Solder plus Support

Glossary/Index (A – P)

Activator: A chemical that improves the ability of a flux to remove oxides and aid the wetting of parts being soldered.

Annular Ring: The conductive area around a plated through hole.

Billboarding: A discrete component with both terminations soldered, but is laying on its edge.

BGA Voiding: Although specifications on percent voids exist, BGA voids still can form. Provided the voids are not a champagne void created at the board pads due to poor platting, a void is not a reliability risk. This was documented in the IPC SPVC SAC alloy study.

Blow Holes: Small holes or voids caused by out gassing in a plated through hole.

Bridging: A soldered joint that spans two conductors, not intended to be connected, creating an electrical short.

Copper Erosion: Lead-free alloys tend to dissolve the contact copper into the bath. This can eventually remove the pad from the board or cause a separation from the PTH to the ring on the board surface.Delta (Δ) T: The greatest difference of temperature found across an assembly.

Dewetting: Retreating of solder from some or all parts of a substrate that initially was wetted.

Electromigration: The tendency of conductive material to spread from one solder interconnect to another, causing a short circuit.

Halides: Compounds containing fluorine, chlorine, bromine, iodine. These are parts of the activators of certain types of flux and might need to be cleaned due to their corrosivity or conductivity.

Hot Tears: Openings in the surface of the solder that are caused by cooling cavities in SAC305 alloy and other similar alloys

Liquidus: The temperature at which solder reaches its fully molten or liquid state.

Micro Balls: Tiny solder balls as related to wave soldering.

Non-wetting: A surface that has contacted but rejected molten solder.

On-Contact Printing: Zero snap-off, no print gap. Opens: Two electrical conductors not bridged by solder. This can be due to insufficient solder or non-coplanarity of the lead at its point of connection.

Outgassing: This is the emission of impurities from a PCB or component that occurs when the assembly is exposed to heat or reduced pressure.

Pad: Area on which solder paste is printed and a component is placed.

Package Warpage: Package Warpage, often referred to as "coplanarity", occurs as received and during reflow. When handling finer pitch devices, this issue becomes especially critical. For instance, many BGA packages are received with a .008" warpage specification, however most boards are now printed with .004-.005" of solder paste. This results in some of the balls not contacting the paste ultimately resulting in HiP. This is also critical when using any multiple IO leadless device (LGA, QFN).

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Glossary/Index (P – Z)

Peel Back Angle: The angle at which the PCB contacts the solder wave.

Pin Probe: The conductive member by which electrical contact is made between the PCB pad or lead and the tester.

Popcorning: Eruptions in an IC during reflow, normally the result of moisture absorption.

Reflow Profile: The time vs. temperature graph of a PCB as it is processed through a heat source.

Rheology: The science or study of a materials flow in terms of stress strain and time.

Skips: As related to printing, skips are component pads that were missed during the printing process. As related to wave, areas that were intended to be soldered but were missed due to shadowing or gassing.

Slump: A spreading of solder paste that may lead to bridging. May be cold (occurring before reflow) or hot (occurring during reflow).

Snap-off/Print Gap: The distance between the stencil and the PCB during printing.

Solder Balls: Tiny spheres of solder usually located around a solder joint or remotely around the board.

Solder Beads: A large solder ball positioned between the terminations of a discrete component, usually a resistor or capacitor, but can also be found on large and small transistors as well. Solder Fillet: The solder meniscus or joint formed by the solder between the pad or hole and the component lead.

Solder Mask Damage: A chemical attack of the mask by the flux typically results in solder mask damage. This is often associated with poor adhesion to the board due to oxidized copper traces or a poorly cured mask. This can be mitigated by controlling the solvents in the liquid flux being used.

Solidus: The temperature at which solder reaches its fully solid state.

Solids Content: The percentage by weight of non-solvent material in a flux.

Squeegee: A plastic, metal, or fiber blade used to push solder across the stencil surface while filling the stencil apertures.

Tombstoning: A soldering defect in which a component is pulled into a vertical or angular position leaving one side unsoldered.

Torn Prints: Paste printing defect, which results in printed paste being ripped from the board pads resulting in clogged stencil apertures.

Viscosity: A measurement of shear stress over shear rate, which is the resistance of a material to flow. Wave Bridges: Bridging that occurs during wave soldering between pins or components.

Webbing: Wave solder defect recognized by a spider web like extension of solder across the non-conductive portion of a PCB.

Wetting: The formation of an intermetallic allowing the spread of molten solder over a base metal.

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