MULTICOLOR ANODIZING TREATMENT

A multicolor anodizing treatment for treating the surface of an aluminum workpiece includes the steps of (1) anti-oil procedure where dirty oil is removed from the aluminum workpiece, (2) rinsing where the aluminum workpiece is cleaned with running water in a rinsing trough, (3) chemical polishing where the aluminum workpiece is polished by means of a chemical solution, (4) anodizing where the aluminum workpiece is anodized to produce an oxide surface layer, (5) coloring where the aluminum workpiece is colored with at least one color, (6) drying where the aluminum workpiece is dried, and (7) finishing where the aluminum workpiece is sealed with a layer of sealant.
anti-oil

rinsing

chemical polishing where the aluminum workpiece is polished by means of a chemical solution

anodizing where the aluminum workpiece is anodized to produce an oxide surface layer

coloring where the aluminum workpiece is colored with at least one color

drying

finishing to have the aluminum workpiece be sealed with a layer of sealant
MULTICOLOR ANODIZING TREATMENT

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention
The present invention relates to a surface treatment technology and more particularly, to a single-step multi-color anodizing treatment that saves much labor and time, reduces color agent consumption, minimizes pollution, and prevents color variation.

[0002] 2. Description of the Related Art
Many multicolor anodizing treatments are known as follows:

[0003] One known multicolor anodizing treatment is that: the workpiece is processed through an anti-oil procedure, a rinsing procedure, and an anodizing procedure to form a single color, and then the part of the workpiece to be further colored is coated with an anti-corrosion ink, and then the workpiece is treated in a nitric acid trough to have the surface that is not coated with the anti-corrosion ink to be corroded, and then the workpiece is dipped in an electrolytic trough containing a solution of a second color agent to receive an anodizing process so that the workpiece shows a second color corresponding to the part that is not coated with an anti-corrosion ink, and the procedure is repeated to have the workpiece show multiple colors, and then an organic solvent is applied to the workpiece to remove the anti-corrosion ink, and then the workpiece is dried and then sealed with a layer of sealant. This method wastes much time and labor, and consumes a big amount of color agent. Further, this method causes pollution.

[0004] Another known multicolor anodizing treatment is that: the workpiece is processed through a primary anodizing process to have the surface show a first color, and then a predetermined part of the surface of the workpiece is milled or sintered by laser to remove the first color, and then the workpiece is processed through a secondary anodizing process to have the previously milled or sintered part show a second color, and then the milling/sintering and anodizing process are repeated when necessary subject to the number of colors desired, and then the workpiece is sealed with a layer of sealant. This method wastes much time and labor, consumes a big amount of color agent, and causes pollution. Further, the color control of this method is difficult, i.e., this method cannot eliminate the problem of color variation.

[0005] Still another known multicolor anodizing treatment is that: the workpiece is processed through a primary anodizing process to show a first color, and then a fading agent such as hydrogen peroxide is employed to remove the first color from a predetermined part of the workpiece, and then the workpiece is processed through a secondary anodizing process to show a second color corresponding to the faded part of the workpiece, and this fading and anodizing procedure is repeated when a further color is necessary, and finally, the workpiece is sealed with a layer of sealant. This method also wastes much time and labor, consumes a big amount of color agent, and causes pollution. Further, the color control of this method is difficult, i.e., this method cannot eliminate the problem of color variation. Further, the color control of this method is difficult to perform, i.e., this method cannot eliminate the problem of color variation.

SUMMARY OF THE INVENTION

[0006] The present invention has been accomplished under the circumstances in view. It is therefore the main object of the present invention to provide a multicolor anodizing treatment, which simplifies the anodizing treatment, saving much labor and time. It is another object of the present invention to provide a multicolor anodizing treatment, reduces color agent consumption, minimizes pollution, and prevents color variation. To achieve these and other objects of the present invention, the multicolor anodizing treatment comprises the steps of (1) anti-oil procedure where dirty oil is removed from the aluminum workpiece, (2) rinsing where the aluminum workpiece is cleaned with running water in a rinsing trough, (3) chemical polishing where the aluminum workpiece is polished by means of a chemical solution, (4) anodizing where the aluminum workpiece is anodized to produce an oxide surface layer, (5) coloring where the aluminum workpiece is colored with at least one color, (6) drying where the aluminum workpiece is dried, and (7) finishing where the aluminum workpiece is sealed with a layer of sealant.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The FIGURE is a flow chart of a multicolor anodizing treatment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0008] Referring to the FIGURE a multicolor anodizing treatment in accordance with the present invention is shown comprising the steps of:

[0009] (1) anti-oil procedure where the aluminum workpiece is hung on a tool and dipped in a heated acidic or alkali chemical trough containing nitric acid solution, sulphoacid solution or sodium hydroxide solution;

[0010] (2) rinsing where the aluminum workpiece is cleaned with running water;

[0011] (3) chemical polishing where acidic or alkali chemical solution such as phosphoric acid solution, nitric acid solution or an alkali solution is applied to the aluminum workpiece to remove impurities from the surface of the aluminum workpiece so that the aluminum workpiece shows the original aluminum color;

[0012] (4) anodizing where the aluminum workpiece is hung on a tool and dipped in an anodizing trough to receive a sulphoacid anodizing process so that an oxide layer is formed on the surface of the aluminum workpiece;

[0013] (5) coloring where the aluminum workpiece is colored with at least one hydrophilic color agent by means of painting, spray coating, or printing;

[0014] (6) drying where the aluminum workpiece is dried in a baking oven at 30°-120° C.; and

[0015] (7) finishing where the aluminum workpiece is hung on a tool and dipped in a chemical sealant trough so that the aluminum workpiece is sealed with a chemical protective layer.

[0016] Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention.

What the invention claimed is:

1. A multicolor anodizing treatment for treating the surface of an aluminum workpiece, comprising the steps of:

(1) anti-oil procedure where dirty oil is removed from the aluminum workpiece;

(2) rinsing where the aluminum workpiece is cleaned with running water in a rinsing trough,
(3) chemical polishing where the aluminum workpiece is polished by means of a chemical solution;
(4) anodizing where the aluminum workpiece is anodized to produce an oxide surface layer;
(5) coloring where the aluminum workpiece is colored with at least one color;
(6) drying where the aluminum workpiece is dried; and
(7) finishing where the aluminum workpiece is sealed with a layer of sealant.

2. The multicolor anodizing treatment as claimed in claim 1, wherein said chemical polishing is performed by means of applying one of the solutions of phosphoric acid solution, nitric acid solution and strong alkali solution to the aluminum workpiece to remove impurities from the surface of the aluminum workpiece so that the aluminum workpiece shows the original aluminum color.

3. The multicolor anodizing treatment as claimed in claim 1, wherein the aluminum workpiece is anodized during the anodizing step to produce an oxide surface layer that has a porous structure for the adhering of a color agent;

4. The multicolor anodizing treatment as claimed in claim 1, wherein coloring the aluminum workpiece with at least one hydrophilic color agent by means of printing performs the coloring step.

5. The multicolor anodizing treatment as claimed in claim 1, wherein coloring the aluminum workpiece with at least one hydrophilic color agent by means of spray coating performs the coloring step.

6. The multicolor anodizing treatment as claimed in claim 1, wherein coloring the aluminum workpiece with at least one hydrophilic color agent by means of painting performs the coloring step.

7. The multicolor anodizing treatment as claimed in claim 1, wherein hanging the aluminum workpiece on a tool and dipping the aluminum workpiece in a heated chemical trough containing one of the solutions of nitric acid solution, sulphuric acid solution and sodium hydroxide solution perform the anti-oil step.

8. The multicolor anodizing treatment as claimed in claim 1, wherein cleaning the aluminum workpiece with running water in a rinsing trough performs the rinsing step.

9. The multicolor anodizing treatment as claimed in claim 1, wherein the anodizing step is performed by hanging said the aluminum workpiece on a tool and dipping the aluminum workpiece in an anodizing trough to receive a sulphuric anodizing process, for enabling the aluminum workpiece to be coated with a layer of sulphuric anodic oxide coating.

10. The multicolor anodizing treatment as claimed in claim 1, wherein the drying is performed by drying the aluminum workpiece in a baking oven at 30°-120° C.

11. The multicolor anodizing treatment as claimed in claim 1, wherein the finishing step is performed by hanging said the aluminum workpiece on a tool and dipping the aluminum workpiece in a chemical sealant trough to have the aluminum workpiece to be sealed with a layer of sealant.

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