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ETCHING SOLUTION

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1 Claim. (Cl. 41—42)

This invention relates to solutions for etching metals and particularly to etching solutions such as used in preparing printing plates.

It is an object of the invention to provide an etching solution which is particularly suitable for use with stainless steel.

It is a particular object of the invention to provide a solution for etching metals which is rapid in its attack, non-selective in its action, and which will produce a uniformly etched surface. More particularly, it is an object of the invention to provide a solution which will give these highly desirable results when used with stainless steel.

It is well known that stainless steels of the 18–8 or other types are much more resistant to corrosion than ordinary steels. They are, therefore, more difficult to etch to any great depth. Ordinary etching solutions are not sufficiently rapid in their attack to be practical when etching stainless steel to a considerable depth. Furthermore, it is difficult to get a solution which is non-selective, i. e. which attacks each component of the metal equally and thus produces a uniform etch.

According to the present invention, an etching solution having the above desirable properties is made up comprising: ferric chloride, nitric acid, hydrofluoric acid.

That is, we have found that the addition of hydrofluoric acid to the materials commonly used for etching, makes the solution satisfactory for etching stainless steel, whereas no previously known material would give satisfactory results. In practice, we make up the solutions containing these materials from saturated ferric chloride solution (e. g. 91.8 grams of ferric chloride in 100 grams of water at 20° centigrade), concentrated nitric acid (specific gravity 1.42) and commercial hydrofluoric acid (48% HF i. e. approximately 50% HF). We have found that the most efficient concentrations of these materials are by volume as follows:

	Parts
Saturated ferric chloride solution	4
Concentrated nitric acid	1
Commercial hydrofluoric acid	1

Of course, concentrations slightly different from these give satisfactory results and even other materials may be added, but we have found that if the solution contains between 25 and 75% saturated ferric chloride, between 10 and 50% concentrated nitric acid and between 10 and 50% hydrofluoric acid, it is quite useful for etching stainless steel printing rollers. These concentrations are by volume.

Having thus described the preferred embodiment of our invention, we wish to point out that it is not limited to the specific concentrations mentioned, but is of the scope of the appended claim.

What we claim and desire to secure by Letters Patent of the United States is:

An etching solution comprising approximately 4 parts by volume saturated ferric chloride solution, 1 part by volume concentrated nitric acid and 1 part by volume of a 50% aqueous solution of hydrofluoric acid.

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