What is claimed is:

1. A method for the production of a water-reactive Al film comprising the steps of melting a material which comprises 4NAl or 5NAl as an Al raw material and added In in an amount ranging from 2 to 5% by mass on the basis of the mass of the Al raw material in such a manner that the composition of the material becomes uniform; thermally spraying the resulting molten material on the surface of a base material according to the electric arc spraying technique; and solidifying the sprayed molten material through quenching to thus form an Al film in which In is uniformly dispersed in Al crystalline grains.

2. A method for the production of a water-reactive Al film comprising the steps of melting a material which comprises 4NAl or 5NAl as an Al raw material, and added In in an amount ranging from 2 to 5% by mass and added Si, including the Si as an impurity of the Al raw material, in a total amount ranging from 0.04 to 0.6% by mass, on the basis of the mass of the Al raw material in such a manner that the resulting molten material has a uniform composition; thermally spraying the resulting molten material on the surface of a base material according to the electric arc spraying technique; and solidifying the sprayed molten material through quenching to thus form an Al film in which In is uniformly dispersed in Al crystalline grains.

3. A constituent member for a film-forming chamber of a film-forming apparatus characterized in that it is provided thereon with a water-reactive Al film prepared according to the method as set forth in claim 1 or 2.

4. The constituent member for a film-forming chamber as set forth in claim 3, wherein the constituent member is an adhesion-preventive plate, a shutter or a mask.

CLAIMS

1. A method for the production of a water-reactive Al film comprising the steps of

melting a material which comprises 4NAl or 5NAl as an Al raw material and added In in an amount ranging from 2 to 5% by mass on the basis of the mass of the Al raw material in such a manner that the composition of the material becomes uniform;

thermally spraying the resulting molten material on the surface of a base material according to the electric arc spraying technique; and

solidifying the sprayed molten material through quenching to thus form an Al film in which In is uniformly dispersed in Al crystalline grains,

wherein even after the water-reactive Al film is subjected to an influence of a thermal hysteresis experienced in a film-forming process implemented within a film-forming apparatus in which an upper limit of a thermal hysteresis temperature is on an order of 300 to 350°C, reaction current density, as determined by immersing the base material covered with the Al film in warm water maintained at a temperature ranging from 40 to 130°C and dissolving the Al film in water, is not less than 50 mA/cm^2.

2. A method for the production of a water-reactive Al film comprising the steps of

melting a material which comprises 4NAl or 5NAl as an Al raw material, and added In in an amount ranging from 2 to 5% by mass and added Si, including the Si as an impurity of the Al raw material, in a total amount ranging from 0.04 to 0.6% by mass, on the basis of the mass of the Al raw material in such a manner that the resulting molten material has a uniform composition;

thermally spraying the resulting molten material on the surface of a base material according to the electric arc spraying technique; and

solidifying the sprayed molten material through quenching to thus form an Al film in which In is uniformly dispersed in Al crystalline grains.

3. A constituent member for a film-forming chamber of a film-forming apparatus characterized in that it is provided thereon with a water-reactive Al film prepared according to the method as set forth in claim 1 or 2.

4. The constituent member for a film-forming chamber as set forth in claim 3, wherein the constituent member is an adhesion-preventive plate, a shutter or a mask.