

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016

DateRun: 03/20/2016

Experimenters: Carla De La Cruz

ClientType:

ProjectNumber: Project #1

Substrates: Brass

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate the efficiency that various cleaning methods can remove Momentive Grease from Brass coupons\substrate.

Experimental Procedure: Brass coupons were selected and arranged into rows of 3 coupons, a row per cleaner. Initial weights were taken, and coupons were soiled and reweighed. The lower third of the coupons were soiled. Beakers with drop in solvent replacement solutions were set up on stirring plates equipped with a stir bar. The coupons were immersed for 5 minutes. Observations were taken during the cleaning process. The coupons were dried on a rack for 15 minutes. Final weights were recorded.

Results:

| Cleaner | Initial wt of cont. | Final wt of cont. | %Cont Removed |
|-----------------|---------------------|-------------------|---------------|
| FluoSolv CX | 0.2139 | 0.0052 | 97.57 |
| | 0.0814 | 0.0004 | 99.51 |
| | 0.1651 | 0.0163 | 90.13 |
| FluoSolv NC | 0.1846 | 0.0027 | 98.54 |
| | 0.1267 | 0.0055 | 95.66 |
| | 0.1342 | 0.0054 | 95.98 |
| Honeywell PF | 0.1894 | 0.0004 | 99.79 |
| | 0.1947 | 0.0008 | 99.59 |
| | 0.1950 | 0.0025 | 98.72 |
| Honeywell PF 2A | 0.1246 | 0.0019 | 98.48 |
| | 0.1420 | 0.0002 | 99.86 |
| | 0.1483 | 0.0009 | 99.39 |
| Vertrel Sion | 0.1245 | 0.0193 | 84.5 |
| | 0.1907 | 0.0668 | 64.97 |
| | 0.1074 | 0.0187 | 82.59 |
| Fluosolv CX-500 | 0.1956 | 0.1840 | 5.93 |
| | 0.1601 | 0.1502 | 6.18 |
| | 0.1509 | 0.1407 | 6.76 |
| Fluosolv FR-110 | 0.1616 | 0.1554 | 3.84 |
| | 0.2280 | 0.2184 | 4.21 |
| | 0.1711 | 0.1631 | 4.68 |

Summary:

| Substrates: | Brass | | | | | |
|--------------------------------|------------------------|--------|-------------|-------------------------------------|---------------|--|
| Contaminants: | Greases | | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| NuGeneration Technologies, LLC | FluoSolv CX | 100 | 95.74 | <input checked="" type="checkbox"/> | | |
| NuGeneration Technologies, LLC | FluoSolv NC 786 | 100 | 96.73 | <input checked="" type="checkbox"/> | | |
| Honeywell | Solstice PF with N2 | 100 | 99.37 | <input checked="" type="checkbox"/> | | |
| Honeywell | Solstice PF-2A with N2 | 100 | 99.24 | <input checked="" type="checkbox"/> | | |
| DuPont | Vertrel Sion | 100 | 77.35 | <input type="checkbox"/> | | |

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|--------------------------------|-----------------|-----|------|--------------------------|--|
| NuGeneration Technologies, LLC | FluoSolv CX | 100 | 6.29 | <input type="checkbox"/> | |
| NuGeneration Technologies, LLC | Fluosolv FR-100 | 100 | 4.24 | <input type="checkbox"/> | |

Conclusion: Based on the lab results, Fluosolv CX, Fluosolv NC, Solstice PF, and Solstice PF-2A were effective in removing the Momentive grease.