# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 03/21/2021

Experimenters: Zoe Lawson, Justin Kiander

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Part

Contaminants: Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: The purpose of this experiment was to determine the effectiveness of cleaners on fresh parts provided by the company.

Experimental Procedure: Cleaners were prepared to the following concentrations: Metalnox 6386 100%, Dimethyl Glutarate 100%, SC Aircraft & Metal Cleaner 20%. Dimethyl Glutarate and SC Aircraft & Metal were heated to 120°F while Metalnox was kept at room temperature. One stainless steel part provided by the company was obtained for each of the cleaners being tested. Parts were pre-soiled with grind oil by the company. Photos and a white glove test were utilized to show the presence of the soil on the substrates before cleaning. Once solutions reached the proper temperature, parts were submerged into their respective cleaners. Unheated immersion in Metalnox 6386 was conducted for 15 minutes. After 15 minutes had passed, the part was removed from solution and dried with a heat gun. Heated immersion with a stir bar added for agitation was conducted for 30 minutes for both Dimethyl Glutarate and SC Aircraft & Metal Cleaner. After 30 minutes had passed, the part cleaned with SC Aircraft was rinsed in a deionized water bath also at 120°F for 30 seconds. Both parts were then dried with a heat gun. Following the drying step, more photos and an additional white glove test were utilized to show the removal of soil after the cleaning process. Effectiveness of the cleaners was determined.

Results:

| Cleaner | Observations |
|---|---|
| Metalnox 6386 | Can see a clear distinction between cleaned and uncleaned area. |
| Dimethyl Glutarate | Solution has developed a slight yellow tint indicating the removal of the oil. Clear distinction between cleaned and uncleaned area. |
| SC Aircraft & Metal | Oil visibly pooling at the surface of solution indicating removal. |

All parts dried very quickly using the heat gun (approximately 2 minutes).

All cleaners were visibly effective at removing the oil from stainless steel parts. Photos will be provided that clearly show the removal of the oil following the cleaning process. Parts did not sustain any visible damage or changes from the cleaners. Next steps would be to discuss the results with the company.

Summary:

| **Substrates:** | Stainless Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Oil | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Kyzen Corporation | Metalnox M6386 | 100% | 100.00 | ☑ | |
| Fisher Scientific | Dimethyl glutarate (CAS:1119-40-0) | 100% | 100.00 | ☑ | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 20% | 100.00 | ☑ | |

Conclusion: Upon completion of testing, it was verified that all cleaners were effective at removing the oil from stainless steel parts. Next steps would be to discuss the results with the company.