KAWASAKI STEEL TECHNICAL REPORT No. 14 March 1986

Warm Press Forming of Stainless Steel Sheets*

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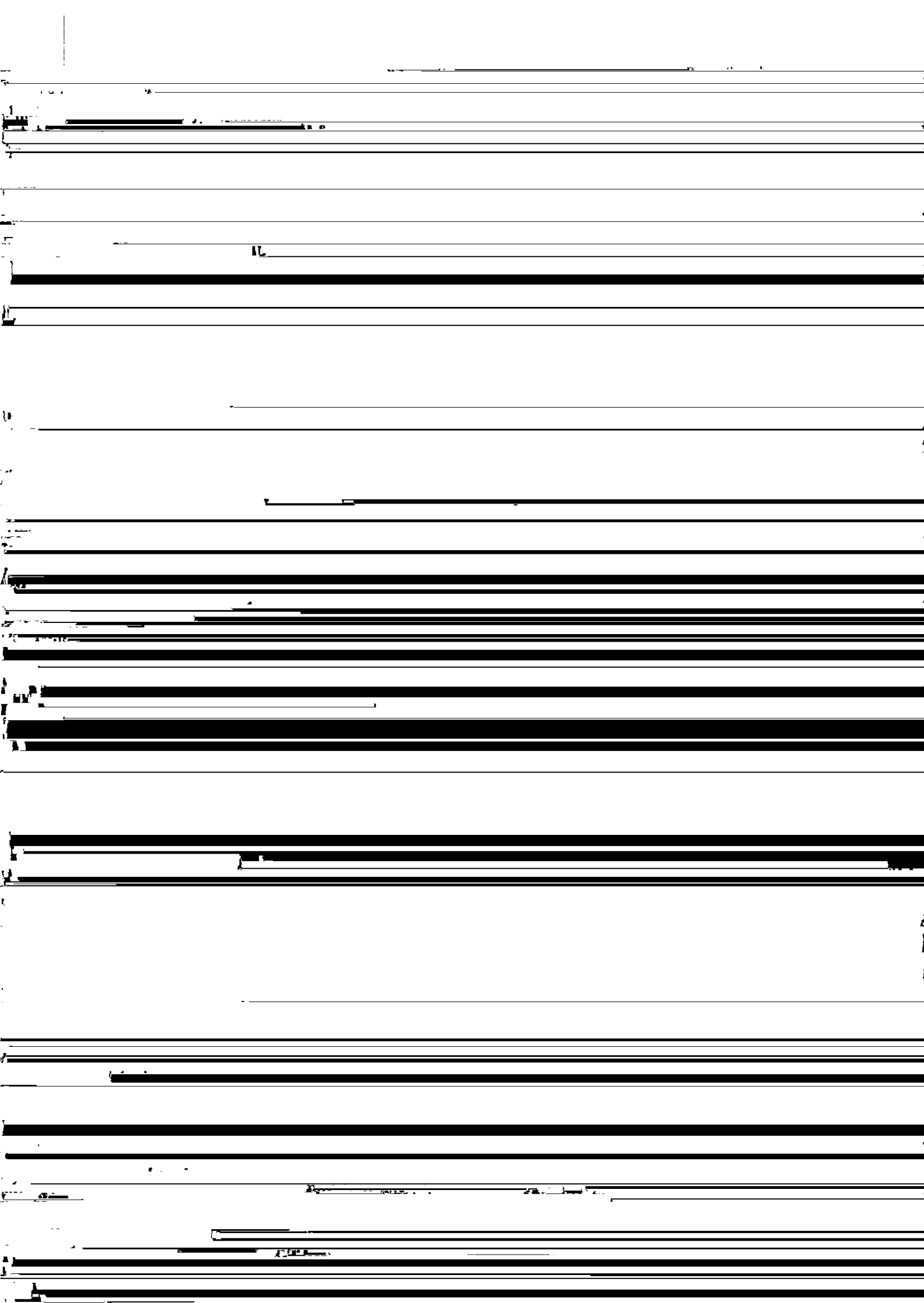


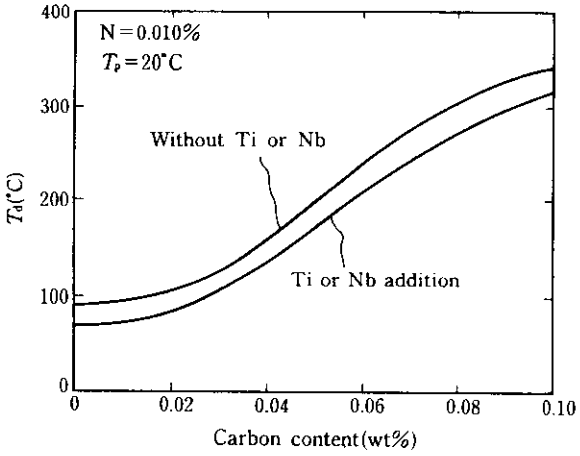


Fig. 6 Change in optimum drawing (die) temperature

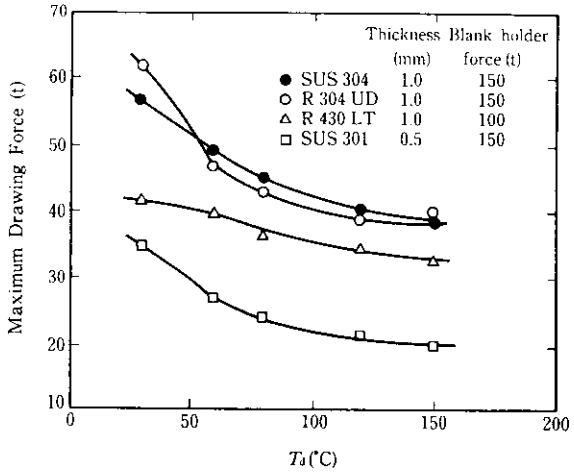
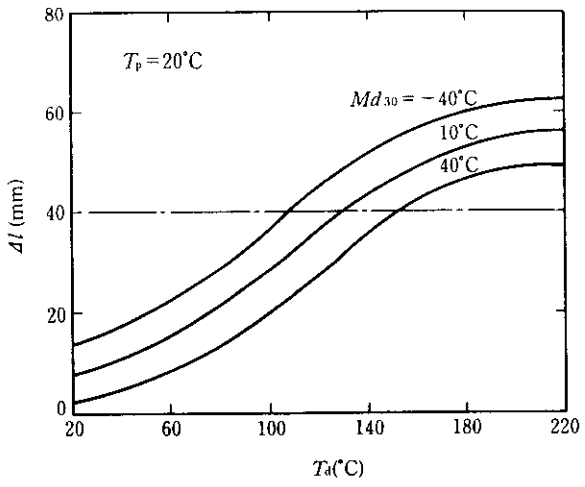


Fig. 7 Relation between die temperature (T_d) and



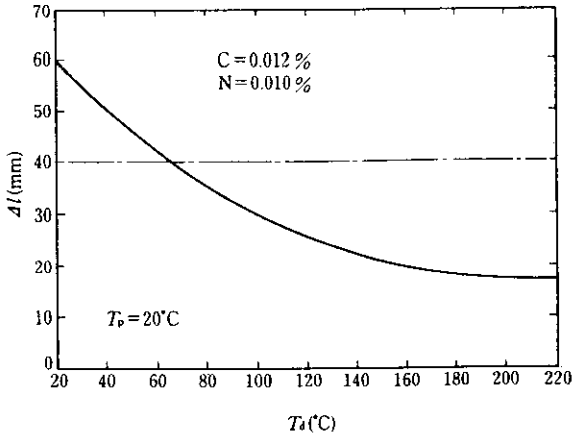


Fig. 10 Change in anisotropic parameter related to residual flange width (Δl) with die tempera-

(T_d) in austenitic stainless steel

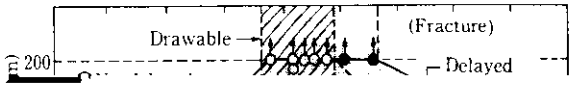


Table 3 Delayed fracture test result at various drawing (die) temperature

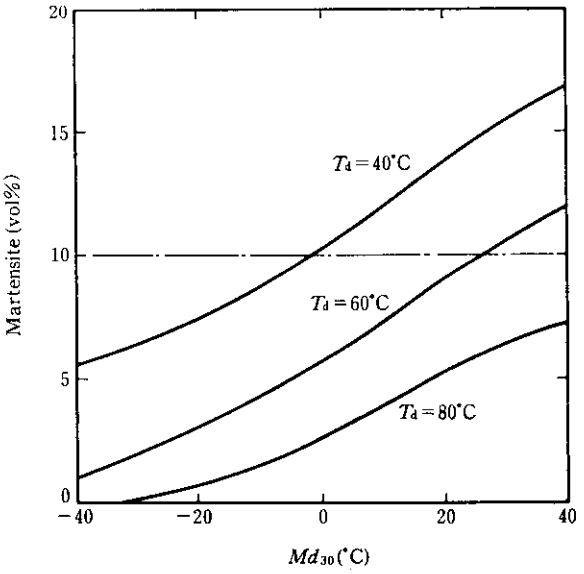
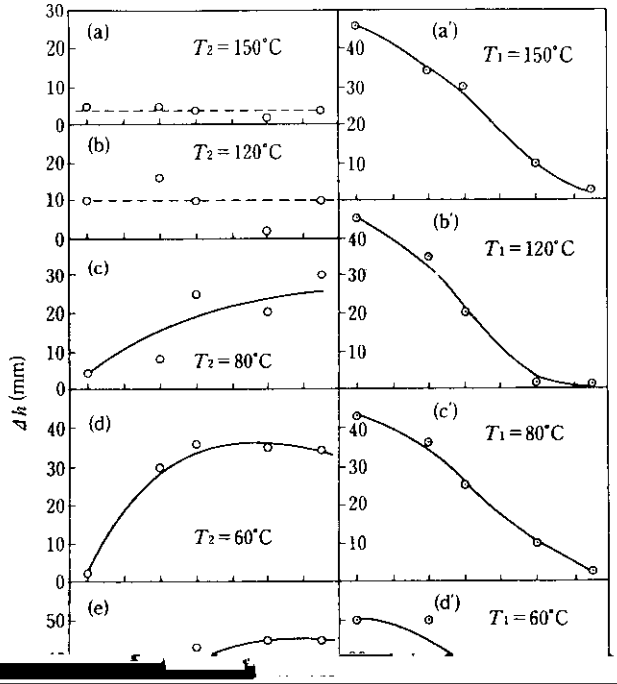
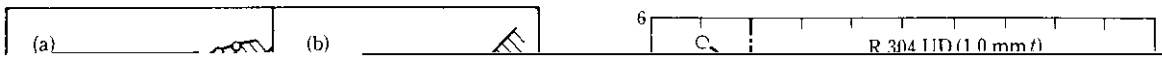


Fig. 13 Change in martensite volume ratio after drawing of austenitic stainless steel with austenite




(a)
(b)
6
R 304 UD (1.0 mm t)

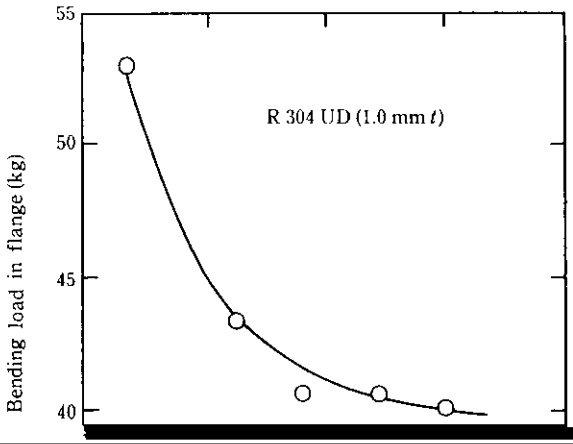


Table 4 Examples of compositions of new water-soluble lubricant with heat resistance (wt %)

Elment \ Type	A	B	C
Boric trimethyl	10	10	10
Machine oil	—	5	—
Polyethylene glycol	—	—	5
Methanol/1,1,1 trichloroethane	90	85	85

cleaning after forming is also excellent; it can be easily removed by any method of cold water, hot water, or

Table 5 Lubricating performance of newly developed heat resisting lubricant in warm drawing (mm)

Punch side	J**	PF***	MoS_2	PF***	414 K*			PF***		
					A	B	C			
Die side	J**	J**	MoS_2	MoS_2	414 K*			414 K*		
					A	B	C	A	B	C