

# Contamination Removal from Set-Top PC Boards

## Application Overview

### I. Overview

Cable TV converter boxes or "Set-Tops" can become inoperable for a variety of reasons. A frequent cause of failure is damage to the PC boards inside the box. The high value of the boards and boxes warrants a significant effort to salvage these products.

Often in the process of Set-Top and converter PC board reclamation, a significant amount of residue or contamination is found on the board. Boards can be coated with everything from cat hair to coffee or soda.

Typically this material will cause the board to short out or malfunction. In order to recycle the returned board, it must be cleaned of all foreign substances and tested.

Micro-abrasive blasting is a fast, environmentally friendly, and cost-effective solution to the problem of cleaning PC boards without causing damage to the board circuitry.

### II. What is Micro-Abrasive Blasting?

Micro-abrasive blasting involves mixing a fine abrasive media, or powder, with compressed air and propelling it through a miniature nozzle. The high velocity achieved by the particles as they exit the nozzle greatly increases their abrasive action.



The MicroBlaster nozzle can be used comfortably in a manual operation or easily fixtured for applications that require a higher degree of precision. By varying the type and size of abrasive, the air pressure, and the size of the nozzle opening, micro-abrasive blasting can be used for focused cutting, selective cleaning, precision deburring, surface preparation, and material removal on a variety of surfaces.

### III. How Does Micro-Abrasive Blasting Address this Issue?

Micro-abrasive blasting has been proven as an effective and economical method of removing various types of contamination without damaging the leads or traces on the devices. In some cases, simply removing the foreign material is sufficient to restore proper functioning of the board.



Contamination impacted PC board



PC board after micro-abrasive blasting process

Blasting of the contaminated board is performed manually in an enclosed WorkStation that confines the spent abrasive and provides a high visibility work area for the operator. The WorkStation is equipped with static dissipative devices to reduce the potential for static charge damage.

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### IV. Application Parameters

The typical MicroBlaster installation for this application includes three components: the single tank MicroBlaster, the ESD control ProCenter, and a desiccant air dryer.

Type of Media: 50 Micron Glass Bead - chosen because it will remove residue without damaging components and/or traces.

Size of Nozzle: 0.046" I.D. - good for large, even coverage over the entire board.

Nozzle Distance: 3-5"

Blast Pressure: 60-80 psi

The operator holds the MicroBlaster nozzle approximately 4-5 inches from the board so that there is only light abrasion of the surface. Because of the small size of the nozzle opening, the operator can direct the abrasive stream with pinpoint accuracy and can blast only those sections of the board that are contaminated with the foreign material.



PC board prior to cleaning with the MicroBlaster

The blasting process needs to be an even, controlled motion across the surface of the board. Care should be taken not to focus on any one section too long. If sprayed in one location long enough, the abrasive will start to damage the board. Once the board has been cleaned, it should be blown off with an air gun to remove any of the residual abrasive media.



Due to the wide variety of contamination types and levels of residue build-up, it may take anywhere from 15 to 45 seconds to process a board.



PC board after micro-abrasive blasting

Micro-abrasive blasting offers a cost-effective solution to many of the problems encountered when trying to salvage and recycle printed circuit boards. In addition to the selective cleaning example used in this overview, micro-abrasive blasting is used to remove conformal coatings from PC boards, trim epoxy from probe rings, and for demarking electronics packages. Contact our Technical Sales Department today for information on how Comco's MicroBlasters can assist you with your specific application.

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