

CHAPTER I

INTRODUCTION

Solder mask (resist) is used as a coating material to mask or to protect selected areas of a printed circuit board (PCB) from the action of etching, soldering and plating, as well as providing continued protection from the environment throughout the life of the circuit board.

The available solder masks are broadly divided into two categories, i.e. permanent solder masks and temporary solder masks. The permanent solder masks can not be removed and thus become an integral part of the PCB but the temporary solder masks can be removed by organic solvents, water or even peeling off PCB.

At present, electronic industry is expanding rapidly and involving many things in everyday life, in which the PCB is an important component in electronic equipments. Therefore, the solder masks is necessary in the production of PCB. All solder masks were imported from foreign countries such as Malaysia, England, Hong Kong and United State of America. This experiment aimed at the development of the method for the production of temporary peelable solder mask.

The temporary solder masks usually consist of a latex rubber material or vinyl monomer. It is masked to specified areas of PCB using robotic, pneumatic, hand application, silkscreen, or template screening methods. The temporary solder mask is cured by heat or ultraviolet light. It will withstand temperatures up to 268 °C (515 °F) during the normal soldering operation, which is not to exceed 5 seconds. The

temporary solder mask protects a contact surface from solder during soldering operations. The natural rubber is coated on PCB by hand which is not a high-speed production. On the other hand, vinyl monomer can be used by stripping or screening techniques. After that, the temporary solder mask is removed by peeling off, or using organic solvent. This temporary solder mask is cured by thermal, radiation or ultraviolet. In this experiment, the temporary solder mask is cured by thermal and is removed by peeling off.

Objectives

1. To develop the appropriate preparation technique for the production of temporary solder mask.
2. To investigate the mechanical and physical properties of temporary solder mask.

Scope of investigation

For the preparation of the temporary solder mask composite, the appropriate ratio was determined. The investigation procedures were carried out as follows:

1. Investigation of the physical and chemical properties of solder mask currently available in the market.
2. Preparation of the temporary solder mask by varying Concentration of monomer, initiator, reaction temperature and time.
3. Determination of the mechanical properties such as tensile strength, %elongation and physical testing such as adhesives of coating films, viscosity.

4. Investigation of the miscibility between components of polymer blends by differential scanning calorimetry (DSC) and ATR FT-IR spectroscopy.
5. Investigation of thermal resistance of product by thermogravimetric analysis (TGA).

Expecting out come of this research work

1. To obtain temporary solder mask.
2. To obtain a guideline for temporary solder mask development in the future.



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