CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 02/16/2004

Experimenters: Jason Marshall

ClientType: Aircraft Parts Manufacturer

ProjectNumber: Project #2

Substrates: Aluminum

PartType: Coupon

Contaminants: Abrasive, Cutting/Tapping Fluids

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate products form removal of machining fluid

Experimental Procedure: Seven cleaners were selected from the laboratory's database of past testing based on supplied data from client. Six aqueous based cleaners were diluted to 10% using DI water in 600 ml beakers. One semi-aqueous product was used at 50% diluted with DI water. An eight product was added as the client's current cleaner. All of the products were heated to 120 F on a hot plate.
Twenty-four preweighed aluminum coupons were coated with client supplied cutting fluid, Speedfam Vehicle 210 mixed with an abrasive. The oil and abrasive were first mixed in a bottle. The mixture was added to coupons using a swab and then heated for 10 minutes using a Master Appliance heat gun. The coupons were allowed to cool to room temperature before weighing a second time.
Three coupons were cleaned in each solution for 10 minutes using stir-bar agitation. Coupons were not rinsed but were dried using air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.

Results: Four of the eight products removed over 74% of the oil/abrasive mix within five minutes using no rinsing. The Bio T 300 B removed over 97%. Most of the coupons had an oil film remaining except the Bio T 300 B. The client's current cleaner, Bruilin 815 GD removed 68% of the oil. The following table lists the amount of soil added, the amount remaining after cleaning and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
815 GD	0.1454	0.0712	51.03
	0.1641	0.0213	87.02
	0.1869	0.0619	66.88
Aquavantage 1400	0.1094	0.0549	49.82
	0.1592	0.0742	53.39
	0.1775	0.0587	66.93
Ozzy Juice SW1	0.2170	0.0771	64.47
	0.1594	0.0730	54.20
	0.1524	0.0887	41.80
SC Aircraft & Metal Cleaner	0.1355	0.0203	85.02
	0.1070	0.0268	74.95
	0.1045	0.0156	85.07
Multi-Kleen 1568	0.2380	0.0507	78.70
	0.1321	0.0506	61.70
	0.0890	0.0398	55.28
Metalnox M6314	0.1229	0.0365	70.30
	0.1085	0.0394	63.69
	0.1694	0.0200	88.19
Hurrisafe 9450	0.2034	0.0461	77.34
	0.1724	0.0077	95.53
	0.1444	0.0048	96.68
Bio T 300 B	0.1161	0.0039	96.64
	0.1333	0.0039	97.07
	0.1927	0.0037	98.08

Summary:

Substrates:	Aluminum

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Contaminants:	Abrasive, Cutting/Tapping Fluids				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Brulin Corporation	Formula 815 GD	10	68.31	☐	
Brulin Corporation	Aquavantage 1400	10	56.71	☐	
Chem Free Corporation	SW-1 Ozzy Juice	10	53.49	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	81.68	☑	
Heatbath Corporation	Multi-Kleen 1568	10	65.22	☐	
Kyzen Corporation	Metalnox M6314 (For Comparison Only)	10	74.06	☑	
PCI of America	Hurrisafe 9450	10	89.85	☑	
Bio Chem Systems	Bio T 300 B	50	97.27	☑	

Conclusion: The four effective products and the current cleaner will be tested under the same conditions except a water rinse will be added.