

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007
 DateRun: 12/10/2007
 Experimenters: Heidi Wilcox
 ClientType: Wire & Cable Mfr
 ProjectNumber: Project #1
 Substrates: Steel
 PartType: Part
 Contaminants: Paints, Resins/Rosins
 Cleaning Methods: Ultrasonics
 Analytical Methods: Tactile, Visual

Purpose: To screen potential cleaning products for removing paint/resin from steel parts

Experimental Procedure: The two products from the previous trial are being further testing on client supplied parts using heated ultrasonics. Circular steel parts approximately 6 inches in diameter with resin on them were immersed in the two solutions of 100% concentration at 120 F and cleaned with 40 kHz ultrasonics using Branson 1510 & 2510 units. The parts were allowed to clean with the ultrasonics at 60 minute intervals to determine what effect the cleaning products would have on the resin. Observations were made at 60, 120, 180 and 240 minute intervals. Any signs of interaction between paint/resin and cleaner were recorded.

Results: Parts were cleaners using heated ultrasonics to determine if the added mechanical energy would significantly decrease. The overall cleaning time. Overall the process was the same, but the cleaning time seemed to be cut in half using ultrasonics and heat compared to room temperature immersion. Again, bath life due to the dissolving resin will be the issue.

| Product | Initial Appearance and observations |
|---------------------------|---|
| EnviroCare Floor Stripper | Clear |
| 60 min | Solution was dark brown almost black after 1st hr. Resin seemed to be softening very quickly and parts were peeling off already. |
| 120 min | Solution black. Thinner areas of resin, 1/8 inch are now almost clean to metal. |
| 180 min | Same |
| 240 min | Thicker areas of resin softening and are able to be peeled, scraped and wiped off. If watched every half hour instead of hour may remover even more |
| Green Solutions | Clear, fizzed and saw streaks of color |
| 60 min | Soln black. Resin softening quickly. |
| 120 min | Areas with thin resin were almost clean to metal. |
| 180 min | Same |
| 240 min | Thinner areas clean, thicker resin softening and can be wiped, scraped a and peeled. |

Summary:

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|-------------------------------|---------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Steel | | | | |
| Contaminants: | Paints, Resins/Rosins | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Rochester Midland Corporation | EnviroCare Floor Stripper | 100 | | <input checked="" type="checkbox"/> | |

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|--------------------------|--------------------------------|-----|--|-------------------------------------|--|
| Spartan Chemical Company | Green Solutions Floor Stripper | 100 | | <input checked="" type="checkbox"/> | |
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Conclusion:

Both the Rochester Midland and Spartan products worked. The cleaners soften the resin on the top which allows it to be wiped or scraped off in incremental layers. Using the heated ultrasonics seemed to reduce cleaning time approximately 50%. The resin dissolved in the solutions so the bath life may be decreased over time. Thinner areas of resin were able to be clean to the metal in approximately 2 hrs.

Recommendations would be to pull parts out and check coating. Parts should then be wiped every half hour with the added heat and energy in order to expedite the process by removing thicker layers of the resin/paint. Next steps will be to supply the company with samples of the products and let them test them to see which they prefer and what arrangements they can make for routine cleaning that will work for them.