

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005
DateRun: 08/15/2005
Experimenters: Jason Marshall
ClientType: Metal
ProjectNumber: Project #1
Substrates: Aluminum
PartType: Coupon
Contaminants: Mold Releases, Graphite
Cleaning Methods: Ultrasonics
Analytical Methods: Gravimetric

Purpose: To evaluate new product on graphite mold release agent using ultrasonic cleaning.

Experimental Procedure: One product was selected based on similar product make up to successful product in previous trial. The product was diluted to 10% using DI water in 600 ml beakers based on vendor recommended concentration. The product was heated to 130 F on a hot plate.

Three preweighed aluminum coupons were coated with the Acheson Colloids Co Aquadag M mold release agent (CAS#: 7782-42-5, 84122-50-6, 70131-67-8, 1333-86-4, 107-21-1, 9002-84-0). The mold release was initially dried for 5 minutes using a Master Appliance Heat Gun at 500 F. The coupons were then subjected to another 10 minutes of drying. Coupons were not allowed to sit overnight but were heated for 2 hours in an oven at 500 F. After the drying, coupons were allowed to cool to room temperature and weighed a second time to determine the amount of soil added to the coupons.

Three coupons were cleaned in the solution for 5 minutes using ultrasonic agitation. Coupons were rinsed in a tap water bath for 15 seconds at 120 F and dried using compressed air blow off at room temperature for 30 seconds. Final weights were recorded and efficiencies were calculated.

Results: The Metal Bright removed nearly 80% of the graphite mold release from the aluminum coupons. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|--------------|------------|----------|-----------|
| Metal Bright | 0.0062 | 0.0017 | 72.58 |
| | 0.0096 | 0.0014 | 85.42 |
| | 0.0108 | 0.0020 | 81.48 |

Summary:

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|----------------------|-------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum | | | | |
| Contaminants: | Mold Releases, Graphite | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Green Power | Metal Bright | 10 | 79.83 | <input checked="" type="checkbox"/> | |

Conclusion: The Metal Bright will be used to clean supplied aluminum parts using ultrasonics.