

E-Prep® 270

Stainless Steel Chemical Brightening and Passivation

The **E-Prep 270** process is designed for the chemical brightening and passivation of 300 series stainless steel alloys and also other nickel bearing alloys such as Inconel and Kovar. It produces a uniformly smooth finish with good specular reflectivity.

Unlike electropolishing, **E-Prep 270** chemical polishing eliminates the grain boundary attack and the danger of hydrogen embrittlement and stress corrosion. The process can find application in the aircraft, electronics and surgical implants industry.

The **E-Prep 270** process produces minimum metal loss during the brightening process and offers definite advantages over the Nitric/Hydrofluoric Acid based formulations which produce a rough finish. A metal removal rate of about 0.05 mils/min./side is achieved when brightening 300 series stainless steel with 2B finish.

It will remove heat treatment and welding scale and is safe on silver and brass solder, but should not be used with tin or lead soldered stainless steel work.

E-Prep 270M produces a matte finish, whereas **E-Prep 270B** is formulated to produce a relatively bright finish.

OPERATING PARAMETERS

Concentration:	100% by volume E-Prep 270M or E-Prep 270B
Temperature:	170-175°F
Time:	5 - 15 minutes or longer depending upon the surface roughness and the degree of brightness required
Agitation:	Use a gentle agitation with the back and forth rocking of the parts to avoid gas streaking. When polishing small parts, agitation by rotating in a perforated polypropylene bucket is ideal

Note: If masking is required to avoid polishing selected areas of the work piece, then use tapes that are free of silicone adhesives, based on manufacturer's recommendation.

EQUIPMENT

Tanks: Polyethylene, polypropylene, fiberglass and unplasticized PVC are suitable for lining of tank material. They should be able to withstand the operating temperature and sufficiently reinforced to avoid sagging or bulging.

Heaters: Quartz or Teflon sheathed stainless steel electrical heaters or Teflon spaghetti coils for steam heating.
Ventilation: Adequate exhaust ventilation is required during processing.

OPERATING PROCESS

Prior to brightening in **E-Prep 270M** or **E-Prep 270B**, the parts should be cleaned of oil and grease, if any, using the following steps.

1. Soak clean: **E-Kleen 105**, 8 - 10 oz/gal., 160° - 190°F, 2-3 minutes.
2. Cold water rinse.
3. Brightening and passivation: **E-Prep 270M** or **E-Prep 270B** - refer to operating parameters above.
4. Cold water rinse and dry.

Note: Parts with heat treat or annealing scale will require descaling after step 2 above, using the following complete process:

1. Soak clean: **E-Kleen 105**, 8-10 oz/gal., 160-190°F, 2-3 minutes.
2. Cold water rinse.
3. Scale removal: **E-Pik 271**, 50% by volume, room temperature, 1 to 2 minutes.
4. Cold water rinse.
5. Brightening and Passivation: **E-Prep 270M** or **E-Prep 270B** - refer to operating parameters above.
6. Cold water rinse and dry.

Note: Stubborn and heavy scale will require repeating steps 3, 4, 5 and 6 above for complete scale removal. This is necessary for a uniform finish and to minimize processing time in **E-Prep 270M** or **E-Prep 270B**.

Certain alloys and surface conditions may cause smut formation on the stainless during brightening. This smut can be removed by repeating step 5, or if necessary, steps 3 and 5 above.

EPI technical service can help evaluate **E-Prep 270** application for potential customers based on laboratory testing and recommend the required processing steps.

SOLUTION CONTROL

For small installations, **E-Prep 270M** or **E-Prep 270B** baths can be operated without replenishment and dumped at the point of exhaustion.

WASTE TREATMENT CONSIDERATIONS

E-Prep 270M or **E-Prep 270B** by themselves are easy to waste treat via neutralization, as they are composed of mineral acids. A spent solution, however, would need treatment for removal of dissolved metals, such as nickel, iron and chromium, which are introduced during brightening of the stainless steel.

EPI has a package of special coagulants and polymers available for effective removal of these metals by precipitation, flocculation and settling.

PACKAGING

Five (5) and 55 gallon plastic, non-returnable containers. Store indoors away from heat or direct sunlight and in a cool area.

CAUTION

THIS MATERIAL CONTAINS STRONG MINERAL ACIDS. MAY CAUSE SEVERE BURNS. Do not get in eyes, on skin or clothing. Avoid breathing mists. Do not take internally. When handling, wear goggles or face shield. While making up solutions, or for replenishment, add **E-Prep 270M** or **E-Prep 270B** slowly to surface of solution. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. For eyes, call a physician.

Do not work with **E-Prep 270M** or **E-Prep 270B** without first reading and understanding the **MATERIAL SAFETY DATA SHEET** furnished by **EPI**.

IMPORTANT NOTICE! For Industrial Use Only

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: seller's and manufacturer's only obligation shall be to replace such quantity of the product as proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. **Neither seller nor manufacturer shall be liable either in tort or in contract for any loss or damage, direct, incidental or consequential, arising out of the use or the inability to use the product.**

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