# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010

DateRun: 11/15/2010

Experimenters: Timothy Weil, Paul Yan

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Rust/Scale

Cleaning Methods: Manual Wipe

Analytical Methods: Visual, Gloss-Color Meter

Purpose: To evaluate supplied products for rust removal ability from steel coupons.

Experimental Procedure: Six pre-rusted steel coupons were photographed to establish the baseline level of rust. Three non-rusted coupons were used as an initial baseline of pre-rust appearance. Gloss readings were taken for all coupons with a BYK Spectro-Guide. A coupon was paired with another coupon that had similar amount of rust. One of the paired coupons was wiped for one minute using a paper towel that contained one of the supplied cleaning solutions at full strength. The second coupon was wiped with the supplied comparative product. Additionally, coupons were wiped at five and ten minutes. Final gloss readings were taken for comparison against the baseline gloss readings. Wiping was performed at room temperature. Observations were made and a second photograph was taken to compare to the baseline photograph. Coupons were also observed after 24 hours to determine the level of rust that returned.

Results: Effectiveness depended on the timeframe. Less rust was removed from the coupons wiped with Chemspec CLR than the coupons wiped with Krud Kutter at the one- and five-minute intervals. The coupons wiped with Chemspec CLR were slightly better than the coupons wiped with Krud Kutter at the ten-minute interval. Both cleaners were effective in removing rust from the steel coupons. No difference was noticeable between the two cleaning products. After wiping, there was no visible return of rust for either product. Averages for the final gloss at one minute were calculated for both products with that calculation for Krud Kutter being near the baseline average and considerably higher than that of Chemspec CLR. There was a considerable increase in the gloss readings for Chemspec CLR at five minutes that brought it much closer to the gloss of the comparative product and at ten minutes the gloss of Chem-Spec CLR was better than that of the comparative product. Chem-Spec CLR is considered to be ineffective because it had lower gloss readings for two out of three of the tests.

| Wipe Time | (min) | | One | Five | Ten | Ave |
|---|---|---|---|---|---|---|
| | Coupon | Initial | Final | Final | Final | Final |
| Baseline | | | | | | |
| | 16 | 55.56 | | | | 54.75 |
| | 18 | 53.14 | | | | |
| | 32 | 55.56 | | | | |
| Chemspec CLR | | | | | | |
| | 10 | 36.26 | 36.82 | | | 34.51 |
| | 15 | 34.27 | 35.42 | | | |
| | 17 | 33.02 | 32.76 | | | |
| | 23 | 30.80 | | 50.29 | | |
| | 19 | 35.84 | | | 60.21 | |
| Krud Kutter | | | | | | |
| | 20 | 34.07 | 52.69 | | | 51.65 |
| | 35 | 34.57 | 49.62 | | | |
| | 36 | 35.71 | 52.66 | | | |
| | 24 | 31.33 | | 55.97 | | |
| | 6 | 32.20 | | | 57.27 | |

Summary:

| **Substrates:** | Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Rust/Scale | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |

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|---|---|---|---|---|---|
| Chemspec | DFC Calcium, Lime & Rust Cleaner | 100 | 0.00 | ☑ | 10 minutes |

Conclusion: Chemspec CLR is considered effective at the ten-minute interval but ineffective at one- and five-minute intervals. The Krud Kutter was effective at all one minute.