CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1997
DateRun:	12/03/1997
Experimenters:	Jason Marshall, Prashant Trivedi
ClientType:	Manufacturers of Surgical Tools and Equipments
ProjectNumber:	Project #1
Substrates:	Stainless Steel
PartType:	Part
Contaminants:	Buffing/Polishing Compounds, Cutting/Tapping Fluids, Lubricating/Lapping Oils, Fingerprints, Oil
Cleaning Methods:	Ultrasonics
Analytical Methods:	Visual, microscopic
Purpose:	Evaluation of four cleaners on supplied parts
Experimental Procedure:	Four cleaning chemistries were selected from the laboratory's database that have proven to be effective in previous trials for other clients with similar substrates and contaminants. Five percent solutions were made with each cleaner and DI water in beakers. The solutions were heated to 130 F on a hot plate. Then the beakers were suspended into a 40kHz ultrasonic tank at the same temperature. One part was placed in each beaker and cleaned for five minutes. Following the cleaning, the parts were rinsed by being immersed in tap water at 130 F for thirty seconds and then dried with a portable hot air heater until the parts were completely dry. Finally, the parts were visually inspected visually and with a microscope and compared to each other and to an uncleaned part. SUBSTRATE MATERIAL: Stainless Steel 455 CONTAMINANTS: Buffing compound, machining oils, fingerprints
Results:	Each cleaner showed some removal of the contaminants. Some of the samples had clumps of contaminants located near the edge of the part and in the narrow shafts. This problem could be fixed be altering the position of the part while it is being cleaned. The movement would allow all of the surfaces to be exposed to the ultrasonic bubbles. The Daraclean 282 solution appeared to leave no signs of contaminants behind. There were no clumps lodged in the shaft nor at the bottom of the part. This cleaner was the most effective chemistry used.

Summary:

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Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Oakite Products	Inproclean 3800	5	0.00	☐	
Church & Dwight Co Inc.	Armakleen E 2001	5	0.00	☐	
US Polychem Corporation	Polychem A 2000 P	5	0.00	☐	
Magnaflux	Daraclean 282	5	0.00	☑	

Conclusion: W.R. Grace's Daraclean 282 proved visually remove the contaminants from the parts. All of the parts cleaned were sent back to the client to be tested in-house. The next step in testing will be to clean several parts completely by using Daraclean in the ultrasonic tank and adding some form of vibrational or rotational energy to enhance the cleaning efficiencies. A second test will be to use samples of the different contaminates and coupons to determine quantitatively how effective the four cleaners were.