CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1995
DateRun:	11/26/1995
Experimenters:	Jay Jankauskas
ClientType:	Adhesive Manufacturer
ProjectNumber:	Project #1
Substrates:	Stainless Steel
PartType:	Coupon
Contaminants:	Adhesive
Cleaning Methods:	Manual Wipe
Analytical Methods:	Visual
Purpose:	Eleven different cleaners were evaluated

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.
Eleven different cleaners were used, all at full strength. These cleaners were:
- International Products, Inc. Micro
- Calgon Corporation Geo-Guard 5210
- Chem-Tech International Inc. CT-1 multipurpose cleaner
- Terpene Technologies HTF 50
- MacDermid Inc. ND-17
- Oakite Products, Inc. Citridet
- Pride International Citrisolv Plus
- WR Grace Daraclean 294xx
- Cleaning Systems Inc. Release
- Oakite Products Inproclean 4000T
- Brulin Corp. Compliance

Durotac Adhesive was applied to the 316 stainless steel coupons. Sitting times of the adhesive was between. 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 one minute 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.

SUBSTRATE MATERIAL: 316 Stainless Steel
CONTAMINANTS: Duro-Tac toluene-heptane based adhesive
CONTAMINATING PROCESS USED: Adhesives applied on with swab

Results:

Cleaner	Time (min)	Temp. F	cleanliness
Terpene Tech. HTF 50	1:30	110	1
Oakite Products Inproclean 4000T	1:30	110	2
Brulin Corp. Compliance	1:30	130	3
Pride Citrisolv Plus	1:30	130	4
Oakite Products Citridet	1:30	120	5
CSI Release	1:30	120	6
MacDermid ND-17	1:30	130	7
ChemTech CT-1	1:30	130	8
WR Grace Daraclean 294xx	1:30	90	9
Calgon Geo-Guard 5210	1:30	130	10
IPC Micro	1:30	120	11

*cleanliness is compared for runs at the same temperature with 1 being the best and 11 the worst.

Summary:

Substrates:	Stainless Steel

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Contaminants:	Adhesive				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Tarksol Inc	Tarksol HTF-50	100	0.00	☐	
International Products Corporation	Micro (no longer available)	100	0.00	☐	
Calgon Corporation	Geo Guard 5210	100	0.00	☐	
Chemkleen International Inc.	CT 1 Multipurpose Cleaner	100	0.00	☐	
MacDermid Industrial Products	ND 17	100	0.00	☐	
Oakite Products	Citradet	100	0.00	☐	
Oakite Products	Inproclean 4000 T	100	0.00	☐	
Pride International Inc	Citrisolv Plus	100	0.00	☐	
Magnaflux	Daraclean 294 xx	100	0.00	☐	
Cleaning Systems	Release	100	0.00	☐	
Brulin Corporation	Compliance	100	0.00	☐	

Conclusion: The best adhesive remover found to date is the Terpene Technologies HTF 50 used at full strength and heated to a warm temperature. The Oakite Inproclean 4000T and the Brulin Compliance are the only other two cleaners which showed any promise. It doesn't seem likely that an aqueous or semi-aqueous chemistry will be a suitable replacement. Might look into a replacement solvent.