

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001  
DateRun: 11/14/2001  
Experimenters: Jason Marshall  
ClientType: Metal  
ProjectNumber: Project #1  
Substrates: Steel  
PartType: Part  
Contaminants: Coatings, Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil  
Cleaning Methods: Ultrasonics  
Analytical Methods: Visual  
Purpose: To evaluate ultrasonic cleaning on supplied parts

Experimental Procedure: The five chemistries from the previous trial were diluted to 5% using DI water and heated to 130 F in a Crest 40 kHz ultrasonic tank filled with tap water. Solutions were degassed for 5 minutes prior to cleaning parts. Four different substrates and contaminants were cleaned in each solution for 3 minutes. Parts were rinsed in tap water for 30 seconds at 120 F and dried using a heat gun at 500 F for 1 minute. Each of the four substrates were initial wiped with a white swab to determine how dirty the pieces were prior to cleaning. One swab was wiped across each surface of the metal for a total of four wipes. The cleaned parts were also subjected to the same white swab wipe and compared to the initial uncleaned piece as well as the four other cleaning solutions. Observations were recorded and the cleaning solutions were ranked for effectiveness.

Results: The Oakite Inproclean 3800 was by far the most effective and consistent solutions used in cleaning the different rust preventatives from the steel pieces. The following table lists the observations made and the rankings for the different contaminant removal.

Table 1. Observations

Cleaner	Contaminant	Observation	Rank
1	A	Very clean, some rust spots	1
2	A	Very clean, some rust spots	1
3	A	Very clean, some rust spots	1
4	A	Very clean, some rust spots	1
5	A	Dirty, similar to uncleaned part	5
1	B	Rust, wipe off light brown	4
2	B	Little wipe off, light brown	2
3	B	Little wipe off, light brown	1
4	B	Little wipe off, light brown (<2)	3
5	B	Rust, wipe off light brown	4
1	C	Some oil, grey	3
2	C	little grey	1
3	C	lots of grey	5
4	C	little grey	2
5	C	lots of grey	4
1	D	little to no grey	3
2	D	clean	1
3	D	clean	1
4	D	little grey	4
5	D	Some oil, grey	5

The overall rank of the products was based on the average of the individual rankings as shown in Table 2.

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Table 2. Overall Ranking Calculations.

Cleaner	A	B	C	D	Ave Rank	Overall Ranking
1	1	4	3	3	2.75	4
2	1	2	1	1	1.25	1
3	1	1	5	1	2.00	2
4	1	3	2	4	2.50	3
5	5	4	4	5	4.50	5

Summary:

<b>Substrates:</b>		Steel			
<b>Contaminants:</b>		Coatings, Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Heatbath Corporation	Multi-Kleen 1568	5	4.00	<input type="checkbox"/>	Rank
Oakite Products	Inproclean 3800	5	1.00	<input checked="" type="checkbox"/>	Rank
Today & Beyond	Beyond 2001	5	2.00	<input checked="" type="checkbox"/>	Rank
DA Stuart Company	Dasco Kleen 3250	5	3.00	<input checked="" type="checkbox"/>	Rank
Houghton International	Cerfa Kleen 5387	5	5.00	<input type="checkbox"/>	Rank

Conclusion:

Oakite Inproclean 3800, Today & Beyond Beyond 2001 and one of the clients cleaners D.A. Stuart Dasco Kleen 3250 were the three most effective products evaluated.