

Title (en)

Ultra-thick high strength 7xxx series aluminum alloy products and methods of making such products

Title (de)

Ultradicke, hochfeste Aluminiumlegierungsprodukte der 7xxx-Serie und Verfahren zur Herstellung solcher Produkte

Title (fr)

Produits en alliage d'aluminium de série 7xxx ultra épais à résistance élevée et procédés de fabrication de tels produits

Publication

EP 2662467 A1 20131113 (EN)

Application

EP 13164525 A 20130419

Priority

US 201261636695 P 20120422

Abstract (en)

The present invention is directed to an ultra-thick high strength aluminum alloy, comprising 7.5 to 8.4 wt. % Zn, 1.6 to 2.3 wt. % Mg, 1.4 to 2.1 wt. % Cu, and 0.05 to 0.15 wt. % Zr. This alloy can be fabricated to produce 2-10 inch thick plate, extrusion or forging products, and is especially suitable for aerospace structural components, especially large commercial airplane wing structure applications. The aluminum product has a minimum yield strength of [75 ksi - 0.8 x (thickness in inch - 3.94 inch)] in LT direction and [76 ksi - 0.8 x (thickness in inch - 3.94 inch)] in L direction for more than 2 inch thick product in T7651 temper. Besides strength, product provides necessary damage tolerance performance as well as corrosion resistance performance suitable for aerospace application.

IPC 8 full level

C22C 21/10 (2006.01); **C22C 21/12** (2006.01); **C22C 21/16** (2006.01); **C22F 1/053** (2006.01)

CPC (source: EP US)

C22C 21/10 (2013.01 - EP US); **C22C 21/12** (2013.01 - EP US); **C22C 21/16** (2013.01 - EP US); **C22F 1/002** (2013.01 - US); **C22F 1/053** (2013.01 - EP US)

Citation (applicant)

- US 6972100 B2 20051206 - MINKE RONALD C [US], et al
- US 6027582 A 20000222 - SHAHANI RAVI [FR], et al
- O. ENGLER ET AL.: "A Study of Through-Thickness Texture Gradients in Rolled Sheets", METALLURGICAL AND MATERIALS TRANSACTION A, September 2000 (2000-09-01)
- D.J. CHAKRABAKTI ET AL.: "Through Thickness Property Variations in 7050 Plate", MATERIALS SCIENCE FORUM, 1996, pages 217 - 211

Citation (search report)

- [X] US 2005006010 A1 20050113 - BENEDICTUS RINZE [NL], et al
- [X] EP 2386667 A1 20111116 - GEN RES INST NONFERROUS METALS [CN]
- [XI] US 2002150498 A1 20021017 - CHAKRABARTI DHRUBA J [US], et al

Citation (third parties)

Third party :

- US 8083870 B2 20111227 - CHAKRABARTI DHRUBA J [US], et al
- US 6792100 B2 20040914 - NEKRASOVSKAIA SOFIA [US], et al

Cited by

EP3101149A1; CN106191576A; CN113444940A; CN112921218A; EP3394305A4; WO2017044471A1; WO2024104378A1

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

DOCDB simple family (publication)

EP 2662467 A1 20131113; US 2015240338 A1 20150827

DOCDB simple family (application)

EP 13164525 A 20130419; US 201313867682 A 20130422