

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017

DateRun: 07/12/2017

Experimenters: Alicia McCarthy, Hayley Byra

ClientType: General

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Lubricating/Lapping Oils

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the effectiveness of five drop-in solvents at removing lubricant from aluminum alloys.

Experimental Procedure: Prewieghed aluminum coupons were tested for each cleaner. Coupons were soiled with Rustlick EDM30 lubricant (CAS:64742-47-8; 8042-47-5) using a swab to cover the bottom third of the substrate and dirty weights were recorded. Coupons were immersed, three at a time, in a beaker with 200ml of the chosen cleaner at room temperature (68 F) for five minutes. Visual observations were taken during this time, and final weights were recorded after cleaning. This process was repeated for each cleaner.

| Cleaner | Initial wt. | Final wt. | % Removed | Average % Removed |
|----------------|-------------|-----------|-----------|-------------------|
| Fluosolv CX | | | | |
| | 0.0511 | 0.0154 | 69.86 | 70.86 |
| | 0.0446 | 0.0139 | 68.83 | |
| | 0.0559 | 0.0146 | 73.88 | |
| Fluosolv NC | | | | |
| | 0.0665 | -0.0001 | 100.15 | 95.54 |
| | 0.0711 | 0.0113 | 84.11 | |
| | 0.0637 | -0.0015 | 102.35 | |
| Solstice PF | | | | |
| | 0.0369 | -0.0007 | 101.9 | 101.39 |
| | 0.0531 | -0.001 | 101.88 | |
| | 0.0515 | -0.0002 | 100.39 | |
| Solstice PF-2A | | | | |
| | 0.0706 | -0.0001 | 100.14 | 100.28 |
| | 0.0601 | 0 | 100 | |
| | 0.058 | -0.0004 | 100.69 | |
| Vertrel Sion | | | | |
| | 0.0479 | -0.001 | 102.09 | 101.31 |
| | 0.0541 | -0.0006 | 101.11 | |
| | 0.0809 | -0.0006 | 100.74 | |

Residue was observed on coupons cleaned with Fluosolv CX after five minutes. No substrate damage was observed on coupons with above 100% removal. High percentage removal could potentially be due to contaminants on coupons prior to testing.

Summary:

| | | | | | |
|--------------------------------|--------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum | | | | |
| Contaminants: | Lubricating/Lapping Oils | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| NuGeneration Technologies, LLC | FluoSolv CX | 100 | 70.86 | <input type="checkbox"/> | |
| NuGeneration Technologies, LLC | FluoSolv NC 786 | 100 | 95.54 | <input checked="" type="checkbox"/> | |
| Honeywell | Solstice PF with N2 | 100 | 101.39 | <input checked="" type="checkbox"/> | |
| Honeywell | Solstice PF-2A with N2 | 100 | 100.28 | <input checked="" type="checkbox"/> | |

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| DuPont | Vertrel Sion | 100 | 101.31 | <input checked="" type="checkbox"/> | |
|--------|--------------|-----|--------|-------------------------------------|--|

Conclusion:

Three of the five drop-in solvents were effective at removing Rustlick EDM30 from aluminum. Next step will be to repeat the procedure on Lube Tube Wax.