

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999  
 DateRun: 01/25/1999  
 Experimenters: Jason Marshall  
 ClientType: Electronics Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Teflon  
 PartType: Part  
 Contaminants: Lubricating/Lapping Oils  
 Cleaning Methods: Mechanical Agitation  
 Analytical Methods: Visual

Purpose: To replace mineral spirits with a semi-aqueous cleaner

Experimental Procedure: Five semi-aqueous cleaners were selected from the lab's database of vendor product information based on compatibility with brass. Full strength solutions were poured into 50 mL beakers. Teflon shavings were immersed into the beakers at room temperature. The shavings were manually agitated by lifting and lowering. After one minute of cleaning the shavings and parts were rinsed for 15 seconds in tap water at 120 F. Samples were set aside to dry at room temperature. Observations were based on how white the Teflon was after cleaning. In addition to the substrate observations, the appearances of the cleaning solutions were recorded.

SUBSTRATE MATERIAL: Teflon parts and shavings  
 CONTAMINANTS: Oil-lubricating oil (CAS # 64742-53-6, 64742-52-5)

Results: All five chemistries performed much better than the aqueous cleaners in the previous tests. Two products had exceptional cleaning of the shavings in only one minute. Table 1 lists the observations and rankings of the five cleaners.

Table 1. Cleaning Observations.

Chemistry	Observations	Ranking	Cleaner Status
Soy Gold 2000	Good cleaning	4	Hazy orange color (orange was its original color)
Vortex	Excellent cleaning	1	Clear Yellow (clear was its original color)
EP-921	Okay cleaning	5	Cloudy Yellow (clear was its original color)
HTF-50	Excellent to good cleaning	2	Cloudy Yellow (clear was its original color)
D-Limonene	Good cleaning	3	Clear Yellow (clear was its original color)

Summary:

Substrates:		Teflon			
Contaminants:		Lubricating/Lapping Oils			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
AG Environmental Products	Soy Gold 2000	100	4.00	<input checked="" type="checkbox"/>	Rank
EcoLink	Vortex	100	1.00	<input checked="" type="checkbox"/>	Rank
Inland Technologies Inc	EP 921	100	5.00	<input type="checkbox"/>	Rank
Tarksol Inc	Tarksol HTF-50	100	2.00	<input checked="" type="checkbox"/>	Rank

# CLEANING LABORATORY EVALUATION SUMMARY

Florida Chemical Company	D-Limonene	100	3.00	<input checked="" type="checkbox"/>	Rank
--------------------------	------------	-----	------	-------------------------------------	------

**Conclusion:**

Two cleaning products, Ecolink Vortex and T-Square HTF-50, showed excellent removal of the oil from the Teflon shavings and parts. Each removed nearly all of the oil from the shavings and parts in under one minute.

Technical information has been included for four of the products (the fifth from Florida Chemical will be similar to EP-921). This information can be obtained by running a query in C:\My Documents\CHEM USED\cleaner used. Select Hazinfoquery. Or it can be found in the hard copy of the notebook located in the locked closet in room 309.