Title (en)

METHOD FOR REMOVING FERRIC IONS FROM SULFATE-BASED IRON ELECTROPLATING SOLUTION

Title (de)

VERFAHREN ZUR ENTFERNUNG VON EISENIONEN AUS SULFATBASIERTER EISENELEKTROPLATTIERUNGSLÖSUNG

Title (fr)

PROCÉDÉ D'ÉLIMINATION D'IONS FERRIQUES D'UNE SOLUTION D'ÉLECTROPLACAGE DE FER À BASE DE SULFATE

Publication

EP 4317537 A4 20240522 (EN)

Application

EP 21933323 A 20210322

Priority

KR 2021003533 W 20210322

Abstract (en)

[origin: EP4317537A1] The present invention relates to a method for effectively removing ferric ions contained in an iron electroplating solution. The method for removing ferric ions contained in a sulfate-based iron electroplating solution comprises a step of regeneration for reduction of the ferric ions by circulating a ferric ion-containing sulfate-based iron electroplating solution in a solution bath containing ferrous metal charged therein, wherein the ferrous metal is charged in an amount that satisfies the following formula (1): S ≥0.01 I_{conv}/C_{max} (1). In formula (1), S indicates a total surface (m²) of ferrous metal, C_{max} indicates a maximum permissible ion concentration level (g/L) of the ferric ions in the solution, and I_{conv} indicates, as represented by the following formula (2), converted current (A) obtained by dividing the sum of current (I) applied to an electroplated cell during the plating time (t_p, sec) by the regeneration time (t_r, sec) for reduction of the ferric ions in an electrolyte. Iconv=∫Idtp∫dtr

IPC 8 full level

C25D 21/18 (2006.01); **C25D 3/20** (2006.01); **C25D 21/06** (2006.01)

CPC (source: EP KR US)

C25D 3/20 (2013.01 - EP KR US); **C25D 3/562** (2013.01 - US); **C25D 21/06** (2013.01 - EP KR US); **C25D 21/18** (2013.01 - EP KR US)

Citation (search report)

- [XYI] JP S5983799 A 19840515 - NIPPON STEEL CORP
- [XI] JP S5964800 A 19840412 - SUMITOMO METAL IND
- [I] JP S63171899 A 19880715 - NISSHIN STEEL CO LTD
- [Y] CN 1096332 A 19941214 - KAWASAKI STEEL CO [JP]
- See also references of WO 2022203095A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4317537 A1 20240207; **EP 4317537 A4 20240522**; CN 117460867 A 20240126; JP 2024509312 A 20240229; KR 20230159574 A 20231121; US 2024150924 A1 20240509; WO 2022203095 A1 20220929

DOCDB simple family (application)

EP 21933323 A 20210322; CN 202180096238 A 20210322; JP 2023555600 A 20210322; KR 2021003533 W 20210322; KR 20237036190 A 20210322; US 202118280811 A 20210322