

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2009  
 DateRun: 02/09/2009  
 Experimenters: Johanna Oviedo  
 ClientType: Lab  
 ProjectNumber: Project #1  
 Substrates: Stainless Steel  
 PartType: Coupon  
 Contaminants: Inks  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Visual

Purpose: To test nontoxic industrial cleaning solutions for oil removal

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Products were selected based on the compatibility of substrate and removal of foreign substance. Used 5% concentration and heated the samples at 135F. The steel coupons were immersed in a product for 5 minutes, rinsed for 30 seconds in tap water at 120F and dried in 30 seconds using compressed air is room temperature. Coupons were coated with used oil. Using a handheld swab and allowed to dry for 144 minutes at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. After cleaning process, the final weights were recorded, efficiencies were calculated and recorded.

| Results: | Kyzen Chemical, Industrial Floor | Initial Wt | Final wt | % Removal |
|----------|----------------------------------|------------|----------|-----------|
|          |                                  | 0.0291     | 0.0026   | 91.07     |
|          |                                  | 0.0098     | 0.0045   | 54.08     |
|          |                                  | 0.0166     | 0.0015   | 90.96     |
|          | Vertec Biosolvent                |            |          |           |
|          |                                  | 0.0432     | 0.0239   | 44.68     |
|          |                                  | 0.0357     | 0.0138   | 61.34     |
|          |                                  | 0.0200     | 0.0045   | 77.50     |
|          | Seventh Generation               |            |          |           |
|          |                                  | 0.0234     | 0.0145   | 38.03     |
|          |                                  | 0.5597     | 0.0569   | 89.83     |
|          |                                  | 0.0185     | 0.0061   | 67.03     |
|          | Sky Product Cleaner              |            |          |           |
|          |                                  | 0.0127     | 0.0064   | 49.61     |
|          |                                  | 0.0378     | 0.0197   | 47.88     |
|          |                                  | 0.0139     | 0.0092   | 33.81     |

|                          |                      |                                       |               |                          |                          |                      |
|--------------------------|----------------------|---------------------------------------|---------------|--------------------------|--------------------------|----------------------|
| Summary:                 | <b>Substrates:</b>   | Stainless Steel                       |               |                          |                          |                      |
|                          | <b>Contaminants:</b> | Inks                                  |               |                          |                          |                      |
|                          | <b>Company Name:</b> | <b>Product Name:</b>                  | <b>Conc.:</b> | <b>Efficiency:</b>       | <b>Effective:</b>        | <b>Observations:</b> |
|                          | Kyzen Corporation    | Industrial Floor Cleaner 11           | 10            | 78.70                    | <input type="checkbox"/> |                      |
|                          | Vertec BioSolvents   | VertecBio Gold Unscented Part Cleaner | 10            | 61.17                    | <input type="checkbox"/> |                      |
|                          | Seventh Generation   | Free & Clear All Purpose              | 10            | 64.97                    | <input type="checkbox"/> |                      |
| Sky Products Company Inc | Cleaner #10          | 10                                    | 43.77         | <input type="checkbox"/> |                          |                      |

Conclusion: No product removed over 85% of the graffiti from stainless steel using immersion cleaning.