

## ULTRASONIC CLEANERS

### How they work!

Ultrasonic is the science of sound waves above the frequency of human audibility. In general, frequency above 18, 000 cycles per second are considered to be ultrasonic.

In Ultrasonic cleaning, high amplitude sound waves are introduced into a liquid cleaning solution. As these sound waves travel through the liquid, areas of alternate positive and negative pressures are created which correspond to the areas of compression and rarefaction of a sound wave passes a given point.

Liquids, however, are not elastic (as can be evidenced by hydraulic principal) and are literally torn apart when a strong rarefaction or negative pressure point is created.

As the liquid is torn apart a microscopic void is created which is called the cavitation bubble.

For all practical purposes cavitation bubble is an area of vacuum within the body of liquid and is therefore very unstable and short lived.

When the bubble collapses or implodes, a phenomenon not unlike that of a thunderclap only on a microscopic scale results.

Minute areas of high pressure are created by these “thunderclaps” which break down the surface boundary layer and enhance chemical cleaning action.

The advantages of ultrasonic cleaning are:

1. Cavitation bubbles are extremely small and can reach into areas that the bristle of a brush could never reach.
2. Ultrasonic cleaning is fast, accomplishing a better cleaning job in a small fraction of the time required by other methods.
3. Ultrasonic cleaning will not damage even the most delicate instruments.

### Ultrasonic versus Other Cleaning Methods

Spraying	14%
Immersion	30%
Vapour Degreasing	35%
Brushing	92%
Ultrasonics	99%

This shows the comparison table drawn up originally in the USA some years ago. It depicts how effective ultrasonic cleaning can be compared to other more commonly known cleaning systems.

***Ultra Sonic Cleaners are ideal for cleaning surgical, medical, dental instruments and equipment and are available in various sizes.***

The unit should be tested daily (alfoil test), then degas the solution by running a “degas” cycle. A clinical detergent should be added. e.g. [Clinidet](#) – Medical & Dental Instrument and Equipment Detergent.

Further information is available from Majac Medical Products Pty Ltd.

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*We acknowledge Unisonics Australia Pty Ltd for some of the above information.*

## **PERFORMANCE TEST**

Underlisted is a test process designed to monitor the efficiency levels in a ultrasonic cleaner using aluminium foil.

The aluminium foil test is a procedure that Unisonics and many healthcare institutions have been using for in excess of 20 years. This alfoil test gives an accurate assessment of the cleaners performance and is economical.

### **Alfoil Test:**

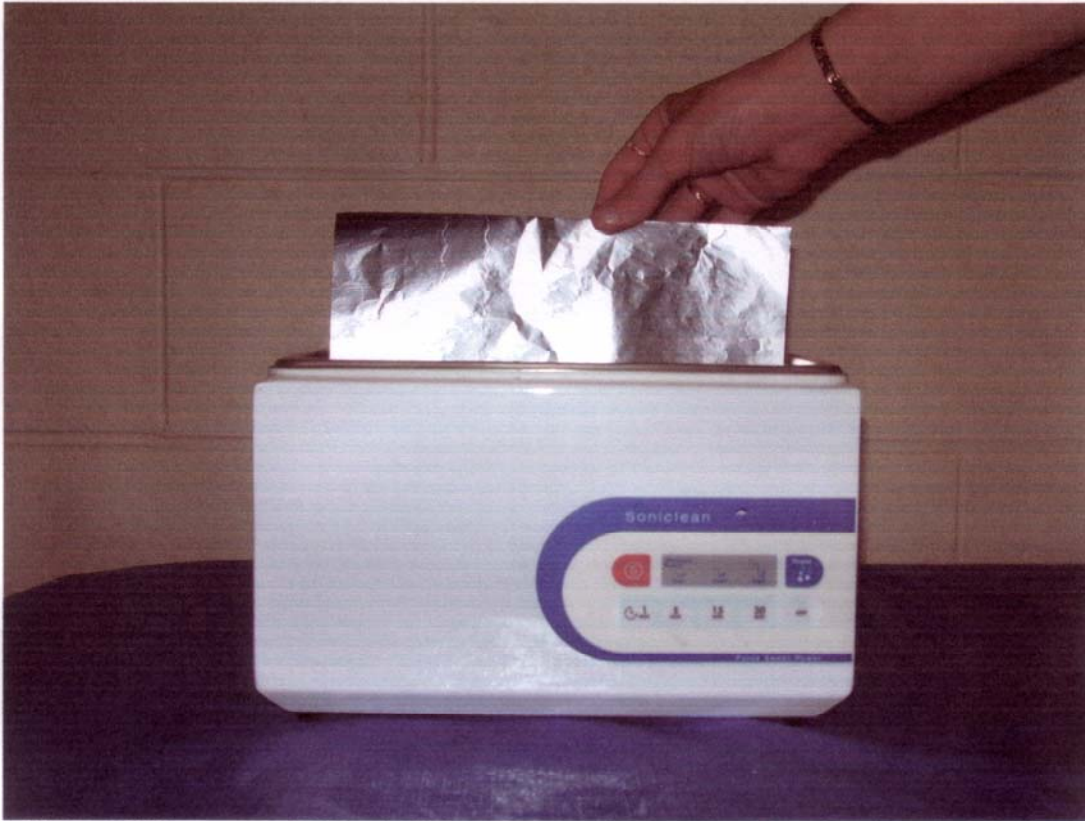
1. Cut a section of aluminium foil the length and depth of the ultrasonic tank.
2. Immerse the section of aluminium foil into the water lengthways and in a vertical position.
3. The foil must not contact the bottom of the tank and be left for a duration of 30 seconds.
4. A consistent pattern of perforation should result with the hole sizes varying from one to four mm in diameter.
5. Foil can be purchased from any supermarket.

### **Please note:**

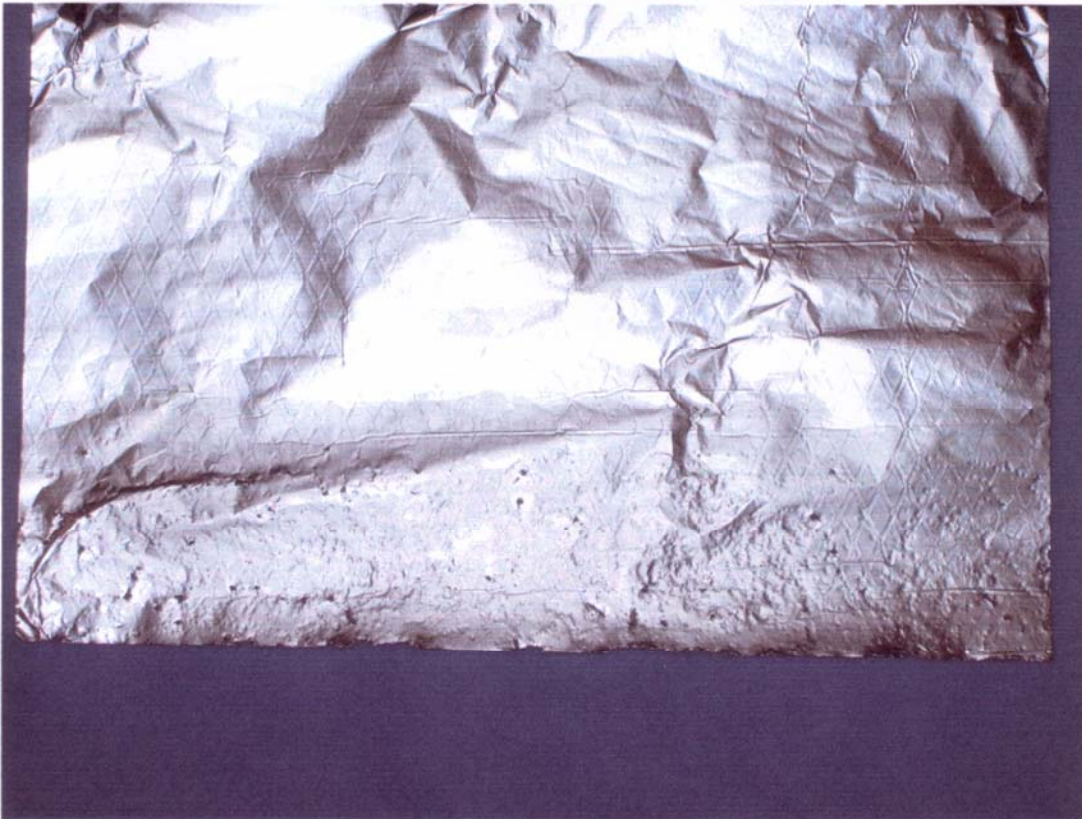
In larger ultrasonic cleaner more than one piece of foil may be immersed.

Should the Alfoil test be done at the beginning of the day the water should be changed, prior to the cleaning of instruments. as the solution left is foil contaminated.

## Daily Ultrasonic Cleaner Test



Foil Test (Alfoil not to exceed .025mm in thickness) Not to touch bottom of tank, leave for 10 seconds. Note that perforations are evenly distributed across foil, indicating the unit is generating as programmed. The water is now contaminated with alfoil particles, empty, refill, "degas" add **Clinidet**. The cleaner is now ready for use.



## **Useful Hints**

- Use a clinical detergent that is compliant to AS/NZS4815
- Record the daily test procedure in the Sterilizing Record and Tracking System.
- When refilling the tank with the fresh liquid always degas the water by running for a few minutes.
- Never clean contaminated instruments in water over 35°C
- Monitor the bio burden in the tank and change the water as required.
- Suspend instruments in a basket and do not drop heavy instruments in the tank.
- Avoid contaminants. Drain the basket fully of liquid before leaving the tank.
- Be safe and avoid spills or liquid contact with electrical plugs and connections.
- Do not run the machine without solution in the tank.