CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1999
DateRun:	02/21/1999
Experimenters:	Jason Marshall
ClientType:	State Transportation Agency
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Part
Contaminants:	Cutting/Tapping Fluids, Greases, Lubricating/Lapping Oils, Dirt, Oil
Cleaning Methods:	Manual Wipe
Analytical Methods:	Photography, Visual
Purpose:	To clean commuter rail train coaches in a safe, effective manner.

Experimental Procedure:

Replace current aqueous solution of organic acid and surface-active agents (Bo Chem Co. Inc, T 110 containing Oxalic acid CAS#: 144-62-7 at 8% and Nonyphenolpolyethoxylate CAS #: 9016-45-9 at 3-5%)

Using the SCL's Effective Test Conditions Database and vendor supplied data, nine cleaning solutions were selected based on information provided by the client. Six alkaline aqueous cleaners were made into five percent solutions in 400 mL beakers using DI water. Three alkaline powders were made into solution according to the manufacturer's instructions. All nine cleaners and the client supplied cleaner were heated to 130 F on hot plates.

The train door was marked off into 10 sections using tap. One cleaner was used for each section. A paper towel, Kimberly-Clark Teri Reinforced Wipers #34790, was dipped into the cleaner solution and then placed onto the corresponding grid. The grid was wiped with the towel for three minutes (towel was replaced halfway through). Grids were observed before and after, visual and by photography, to determine the effectiveness of the cleaners. A ranking system of excellent to poor was used (Excellent > Good > Okay >Fair > Poor).

SUBSTRATE MATERIAL: Brushed Aluminum Train Door
CONTAMINANTS: Dirt, oil & grease

Results:

All products tested did not remove large amounts of the contaminants. Three products cleaned as well as the supplied cleaner. Only two products showed little to no signs of cleaning the contaminants. Four products removed some of the contaminants but not as much as the client supplied cleaner. Table 1 list each cleaner and its ranking.

Table 1. Cleaner Ranking

Cleaner	Rating
Alconox	Poor
Ardrox	Poor
Oakite	Fair
Gemtek	Okay
Hotsy	Okay
EMKAY	Fair
Star	Fair
US Poly	Fair
WR Grace	Okay
Bo Chem	Okay

Summary:

Substrates:	Aluminum
Contaminants:	Cutting/Tapping Fluids, Greases, Lubricating/Lapping Oils, Dirt, Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Alconox Inc	Alcojet	3	0.00	☐	
Ardrox Inc	6333	5	0.00	☐	
Emkay Chemical Company	Safety Wash Clear	5	0.00	☐	
Gemtek Products	SC 1000 Aqueous Cleaner Concentrate	5	0.00	☑	

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Hotsy Cleaning Systems	Tubmate All Purpose	3	0.00	☑	
Oakite Products	Inproclean 2300		0.00	☐	
By Pas and Star Products	Star Cleaning Miracle # 50	5	0.00	☐	
US Polychem Corporation	Polyspray Jet 790 P	5	0.00	☐	
Bo Chem Company	T 110		0.00	☑	

Conclusion: Since the cleaning trial was a preliminary study of the possible replacement chemistries, all of the cleaners that were ranked as Okay and Fair could be tested further using a spray cleaning system.