

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2025

DateRun: 04/15/2025

Experimenters: Amelia Wagner

ClientType: Lab

ProjectNumber: Project #13

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Food

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To test the efficacy of safer alternatives to caustics and acidic descalers in removing encrusted yeast and hops from stainless steel coupons.

Experimental Procedure: Stainless steel coupons were chosen and had their initial weights recorded before beginning the 'brewing' process. To begin the 'brewing process' a slurry of 1.5 lbs of dry malt extract and warm water was made and added to 2 gallons of boiling water in the brewing pot. An entire packet of hops was then added to the brewing pot and continued to boil for ~1 hour until wort was created. The wort was allowed to cool to room temperature before transferring it into the plastic fermentation bucket. 6-7 grams of dry yeast was rehydrated with a small amount of warm water, and was left to rest for 5 minutes. The dry yeast mixture was then added into the fermentation bucket (without stirring). The coupons were hung in the fermentation bucket with fishing line so that the bottom of each coupon sat just above the wort level. The fermentation bucket was covered and left to ferment for 72 hours, checking for yeast activity every day. Once the coupons were removed, they were baked in the oven at 250F to fully solidify the yeast and hops soil to the surface. At this point, the dirty weights of the coupons were then recorded.

To clean, the coupons were subjected to 10 minutes of immersion in their respective cleaners with a stir bar set to 300rpm. After cleaning, each coupon was rinsed with tap water for 10 seconds. After allowing the coupons to air dry, the clean weights were recorded.

| Cleaner | Initial wt of cont. | Final wt of cont. | %Cont Removed | % AVG |
|---|---------------------|-------------------|---------------|-------|
| Eco Safeway High pH cleaner 50% (ambient) | 0.0259 | 0.0005 | 98.07 | 97.73 |
| | 0.0289 | 0.0005 | 98.27 | |
| | 0.0317 | 0.0010 | 96.85 | |
| Eco Safeway Descaler60 50% (ambient) | 0.0223 | 0.0004 | 98.21 | 98.71 |
| | 0.0203 | 0.0003 | 98.52 | |
| | 0.0171 | 0.0001 | 99.42 | |
| Virdivis FB2100 20% (ambient) | 0.0273 | 0.0005 | 98.17 | 98.14 |
| | 0.0375 | 0.0007 | 98.13 | |
| | 0.0211 | 0.0004 | 98.10 | |
| Virdivis FB2100 20% (120F) | 0.0265 | 0.0002 | 99.25 | 96.96 |
| | 0.0172 | 0.0007 | 95.93 | |
| | 0.0163 | 0.0007 | 95.71 | |

The coupons cleaned with both Eco Safeway products still had a large amount of visible soil when removed from immersion however, most of this soil was removed in the subsequent 10 second rinsing step. It is common industry practice for a rinse step to be included in the cleaning process.

| | | | | | | |
|-------------|--|-----------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Summary: | Substrates: | Stainless Steel | | | | |
| | Contaminants: | Food | | | | |
| | Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| | Eco Safeway | Eco Safeway High pH Cleaner | 50% | 97.73 | <input checked="" type="checkbox"/> | |
| | Eco Safeway | Eco Safeway Descaler60 | 50% | 98.71 | <input checked="" type="checkbox"/> | |
| | Innovative Chemical Technologies, Inc. | Virdivis FB1000 (ICT 1648L) | 20% | 98.14 | <input checked="" type="checkbox"/> | |
| Conclusion: | Innovative Chemical Technologies, Inc. | Virdivis FB1000 (ICT 1648L) | 20% | 96.96 | <input checked="" type="checkbox"/> | Temp: 120F |

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All cleaners tested were highly effective in removing the encrusted yeast and hops from the stainless steel.

The addition of heat did not seem to affect the efficacy of the Virdivis FB2100