CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1997
DateRun:	10/28/1997
Experimenters:	Jason Marshall, Prashant Trivedi
ClientType:	Manufacturers of Precision Parts and Assemblies
ProjectNumber:	Project #2
Substrates:	Stainless Steel
PartType:	Part
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil
Cleaning Methods:	Ultrasonics
Analytical Methods:	Black light
Purpose:	Evaluate cleaning on large number of parts

Experimental Procedure:

The experiment was conducted to determine how effective the MacDermid product would be when cleaning a large quantity of parts. The other cleaner will be tested when the lab obtains a new supply.

Parts were put into the smaller rectangular container and over contaminated with the fluorescent tagged oil. A five percent solution of MacDermid ND-17 was made in the 40kHz tank. The solution was then heated in the tank to 130 F. The parts were cleaned for five minutes. At the half way point, the container was inverted to increase the removal of the contaminant. From the cleaning tank, the container was then transferred to the first tap water rinsing tank. Rinsing continued to the second tap water tank, and then finally to a DI water rinse. The two tap water rinses were heated to about 130 F. The DI water was used at room temperature. Each rinsing step lasted for thirty seconds. Drying was performed by a portable space heater for ten minutes. After drying was completed, the parts were analyzed under the black light for fluorescence.

SUBSTRATE MATERIAL: 303 Stainless steel
CONTAMINANTS: C-Eblis oil (sulfur based)
CONTAMINATING PROCESS USED: Added excess tagged oil using a plastic eyedropper to the metal basket.

Results:

Upon analyzing the cleaned parts, it was determined that the vast majority of the oil was removed. The trace amounts left were trapped in the gear like end. The limited agitation provided during the experiment was not enough to expose all of the parts to the ultrasonic cleaning. The addition of additional mechanical agitation would help to increase the removal of the contaminant by improving the exposure. Furthermore, another observation made during the experiment was that there appeared to be no rusting.

Summary:

Substrates:	Stainless Steel				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
MacDermid Industrial Products	ND 17	5	0.00	☑	

Conclusion:

The MacDermid cleaning solution was shown to be able to effectively remove a majority of the oil from the parts in the container and the cleaner did not cause any rusting. Other observations were made in regards to the cleaning bath itself. Most of the oil that was removed from the parts and the container floated on the top of the cleaning bath. This characteristic would allow the oil to be removed by skimming. The tendency to float on the top may cause the part to be contaminated again upon removal from the bath. The addition of mechanical energy should minimize this recontamination. A second observation was that the bottom of the bath contained small metal chips.