

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1995  
 DateRun: 03/07/1995  
 Experimenters: Donald Garlotta  
 ClientType: Biomedical Device Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Stainless Steel  
 PartType: Part  
 Contaminants: Lubricating/Lapping Oils, Fingerprints  
 Cleaning Methods: Ultrasonics  
 Analytical Methods: Visual  
 Purpose: Determine the effectiveness of removing light oils

Experimental Procedure: The parts will be cleaned in a Crest Ultrasonic unit. Part #2 was cleaned for 4 minutes and parts #3 and #4 were cleaned for 10 minutes. The cleaner bath temperature was set at 140 F. Half of the cleaning time was done with the hole side up while the other half was done with the hole side down so that both the interior and the exterior would be subjected to ultrasonic energy. The parts were then washed in a tap water rinse and then a DI water rinse, both for 2 minutes at 140 F. The parts were then dried under an IR lamp for 25 minutes and then in a convection oven for 30 minutes.

Temperature

|                                      | time (min) | sample #2 | sample #3 | sample #4 |
|--------------------------------------|------------|-----------|-----------|-----------|
| Ultrasonics                          | 4, 10, 10  | 144       | 144       | 144       |
| #1 RINSE/TAP H <sub>2</sub> O        | 2          | 138       | 145       | 141       |
| #2 RINSE/ DEIONIZED H <sub>2</sub> O | 2          | 138       | 142       | 138       |
| DRY- IR lamps                        | 30         | 104       | 105       | 104       |
| DRY convection oven                  | 30         | 135       | 139       | 134       |

Results: Part #2- A lot of oil dragout was noticed in both rinse tanks, so cleaning time was increased to ten minutes. Water was noticed on the part after 30 minutes under the IR lamp. After 30 minutes in the convection oven, there was still some water remaining on the part. Parts #3 and #4- Excellent removal of oil on both the inside and outside of the tubes. No oil dragout was noticed in the rinse tanks suggesting that all oil was removed in the cleaning bath. Once again, drying was incomplete.

Summary:

|                      |  |               |                    |                                     |                      |
|----------------------|--|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>   | Stainless Steel                        |               |                    |                                     |                      |
| <b>Contaminants:</b> | Lubricating/Lapping Oils, Fingerprints |               |                    |                                     |                      |
| <b>Company Name:</b> | <b>Product Name:</b>                   | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Valtech Corporation  | Valtron SP 2275                        | 5             | 0.00               | <input checked="" type="checkbox"/> |                      |

Conclusion:

A cleaning time of ten minutes seems sufficient to remove all of the oil. Due to the large surface area, the parts take a long time to dry. The shortest drying time would probably be achieved by using a vacuum oven after the hot rinse.