CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 06/29/2008

Experimenters: Jason Marshall, Shweta Bansal

ClientType: Tool Manufacturer

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate client supplied cleaning product on all four soils comparing to other alternatives previously evaluated.

Experimental Procedure: The supplied products were diluted to the 3% concentration being used by the client. Dilution was done using DI water in 600 ml glass beakers. The solution was heated to 130 F immersed in a heat bath in a Branson 40 kHz ultrasonic tank. The product was degassed for five minutes.

Twelve preweighed steel coupons were coated with the four supplied contaminants: Castrol Industrial Inc Safety Draw 722X (61788-76-9, 64742-54-7), Tru-Edge Cutting Fluid, ChemSearch Aerolex Plus moly dry film lubricant, and Dow Corning G-n metal assembly spray lubricant. Soils were applied using a swab or sprayed directly onto the coupons. Coupons were weighed a second time to determine the amount of soil added. Three coupons were immersed into each product and cleaned for 5 minutes using ultrasonic agitation. Following cleaning, coupons were rinsed for 15 seconds in tap water at 120 F and dried using air blow off for 30 seconds at room temperature. Final weights were recorded and efficiencies were calculated.

Results: The supplied cleaning product was effective on two of the four products, removing 87% of the safety draw 722 x and 94% of the cutting fluid. It was partially successful on the Moly Dry film lubricant and the G-N metal assembly spray, removing 63% and 75%. The table lists the amount of contaminant added, the amount remaining after cleaning and the efficiency of each coupon cleaned.

Contaminant	Initial wt	Final wt	% Removed
Safety draw 722X	0.7287	0.1328	81.78
	0.7399	0.0340	95.4
	0.6615	0.0981	85.17
Cutting fluid	0.2276	0.0122	94.64
	0.4488	0.0262	94.16
	0.5113	0.0303	94.07
Moly Dry Film Lube	0.0114	0.0071	37.72
	0.0240	0.0054	77.50
	0.0238	0.0058	75.63
Gn Metal Assembly Spray	0.2079	0.0928	55.36
	0.1609	0.0424	73.65
	0.1373	0.0049	96.43

Summary:

Substrates:	Steel				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
BCS Company	Green Spray 400	3	87.45	☑	Safety Draw 722 x
BCS Company	Green Spray 400	3	94.29	☑	Cutting fluid
BCS Company	Green Spray 400	3	63.62	☐	Moly Dry film lubricant
BCS Company	Green Spray 400	3	75.15	☐	GN metal assembly spray

Conclusion: The supplied product was comparable to other selected cleaners, removing slightly less on average for the safety draw and cutting fluids. However, it was better than the other aqueous products on removing the Moldy dry film lubricant. The product was consistent with the other products for the G-N assembly spray. The supplied product will be evaluated on the two types of supplied parts.