CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1996

DateRun: 06/09/1996

Experimenters: Jay Jankauskas

ClientType: Ceramic Coating Company

ProjectNumber: Project #1

Substrates: Steel, Teflon

PartType: Coupon

Contaminants: Coatings, Clay

Cleaning Methods: Ultrasonics

Analytical Methods: Visual

Purpose: Update on feasibility of using ultrasonics

Experimental Procedure: I just finished up a round of tests on evaluating the effects of using terpenes along with ultrasonics to clean the clay/silicon dioxide off of your support screens. The screens that I prepared for cleaning had two coats of Slurry #2 and one Coat of Slurry #1 baked on. For the baking process, I dipped the screen sample in the slurry, let it air dry for one hour and then baked it at 330 C for 10-15 minutes in a convection oven. I enclosed one dirty screen so you could get an idea of how heavily soiled the screens were.
Six different terpenes were tested at a concentration of 20% each. Cleaning was performed for one hour fifteen minutes at 150 F. The chemistries that I tested were:
Terpene Technologies HTF 10B
Terpene Technologies SRKS 40
Terpene Technologies Earthworks 321
WR Grace Daraclean 294xx
Terpene Technologies HTF 50
Terpene Technologies HTF 60

Results: I enclosed a sample of each of the screens cleaned. You'll notice that one end of each screen is still soiled, that is because the screens were not totally immersed in the ultrasonic bath.

Summary:

Substrates:	Steel, Teflon				
Contaminants:	Coatings, Clay				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Tarksol Inc	Tarksol HTF 10 B	20	0.00	☐	
Tarksol Inc	SRKS 40	20	0.00	☐	
Tarksol Inc	Tarksol HTF 321	20	0.00	☐	
Tarksol Inc	Tarksol HTF 40	20	0.00	☐	
Tarksol Inc	Tarksol HTF 60	20	0.00	☐	
Magnaflux	Daraclean 294 xx	20	0.00	☐	

Conclusion: Although it appears that it would be possible to clean off the support screens using ultrasonics, I feel that it would not be too economical. First of all, to hold a 2"x 2" support screen, a fifty-gallon Ultrasonic tank would be needed (at least $20,000). The terpene bath tends to foul up rather quickly with clay. The best performing terpenes (HTF 50 and HTF 10B) took 100 ml to clean off one 2.5" x 4.5" screen, after which the bath was completely spent (samples of the spent baths are enclosed). To clean a 2' x 2' screen, 1.3 gallons of terpene would be needed at an average cost of $15.00 per gallon. Chemical costs alone would be approximately $20 per screen cleaned unless an ultrafiltration unit was used to recover some of the terpene.