

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2022
 DateRun: 02/24/2022
 Experimenters: Nicole Kebler
 ClientType: General
 ProjectNumber: Project #2
 Substrates: Alloys
 PartType: Part
 Contaminants: Oil
 Cleaning Methods: Ultrasonics
 Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the removal of Milform FB 941-A oil from Hastelloy substrate.

Experimental Procedure: Three parts per cleaner were weighed for initial weights. They were then dipped in the Milform FB 941-A oil and all excess oil was allowed to drip off. They were then weighed for dirty weights. The cleaners were heated to their vendor recommended temperatures and were placed in the heated ultrasonics tank. Three coupons per cleaner were immersed and the ultrasonics tank was run for 15 minutes at 40 KhZ. They were then placed on trays and left to dry overnight. After drying, they were weighed for clean weights.

Results: All cleaners were effective for the removal of oil from Hastelloy parts. All had above a 99% average removal effectiveness. Some of the coupons were slick to the touch.

| Cleaner | Conc | Temp | Initial wt. of cont. | Final wt. of cont. | Average | Combined Average |
|----------------|------|-------|----------------------|--------------------|---------|------------------|
| Shopmaster LPH | 20% | 140 F | 0.5767 | 0.0021 | 99.64 | 99.29 |
| | | | 0.5178 | 0.0036 | 99.30 | |
| | | | 0.6477 | 0.0069 | 98.93 | |
| Water Works | 33% | 105 F | 0.4817 | 0.0046 | 99.05 | 99.43 |
| | | | 0.4945 | 0.0026 | 99.47 | |
| | | | 0.5374 | 0.0013 | 99.76 | |
| Mirachem 500 | 33% | 140 F | 0.9151 | 0.0141 | 98.46 | 99.08 |
| | | | 0.9781 | 0.0040 | 99.59 | |
| | | | 0.5544 | 0.0045 | 99.19 | |
| S.C. Aircraft | 25% | 140 F | 0.9842 | 0.0082 | 99.17 | 98.56 |
| | | | 0.3166 | 0.0082 | 97.41 | |
| | | | 0.6346 | 0.0057 | 99.10 | |

Summary:

| Substrates: | | Alloys | | | | |
|-----------------------|---|--------|-------------|-------------------------------------|---|--|
| Contaminants: | | Oil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| Buckeye International | Shopmaster | 20% | 99.00 | <input checked="" type="checkbox"/> | Shopmaster LPH was effective for the removal of oil from Hastelloy. | |
| Keteca USA | Water Works Heavy Duty Degreaser | 33% | 99.00 | <input checked="" type="checkbox"/> | Water Works was effective for the removal of oil from Hastelloy. | |
| Mirachem Corporation | Mirachem 500 | 33% | 99.00 | <input checked="" type="checkbox"/> | Mirachem 500 was effective for the removal of oil from Hastelloy. | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 25% | 99.00 | <input checked="" type="checkbox"/> | SC Aircraft was effective for the removal of oil from Hastelloy. | |

Conclusion: All cleaners were effective for the removal of oil. Since some were still slick to the touch, additional testing including changing temperature and concentration would be next steps to achieve optimal removal of oil.