

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007
 DateRun: 07/09/2007
 Experimenters: Jason Marshall
 ClientType: Metal Working
 ProjectNumber: Project #1
 Substrates: Copper, Stainless Steel, Steel
 PartType: Part
 Contaminants: Oil
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Visual

Purpose: To clean supplied parts using drop-in vapor degreasing solvents.

Experimental Procedure: Six drop-in vapor degreasing solvents were selected from the lab's on-line database, www.cleansolutions.org, based on product classification types and past performance on similar contaminants. Each solution was used at full strength at room temperature (68F) in a 300 ml glass beaker. Cleaning lasted for 5 minutes using no agitation. Parts were not rinsed and were air dried at room temperature prior to packaging, roughly 2 minutes. Parts were visually inspected to determine relative effectiveness.

Results: Only two products left any kind of residue behind. Both 3M 7200 and Dow OS 30 left an oily film inside the copper cups. The 3M product left behind the most oil. The other four products cleaned all parts with no visual problems.

After three days of sitting, observations were made to determine the amount of rusting that has occurred, if any, on the cleaned parts.

| Product | Classifications | Observations at 4 days |
|-------------|-----------------------------------|------------------------|
| HFE 7200 | Hydrofluoroether (HFE) | Some minor rusting |
| Lenium CP | n-Propyl Bromide-HFE mix | Minor rust spots |
| Ensolv | nPB | Some minor rusting |
| AK 225 | Hydro Chloro Fluoro Carbon (HCFC) | No rusting |
| Vertrel MCA | Hydro Fluoro Carbon (HFC) | No rusting |
| OS 30 | Methyl Siloxane | No rusting |

Summary:

| Substrates: | | Copper, Stainless Steel, Steel | | | | |
|-------------------------------|---------------------------------|--------------------------------|-------------|-------------------------------------|---------------|--|
| Contaminants: | | Oil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| 3M | HFE 7200 | 100 | | <input type="checkbox"/> | | |
| Petroferm Inc | Lenium CP (no longer available) | 100 | | <input checked="" type="checkbox"/> | | |
| Enviro Tech International Inc | Ensolv | 100 | | <input checked="" type="checkbox"/> | | |
| AGA Chemical | AK 225 | 100 | | <input checked="" type="checkbox"/> | | |
| DuPont | Vertrel MCA | 100 | | <input checked="" type="checkbox"/> | | |
| Dow Chemical Company | OS 30 | 100 | | <input type="checkbox"/> | | |

Conclusion: Four of the six products were effective in removing the various oils from the different parts that were supplied for cleaning.