CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2000
DateRun:	10/09/2000
Experimenters:	Jason Marshall, John Brunelle
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Aluminum, Stainless Steel
PartType:	Coupon
Contaminants:	Cutting/Tapping Fluids, Fluxes, Greases, Lubricating/Lapping Oils, Oil
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate the effectiveness of client selected cleaners.
Experimental Procedure:	All the products were used at full strength in 600 ml beakers. The solutions were heated to 105 F on a hot plate. Preweighed coupons were coated with the listed contaminants and weighed again. Three coupons with one contaminant were submersed into a beaker agitated with a magnetic stir bar. Cleaning lasted for 5 minutes followed by a tap water rinse at 120 F for 30 seconds and finally allowed to dry overnight at room temperature. Final clean weights were measured and cleaning effectiveness was calculated.

SUBSTRATE MATERIAL: The surface materials used are listed in Table 1.
Substrate Code ID#
aluminum AL 202-5086 H-32
stainless st SS 202-17-4 HR-68

CONTAMINANTS: The contaminants tested are listed in Table 2.
Table 2. Contaminants Used
Contaminant Code CAS#
flux, Ersin 5831 RMA FX 67-56-1, 8050-09-7, 67-63-0
lubricant, 423 LU 64742-47-8
oil, Tap Magic cutting OI 112-62-9
grease, ksl-111 GR 64742-57-0, 64742-62-7, 8052-42-4

Results: Two of the products, SW 1 and SW3, removed over 80% of the oil applied to the coupons. One product, SW3, was successful in removing the grease and lubricant. The coupons with the lubricant showed cleaning in excess of 100%. This increased efficiency could be due to a couple of things, coupon damage (etching) or dirty precleaned coupons. The dirty baseline coupons appears to be the cause of the elevated results. Table 4, 5 and 6 lists the results for each cleaner.

Table 4. Ozzy Juice SW 1 Results

Company	Chem Free Corp			
Product	Ozzy Juice SW1			
Classif.	enzymatic microbial			
Subst/Cont	AL-FX	AL-LU	SS-OI	SS-GR
Coupon 1	20.11	15.91	89.5	55.88
Coupon 2	21.14	20.00	83.42	85.71
Coupon 3	23.63	4.76	72.55	63.33
Average	21.63	13.56	81.82	68.31

Table 5. Heavy Grease Formula Results

Company	Chem Free Corp			
Product	Heavy Grease Formula SW2			
Classif.	enzymatic microbial			
Subst/Cont	AL-FX	AL-LU	SS-OI	SS-GR
Coupon 1	22.00	11.11	40.00	56.60
Coupon 2	19.19	0.00	46.09	79.45
Coupon 3	18.32	-16.22	75.17	72.84
Average	19.84	-1.7	53.75	69.63

Table 6. Ozzy Juice SW3 Results

Company	Chem Free Corp
Product	Ozzy Juice SW3
Classif.	enzymatic microbial

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Subst/Cont	AL-FX	AL-LU	SS-OI	SS-GR
Coupon 1	14.69	188.24	93.18	88.24
Coupon 2	13.20	111.11	88.14	94.59
Coupon 3	13.93	141.18	86.83	86.24
Average	13.94	146.84	89.38	89.69

Summary:

Substrates:	Aluminum, Stainless Steel				
Contaminants:	Cutting/Tapping Fluids, Fluxes, Greases, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Chem Free Corporation	SW-1 Ozzy Juice	100	21.63	☐	flux
Chem Free Corporation	SW-1 Ozzy Juice	100	13.56	☐	Lubricant
Chem Free Corporation	SW-1 Ozzy Juice	100	81.82	☑	oil
Chem Free Corporation	SW-1 Ozzy Juice	100	68.31	☐	grease
Chem Free Corporation	SW-2 Heavy Grease Formula	100	19.84	☐	flux
Chem Free Corporation	SW-2 Heavy Grease Formula	100	-1.70	☐	lubricant
Chem Free Corporation	SW-2 Heavy Grease Formula	100	83.75	☐	oil
Chem Free Corporation	SW-2 Heavy Grease Formula	100	69.63	☐	grease
Chem Free Corporation	SW-3 Ozzy Juice (Improved Low Odor)	100	13.94	☐	flux
Chem Free Corporation	SW-3 Ozzy Juice (Improved Low Odor)	100	146.84	☐	lubricant
Chem Free Corporation	SW-3 Ozzy Juice (Improved Low Odor)	100	89.38	☑	oil
Chem Free Corporation	SW-3 Ozzy Juice (Improved Low Odor)	100	89.69	☑	grease

Conclusion:

Ozzy Juice SW3 was the most successful cleaner evaluated in this trial. An additional test will be conducted to determine the compatibility of SW3 with aluminum.