

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008  
 DateRun: 01/30/2008  
 Experimenters: Jason Marshall  
 ClientType: Electronics Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Copper  
 PartType: Coupon  
 Contaminants: Cutting/Tapping Fluids  
 Cleaning Methods: Mechanical Agitation  
 Analytical Methods: Gravimetric  
 Purpose: To evaluate additional products that were more closely comparable to the past solvent used for cleaning.

Experimental Procedure: An additional four products were selected based on similarity to the preferred past solvent according to client supplied information. All four products were used at full strength in 250 ml beakers at room temperature.  
 Twelve preweighed coupons were coated with Hangsterfer Laboratories Hard Cut 5418 cutting fluid using a handheld swab. The contaminated coupons were weighed a second time to determine the amount of soil added. Three coupons were immersed into each cleaning solution and manual raised and lowered in the cleaning solution to provide minimal mechanical agitation. After one minute of cleaning, the coupons were removed and dried for 30 seconds using compressed air at room temperature. Following air drying, the coupons were weighed a final time to determine the amount of soil remaining. Efficiency for each coupon was determined and average cleaning results for each product were calculated.

Results: Two of the four products removed over 80% of the cutting fluid within one minute of mechanical agitation. The table below lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Shopmaster RC	0.1026	0.0224	78.17
	0.1710	0.0230	86.55
	0.1955	0.0261	86.65
DBE 6	0.1027	0.0408	60.27
	0.1479	0.0325	78.03
	0.0633	0.0294	53.55
Soy Clear 1500	0.2080	0.0157	92.45
	0.1252	0.0320	74.44
	0.1324	0.0231	82.55
Methyl Ester 1618	0.1522	0.0371	75.62
	0.1105	0.0330	70.14
	0.1572	0.0332	78.88

Summary:	<b>Substrates:</b>	Copper				
	<b>Contaminants:</b>	Cutting/Tapping Fluids				
	<b>Company Name:</b>	<b>Product Name:</b>	<b>Conc.:</b>	<b>Efficiency:</b>	<b>Effective:</b>	<b>Observations:</b>
	Buckeye International	Shopmaster RC	100	83.79	<input checked="" type="checkbox"/>	
	Invista S.a.r.l	Flexisolv DBE 6 ester	100	63.95	<input type="checkbox"/>	
	AG Environmental Products	Soy Clear 1500	100	83.15	<input checked="" type="checkbox"/>	
	Twin Rivers Technologies	Methyl Ester 1618	100	74.88	<input type="checkbox"/>	

Conclusion: The two effective products, Shopmaster RC and Soy Clear 1500, will be included with the four effective products from the previous trial to determine how well they work on the second supplied soil.