

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023

DateRun: 08/18/2023

Experimenters: Alexander Symko, Amelia Wagner

ClientType: Metal

ProjectNumber: Project #1

Substrates: Copper, Stainless Steel

PartType: Coupon

Contaminants: Greases, Lubricating/Lapping Oils

Cleaning Methods: Immersion/Soak

Analytical Methods: Wipe

Purpose: To find an effective alternative to nPB in removing metal working fluid and grease from copper and stainless steel rings

Experimental Procedure: The cleaner to be tested was Water Works Heavy Duty Degreaser 1:4 dilution (the highest vendor recommended dilution). Three types of substrates were supplied by the company, being copper rings, steel discs (female) and steel discs (male). Two soils were tested, soil A. Moly Dee (the most difficult soil for the company to remove), and B. Tap Magic EP-extra (the most used soil). Three coupons of each substrate were used for each soil, meaning a total of 18 coupons were used. The coupons were soiled by dabbing the soils on using a swab. The coupons were then subjected to 15 minutes of heated immersion at 105 degrees F with a stir bar set to 200 rpm. Once the coupons were removed, their cleanliness was determined with a white glove test. Each coupon was wiped with a white cotton glove. If any soil came off onto the glove the coupons were declared to still be soiled. If no soil came off onto the glove the coupons were declared clean.

Results:

Cleaner	Soil	Substrate	White Glove Test
Waterworks Heavy Duty Degreaser 1:4	A	Copper	X
		Copper	X
		Copper	X
		Steel (F)	X (almost)
		Steel (F)	X (almost)
		Steel (F)	X
		Steel (M)	O
		Steel (M)	X (almost)
		Steel (M)	X (almost)
	B	Copper	X (almost)
		Copper	X (almost)
		Copper	X (almost)
		Steel (F)	O
		Steel (F)	O
		Steel (F)	O
		Steel (M)	O
		Steel (M)	O
		Steel (M)	O

Summary:

Conclusion: Waterworks Heavy Duty Degreaser 1:4 dilution was not effective in removing the soil from coupons using heated immersion, but shows promise with the introduction of ultrasonics.