TECHNICAL DATA SHEET
ELECTRAMASK
EM55

PEELABLE RESIST RANGE

PRODUCT DESCRIPTION

EM55 PEELABLES are formulated to provide temporary protection for selected board areas against hot air solder levelling, wave soldering, infra-red reflow or gold plating.

They are an extremely cost effective alternative to the otherwise laborious process of masking board areas by tape against unwanted solder pickup or galvanic deposit.

EM55 is suitable for use over **ED5000** Carbon Conductor Pastes.

FEATURES & ADVANTAGES

- **Plating Resist**. EM55 can be used as a localised resist to protect parts of the circuit board during plating of selected areas.

- **Solder Resist**. EM55 is formulated to resist multiple soldering operations/heat processes typically seen during SMD-mixed assembly, without excessive hardening and poor removal from laminate surface, connection holes or between keypad fingers.

  Examples of areas protected:

  (i) Gold finger/edge connectors and contact pads during hot-air-solder-level (HASL), wave-solder and IR reflow.

  (ii). Electra Polymer Thick Film Resistors or conductors during soldering operations thus preventing conductivity variation or handling damage.

ELECTRAMASK EM55 PRODUCT RANGE

PRODUCT CODE	COLOUR	
EM55 B	Blue	
EM55 G	Green	
EM55 T	Transparent	
EM55 W	White	
EM55 R	Red	
EM55 B-UV	Blue	UV curable peelable mask for high throughput

Multiple heat/soldering operations:

Because of the extreme thermal stresses experienced during the multiple soldering operations used in Surface Mount Technology (SMT) we have found EM55W and EM55R to offer the highest level of durability, especially in conjunction with multiple IR reflows.
Under extreme assembly conditions suitability of each peelable should be evaluated in a preliminary test, each following the recommendations stipulated under the **curing** section.

PROCESSING

Viscosity adjustment:
EM55 is supplied at printing viscosity and should not need any viscosity adjustment. The addition of solvent is not recommended since this may cause a reduction in film strength and poor peeling properties.

Board surface preparation:
Boards should be free from oil, grease and other surface contaminants prior to application of the resist.

Printing:

Mesh count: 11-22T monofilament polyester. Ensure a thick (0.2- 0.4mm), even pinhole-free film.

Stencil: Capillary film or direct emulsions are recommended in order to achieve a stencil thickness of 100 to 400μm, depending on thermal demands expected of the resist.

Squeegee: When printing over tracks it is recommended to use a squeegee of 55-65 Shore hardness at a relatively flat angle (65 to 75 deg).

In order to maximise hole-plugging capability a slightly rounded squeegee should be used.

When printing on both sides of the board it is important to ensure that the 2 layers of resist do not join through a hole, or removal may be impaired.

Curing:
Correct curing of EM55 is critical, since it determines the forming of the continuous film and prevents porosity and lack of chemical resistance as well as allowing for easy peelability.

Typical Cure Schedule:

Convection Oven:	10 to 30 mins* at 140ºC, depending on future thermal demands. * - Time at board temperature.

When multiple heat cycles are to be used it is recommended that the shorter cure cycle is utilised. If a single HASL process is required (particularly in conjunction with a horizontal levelling unit) or a simple plating operation then the prolonged cure time should be used.

Alternatively EM55 may be cured by the heat from a hot running UV curing machine.
In this case the use of **EM55B-UV** is recommended in order to ensure a tack-free surface.

REMOVAL
EM55 is removed by peeling from the board. This is easiest if the edge of the film has a sharp profile. This can be achieved by the use of thick stencils as described under **stencil**. Poor peeling may result if the film has been inadequately cured or if solvent has been added.

In order to speed up and ease peeling; boards can be warmed prior to the resist being removed. This can be done using a UV curing machine running on half power or at a fast conveyor speed.

INTERACTION WITH CARBON CONDUCTORS:
When EM55 is to be used over carbon conductors; **ED5000** is recommended for best results.

Laboratory tests have shown that there is an interaction between EM55 and the carbon conductor. The magnitude of the interaction depends on the cure schedule used for the carbon and the peelable. For more information on carbon/peelable interaction please contact the Electra technical support department.

SCREEN CLEANING:

Screens and equipment should be cleaned using Universal Screenwash SW100.

STORAGE:

Store between 5ºC - 25ºC in a dry store. Avoid subjecting containers to temperatures below 5ºC because of risk of splitting.

SHELF LIFE:

6 months when stored in cool dry conditions.

For further information, contact:

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