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(54) Titre : ALLIAGES D'ALUMINIUM DESTINES A LA COULEE CONTINUE PRESQUE AUX COTES DE PIECES STRUCTURALES ET ET NON STRUCTURALES, ET LEURS PROCEDES DE FABRICATION

(54) Title: ALUMINIUM ALLOYS FOR STRUCTURAL AND NON-STRUCTURAL NEAR NET CASTING, AND METHODS FOR PRODUCING SAME

(57) Abrégé/Abstract:
An aluminum alloy for near net shaped casting of structural components is disclosed. The alloy contains 2 to 10 wt.% Zn, 0.5 to 5 wt.% Mg, 0.5 to 5 wt.%) Fe, optionally Cu, Ti, Sr, Be, Zr, V, Cr, Sc, Na, Si, Mn, Mo, B, and Ni, with balance aluminum. The alloy may be subjected to heat treatment selected from the group consisting of solutionizing, incubation, aging, and two or more heat treatment steps.

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(54) **Title:** ALUMINIUM ALLOYS FOR STRUCTURAL AND NON-STRUCTURAL NEAR NET CASTING, AND METHODS FOR PRODUCING SAME

(57) **Abstract:** An aluminum alloy for near net shaped casting of structural components is disclosed. The alloy contains 2 to 10 wt.% Zn, 0.5 to 5 wt.% Mg, 0.5 to 5 wt.%) Fe, optionally Cu, Ti, Sr, Be, Zr, V, Cr, Sc, Na, Si, Mn, Mo, B, and Ni, with balance aluminum. The alloy may be subjected to heat treatment selected from the group consisting of solutionizing, incubation, aging, and two or more heat treatment steps.

Claims:

1. An aluminium alloy according to the attached text and figures.

2. An aluminium alloy consisting of:
from 2 to 10 wt. % zinc (Zn);
from 0.5 to 5 wt. % magnesium (Mg);
from 0.5 to 5 wt. % iron (Fe), wherein aluminium (Al), as well as, other elements (copper, titanium, strontium, beryllium, zirconium, vanadium, chromium, scandium, sodium, silicon, manganese, molybdenum, boron and nickel) and impurities make up the balance wt. %.

3. An aluminium alloy comprising:
from 4 to 10 wt.% zinc (Zn);
from 1.5 to 3 wt% magnesium (Mg);
from 1.5 to 3% iron (Fe); and,
inevitable impurities.

4. An aluminium alloy comprising:
from 4.5 to 7 wt.% zinc (Zn);
from 2 to 2.5 wt% magnesium (Mg);
from 1.5 to 4% iron (Fe); and,
inevitable impurities.

5. An aluminium alloy comprising:
from 4.7 to 6.9 wt.% zinc (Zn);
from 2.1 to 2.24 wt% magnesium (Mg);
from 1.56 to 3.78% iron (Fe);
from 0.05 to 0.38 copper (Cu);
from 0.02 to 0.24 manganese (Mn); and,
inevitable impurities.

6. An aluminium alloy consisting of:
zinc at 2 to 10 percentage by weight;
magnesium at 0.5 to 5 percentage by weight;

iron at 0.5 to 5 percentage by weight;
copper at 0 to 4 percentage by weight;
manganese at 0 to 1 percentage by weight;
titanium at 0 to 0.5 percentage by weight;
boron at 0 to 0.15 percentage by weight;
zirconium at 0 to 0.5 percentage by weight;
vanadium at 0 to 0.5 percentage by weight;
scandium at 0 to 0.5 percentage by weight;
chromium at 0 to 0.5 percentage by weight;
strontium at 0 to 0.1 percentage by weight;
sodium at 0 to 0.1 percentage by weight;
boron at 0 to 0.5 percentage by weight; and,
beryllium at 0 to 0.2 percentage by weight.

7. An aluminium alloy as claimed in any one of claims 1 to 6 which has been subject to heat treatment which is one or more members of the group consisting of solution only, incubation only, age only, no treatment or two or more heat treatment steps together.

8. The aluminium alloy of any one of claims 1 to 6 which has been heat-treated by one of:

one step solutionizing at 460° C for 3.5 hours to 24 hours with cold water quench;
two steps solutionizing at 450° C for 12 to 22 hours plus 5 to 30° C per hour to 475 to 500° C plus 475 to 500° C for 4 to 7 hours with cold water quench;
incubation between solution and ageing for 1 to 24 hours at room temperature;
one step ageing at 120 to 170° C for 1 to 24 hours; and,
two step ageing at 120° C for 1 to 24 hours plus 150 to 180° C for 1 to 24 hours.