

Standard Operation Procedure of AOP-22S

Fixture installation & trial run

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1. **Purpose :**

To regulate & Define Electro-Chemical products **AOP-22S an Molten solder purified-able chemical powder compound** , applied & operate in wave solder-dip machine as a standard process regulation ◦

2. **Application Range :**

IC , Electronics & PCB assembly in wave solder-dip process for conductive leads & welt point by molten Solder or Tin, **The solder-dip machine equipped upper & Lower wave surfaces in a pot are required**, while upper wave surface for contacts of handling products and Lower surface will cover by AOP-22S molten liquid, **handling products may never direct contact AOP-22S liquid in any circumstances , and by installation AOP-22S Fixture such goal may full-fill safely , neither routine operation nor any unexpected human error took in places , enable perfect solder-dip performances with great cost saving can be achieve continuously and steadily.**

3. **Benefit & Gain Target : (Refer to ; AOP-22S Combine report & Data)**

3.1 Oxide Solder/Tin, Dross :

Utilize AOP-22S correctly, may eliminate molten solder or Tin in the wave soldering pot generating oxide Solder/Tin or dross ◦

3.2 Soldering Temperature :

Utilize AOP-22S correctly, **may reduce soldering temperature of the wave soldering pot either solder or Tin**, please refer to related chapter in combine report & data, however due to commercialized lead free tin alloy were so many types against varies components & PCB configuration, actual temperature figures should comply by engineering department of individual user through live testing in trial run production scale ◦

3.3 Implement into lead free Tin process with lower soldering temperature :

Utilize AOP-22S correctly, **may reduce soldering temperature in a lead free tin wave solder pot**, yet actual temperature figures should comply by engineering department of individual user through live testing in trial run production scale ◦

3.4 Impurities in solder or Tin :

Utilize AOP-22S correctly, may absorb impurities out from molten solder or Tin to harmless level, enable wave solder dipping temperature may reduce to much lower level either solder or Tin, also due to impurities contain in solder or tin been minimize, **an excellent solder-ability are achievable** ◦

3.5 Electricity energy saving :

Lower molten solder/Tin surface covered by molten AOP-22S liquid, **may effectively reduce heat dissipation factors, reducing heat loss of solder pot**, thus electricity energy may save considerably.

3.6 Manpower saving :

Except used AOP-22S sludge cleaning together with twice a month solder soil cleaning work, **an AOP-22S solder pot required no extra manpower.**

4. Related department :

Follow Order regulation of individual user's.

5. Standard operation : (Refer to ; AOP-22S Combine report & data)

5.1 Cleaning of solder soil :

Qualified distributor of LTAT shall send their Technical service personnel accompany with maintenance personnel of users, to carry-out following task before test & trial run of AOP-22S in the wave solder dipping pot :

5.1.1 Solder pot survey :

To measure & draw structure of solder pot with dimension, and to illustrate solder soil gathering portion.

5.1.2 Solder-soil cleaning procedure :

To set-up parts disassembly steps, and set-up solder-soil cleaning steps, with proper cleaning tools.

5.1.3 Solder-soil cleaning rehearsal :

To cleaning solder-soil out from solder pot, and practice it actually accords to set-up procedure, to repeat the procedure until well familiar of the skill. After finish the work 、gathering all solder-soil and measuring the weight 、clean-up the work area put all cleaning tools back to box, and fill up record table with real figures and sign (**Refer to attached record table – 7.1**).

Also require actual fill record table & understand individual responsibilities, for why and how solder-soil makes heat transfer efficiency & speed would decay, and fully aware traceability of the record table in the days after.

5.2 Replenish of used AOP-22 sludge/foam : (Refer to attached Appendix – 1)

Qualified Technical service personnel of distributor of **LTAT shall conduct training course of how to replenish used AOP-22S to production/Maintenance personnel of users before AOP-22S test & trial run**, to practice replenish used AOP-22S skill with proper tool, to fill record table and understand their responsibilities, for why & how used AOP-22S sludge would affect purity of solder & tin, and fully aware consequences if they fail to replenish used AOP-22S in time. **Operation steps of replenish used AOP-22S as follow :**

- 5.2.1 Operator shall **wear gloves , safety goggle** , prepare used sludge cleaning tools , also put a paper board in between solder-pot and waste paper caton , to prevent sludge drips and sputtering the work area.
- 5.2.2 **Operate the cleaning tools to take used sludge/foam and patting into waste paper caton** , also cutting sticky on wall of the pot by blade until most sludge take-out.
- 5.2.3 Take a wet cloth to scrubbing sticky on the pot-wall , **moisture with heat may easily removes harden-layer of sludge.**
- 5.2.4 Put solder-bar into the pot inside square frame of the AOP fixture, to retain solder liquid level as required.
- 5.2.5 **In order to maintain AOP liquid height , enable fully coverage on molten solder surface. Cut a hole on AOP-22S bag , and put all powder of the bag into the pot right after ,** Since the powder remain in atmosphere , may quickly turn to moisturize form.
- 5.2.6 Put cleaning tools into water-tank to dissolve sticky , than **wash cloth and tools by water leave it to dry by ambience air.** Clean-up work area than fill record table (**Refer to attached record table – 7.2**).

5.3 AOP-22S Fixture installation steps:

Notice: Any solder-pot did not install qualified AOP fixture along with fume ventilation hopper, may not achieve optimize condition of advantage features such as solder saving, enhance solder dipping qualities, yield & solder-ability. Unable to reduce soldering temperature, contain of impurities as well as copper contain.

- 5.3.1 Request user to adjust solder pump speed of nozzles 1 & 2 to standard production rpm, and advise solder liquid level maintain spec. such as weight/cycle , time/cycle , how to put-in, **knowing precise variation range of solder liquid level during the routine production, also take a steel scale ruler to actually measuring solder liquid surface height against tips of filter basket frame both solder pump on & off.**

- 5.3.2 Collect a solder sample piece from injection nozzle after measuring & record PH value and switch-off the solder pump.
- 5.3.3 Install & mounting fixture (Follow steps of Document 8.4) and **keep tips of fixture square frame 5mm above tips of solder pot wall** , and make sure fixture structure would not interference operation of the solder pot.
- 5.3.4 Activated solder pump & inspection whether all down flow molten solder been catch by Guide-tubes with gentle & smooth solder flow, than loading a piece of PCB or product. Also make sure solder dipping effect meet user's specification, after this switch-off pump again.
- 5.3.5 Apply 1-2 kg AOP-22S powder onto solder surface out of Fixture square frame, waiting until 60% of powder melted into liquid form, activated pump again and **observe whether AOP liquid been fully cover all solder surfaces out of square frame**, Collecting solder sample piece from both nozzle, measuring & record PH value, loading a piece of PCB or product again to check solder dipping effects, when result pass QC / QA of user's specification, the solder pot is ready for trial run **production**.
- 5.3.6 Every 2 hours during trial-run production period, collecting solder sample piece from both nozzle, than measuring & record PH value when consecutive 3 times **PH value above 6.90, the solder pot will be consider as qualified & stabilize for long term mass production status**.

5.4 Solder/Tin liquid level maintain :

If solder/Tin liquid level in the pot were automatic maintain with solder bar/wire, user may keep it as usual, **if the job was carry-out by solder bar with manual, than user must put solder bar inside square frame of fixture only**. Otherwise AOP-22S sludge may stick-on solder bar and attached on wall or heater tube beneath molten solder/Tin.

5.5 Dumping solder/tin in a solder pot :

Utilize AOP-22 correctly, QA of user still need to monitoring copper contain through qualified laboratory analysis, yet if soldering temperature was reduced, means copper melting rate reduce as well, solder/Tin dumping chance may reduce dramatically.

6. Environmental control :

6.1 Air quality maintain in solder dipping area :

There are very few AOP-22 fume occur in a solder pot, shall any fume observed would caused by flux mainly, AOP-22 exhibit odorless smell usually, shall there are any odor smell detected, would caused by flux also, **thus install fume ventilation hopper with proper air isolation of solder dipping area are required**, prefer exhaust pipe diameter about 4” while wind velocity minimum 20 Lpm.

6.2 Disposal of used AOP-22 sludge :

Few sus304 container to contain used AOP-22 sludge in recycle term, are recommend if user facilitate waste water treatment system, just simply immerse container in waste acidic tank for over 24 hours, used sludge of AOP-22 may dissolve completely, after rinse by city water it may use again, **for those user don't have waste water treatment system, may sign contract with subcontractor** and utilize container which subcontractor prepare or instructed.

6.3 Safety items for personnel in operation :

To handling AOP-22 all personnel shall wear rubber or PVC glove with safety goggle, skin contacts of AOP-22 must wash by plenty water immediately, leave AOP-22 powder on skin until personnel feel sting may cause red pimples, which require medical attention to put proper ointment on affected skin.

Wind speed & air quality in solder dipping area shall check under regular period, stop operation when status below required standard.

7. Attached record tables :

7.1 AOP-22S Solder-soil cleaning record table

7.2 AOP-22S Fixture installation request form.

7.3 AOP-22S Fixture installation record table.

7.4 AOP-22S Quest & Issue during application

8. Reference Documents :

8.1 AOP-22S Combine report & data / **LTAT**

8.2 AOP-22S using method / **J.C**

8.3 AOP-22S Experiment report 10.Sep.2009 / **LTAT**

8.4 AOP-22S Fixture installation standard rules / **LTAT**