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Article and method for tarnish removal

This invention concerns an article and its use for tarnish removal. 'Tarnish' is used herein to embrace discolouration or oxidation of metal surfaces. The invention is more specifically concerned with an article, such as a package or sachet, useful in cleaning tarnish from metal objects or objects at least having a metal-plated surface. Principally the invention provides an article for use in removing tarnish from silver or silver-plated objects.

One known method of removing silver tarnish requires use of abrasive polish substances by manual effort. This method includes the following disadvantages:

- (a) effort exerted in polishing is arduous,
- (b) polishing can take a long time,
- (c) intricate items such as jewellery or objects having sculptured or engraved surfaces may be impossible to polish in inaccessible areas. Conventional polish tends to get trapped in such areas and leaves an unattractive appearance, and
- (d) plated items eventually lose their plated surface by the repeated action of abrasive silver polish.

It is from a consideration of the drawbacks of known polishes and methods for removing tarnish that has led to the present invention.

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The invention provides a method of removing tarnish from a metal or metal-plated object wherein an electrolyte-containing package is used, one surface of the package comprising water-permeable material and another surface comprising a metal sheet, to form an electrolyte solution in water, the object being placed in the solution in contact with the metal sheet.

The invention also provides a package useful in the method defined above which contains an electrolyte, one surface comprising a water permeable material and another surface comprising a metal sheet, the sheet and material being attached together at or near the periphery of said material. The metal sheet can be in the form of gauze or foil, preferably aluminium foil, or other metal which is more electro positive than silver such as iron or zinc. Conveniently, the metal sheet may be wrapped around the package, although this is not essential for embodiments in which surface area of the material approximates that of the sheet.

To conform with current methods of package production, the sheet can include a coating of heat sensitive adhesive substrate. It is preferred to use as water-porous material infusion web such as paper infusion web commonly employed in the production of tea bags. One side of the package may consist of the metal sheet, e.g. aluminium foil, and another may consist of infusion web appropriately stitched or adhered together at or near the periphery of the material.

Electrolyte in the form of inorganic salt may be used. This can be in powder or crystal form and the salt(s) selected may produce an alkaline solution in water. Carbonates such as sodium carbonate are preferred.

5 Use of a package as described herein for tarnish removal is included within the scope of the present invention.

10 In a process for removing tarnish from the surface of a metal or metal-plated object, a package according to the invention is placed in water, preferably hot or boiling water, the electrolyte(s) are allowed or caused to dissolve whereupon the object is placed in the solution formed to contact the sheet. Preferably silver or silver-plated objects are used.

15 Use of the package in such a process provides an electro-chemical means for tarnish removal wherein the object, e.g. a silver item, and a dissimilar metal are placed in an electrolyte solution such as a solution of common soda in hot water. When the two metals are in contact the tarnish is removed from the surface of the silver. Unlike an abrasive polish, silver is not physically removed in the process.

20 Advantages over convential silver polish include:

(1) No effort is required in polishing, as the process is self-sustaining requiring no manual effort.

(2) The process need only take little time and may even be almost instantaneous.

25 (3) Tarnish can be removed from manually inaccessible

areas without special procedures.

(4) Since silver metal is not physically removed from the object or its plating, plated articles may retain their plated silver surface for longer.

5 The package can be or comprise a convenient and ready-to-use disposable sachet.

Embodiments of the invention will now be described with reference to the accompanying drawings by way of example only, wherein:

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Figure 1 is a plan view of a package,

Figure 2 is a side elevation,

Figure 3 shows one form of package ready for use,

Figure 4 shows the package in a container of
hot water,

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Figure 5 illustrates ingress of water and diffusion
of electrolyte,

Figure 6 illustrates tarnish removal from silver-plated
objects,

Figure 7 is a view of a more preferred package,
and

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Figure 8 is a cross-section of Figure 7.

As shown in Figures 1 and 2 of the drawings, the package comprises a sheet of aluminium foil 1 together with a porous sachet 2 containing sodium carbonate (soda crystals) 3. The sachet 2 is sealed or stitched at its edges 4 and is composed

of water permeable material. The sachet is also attached to the surface of the aluminium foil at 5 by, e.g. stitching or adhesive.

Figure 3 shows a sequence for unfolding the package. The folded aluminium sheet is partially separated from the porous sachet to become opened flat into a position as shown in Figures 1 and 2.

Referring to Figure 4, the unfolded package is placed into a container 6 containing hot (preferably boiling) water 7, the water-porous material facing downwards. Water seeps through the water-permeable material and the soluble electrolyte contained in the sachet diffuses into the hot water 7 to form an alkaline solution 7a of sodium carbonate referred to in Figure 5. Diffusion may take 30-60 seconds.

Use of the package is shown in Figure 6, wherein the container 6 of electrolyte solution 7a includes the aluminium foil sheet 1 fully submerged and a plurality of silver or silver-plated objects 8-13 which are in contact with themselves and/or the aluminium foil providing at least one object contacts the foil. In this process, the package can be positively retained at the bottom of the receptacle 6 by the objects undergoing tarnish removal. Such objects bear on the aluminium foil as shown whereby at least one of them is in contact with the foil and the other objects are in metal-to-metal contact with each other and/or the foil.

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Referring lastly to Figures 7 and 8, a more preferred embodiment of the invention is illustrated. The upper surfaces of the package comprises a non-folded sheet of aluminium foil 1 as an electrode and one side of the container. The lower or under-surface is coated with a plastic, heat sensitive, adhesive 14. A sheet of infusion web 2 similar to tea bag paper forms the other side of the container. It may, if necessary, also be impregnated with heat sensitive adhesive in specific regions providing the web remains water-permeable. Such adhesives are known in the art which are active at approximately 200°C and therefore unaffected by boiling hot water.

The web 2 is heat sealed at seams 4 to the underside of the sheet 1 which consequently traps the electrolyte, light sodium carbonate powder 3, between the web 2 and the foil 1. The foil need only be coated with adhesive substrate in specific regions where the edge seams are to be formed in the web. The heat sealed seams 4 extend around the package formed.

In order to use the modified package for tarnish removal the same steps should be taken as described above, although there is no need to unfold the sheet initially.

Tarnish removal may require some 2 to 5 minutes. Objects with extensive tarnish may require longer and may be gently brushed to assist the action. To keep the electrochemical process sufficiently active it may be desirable to add further boiling water.



Claims

1. A method of removing tarnish from a metal or metal-plated object characterised in that an electrolyte-containing package is used wherein one surface thereof comprises water-permeable material and another surface thereof comprises a metal sheet, to form an electrolyte solution in water, the object being placed in the solution in contact with the metal sheet.
2. A package useful in a method as claimed in claim 1 characterised in that it contains an electrolyte, that one surface of the package comprises a water permeable material and another surface comprises a metal sheet, the sheet and material being attached together at or near the periphery of said material.
3. Package as claimed in claim 2, wherein the sheet is in the form of gauze or foil made of iron or zinc or aluminium.
4. Package as claimed in claim 3, wherein the sheet is in the form of aluminium foil.
5. Package as claimed in any one of claims 2 to 4, wherein the sheet has a coating of heat sensitive adhesive medium.
6. Package as claimed in any one of claims 2 to 5, in the form of a sachet wherein the sheet and material are stitched or adhered together.
7. Package as claimed in anyone of claims 2 to 6, in which the material comprises paper infusion web.
8. Package as claimed in any one of claims 2 to 7, which consists of the metal sheet and water permeable material as respective sides thereof between which the electrolyte is contained.



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9. Package as claimed in any one of claims 2 to 8 in which the electrolyte comprises inorganic salt.
 10. Package as claimed in claim 9 in which the salt is in powder or crystal form.
 11. Package as claimed in claims 9 or 10 in which the salt is alkaline in aqueous solution.
 12. Package as claimed in any one of claims 2 to 11 in which the electrolyte comprises a carbonate such as sodium carbonate.
 13. A method of removing tarnish from a metal or metal-plated item as claimed in claim 1 wherein the package is as defined in any one of claims 2 to 12.
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