

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 480 355 A3

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **91117059.5**(51) Int. Cl.⁵: **C25D 3/56, C23C 28/02**(22) Date of filing: **07.10.91**(30) Priority: **08.10.90 JP 270171/90**(43) Date of publication of application:
15.04.92 Bulletin 92/16(84) Designated Contracting States:
DE FR GB(88) Date of deferred publication of the search report:
02.09.92 Bulletin 92/36(71) Applicant: **NKK CORPORATION**
1-2 Marunouchi 1-chome, Chiyoda-ku
Tokyo(JP)

(72) Inventor: **Sagiyama, Masaru, c/o NKK Corporation**
1-2, 1-chome Marunouchi, Chiyoda-ku
Tokyo(JP)
Inventor: **Abe, Masaki, c/o NKK Corporation**
1-2, 1-chome Marunouchi, Chiyoda-ku
Tokyo(JP)
Inventor: **Hiraya, Akira, c/o NKK Corporation**
1-2, 1-chome Marunouchi, Chiyoda-ku
Tokyo(JP)
Inventor: **Inagaki, Junichi, c/o NKK Corporation**
1-2, 1-chome Marunouchi, Chiyoda-ku
Tokyo(JP)
Inventor: **Morita, Masaya, c/o NKK Corporation**
1-2, 1-chome Marunouchi, Chiyoda-ku
Tokyo(JP)

(74) Representative: **Henkel, Feiler, Hänzel & Partner**
Möhlstrasse 37
W-8000 München 80(DE)

(54) **Iron-zinc alloy plated steel sheet having two plating layers and excellent in electropaintability and press-formability.**

EP 0 480 355 A3

(57) An iron-zinc alloy plated steel sheet having two plating layers and excellent in electropaintability and press-formability, which comprises; a steel sheet; an alloying-treated iron-zinc alloy dip-plating layer as a lower layer formed on at least one surface of the steel sheet; and an iron-zinc alloy electroplating layer as an upper layer, formed on the iron-zinc alloy dip-plating layer. The iron content in the iron-zinc alloy dip-plating layer is from 7 to 15 wt.%, and the plating weight of the iron-zinc alloy dip-plating layer is from 30 to 120 g/m² per surface of the steel sheet. The iron content in the iron-zinc alloy electroplating layer is at least 60 wt.%. The iron-zinc alloy electroplating layer has a plurality of dots of another

iron-zinc alloy; the iron content in each of the plurality of dots of another iron-zinc alloy is under 60 wt.%; the total exposed area per unit area of the plurality of dots of another iron-zinc alloy is from 5 to 50% of the unit area of the iron-zinc alloy electroplating layer; the diameter of each of the plurality of dots of another iron-zinc alloy is from 1 to 100 μm; and the total plating weight of the iron-zinc alloy electroplating layer and the plurality of dots of another iron-zinc alloy is from 1 to 10 g/m² per surface of the steel sheet.



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 11 7059

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.5)
A	US-A-4 329 402 (JACOB HYNER) ---		C25D3/56 C23C28/02
A	PATENT ABSTRACTS OF JAPAN vol. 14, no. 390 (C-751)(4333) 23 August 1990 & JP-A-2 145 778 (KOBE STEEL) 5 June 1990 * abstract *		
A	PATENT ABSTRACTS OF JAPAN vol. 009, no. 188 7 September 1983 & JP-A-60 056 090 (KOBE SEIKOSHO) 1 April 1985 * abstract * -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			C25D C23C
Place of search THE HAGUE		Date of completion of the search 02 JULY 1992	Examiner ELSEN D.B.
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	