

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 05/01/2008

Experimenters: Jason Marshall, Shweta Bansal

ClientType: Machining Company

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Coatings

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate selected products on third supplied metal working fluid using simulated cleaning process

Experimental Procedure: Prew weighed coupons were coated with the supplied rust preventative (WA Wood FPS Rustnot) coating using a handheld swab and weighed a second time to determine the amount of soil added.

The same six cleaners were put in a bowl and three coupons were dunked into the solution at a constant rate for 30 seconds of cleaning. The coupons were then put on a tray and when done and allowed to air dry. There was no rinse. The process was done to as closely replicate the process used on site as possible. Once dry, final weights were recorded, and efficiency calculated for each coupon cleaned.

Results: Two products were moderately successful, removing just under 80% of the cutting fluid. Three products removed over 60%. The table below lists the amount of soil added, the amount remaining and the efficiency for the coupons cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------|------------|----------|-----------|
| Solsafe 245 | 0.2318 | 0.0979 | 57.77 |
| | 0.2433 | 0.0853 | 64.94 |
| | 0.2369 | 0.0756 | 68.09 |
| Metalnox M6310 | 0.2875 | 0.0533 | 81.46 |
| | 0.2139 | 0.0652 | 69.52 |
| | 0.4080 | 0.0558 | 86.32 |
| Ionox HC 2 | 0.1237 | 0.0334 | 73.00 |
| | 0.3589 | 0.1018 | 71.64 |
| | 0.3187 | 0.0950 | 70.19 |
| Soy Clear 1500 | 0.2197 | 0.1693 | 22.94 |
| | 0.3513 | 0.0955 | 72.82 |
| | 0.3048 | 0.1086 | 64.37 |
| Biodiesel | 0.4299 | 0.1093 | 74.58 |
| | 0.3216 | 0.1754 | 45.46 |
| | 0.4310 | 0.1572 | 63.53 |
| SC Supersolve | 0.3908 | 0.2024 | 48.21 |
| | 0.1098 | 0.0174 | 84.15 |
| | 0.4074 | 0.1512 | 62.89 |

Summary:

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|---------------------------|--------------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum | | | | |
| Contaminants: | Coatings | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Bio Chem Systems | Solsafe 245 | 100 | 63.60 | <input checked="" type="checkbox"/> | |
| Kyzen Corporation | Metalnox M6310 (For Comparison Only) | 100 | 79.10 | <input checked="" type="checkbox"/> | |
| Kyzen Corporation | Ionox HC 2 | 100 | 71.61 | <input checked="" type="checkbox"/> | |
| AG Environmental Products | Soy Clear 1500 | 100 | 53.88 | <input type="checkbox"/> | |
| Newport Biodiesel | Biodiesel | 100 | 61.19 | <input checked="" type="checkbox"/> | |
| Gemtek Products | SC Supersolve Safety Solvent | 100 | 65.08 | <input checked="" type="checkbox"/> | |

Conclusion:

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Longer cleaning times should improve the efficiencies for many of the selected products. All six will be evaluated on the third supplied metal working fluid.

Solsafe 245 had the highest combined cleaning efficiency followed by Metalnox M6310 when looking at all three fluids.