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54 **Low alloy steel plate and process for production thereof.**

57 Low alloy steel shape of at least 4.8 mm thickness is produced by providing a steel consisting essentially of from about 0.02% to 0.07% carbon, 1.2% to 2.0% manganese, 0.020% maximum sulfur, up to 0.5% silicon, 0.1% to 0.4% molybdenum, 0.01% to 0.1% columbium, about 0.01% to 0.10% acid soluble aluminium, about 0.8% to 2.0% copper, about 0.4% to 2.0% nickel, residual chromium, and balance iron; hot reducing the steel to a desired final thickness with a total reduction in thickness of at least 30% while within the temperature range of about 760° to 927°C whereby to avoid substantial recrystallization of austenite and to obtain a predominant heavily deformed austenite phase; and cooling at a rate which transforms the austenite phase to a predominantly fine acicular ferrite and lower-bainite phase. The steel may also be precipitation hardened, or may be hot reduced either by the above-described controlled hot reduction or by conventional hot reduction, austenitized, quenched, and precipitation hardened. The product has high strength, improved low temperature toughness and excellent weldability.



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EUROPEAN SEARCH REPORT

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EP 84 30 1762

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Y,D	GB-A-1 436 846 (INTERNATIONAL NICKEL) * claim 1 *	1	C 21 D 8/02 C 22 C 38/16
Y	US-A-4 184 898 (C. OUCHI et al.) * claim 1 *	1	
A	GB-A-1 338 285 (NIPPON KOKAN) * claims 1-5 *	1	
A	US-A-3 539 404 (A.F. DE RETANA) * claim 1 *	1	
A	US-A-3 726 723 (A.P. COLDREN et al.) * claim 6 *	1	
A,D	US-A-3 955 971 (B.G. REISDORF)		C 21 D 8/02 C 22 C 38/16
A,D	US-A-4 008 103 (E. MIYOSHI et al.)		
A,D	CA-A- 988 751 (M. KRISHNADEV)		
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 14-07-1987	Examiner SUTOR W
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			