CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1995

DateRun: 10/23/1995

Experimenters: Donald Garlotta, Jay Jankauskas

ClientType: Adhesive Manufacturer

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Adhesive

Cleaning Methods: Manual Wipe

Analytical Methods: Wipe

Purpose: Replace current 4:1 heptane-toluene mixture

Experimental Procedure: The purpose of this experiment is to find a cleaner for Adhesive Manufacturer that will replace their current 4:1 heptane-toluene mixture. Ten different cleaners were selected on the basis of manufacturer's claims that they were effective in removing adhesives. These cleaners were:
- 5% solution of International Products, Inc. Micro
- 10% Calgon Corporation Geoguard 5210
- 20% Chem-Tech International Inc. CT-1 multipurpose cleaner
- 20% Terpene Technologies HTF 50
- 20% MacDermid Inc. ND-17
- 33% Oakite Products, Inc. Citridet
- 10% Pride International Citrisolv Plus
- 33% WR Grace Daraclean 294xx
- 20% Cleaning Systems Inc. Release
- 33% Oakite Products Inproclean 4000T

Durotac Adhesive was applied to the 1040 Cold Rolled steel coupons. Sitting times of the adhesives was between one hour and two hours. Cleaning would be accomplished by first applying some cleaner onto the contaminated coupons and allowing to sit for about ten seconds. A SOS pad was then used to scrub off the adhesive. The maximum time allotted for cleaning was two minutes and thirty seconds, if less time was needed to obtain 100% removal then cleaning time was noted. A coupon was cleaned for each cleaner made up at both room temperature and at 120 F. Each cleaned coupon was compared to a coupon cleaned with 100% toluene (we were unable to obtain heptane). The time required to clean the coupon with toluene was thirty seconds.

Results:

Cleaner	Time (min)	cleanliness	Temp.	Time	cleanliness
10% Calgon Geo-Guard 5210	2.5	8	130	2.30	5
20% ChemTech CT-1	2.5	3	122	2.30	9
20% Terpene Tech. HTF 50	1.5	1	122	1.30	1
20% MacDermid ND-17	2.5	4	132	2.30	4
33% Oakite Citridet	2.5	2	129	2.00	6
10% Pride Citrisolv Plus	2.5	6	132	1.40	7
5% IPC Micro	2.5	10	126	2.30	10
33% WR Grace Daraclean 294xx	2.5	9	116	1.35	2
20% CSI Release	2.5	7	131	2.10	3
33% Oakite 4000T	2.5	5	130	2.30	6

*cleanliness is compared for runs at the same temperature with 1 being the best and 10 the worst.

Summary:

Substrates:	Steel				
Contaminants:	Adhesive				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
International Products Corporation	Micro (no longer available)	5	0.00	☐	

CLEANING LABORATORY EVALUATION SUMMARY

Calgon Corporation	Geo Guard 5210	10	0.00	☐	
Chemkleen International Inc.	CT 1 Multipurpose Cleaner	20	0.00	☐	
Tarksol Inc	Tarksol HTF-50	20	0.00	☐	
MacDermid Industrial Products	ND 17	20	0.00	☐	
Oakite Products	Citradet	33	0.00	☐	
Pride International Inc	Citrisolv Plus	10	0.00	☐	
Magnaflux	Daraclean 294 xx	33	0.00	☐	
Oakite Products	Inproclean 4000 T	33	0.00	☐	

Conclusion: No cleaners were found to achieve a cleaning time even close to that of the pure toluene. Although the increased temperature did aid in the removal of the adhesives, the fastest cleaning time was only 1 minute and 30 seconds. Additional sourcing out of adhesive removers will have to be done. Also, might try using the cleaner solutions at 100% concentrate.