CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2016
DateRun:	02/28/2016
Experimenters:	Abigail Giarrosso, Catherine York, Sabrina Apel
ClientType:	General
ProjectNumber:	Project #1
Substrates:	Aluminum, Brass, Stainless Steel
PartType:	Coupon
Contaminants:	Cutting/Tapping Fluids
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To eliminate the use of N-Propyl Bromide in cleaning opereations
Experimental Procedure:	Four cleaners and water were tested at room temperature on aluminum, brass, and stainless-steel coupons to evaluate how the soil Water Soluble Coolant was cleaned. Preweighed coupons were coated with the supplied water-soluble coolant using a handheld swab and weighed a second time to determine the amount of soil added. Each cleaner was put in a beaker and three coupons were immersed into the solution for 5 minutes. The coupons were then stood upright to sir dry for 15 minutes and then placed on a tray. There was no rinse. Once dry, final weights were measured and efficiency calculated for each coupon cleaned.

Results:

Cleaner	Substrate	Initial Wt.	Final Wt.	% Removed
Fluosolv CX	Aluminum	21.5772	21.5739	100.00
	Aluminum	21.5349	21.5378	99.10
	Aluminum	21.6684	21.6696	99.45
	Brass	69.4517	69.4550	98.95
	Brass	69.6130	69.6169	98.75
	Brass	69.5385	69.5414	98.87
	Stainless	63.8961	63.9071	96.27
	Stainless	63.8697	63.8800	96.00
	Stainless	60.1002	60.1027	98.86
Fluosolv NC	Aluminum	21.1991	21.1999	99.58
	Aluminum	21.0506	21.0582	96.38
	Aluminum	21.1746	21.1748	99.89
	Brass	49.5343	49.5343	100.00
	Brass	69.3302	69.3311	99.54
	Brass	69.4374	69.4378	99.83
	Stainless	59.1227	59.1229	99.91
	Stainless	59.5738	59.5769	98.45
	Stainless	63.9180	63.9203	99.02
Honeywell PF	Aluminum	21.4827	21.4858	98.63
	Aluminum	21.6229	21.6266	98.73
	Aluminum	21.5751	21.5774	99.14
	Brass	49.4182	49.4233	98.66
	Brass	49.5324	49.5373	98.52
	Brass	49.4790	49.4839	98.03
	Stainless	58.9560	58.9729	94.72
	Stainless	58.9477	58.9590	95.65
	Stainless	61.8864	61.8946	96.47
Honeywell PF-2A	Aluminum	21.4982	21.4984	99.91
	Aluminum	21.0955	21.0965	99.57
	Aluminum	21.6888	21.6899	99.39
	Brass	69.4463	69.4497	98.83

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	Brass	49.5428	49.5449	98.87
	Brass	49.4977	49.4996	99.27
	Stainless	59.5287	59.5315	98.84
	Stainless	63.8418	63.8866	83.21
	Stainless	63.8993	63.8914	100.00
Water	Aluminum	21.4546	21.4588	98.63
	Aluminum	21.5363	21.5391	99.17
	Aluminum	21.4912	21.4962	98.46
	Brass	49.5400	49.5442	98.79
	Brass	49.5310	49.5340	99.00
	Brass	49.5260	49.5291	99.25
	Stainless	60.9681	60.9729	98.60
	Stainless	59.0497	59.0526	98.99
	Stainless	62.9084	62.9395	87.19

Summary:

Substrates:	Aluminum, Brass, Stainless Steel
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Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
NuGeneration Technologies, LLC	FluoSolv CX	100	98.47	☑	
Honeywell	Solstice PF with N2	100	97.61	☑	
NuGeneration Technologies, LLC	FluoSolv NC 786	100	99.17	☑	
Honeywell	Solstice PF-2A with N2	100	97.54	☑	

Conclusion:

All five chemistries evaluated efficiently removed the water-soluble coolant from all three types of substrates. Although Solstice 2A quantitatively was the least efficient, there was more visible soil on the coupons cleaned with water. Water would be classified as the least efficient cleaner despite quantitative evidence. Interactions with stainless substrate removed less soil than other substrates. The most efficient cleaner would be the Fluosolv NC with 99.17% efficiency. All chemistries were successful cleaners.