

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 08/17/1999

Experimenters: Jason Marshall, Nicole Vayo

ClientType: Department of Public Works

ProjectNumber: Project #1

Substrates: Aluminum, Stainless Steel

PartType: Coupon

Contaminants: Buffing/Polishing Compounds, Coatings, Cutting/Tapping Fluids, Greases, Inks, Lubricating/Lapping Oils, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate client requested cleaner based on Vendor supplied information.

Experimental Procedure: The cleaner used was diluted to 5% using DI water in 600 ml beakers. Cleaning of the coupons was performed using stir-bar agitation at room temperature for five minutes. Coupons were rinsed using tap water at 120 F for two minutes and dried at room temperature for two hours. Gravimetric analysis was used to determine effectiveness. The small piece of buffing compound was immersed into a vial containing the 5% solution at room temperature. Cleaning lasted for 30 minutes with no rinse or dry. Visual analysis was performed to determine if the cleaner was effective in dissolving the contaminant.

SUBSTRATE MATERIAL: Liquid, Aluminum Coupons (202-2024 T-3), Nickel/Copper Coupons (202-715), Stainless Steel Coupons (202-316B-80)

CONTAMINANTS: Table 1 lists the contaminants and their CAS#s

Table 1. Contaminants Used

| Contaminant | CAS # | |
|-------------|------------|------------|
| coating | 64742-47-8 | 64742-52-5 |
| grease | 64742-47-8 | |
| lubricant | 64742-47-8 | 9003-29-6 |
| ink | 67-63-0 | 9004-70-0 |
| | 108-88-3 | 109-60-4 |
| | 64-17-5 | 141-78-6 |
| oil | 64741-89-5 | |

CONTAMINATING PROCESS USED: The buffing compound was immersed in the cleaning solutions. All others were applied to coupons using hand held swabs.

Results: The New Pig Degreaser was successful in removing the grease, lubricant and the oil from different substrates. It had difficulty in dissolving the buffing compound and had low efficiency in the cleaning the coating and ink. Table 2 lists the substrate, contaminant & CAS#s and the efficiencies associated with each.

Table 2. Cleaning Results

| Hoofmark All Purpose Cleaner | | | | |
|---------------------------------------|----------------|-------------|------------|------------|
| Substrate | Substrate ID # | Contaminant | CAS # | Efficiency |
| Aluminum | 202-2024 T-3 | grease | 64742-47-8 | 100 |
| Aluminum | 202-2024 T-3 | lubricant | 64742-47-8 | 75 |
| | | | 64742-52-5 | |
| Nickel/ Copper | 202-715 | ink | 64-63-0 | 2 |
| | | | 108-88-3 | |
| | | | 9004-70-0 | |
| | | | 109-60-4 | |
| | | | 64-17-5 | |
| | | | 141-78-6 | |

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|-------------------------------|----------------|-------------|------------|------------|
| Stainless Steel | 202-316B-80 | oil | 64741-89-5 | 93 |
| Hoofmark Industrial Degreaser | | | | |
| Substrate | Substrate ID # | Contaminant | CAS # | Efficiency |
| Aluminum | 202-2024 T-3 | grease | 64742-47-8 | 91 |
| Aluminum | 202-2024 T-3 | lubricant | 64742-47-8 | 68 |
| | | | 9003-29-6 | |
| Nickel/Copper | 202-715 | ink | 67-63-0 | 1 |
| | | | 9004-70-0 | |
| | | | 108-88-3 | |
| | | | 109-60-4 | |
| | | | 64-17-5 | |
| | | | 141-78-6 | |
| Stainless Steel | 202-316B-80 | oil | 64741-89-5 | 61 |

Summary:

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|----------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum, Stainless Steel | | | | |
| Contaminants: | Buffing/Polishing Compounds, Coatings, Cutting/Tapping Fluids, Greases, Inks, Lubricating/Lapping Oils, Oil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| New Pig Corporation | New Pig Degreaser | 5 | | <input type="checkbox"/> | buffing |
| New Pig Corporation | New Pig Degreaser | 5 | 14.00 | <input type="checkbox"/> | coating |
| New Pig Corporation | New Pig Degreaser | 5 | 98.00 | <input checked="" type="checkbox"/> | grease |
| New Pig Corporation | New Pig Degreaser | 5 | 86.00 | <input checked="" type="checkbox"/> | lubricant |
| New Pig Corporation | New Pig Degreaser | 5 | 1.00 | <input type="checkbox"/> | ink |
| New Pig Corporation | New Pig Degreaser | 5 | 100.00 | <input checked="" type="checkbox"/> | oil |

Conclusion:

New Pig Degreaser was found to be effective in removing some of the contaminants tested. Grease, lubricants and oils were easily removed using a 5% solution for five minutes at room temperature.