

PRODUCT INFORMATION

VERDIGRIS FLUID

INTRODUCTION.

The **VERDIGRIS FLUID** is a room temperature metallic oxide precipitate processes that are used to impart the familiar Blue/Green Patina (Verdigris) that is found on Copper and Brass by naturally occurring atmospheric corrosive reactions. The processes can be used cold or hot depending upon production requirements. They can be applied by **IMMERSION**, or by **BRUSH** where the size of the item precludes immersion. All the processes in this range are applicable to Brass, Bronze and Gun Metal; the processes, being cationic processes, have a more even effect on Copper than most other room temperature processes, particularly on flat sheet or panels provided the surfaces have been properly prepared by deep scouring. The resilience of synthetic verdigris coatings initially do not compare well with natural verdigris owing to the complex structure of naturally induced copper reduction compounds. Independent research of such natural coatings have been reported revealing complex structures, these comprise the less common salts of Copper (II) Sulphate:-

Antlerite $\text{Cu}_3(\text{OH})_4\text{SO}_4$; Langite $\text{Cu}_4(\text{OH})_6\text{SO}_4$

Brochantite $\text{Cu}_4(\text{OH})_6\text{SO}_4$ Chalcantite $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

Posnjakite $\text{Cu}_4(\text{OH})_6\text{SO}_4 \cdot \text{H}_2\text{O}$

These salts are formed progressively and sequentially by the process of weathering – a metamorphic process. The **VERDIGRIS FLUID** process imparts the initial coating allowing nature to continue the process.

RECOMMENDED PROCESS EQUIPMENT.

Use acid resistant containers and processing tanks manufactured from Polypropylene, Polyethylene, Rubber or equipment lined with these materials. Dipping Baskets should be made from either perforated Polypropylene or Stainless Steel. **DO NOT USE MILD STEEL OR GALVANISED EQUIPMENT.** Fume extraction is not required when using this process.

PRODUCT USE.

VERDIGRIS FLUID is supplied in liquid concentrate form and should be diluted with water prior to use. Dilution ratios should be in the range of 20 – 50% of **VERDIGRIS FLUID** concentrate in clean water. Articles to be treated may be immersed in a cold solution (at ambient temperature) for a minimum of 5 to 10 minutes then withdrawn and the solution allowed to dry on the surface; *it is this drying phase that imparts the greening effect.* The longer the drying time, the better the effect. This treatment will produce a light green patina, which may be darkened and made more even by repeating the process, ensuring that the work is thoroughly dried between immersions.

Generally, flat even surfaces will require longer immersion times to enable a more concerted penetrative attack of the surface. Leaving components immersed for prolonged periods i.e. 3-4 hours will not cause any problems to either the solution or the articles being treated, but will produce a more even patination with no bare patches. When using on Brass plated articles it is recommended to immerse for 1 minute in a 10% maximum strength solution, this is because the solution attacks the surface of the article therefore care must be taken not to remove too much of the Brass plating. Heating of the solution up to 60-80°C may also have an equivalent effect and sometimes darker effects can be produced by this method, however it has been found that following hot immersion, a cold immersion afterwards to cool down the article being treated will retard the drying time; likewise, a small addition of glycerine will help retard the drying time. A hot article will flash dry too quickly to effect an even patination.

VERDIGRIS FLUID can also be applied by brush, by thickening with 50ccs of glycerine to 950ccs of the solution; this will provide a more even film by reducing runs etc. (Mix thoroughly before use, the solution being applied as often as required). It is essential that metal surfaces are prepared thoroughly before immersion in these solutions, as incomplete pre-treatment will cause loss of adhesion of the finish or a stained or spotty appearance. Parts must be de-greased effectively and scale or oxides removed.

Flat rolled or polished surfaces will give variable effects; it is better if surfaces are rough scoured prior to treatment to create fissures or entrapment zones, which will act as a key to the coating. The greening effect will become apparent usually after 10 minutes or so, however by this stage the coating is delicate, unstable and will lack adhesion. Usually, after 18 hours the deposit cures to a hard resilient green coating which is adherent enough to accommodate a hand applied wax coating to seal if required.

SOLUTION CONTROL.

VERDIGRIS FLUID works by a chemical reaction of the solution on the metal surface to create a precipitate deposit. In nature, acidified rainfall creates surface erosion and pitting forming entrapment areas and fissures in which the dissolved copper precipitates out as a dehydration salt on the surface – the typical green/blue deposit.

It is advisable to maintain a record of the process time on a new solution and maintain it by careful additions of the concentrate.

POST TREATMENT

If the articles are to be 'relieved' using a Brass wire brush; water or a scratch brushing fluid should be used as a lubricant and the articles washed with water afterwards. The finish may also be relieved by polishing with a dry polishing mop if preferred. Under normal circumstances, relieving is not generally practised for these types of finishes.

As the finishes provided by **VERDIGRIS FLUID** patination processes do not have any protective qualities from vigorous abrasives or polishes. Except in the case of exterior locations, it is advisable to protect the surfaces by lacquering, waxing or oiling.

Usually, for maintenance guidance notices issued by manufacturers to end users of articles finished with these processes, recommendations for only occasional light waxing using a beeswax based household waxes should be emphasised. Spray waxes are not recommended unless allowed to dry thoroughly on the surface prior to polishing. The solvent and water bases of spray polishes can damage the coating.

In conclusion, these post treatment process will also deepen and enhance the colour.

In exterior situations, natural atmospheric reaction will of course continue the reaction that the process has initiated.

REFER TO SAFETY DATA SHEET BEFORE USING THIS PRODUCT

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