Zn: 0.15-0.40,

at least one element selected from Ti, Cr, Cu and Zr, with a content, if it is selected, of 0.01-0.15 for Ti, 0.05-0.25 for Cr, 0.02-0.25 for Cu, 0.05-0.25 for Zr,

Fe: < 0.40,

Si: < 0.40,

other elements or impurities < 0.05 each and < 0.15 in total, the remainder aluminum,

b) a slab is cast by vertical semicontinuous casting,

c) optionally, said slab is homogenized,

d) said optionally homogenized slab is hot rolled, in two successive steps, in order to obtain a sheet

d1) a hot-rolling step on a reversible mill to a thickness of between 12 and 35 mm,

d2) a hot-rolling step on a tandem mill to a thickness of between 3 and 12 mm, wherein the final temperature is at least 260°C and is less than 300°C,

e) optionally, said sheet is cold rolled, to a thickness of between 1 and 7 mm,

f) optionally, a final heat treatment of said optionally cold-rolled sheet is carried out at a temperature below 300°C.

In another aspect of the present disclosure, there is provided an aluminum alloy sheet with a thickness of between 1 and 12 mm with a composition, as % by weight,

Mg: 4.0-5.2,

Mn: 0.40-1.0,

Zn: 0.15-0.40,

at least one element selected from Ti, Cr, Cu and Zr, with a content, if it is selected, of 0.01-0.15 for Ti, 0.05-0.25 for Cr, 0.02-0.25 for Cu, 0.05-0.25 for Zr,

Fe: < 0.40,

Si: < 0.40,

other elements or impurities < 0.05 each and

< 0.15 in total, the remainder aluminum,

able to be obtained by the method disclosed herein having, after exposure of 7 days at 100°C, a weight loss of less than 15 mg/cm2 during a corrosion test in accordance with ASTM G67.

In a further aspect of the present disclosure, there is provided a use of a sheet disclosed herein in naval construction or for constructing industrial vehicles.

A first object of the invention is a method for manufacturing such an aluminum alloy sheet, wherein

a) an aluminum alloy is prepared, with the composition, as % by weight
Mg: 4.0-5.2,
Mn: 0.40-1.0,
Zn: 0.15-0.40,
at least one element selected from Ti, Cr, Cu and Zr, with a content, if it is selected, of 0.01-0.15 for Ti, 0.05-0.25 for Cr, 0.02-0.25 for Cu, 0.05-0.25 for Zr,
Fe: < 0.40,
Si: < 0.40,
other elements or impurities < 0.05 each and < 0.15 in total, the remainder aluminum,

b) a slab is cast by vertical semicontinuous casting,

c) optionally, said slab is homogenized,

d) said optionally homogenized slab is hot rolled, in two successive steps, in order to obtain a sheet
d1) a hot-rolling step on a reversible mill to a thickness of between 12 and 35 mm,
d2) a hot-rolling step on a tandem mill to a thickness of between 3 and 12 mm, wherein the final temperature is at least 240°C and is less than 300°C,

e) optionally, said sheet is cold rolled, to a thickness of between 1 and 4 mm,

f) optionally, a final heat treatment of said optionally cold-rolled sheet is carried out at a temperature below 300°C.

A second object of the invention is an aluminum alloy sheet with a thickness of between 1 and 12 mm with the composition, as % by weight,
Mg: 4.0-5.2,
Mn: 0.40-1.0,
Zn: 0.15-0.40,
at least one element selected from Ti, Cr, Cu and Zr, with a content, if it is selected, of 0.01-0.15 for Ti, 0.05-0.25 for Cr, 0.02-0.25 for Cu, 0.05-0.25 for Zr,
Fe: < 0.40,
Si: < 0.40,
other elements or impurities < 0.05 each and < 0.15 in total, the remainder aluminum,

Claims

1. Method for manufacturing an aluminum alloy sheet, wherein

a) an aluminum alloy is prepared, with the composition, as % by weight
Mg: 4.0-5.2,
Mn: 0.40-1.0,
Zn: 0.15-0.40,
at least one element selected from Ti, Cr, Cu and Zr, with a content, if it is selected, of 0.01-0.15 for Ti, 0.05-0.25 for Cr, 0.02-0.25 for Cu, 0.05-0.25 for Zr,
Fe: < 0.40,
Si: < 0.40,
other elements or impurities < 0.05 each and < 0.15 in total, the remainder aluminum,
b) a slab is cast by vertical semicontinuous casting,
c) optionally, said slab is homogenized,
d) said optionally homogenized slab is hot rolled, in two successive steps, in order to obtain a sheet
d1) a hot-rolling step on a reversible mill to a thickness of between 12 and 35 mm,
d2) a hot-rolling step on a tandem mill to a thickness of between 3 and 12 mm, wherein the final temperature is at least 260°C and is less than 300°C,
e) optionally, said sheet is cold rolled, to a thickness of between 1 and 7 mm,
f) optionally, a final heat treatment of said optionally cold-rolled sheet is carried out at a temperature below 300°C.

2. Method according to claim 1, wherein the Zn content is between 0.15 and 0.35% by weight and preferably between 0.18 and 0.30% by weight.

3. Method according to claim 1 or claim 2, wherein the homogenization step c is not performed but a simple reheating is carried out before hot rolling at a temperature of between 490° and 535°C.

4. Method according to any one of claims 1 to 3, wherein the final heat treatment step f is not performed and wherein the sheet is used in the as-manufactured temper.

5. Method according to any one of claims 1 to 4, wherein the final temperature during step d2 is between 240°C and 280°C.

6. Method according to any one of claims 1 to 5, wherein a reduction in thickness of at least 30% is performed at a temperature of between 240°C and 380°C during step d2.

7. Method according to any one of claims 1 to 6, wherein the Mg content is between 4.0 and 4.6% by weight and wherein a reduction in thickness of at least 65% is performed at a temperature of between 240°C and 380°C during step d2.

8. Aluminum alloy sheet with a thickness of between 1 and 12 mm with a composition, as % by weight,
Mg: 4.0-5.2,
Mn: 0.40-1.0,
Zn: 0.15-0.40,
at least one element selected from Ti, Cr, Cu and Zr, with a content, if it is selected, of 0.01-0.15 for Ti, 0.05-0.25 for Cr, 0.02-0.25 for Cu, 0.05-0.25 for Zr,
Fe: < 0.40,
Si: < 0.40,
other elements or impurities < 0.05 each and
< 0.15 in total, the remainder aluminum,
able to be obtained by the method according to any one of claims 1 to 7 having, after exposure of 7 days at 100°C, a weight loss of less than 15 mg/cm^2 during a corrosion test in accordance with ASTM G67.

9. Sheet according to claim 8, wherein the Mg content is between 4.0 and 4.6% by weight, able to be obtained by the method according to claim 7.

10. Aluminum alloy sheet according to claim 9, characterized in that the degree of KAM mean misorientation is at least 0.75.

11. Use of a sheet according to one of claims 8 to 10 in naval construction or for constructing industrial vehicles.