

Title (en)  
FERRITIC FREE-CUTTING STAINLESS STEEL MATERIAL

Title (de)  
FERRITISCHES, FREI SCHNEIDENDES EDELSTAHLMATERIAL

Title (fr)  
MATÉRIAU EN ACIER INOXYDABLE FERRITIQUE DE DÉCOLLETAGE

Publication  
**EP 4368740 A1 20240515 (EN)**

Application  
**EP 23207410 A 20231102**

Priority  
JP 2022177092 A 20221104

Abstract (en)  
The present invention relates to a ferritic free-cutting stainless steel material having a component composition contains: in terms of mass%,  $10.0\% \leq \text{Cr} \leq 25.0\%$ ,  $0.2\% \leq \text{Mn} \leq 2.0\%$ ,  $0.30\% \leq \text{Al} \leq 2.50\%$ ,  $0.02\% \leq \text{Si} \leq 0.60\%$ , and  $0.10\% \leq \text{S} \leq 0.45\%$ , and further two or more selected from the group consisting of  $0.03\% \leq \text{Pb} \leq 0.40\%$ ,  $0.03\% \leq \text{Bi} \leq 0.40\%$ , and  $0.01\% \leq \text{Te} \leq 0.10\%$ , with a balance being Fe and unavoidable impurities. The component composition satisfies:  $900([\text{C}] + [\text{N}]) + 170[\text{Si}] + 12[\text{Cr}] + 30[\text{Mo}] + 10[\text{Al}] < 300$ , and  $([\text{Cr}] + [\text{Mo}] + 1.5[\text{Si}] + 4[\text{Al}])/([\text{Ni}] + 0.5[\text{Mn}] + 30[\text{C}] + 30[\text{N}]) \geq 7$ . The ferritic free-cutting stainless steel material contains sulfides having a circle equivalent diameter of 1.5  $\mu\text{m}$  or more, and the sulfides have an average circle equivalent diameter of 3.0 to 15.0  $\mu\text{m}$ , an average aspect ratio of 2.5 or less, and an area ratio of 0.5 to 2.0%, and the maximum value of Vickers hardness of 170 HV or less.

IPC 8 full level  
**C22C 38/60** (2006.01); **C21D 6/00** (2006.01); **C21D 6/02** (2006.01); **C21D 7/13** (2006.01); **C21D 8/00** (2006.01); **C21D 8/06** (2006.01); **C21D 9/52** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/18** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/54** (2006.01)

CPC (source: EP US)  
**C21D 1/84** (2013.01 - US); **C21D 6/002** (2013.01 - EP); **C21D 6/004** (2013.01 - EP US); **C21D 6/005** (2013.01 - US); **C21D 6/008** (2013.01 - US); **C21D 6/02** (2013.01 - EP); **C21D 7/13** (2013.01 - EP); **C21D 8/005** (2013.01 - EP); **C21D 8/065** (2013.01 - EP US); **C21D 9/52** (2013.01 - EP); **C21D 9/525** (2013.01 - US); **C22C 38/001** (2013.01 - EP US); **C22C 38/002** (2013.01 - EP US); **C22C 38/004** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/18** (2013.01 - EP); **C22C 38/42** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/54** (2013.01 - EP US); **C22C 38/60** (2013.01 - EP US); **C21D 2211/005** (2013.01 - US)

Citation (applicant)  
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Citation (search report)  
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Designated contracting state (EPC)  
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