



## TECHNICAL INFORMATION

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### **SOLDER PALLET – FLUX REMOVAL**

The removal of flux from Durostone<sup>®</sup> solder pallets proves somewhat difficult. The following information gives recommendations on how to and how not to clean a Durostone<sup>®</sup> solder pallet.

#### **ULTRASONIC CLEANING**

It was previously advised not to clean Durostone<sup>®</sup> solder pallets using ultrasonic equipment as it seriously degraded the material and left it susceptible to flux attack, reducing the life-span of the pallets. Two cases had been reported but a manufacturer supplying the PCB industry did not produce the ultrasonic machines used in both instances.

As many end-users were having problems with cleaning and did not have a budget to invest in a dedicated system just for pallets, enquiries were received from customers if they could use the ultrasonic stencil / pallet cleaners available for this purpose.

Tests were carried out in conjunction with a major ultrasonic cleaner manufacturer, Smart Sonic Corporation of Canoga Park, California, U.S.A.

A batch of pallets covered in a no-clean flux were submitted to Smart Sonic for cleaning and returned to the customers' production line. Following cleaning of the pallets, no degradation occurred so it was concluded that given the correct equipment and process settings, ultrasonics does not affect Durostone<sup>®</sup>.

The pallets cleaned at Smart Sonic were,

- At a frequency of 40 kHz or higher
- With a power input of 11 watts per liter or less (12-15 watts would be OK)
- In a wash cycle of 10 minutes or less

It was finally concluded that the past problems occurred due to the material being subjected to a low frequency, i.e. below 40kHz. The lower the frequency the more aggressive the ultrasonic cavitation.

Ultrasonic cleaning can be compared to manual cleaning.

- Using high frequency / low power ultrasonics is like using a soft brush with little scrubbing force.
- Using low frequency / high power ultrasonics is like using a stiff wire brush with lots of scrubbing force.

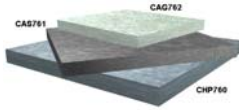
**DO NOT CLEAN DUROSTONE USING A LOW FREQUENCY SYSTEM (below 40kHz).**

However, when employing high frequency / low power ultrasonics, an effective cleaning chemistry must be used to break down the flux contaminants on the pallets.

The tests at Smart Sonic were successful using their 440-R SMT Detergent,  
<http://www.smartsonic.com/chemistry.html>

**Durostone®**

Solder Pallet Materials



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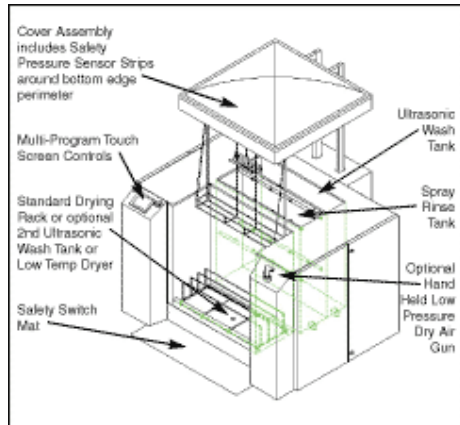


Fig. 1 Model 6000 - Schematic



<http://www.smartsonic.com>

**SMART SONIC®**

**Note:**

No other ultrasonic cleaning system manufacturer has been tested or provided feedback on the cleaning of flux from solder pallets.

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