

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007
 DateRun: 06/12/2007
 Experimenters: Jason Marshall
 ClientType: Metal Working
 ProjectNumber: Project #1
 Substrates: Stainless Steel
 PartType: Part
 Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil
 Cleaning Methods: Ultrasonics
 Analytical Methods: Visual

Purpose: To evaluate selected products on the supplied parts using ultrasonic cleaning.

Experimental Procedure: The three successful products from the oil removal trials were evaluated on the supplied parts using ultrasonic energy. The products were diluted to 5% in 600 ml beakers using DI water and heated to 130 F in a Crest 40kHz ultrasonic tank filled with water. Products were degassed for 5 minutes.

Five different part types, each with a different oil were cleaned in each solution for five minutes using 40 kHz ultrasonic agitation. The parts were rinsed for 15 seconds in a tap water bath at 120 F and dried using compressed dry air at room temperature for 30 seconds. Once dry, parts were inspected visually for cleanliness.

The five oils were Tuff Draw 1730 R (knife), Vanishing oil 300 (spring), US 1517 (base plate), Blanking 250 (cup) and a combination of 6040 & 1730 R (converter).

Results: All three products appeared to have removed the various oils from the different parts during the ultrasonic cleaning. The knives were the least clean using visual analysis. The table lists the overall cleaning ranking of the three products.

| Product | Ranking |
|---------------------|---------|
| Aquavantage 1400 GD | 1 |
| Inproclean 3800 | 3 |
| Sea Wash Blue | 2 |

Summary:

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|-------------------------|---|--------|-------------|-------------------------------------|---------------|
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| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Brulin Corporation | Aquavantage 1400 | 5 | | <input checked="" type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 5 | | <input checked="" type="checkbox"/> | |
| Warren Chemical Company | Sea Wash Blue | 5 | | <input checked="" type="checkbox"/> | |

Conclusion: All three products worked well under laboratory conditions. Parts have been sent back to client for final inspection. Piloting on-site should be conducted to establish the optimum cleaning conditions.