WET ETCHING

WHITE PAPER

Wet Chemical Etching Process for

Stainless Steel Nameplates

MATERIALS FROM: HTTPS://WWW.YOUTUBE.COM/WATCH?V=XZANSWZ8CI0

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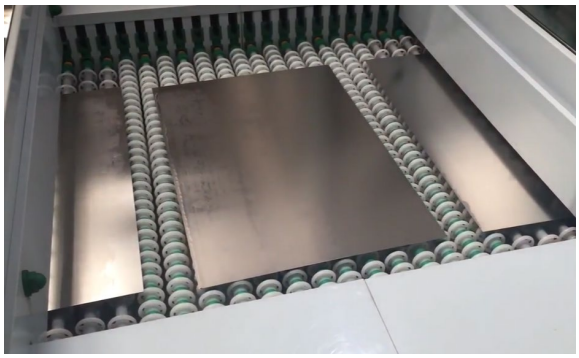
This guide outlines the process for chemically etching stainless steel, specifically using SUS304 as the material, to produce nameplates. Let's skip over the preparation of raw materials and dive directly into the chemical processing steps using specialized equipment.

1. Cleaning and Surface Preparation

The first step involves placing the pre-cut SUS304 stainless steel into the equipment for cleaning and polishing. This process removes any dust and debris on the surface while ensuring the material remains flat and smooth. Proper cleaning is essential, as surface contamination can negatively impact the etching process.

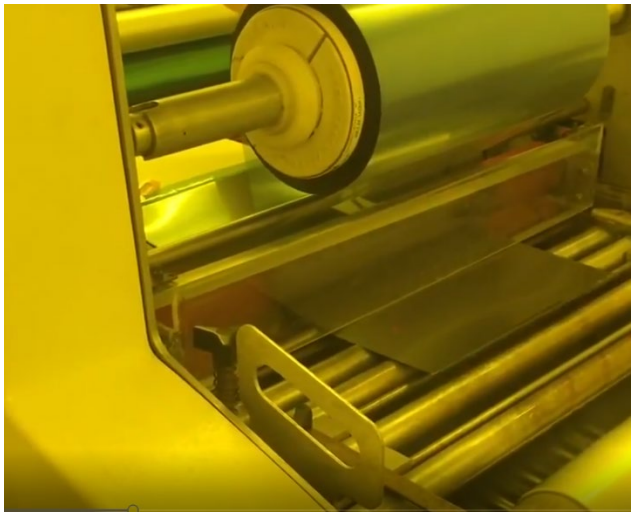


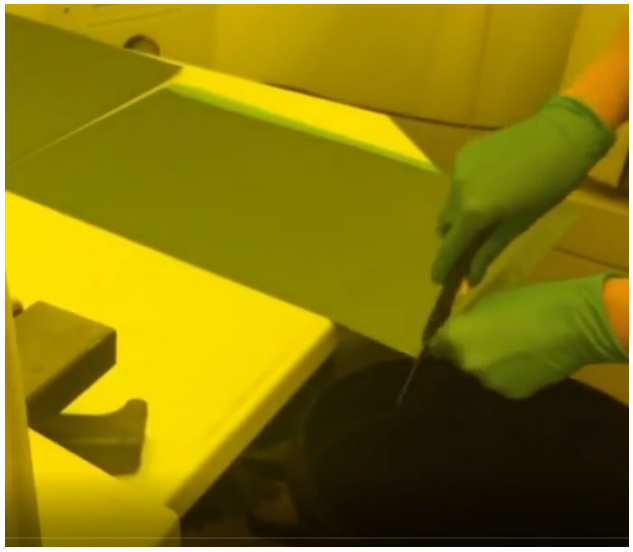
2. Chemical Immersion

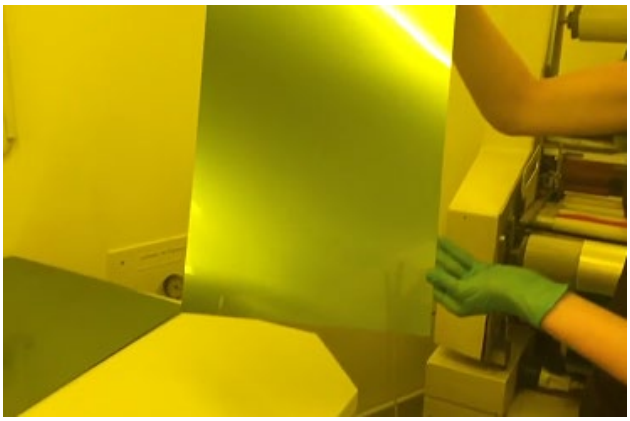
Once cleaned, the stainless steel is immersed in a special chemical solution. This treatment prepares the surface for the application of the protective film, which will later define the areas to be etched. It's important to wear cleanroom gloves during this stage to avoid introducing any contaminants.

3. Film Application and Trimming

After the chemical bath, a thin protective film is applied to the entire surface of the material. Any excess film is trimmed away, ensuring that only the desired areas are covered. This film will act as a resist, protecting certain areas of the metal from the etching solution.





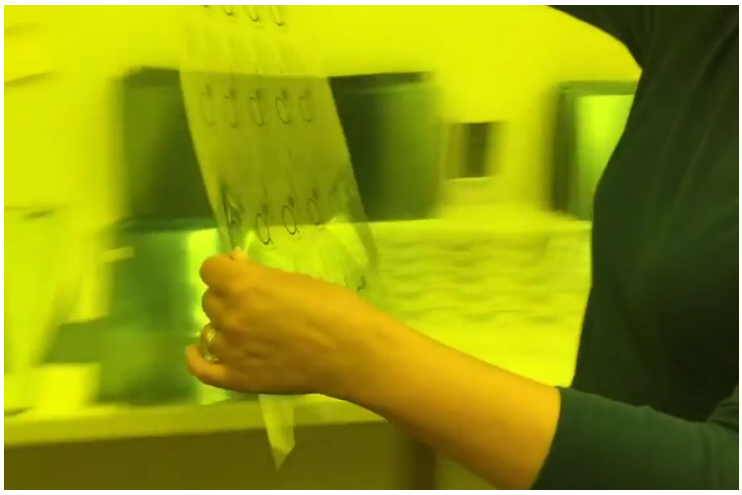


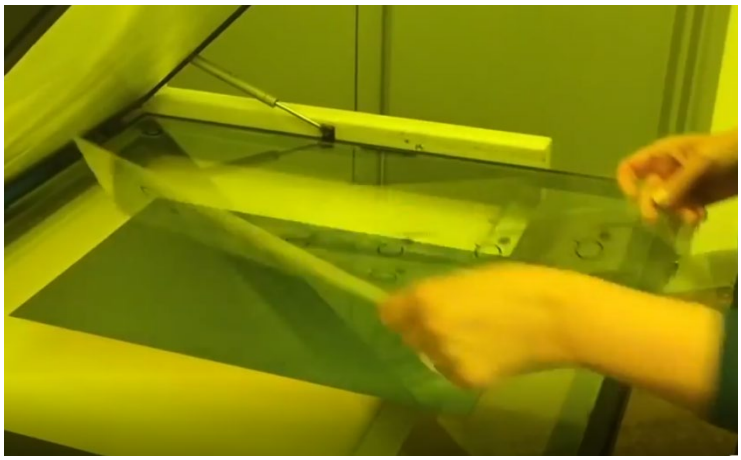
4. Exposure

Before exposure, the film undergoes a special treatment that helps it better display the etched patterns. Next, the prepared stainless steel is carefully aligned with the etching artwork (known as the photomask or film). This artwork is then loaded into the exposure machine. Proper alignment is crucial, as it directly affects the precision of the etching.

5. Development

Once the exposure is complete, the stainless steel is passed through the developing line. This process reveals the etched pattern by removing portions of the protective film in areas where exposure occurred. As a result, the design becomes visible on the stainless steel surface.





Engineers need to carefully check the symmetry of the etching drawing position

Exposure completed √

6. The exposed works are placed one by one into the development production line for development process.

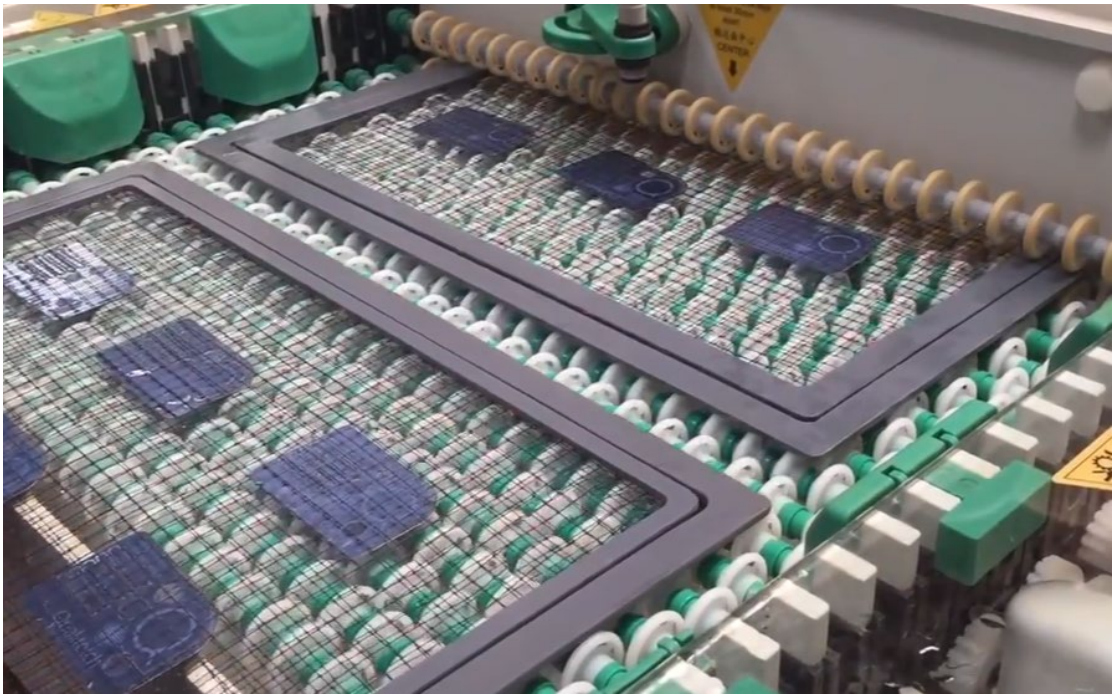
6. Etching

The developed stainless steel is placed into a specially designed rack to prevent it from falling into the etching tank. This rack holds the material securely as it is submerged into the etching solution. The exposed areas of the stainless steel are etched away by the chemicals, creating the desired pattern on the nameplate. After etching, the material is removed from the tank.

After etching is completed, remove the etched product. At this time, we will find that there is still a layer of blue film on the surface of the product.

7. Film Stripping

Post-etching, a blue protective film remains on the surface of the stainless steel. This step involves placing the etched material into a mesh tray, which is then passed through the stripping line. Here, the blue film is completely removed, leaving the final product exposed.



During this process, we will also go through a cleaning and drying process.

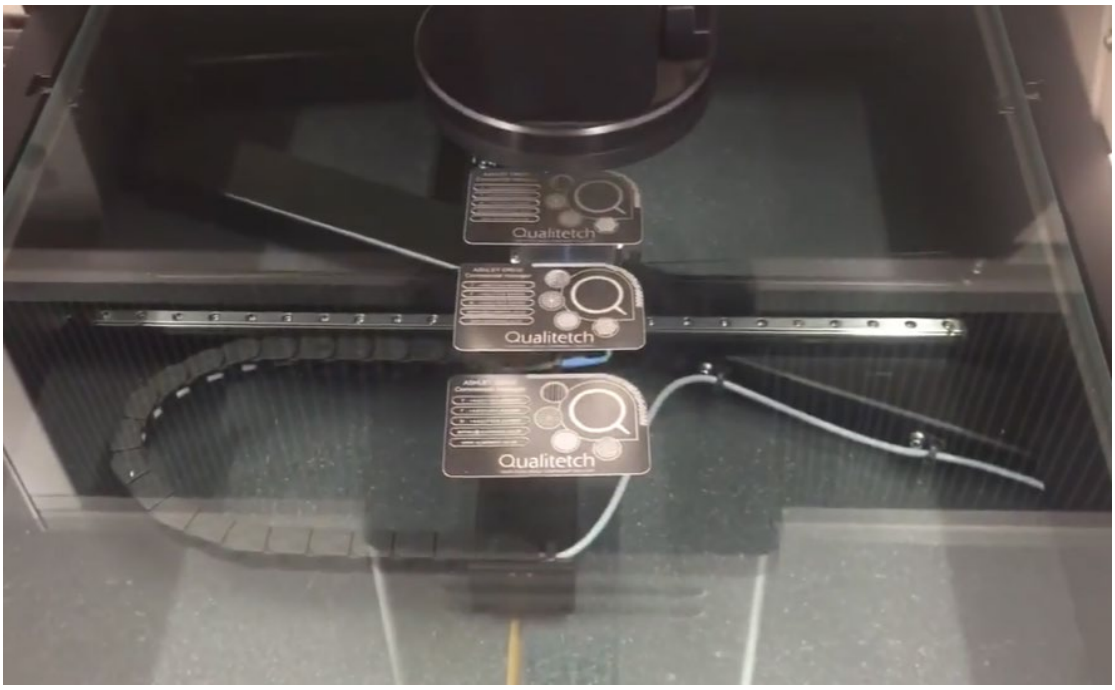
Open the storage panel and take out the product

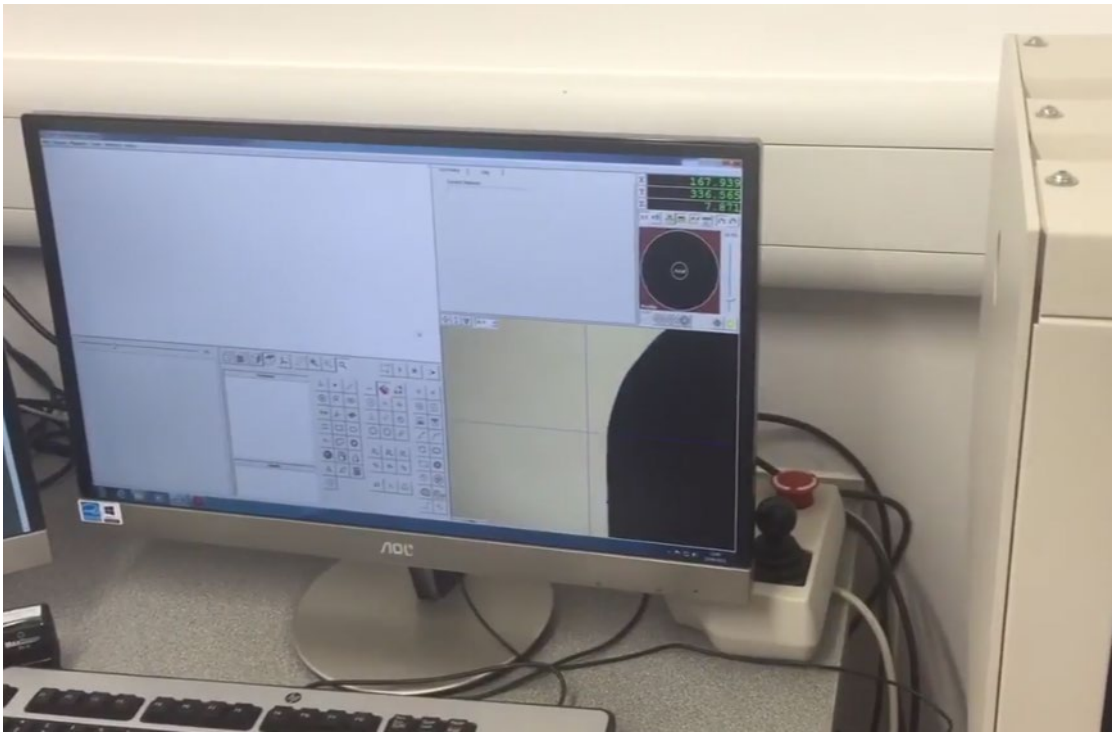
8. Rinsing and Drying

Following the stripping process, the stainless steel undergoes thorough rinsing and drying to remove any remaining chemicals or residue. This ensures the nameplate is clean and ready for inspection.

9. Inspection and Final Packaging

In the final step, the etched nameplates are carefully inspected to ensure they meet the required quality standards. Any defects or inconsistencies are identified and corrected. Once the inspection is complete, the nameplates are packed and prepared for shipment.





After the inspection is completed, the process is completed and the product is packed and shipped.

Thank you for looking!!

If you want to purchase this set of wet chemical etching equipment, please pay attention to the contact information below:

High Precision PCB/Metal Chemical Etching Machine Manufacturer

HaiLong He.

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