

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003  
 DateRun: 09/15/2003  
 Experimenters: Jason Marshall  
 ClientType: Tool Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Steel  
 PartType: Coupon  
 Contaminants: Oil  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric  
 Purpose: To reevaluate partially successful products under heated conditions

**Experimental Procedure:** Two cleaners (AW Chesterton and Metabolix) were used at full strength. Two other products (Oakite and Gemtek) were aqueous based and diluted to 10% using DI water. All four products were used at 120 F in 250 ml beakers with no agitation. The process utilized no water rinse and only used compressed air to dry/rinse the parts. Twelve preweighed steel coupons were coated with Castrol Quench G oil (64742-55-8, 64742-65-0, 8052-42-4) using a hand held swab. The quench oil was then heated with a Master Appliance Heat gun at 300 F for 10 minutes. After cooling to room temperature, a second weighing was performed to determine the amount of soil that was added. Three coupons were cleaned in each solution for 5 minutes with no agitation. After drying with the air blow off, coupons were weighed a final time to determine the cleaning efficiencies of each product.

**Results:** Two products, E3HB and SC Aircraft & Metal cleaner, had increased efficiencies with the increase in cleaning temperature. The other two, 278 Super Solv and Inproclean 3800, had no change in effectiveness with increased temperature. The table below lists the amount of soil added and the amount of soil left for each coupon. In addition, the efficiencies from cleaning at 68 F are included for comparison to the average cleaning scores located in the summary section.

Cleaner	Initial wt	Final wt	% Removed
278 Super Solv	0.1390	0.0045	96.76
	0.1483	0.0065	95.62
	0.1108	0.0097	91.25
E3HB	0.1007	0.0038	96.23
	0.1060	0.0036	96.60
	0.1457	0.0049	96.64
Inproclean 3800	0.1528	0.0055	96.40
	0.1261	0.0077	93.89
	0.1235	0.0023	98.14
SC Aircraft & Metal	0.1467	0.0065	95.57
	0.1631	0.0051	96.87
	0.1713	0.0034	98.02

Summary:

<b>Substrates:</b>		Steel			
<b>Contaminants:</b>		Oil			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
AW Chesterton	278 Super Solv	100	94.54	<input checked="" type="checkbox"/>	
Metabolix Inc	Metabolix E3HB	100	96.49	<input checked="" type="checkbox"/>	
Oakite Products	Inproclean 3800	10	96.14	<input checked="" type="checkbox"/>	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	96.82	<input checked="" type="checkbox"/>	

**Conclusion:** All four products removed over 95% of the soil. An increase in time or agitation (air sparging or ultrasonics) may improve the efficiencies of these four products. Increasing air blow off flow rate may also help to eliminate the remaining film on coupons after cleaning. The eight products tested so far will all be used to remove the second contaminant, the Rochester Midland Corporation RI 780 Rust Preventative.