



HN505™ ACCELERATOR

Introduction

HN505.1™ is a free-flowing powder that is dissolved in water and mixed with a small amount of HN505.4™ Kick Start II to form the HN505™ accelerator bath. HN505™ acts to increase the plating potential of parts treated in HN504™ Acid-Free™ Activator.

Operating Conditions

CONCENTRATION

HN505.1™ 1.5 – 3.0 Lb/gal
2.5 Lb/gal optimum

HN505.4™ 45 – 65 mL/gal
57 mL/gal optimum

TEMPERATURE

140-147°F (145°F optimum)

DWELL TIME

5 - 10 minutes (10 minutes preferred)

RINSE TIMES

Dual cascading counterflow rinse – 30 seconds per station

Make Up and Operating Procedures

1. Fill a freshly cleaned tank about 3/4 full with deionized water. Heat water to 115°F.
2. With constant stirring, slowly add 2.5 pounds HN505.1 for each gallon of operating bath. Make sure pumps in the tank are off so they will not become clogged with salts. Continue stirring manually until no HN505.1™ is sitting on the bottom of the tank.
3. Add more deionized water to bring bath to operating level. Make sure there is no filter in the housing then turn pump on and allow solution to mix for 45 minutes to an hour. If the solution is not water white after an hour, continue mixing until water white.
4. Slowly add 57 ml HN505.4™ Kick Start II for each gallon of operating bath. This will make a copper level of 300 ppm for a make-up.
5. Maintain temperature at 145°F and continue stirring for at least 1 hour before using. Immerse parts into the HN505™ Accelerator bath for 10 minutes. Agitate parts

horizontally so that HN505™ solution is forced through the holes and into blind vias. A rack agitator with a 2-4 inch stroke operating at 12-15 strokes per minute is satisfactory. After treating for 10 minutes, remove parts from the bath (allowing excess solution to drain back into the tank). Transfer parts immediately to a dual cascade counterflow rinse. DO NOT allow HN505™ solution to dry on parts before immersing in water rinse. Soak parts in each station of the counterflow rinse for 30 seconds. Street water at ambient temperature (55-100°F) is suitable for rinsing HN505™ from the parts. **Do not use deionized or RO water.** Remove parts from rinse tanks and proceed immediately to the 10% sulfuric acid dip.

Control Data

Shop Level Control

Keep tank covered when not in use to minimize evaporation and heat loss. Replace evaporation losses with deionized water as required. DO NOT replace evaporation losses with tap water.

At least once each shift, top up tank with DI water then check the Baumé reading of the bath. Maintain the Baumé reading of the bath (when tested at 145°F) between 23 and 29°. If Baumé reading drops below 23, add HN505.1™ and stir well to dissolve. Make additions only when the bath is heated to at least 140°. Precise additions may be calculated from laboratory analysis of bath using the procedure in the analysis section of this manual.

As parts are processed through the HN505™ solution, the blue color of the HN505.4™ Kick Start II will slowly fade. The HN505™ bath will lose its effectiveness as the Kick Start II is depleted. Inspect the bath visually every shift to confirm the blue color has not faded substantially from the bath (or use analysis to calculate needed additions). It is generally possible to establish a per square foot rate of consumption and then make routine additions throughout the production

cycle. Normally, between 0.5 ml and 1.0 ml of Kick Start II will be consumed for every surface square foot of production. Add Kick Start II only when bath is heated. Be sure to stir bath for at least 10 minutes after an addition of Kick Start II before putting any more production into the bath.

When making bath additions once a day, add the HN505.1 Accelerator (powder) to the heated operating bath then wait one-half hour before adding the HN505.4 Kick Start II. After making both adds, wait at least 10 minutes before processing any boards through the bath.

Replenishment

Replenish the levels of the bath components based on analysis. In general, this bath should last at least six weeks when simply replenishing levels by analysis. Bath life can be extended considerably by using procedure described below.

Regular Solution Replacement: Remove 2% of the working bath and replace with fresh materials daily. [For example: For a 2% replacement in a 100-gallon tank, remove 2 gallons of working bath. Add 2 gallons of fresh DI water. Allow bath to heat up to 145° F and add 5 pounds of HN505.1 Accelerator Powder. Allow the solution to mix at temperature for ½ hour, then add 114 ml HN505.4 Kick Start II (56.75 ml/gallon). Wait another 10 minutes before starting production.]

Optional Filtration Procedure:

Regular bath filtration is not a necessity or recommended. However, for shops that desire to filter the bath periodically, follow these recommendations. 1) Use only filters that have no sizing or have been thoroughly rinsed with hot water. We recommend HYTREX GX 0510 filters. 2) Run the filter long enough to turn the bath over three times, then remove the filter. Leaving the filter in the housing chamber can create an environment where the blue ionic copper will reduce to red elemental copper.

Bath Recharging Cycle

If the bath is not replenished as described above then maintain bath strength based on analysis and discard the entire bath and recharge with fresh HN505™ solution when 300 surface square feet per gallon of bath have been processed. (Square footages and/or time may vary due to different shop practices.)

Equipment

Tanks: Polypropylene and CPVC are acceptable. Tanks that previously held permanganate, acid solutions or unknown materials should be relined with 1/4" polypropylene before use. DO NOT USE FLEXIBLE PVC LINERS.
Agitation: A mechanical mixer adequate to keep solution from stratifying.
Stainless steel shafts or other material suitable for hot alkaline solutions
Filters: Hytrex GX 050 filters are recommended.
Heaters: Titanium or Teflon are suitable. 304 Stainless Steel is also used but not all heater manufacturers will warranty this material in carbonate solutions.

The information and recommendations of Solution Technology Systems / Florida Cirtech concerning this product are based on laboratory tests and experience and to the best of our knowledge and belief are true and accurate. Since conditions of actual use are varied and beyond our control, any recommendations or suggestions are made without warranty expressed or implied.

Handling and Safety

The HN505™ operating bath and its components contain alkaline ingredients that may be irritating to skin and eyes. Protective clothing such as impervious gloves, aprons, boots and chemical goggles should be worn when handling these materials. In case of accidental contact, flush immediately with fresh water. Remove contaminated clothing and wash before wearing again. For eye contact, flush with fresh water for 15 minutes and seek medical attention at once. HN505™ maybe harmful if swallowed or inhaled. Avoid prolonged breathing of vapors or mists. **READ ALL MSDS BEFORE USING, HANDLING OR STORING.**