TECHNICAL DATA SHEET

IMAGEFINER TER-20 K27

LIQUID PHOTOIMAGEABLE ETCH RESIST

- **One Component Etching/Plating Resist**
- **Screen Print Application**
- **RoHS Compliant**
- **High Photo Sensitivity**
- **Excellent Developing Characteristics**
- **Wide Processing Window**
- **High Resolution (30 microns)**
- **Fast Stripping**

Revised April 19, 2016

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PROCESSING PARAMETERS FOR TER-20 K27

TER-20 K27 is a one-component, alkaline developable LPI etch/plating resist. **TER-20 K27** is applied by flood screen printing. **TER-20 K27** was designed to be user friendly with wide processing latitudes, high photo sensitivity, fast developing and good resistance to plating chemistries such as ENIG and immersion Tin. **TER-20 K27** also strips easily in an alkaline stripper solution. All Taiyo America products comply with the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment.

TER-20 K27 SPECIFICATIONS

Color	Blue
Solids	70%
Viscosity	150 dPa • s
Specific Gravity	1.2

MIXING

TER-20 K27 is supplied as a one-component product. **TER-20 K27** can be mixed by hand with a mixing spatula for 1 – 5 minutes prior to use to insure uniformity.

PRE-CLEANING

Prior to **TER-20 K27** application, the substrate/metal surface needs to be cleaned. Various cleaning methods include Pumice, Aluminum Oxide, Mechanical Brush, and Chemical Clean. All of these methods will provide a clean surface for the application of **TER-20 K27**. Hold time after cleaning the printed circuit board should be held to a minimum to reduce the oxidation of the copper surfaces.

SCREEN PRINTING

Method: Single Sided and Double Sided Screening

- Screen Mesh: 125 – 300
- Screen Mesh Angle: 22.5° Bias
- Screen Tension: 20 - 28 Newtons
- Squeegee: 60 – 80 durometer
- Squeegee Angle: 27 – 35°
- Printing Mode: Flood / Print / Print
- Flood Pressure: 20 – 30 psi
- Printing Speed: 2.0 – 9.9 inches/sec
- Printing Pressure: 70 – 100 psi

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TACK DRY CYCLE

The Tack Dry step is required to remove solvent from the resist film and produce a firm dry surface. The optimum dwell time and oven temperature will depend on oven type, oven loading, air circulation, exhaust rate, and ramp times. Excessive tack dry times and temperature will result in difficulty developing the resist from the substrate/metal surface. Insufficient tack dry will result in artwork marking and/or sticking. Typical tack dry conditions for **TER-20 K27** are as follows:

- Hold Time Prior to Tack Dry: 5 – 20 minutes
- Oven Temperature: 175°F (80°C)
- For Single-Sided (Batch Oven)
  - 1st Side: Dwell Time: 10 - 20 minutes
  - 2nd Side: Dwell Time: 20 - 40 minutes
- For Double-Sided (Conveyorized or Batch Oven)
- Dwell Time: 20 - 60 minutes

EXPOSURE

TER-20 K27 requires UV exposure to define solder mask dams and features. The spectral sensitivity of **TER-20 K27** is in the area of 365 nm. Exposure times will vary by bulb type and age of the bulb. Below are guidelines for exposing **TER-20 K27**.

- Exposure Unit: 5 kW or higher
- Stouffer Step 21: Clear 10 minimum (on metal / under phototool)
- Energy: 75 mJ / cm^2 minimum (under phototool)

DEVELOPMENT

TER-20 K27 is developed in an aqueous sodium or potassium carbonate solution. Developing can be done in either a horizontal or vertical machine.

- Solution: 1% by wt. Sodium Carbonate or 1.2% Potassium Carbonate
- pH: 10.6 or greater
- Temperature: 77 - 95°F (25 - 35°C)
- Spray Pressure: 20 - 30 psi
- Dwell Time in developing chamber: 60 - 100 seconds
- Water rinse is needed to remove developer solution followed by a drying step

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ETCHING/PLATING

- Etchant: $FeCl_3$ or $CuCl_2$
- Plating: ENIG or Acid Based Plating Chemistries

STRIPPING

- Stripper: 3.0% by wt. of NaOH
- Temperature: 104 – 122˚F (40 – 50˚C)
- Dwell Time in Stripper: 30 – 60 seconds

For Process Optimization please contact your local Taiyo America Representative

CURE PROPERTIES

ITEM	TEST METHOD	RESULT
Adhesion	Internal Test: Cross hatch peeling	100/100
Pencil Hardness	Internal Test	H
Etching Resistance	$CuCl_2$ 200g / liter Dipping at 50˚C / 5 minutes then peeling test	Pass
Strip ability	3% by wt. NaOH Dipping at 50˚C then counting stripping time Lines / Spaces = 100/100 microns	Pass
Immersion Gold	Internal test Ni 3µm, Au 0.03µm	Pass

Taiyo America, Inc. (TAIYO) warrants its products to be free from defects in materials and workmanship for the specified warranty period **(TER-20 K27 Warranty period is 6 Months)** provided the customer has, at all times, stored the ink at a temperature of 68°F or less. TAIYO accepts no responsibility or liability for damages, whether direct, indirect, or consequential, resulting from failure in the performance of its products. If a TAIYO product is found to be defective in material or workmanship, its liability is limited to the purchase price of the product found to be defective. TAIYO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE. TAIYO'S obligation under this warranty shall not include any transportation charges or costs of installation or any liability for direct, indirect, or consequential damages or delay. If requested by TAIYO, products for which a warranty claim is made are to be returned transportation prepaid to TAIYO'S factory. Any improper use or any alteration of TAIYO'S product by the customer, as in TAIYO'S judgment affects the product materially and adversely, shall void this limited warranty.

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