties of Microalloyed Medium Carbon Steel Bars

	(Nobuyuki Kondo)	(Kimio Mine)	(Noriaki
Koshizuka)	(Yoshiji Yamamoto)	(Toshiro Nakao)	

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(1)

V Nb  
Ar3 Ar1

V Nb

(2)

(3)

(4)

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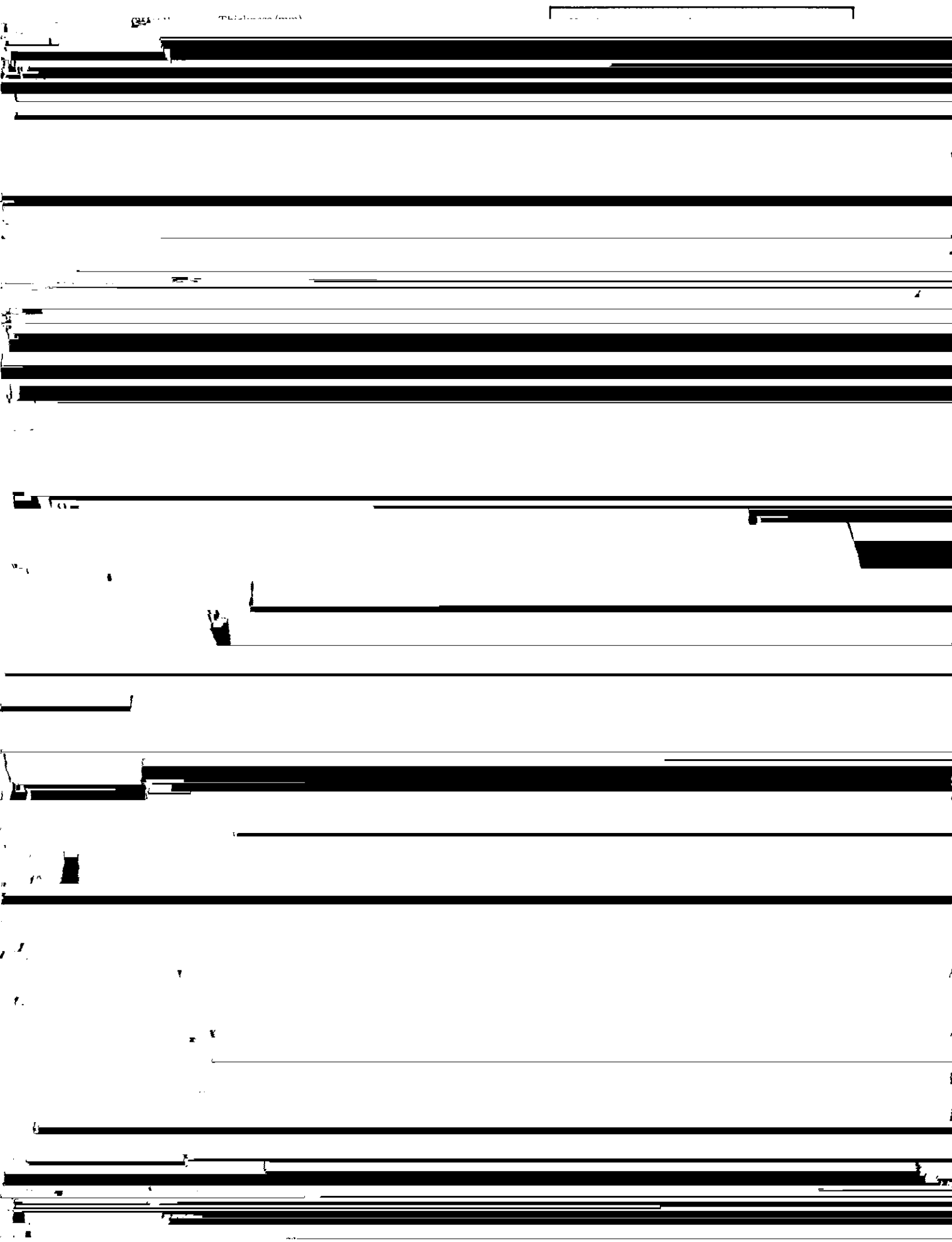
Synopsis :

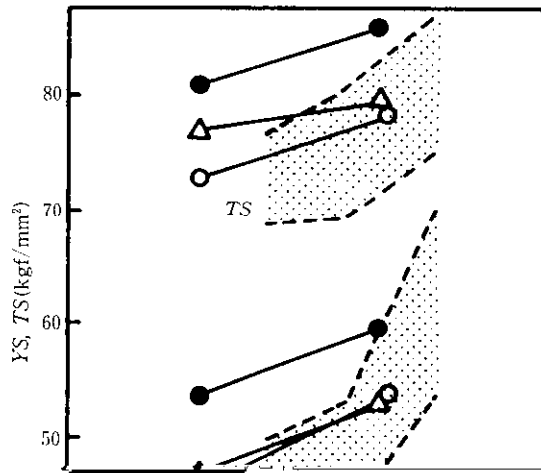
To develop microalloyed carbon steel bars for machinery parts, the effects of microalloying elements and the hot working conditions on the strength and toughness of

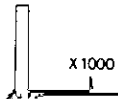
近藤 信行\*<sup>2</sup> 峰 公雄\*<sup>3</sup> 腰塚 典明\*<sup>4</sup> 山本 義治\*<sup>5</sup> 中尾 俊朗\*<sup>6</sup>

## Properties of Microalloyed Medium Carbon Steel Bars

Nobuyuki Kondo, Kimio Mine, Noriaki Kashiwaka, Yoshiji Yamamoto, Takino Nakano







$\geq 50 \text{ kgf}\cdot\text{m}/\text{cm}^2$ ,  $\text{TS} \geq 70 \text{ kgf}/\text{mm}^2$ ,  $\text{El} \geq 17\%$ ,  $\text{RA} \geq 45\%$  および  
 $\sigma_{E20} \geq 8 \text{ kgf}\cdot\text{m}/\text{cm}^2$  を全て満足している。さらに、両鋼種とも直径  
が大きくなるほど引張強度および延伸率の低下は S45C 種より極

100

3.2 機械的性質に与える熱処理条件の影響

N	Heating temperature 1300°C	
	50 mmφ → 15 mmφ	50 mmφ → 30 mmφ

n/cm <sup>2</sup>	10	Austenitizing temp. 1200°C	● NH45MV
	8		○ NH45CV
	6		

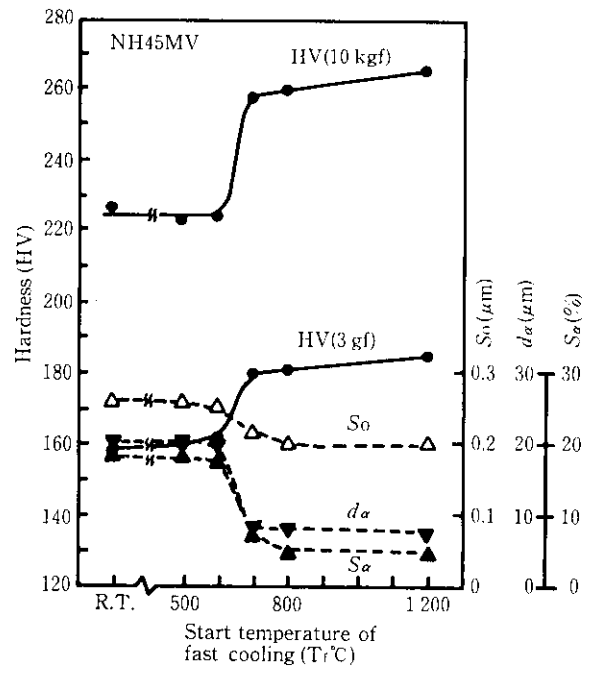
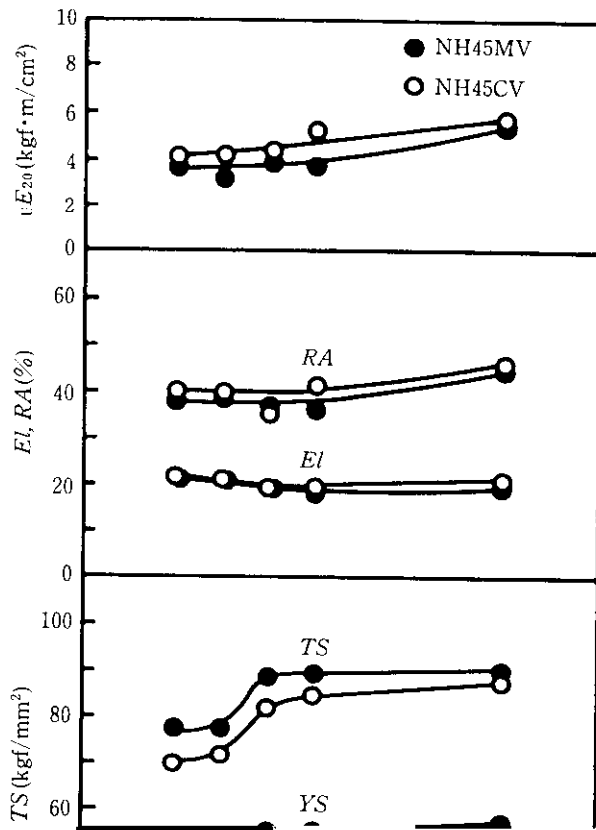


Fig. 16 Influence of start temperature of fast cooling on hardness and structure factors



Table 4 Mechanical properties of crank shaft

Steel	YS (kgf/mm <sup>2</sup> )	TS (kgf/mm <sup>2</sup> )	El*1 (%)	RA (%)	$\sigma_{E_{20}^{*2}}$ (kgf·m/cm <sup>2</sup> )	HRC		Note
						$\bar{x}$	$\sigma$	
SCr435MS	57	96	16	21	2.1	22.6	0.4	