

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002
 DateRun: 10/02/2002
 Experimenters: Jason Marshall, Heidi Wilcox
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Inks
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric
 Purpose: To evaluate client supplied and requested cleaners for ink removal

Experimental Procedure: Nine preweighed coupons were coated with a Sheetfed Offset Ink Super Tech Dense Black AD-2340 lithographic ink and nine other preweighed coupons were coated with a newspaper ink using hand held swabs. All eighteen coupons were allowed to sit overnight to dry. Coupons were then reweighed using Denver Instruments A250 balance. Three coupons were cleaned using Gardner Instruments Straight Line Washability Unit for a maximum of 120 cycles (3.33 minutes). The unit was used in conjunction with a paper towel soaked in the cleaning solution. After 90 cycles, the paper towel was removed and replaced with a fresh soaked towel. At the end of the cleaning cycle, coupons were wiped dry using a dry paper towel. Final weights were recorded and efficiencies were calculated.

Results: All three cleaners were successful in removing both ink types. The lithographic ink needed longer cleaning times than the newspaper ink did. All cleaners removed the lithographic ink in 120 cycles, a little over 3 minutes. The newspaper ink was removed within 60 cycles, just over a minute and a half. The table below lists the efficiencies for each coupons cleaned and also lists the cycles required for cleaning.

Table 1. Cleaning Efficiencies

| | Cleaner | Coupon 1 | Coupon 2 | Coupon 3 | Average |
|--------------|----------|----------|----------|----------|---------|
| Lithographic | Ink Zap | 99.73 | 99.70 | 99.75 | 99.73 |
| | USA Wash | 99.86 | 99.84 | 99.81 | 99.84 |
| | PES 320 | 99.76 | 99.80 | 99.83 | 99.80 |
| Newspaper | Ink Zap | 99.34 | 99.25 | 99.07 | 99.22 |
| | USA Wash | 99.66 | 99.51 | 99.31 | 99.49 |
| | PES 320 | 99.44 | 99.49 | 99.37 | 99.43 |

Table 2 Cleaning Cycles

| | Ink Zap | USA Wash | PES 320 | Ink Zap | USA Wash | PES 320 |
|---------|---------|----------|---------|---------|----------|---------|
| Cycles | 120 | 100 | 120 | 10 | 24 | 60 |
| Stop at | 180 | 100 | 120 | 40 | 60 | 60 |

Summary:

| Substrates: | | Aluminum | | | | |
|-------------------------|--|---------------|--------|-------------|-------------------------------------|------------------|
| Contaminants: | | Inks | | | | |
| Company Name: | | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Vertec BioSolvents | | Ink Zapper | 100 | 99.73 | <input checked="" type="checkbox"/> | Lithographic Ink |
| Nensco | | USA Wash | 100 | 99.84 | <input checked="" type="checkbox"/> | Lithographic Ink |
| Prisco Printers Service | | PES 320 | 100 | 99.80 | <input checked="" type="checkbox"/> | Lithographic Ink |
| Vertec BioSolvents | | Ink Zapper | 100 | 99.22 | <input checked="" type="checkbox"/> | Newspaper Ink |
| Nensco | | USA Wash | 100 | 99.49 | <input checked="" type="checkbox"/> | Newspaper Ink |
| Prisco Printers Service | | PES 320 | 100 | 99.43 | <input checked="" type="checkbox"/> | Newspaper Ink |

Conclusion:

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All three products were capable of removing the inks using a manual wiping technique.