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 cleaners using a water rinse

Experimental Procedure: The three successful aqueous based cleaners from the previous trial were diluted to 10% using DI water in 600 ml beakers. The one semi-aqueous product was used at 50% diluted with DI water. The client's current cleaner was included as the fifth product. All of the products were heated to 120 F on a hot plate.
Fifteen 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 rinsed in a tap water bath at 120 for 30 seconds and 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 five products tested with the rinse improved their efficiency. The Hurrisafe 9450 was the only one to decrease its effectiveness with the water rinse. The other four removed over 80% of the oil/abrasive mix. Bio T 300 B removed nearly all of the oil/abrasive mix. The table below lists the amount of soil added, the amount remaining after cleaning and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Formula 825 GD	0.1616	0.0251	84.47
	0.1356	0.0027	98.01
	0.0912	0.0204	77.63
SC Aircraft & Metal Cleaner	0.1024	0.0030	97.07
	0.0858	0.0074	91.38
	0.1106	0.0120	89.15
Metalnox M6314	0.0968	0.0035	96.38
	0.0644	0.0173	73.14
	0.0825	0.0243	70.55
Hurrisafe 9450	0.1121	0.0472	57.89
	0.1070	0.0366	65.79
	0.0891	0.0344	61.39
Bio T 300 B	0.0938	0.0001	99.89
	0.0869	0.0003	99.65
	0.1088	-0.0005	100.46

Summary:

Substrates:	Aluminum
Contaminants:	Abrasive, Cutting/Tapping Fluids

Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Brulin Corporation	Formula 815 GD	10	86.70	☑	No Rinse = 68.31
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	92.53	☑	No Rinse 81.68
Kyzen Corporation	Metalnox M6314 (For Comparison Only)	10	80.02	☑	No Rinse 74.06
PCI of America	Hurrisafe 9450	10	61.69	☐	No Rinse 89.85
	Bio T 300 B	50	100.00		No Rinse 97.27

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Bio Chem Systems				☑	

Conclusion: The five products tested will be used to clean the supplied cutting fluid in the next trial.