

MERCURY ANALYSIS LOGBOOK

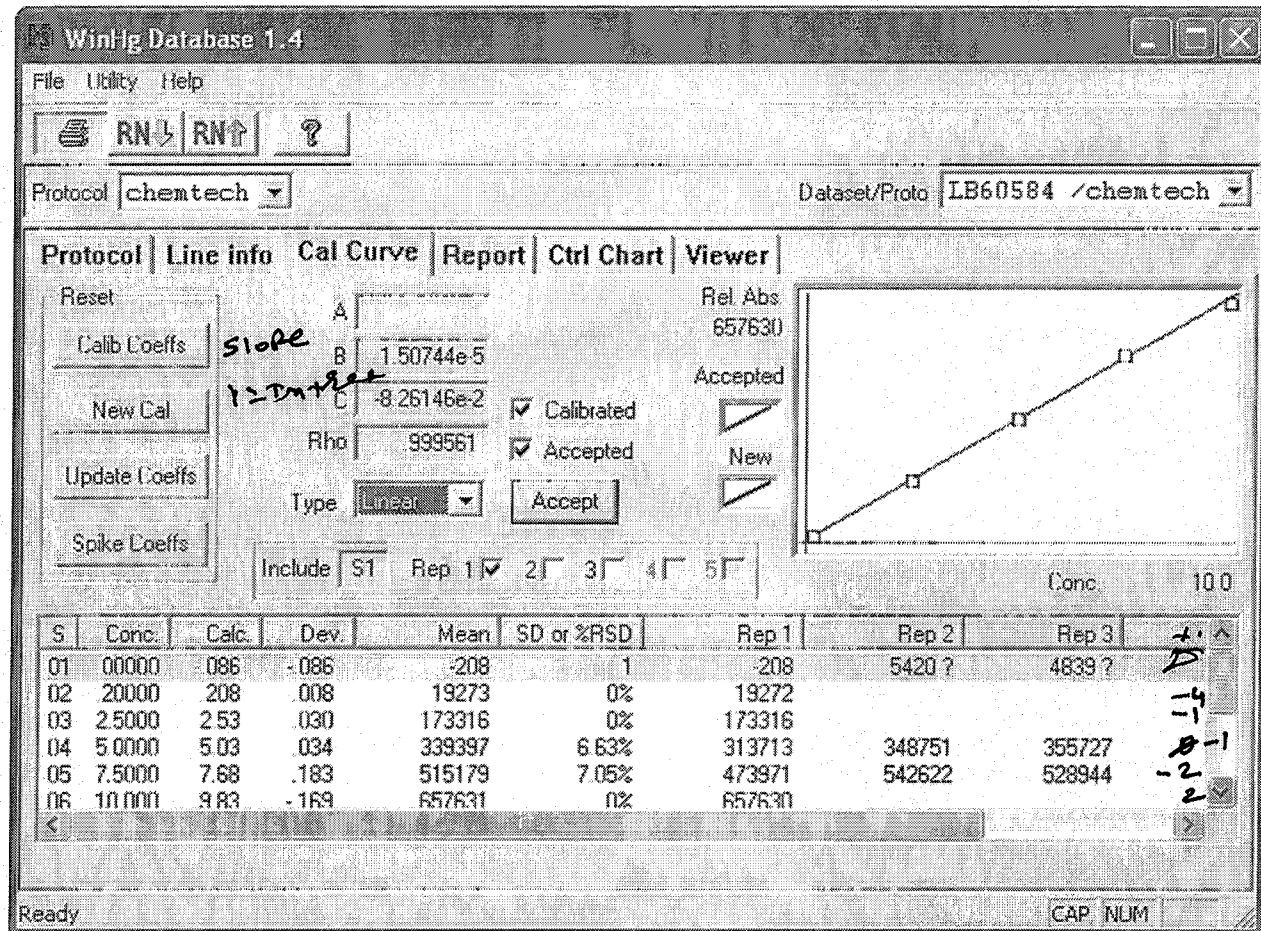
LS 60582 (v2)

Date	Case Number	Batch Number	Start Time	BLK	STD1	STD2	STD3	STD4
04/11/12	D2216	PB62286	15:21	1726	16529	23576	45624	65743
	D2151	↓	↓	↓	↓	↓	↓	↓
04/11/12	D2062	PB62330	12:20	17520	23257	18243	273763	552611
	D2081	↓	↓	↓	↓	↓	↓	↓
	D2106	↓	↓	↓	↓	↓	↓	↓
	D2130	↓	↓	↓	↓	↓	↓	↓
04/11/12	D2158	PB62391	9:28	1994	14765	163676	34369	48766
	D2180	↓	↓	↓	↓	↓	↓	↓
	D2186	↓	↓	↓	↓	↓	↓	↓
	D2215	↓	↓	↓	↓	↓	↓	↓
04/11/12	D2165	PB62490	9:49	1643	11007	118218	239159	373556
	D2272	↓	↓	↓	↓	↓	↓	↓
05/09/12	D2417	PB62905	18:47	-208	19272	173386	213713	473970

MERCURY ANALYSIS LOGBOOK

STD 5	End Time	Correlation Coefficient	Stannous Chloride Prep log #	Comment	Analyst	Supervisor Signature
868195	16:17	.999196	ml 11053		A-J-Pahl	
733507	13:02	.999859	ml 11107	DOV-65	A-J-Pahl	
				DOB-65	A-J-Pahl	
				COV-91,92	A-J-Pahl	
				COV-91,92	A-J-Pahl	
673973	12:35	.999555	ml 11122		A-J-Pahl	
	12:35				A-J-Pahl	
	12:35				A-J-Pahl	
	12:35				A-J-Pahl	
508344	10:54	.999469	ml 11152		A-J-Pahl	
					A-J-Pahl	
657630	14:40	.999521	ml 11398	DOV-66, DOB-66 COV-93,94, COB-93,94	A-J-Pahl	

13605824 A-P.



Instrument ID: V2 LB 60584 A-P.

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Standard: 1 Rep: 1			50	Seq: 1		18:47:47 09 May 12	HG	
Hg	.000	ppb	-208					
*** Standard: 2 Rep: 1			50.2	Seq: 2		18:49:48 09 May 12	HG	
Hg	.200	ppb	19272					
*** Standard: 3 Rep: 1			52.5	Seq: 3		18:51:51 09 May 12	HG	
Hg	2.50	ppb	173316					
*** Standard: 4 Rep: 1			55.0	Seq: 4		18:54:00 09 May 12	HG	
Hg	5.00	ppb	313713					
*** Standard: 5 Rep: 1			57.5	Seq: 5		18:56:18 09 May 12	HG	
Hg	7.50	ppb	473970					
*** Standard: 6 Rep: 1			510.0	Seq: 6		18:59:18 09 May 12	HG	
Hg	10.0	ppb	657630					

05/09/12 A-P

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: ICV				Seq: 7		19:01:47 09 May 12	HG	
			ICV66					
Hg	4.00	ppb	.000	4.00				
*** Sample ID: ICB				Seq: 8		19:03:45 09 May 12	HG	
			ICB66					
Hg	-.040	ppb	.000	-.040				
*** Sample ID: CCV				Seq: 9		19:05:45 09 May 12	HG	
			CCV93					
Hg	5.18	ppb	.000	5.18				
*** Sample ID: CCB				Seq: 10		19:08:30 09 May 12	HG	
			CCB93					
Hg	-.050	ppb	.000	-.050				
*** Sample ID: D2417-01				Seq: 11		19:10:40 09 May 12	HG	
			ME3RH9 X10					
Hg	2.18	ppb	.000	2.18				
*** Sample ID: D2417-03				Seq: 12		19:12:51 09 May 12	HG	
			ME3RJ1 X10					
Hg	4.56	ppb	.000	4.56				
*** Sample ID: D2417-04				Seq: 13		19:15:31 09 May 12	HG	
			ME3RJ2 X10					
Hg	2.42	ppb	.000	2.42				
*** Sample ID: D2417-05				Seq: 14		19:17:51 09 May 12	HG	
			ME3RJ3 X10					
Hg	4.74	ppb	.000	4.74				
*** Sample ID: D2417-06				Seq: 15		19:19:51 09 May 12	HG	
			ME3RJ4 X10					
Hg	4.50	ppb	.000	4.50				
*** Sample ID: D2417-07				Seq: 16		19:21:52 09 May 12	HG	
			ME3RJ5 X10					
Hg	4.45	ppb	.000	4.45				
*** Sample ID: D2417-08				Seq: 17		19:23:52 09 May 12	HG	
			ME3RJ5D X10					
Hg	4.41	ppb	.000	4.41				
*** Sample ID: D2417-09				Seq: 18		19:27:53 09 May 12	HG	
			ME3RJ5S X10					
Hg	4.46	ppb	.000	4.46				

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: D2417-10				Seq: 19	19:30:21 09 May 12			HG
				ME3RJ6 X10				
Hg	3.40	ppb	.000	3.40				
*** Sample ID: D2417-11				Seq: 20	19:32:20 09 May 12			HG
				ME3RJ7 X10				
Hg	.208	ppb	.000	.208				
*** Sample ID: D2417-12				Seq: 21	19:34:19 09 May 12			HG
				ME3RJ8 X10				
Hg	5.61	ppb	.000	5.61				
*** Sample ID: D2417-13				Seq: 22	19:36:19 09 May 12			HG
				ME3RJ9 X10				
Hg	5.60	ppb	.000	5.60				
*** Sample ID: CCV				Seq: 23	19:38:28 09 May 12			HG
				CCV94				
Hg	5.20	ppb	.000	5.20				
*** Sample ID: CCB				Seq: 24	19:40:28 09 May 12			HG
				CCB94				
Hg	-.063	ppb	.000	-.063				

LB60584.PRN

2,1,"CCB",10,"09 May 12","19:08:30","chemtech","",4,1.00,1.00,1,"","Hg
 ","ppb","",",-050,.000,2167,-.050
 2,1,"CCB",24,"09 May 12","19:40:28","chemtech","",18,1.00,1.00,1,"","Hg
 ","ppb","",",-063,.000,1302,-.063
 2,1,"CCV",9,"09 May 12","19:05:45","chemtech","",3,1.00,1.00,1,"","Hg
 ","ppb","",",5.18,.000,348908,5.18
 2,1,"CCV",23,"09 May 12","19:38:28","chemtech","",17,1.00,1.00,1,"","Hg
 ","ppb","",",5.20,.000,350400,5.20
 2,1,"D2417-01",11,"09 May 12","19:10:40","chemtech","",5,1.00,1.00,1,"","Hg
 ","ppb","",",2.18,.000,150002,2.18
 2,1,"D2417-03",12,"09 May 12","19:12:51","chemtech","",6,1.00,1.00,1,"","Hg
 ","ppb","",",4.56,.000,307796,4.56
 2,1,"D2417-04",13,"09 May 12","19:15:31","chemtech","",7,1.00,1.00,1,"","Hg
 ","ppb","",",2.42,.000,165951,2.42
 2,1,"D2417-05",14,"09 May 12","19:17:51","chemtech","",8,1.00,1.00,1,"","Hg
 ","ppb","",",4.74,.000,319676,4.74
 2,1,"D2417-06",15,"09 May 12","19:19:51","chemtech","",9,1.00,1.00,1,"","Hg
 ","ppb","",",4.50,.000,303700,4.50
 2,1,"D2417-07",16,"09 May 12","19:21:52","chemtech","",10,1.00,1.00,1,"","Hg
 ","ppb","",",4.45,.000,300687,4.45
 2,1,"D2417-08",17,"09 May 12","19:23:52","chemtech","",11,1.00,1.00,1,"","Hg
 ","ppb","",",4.41,.000,297920,4.41
 2,1,"D2417-09",18,"09 May 12","19:27:53","chemtech","",12,1.00,1.00,1,"","Hg
 ","ppb","",",4.46,.000,301209,4.46
 2,1,"D2417-10",19,"09 May 12","19:30:21","chemtech","",13,1.00,1.00,1,"","Hg
 ","ppb","",",3.40,.000,231085,3.40
 2,1,"D2417-11",20,"09 May 12","19:32:20","chemtech","",14,1.00,1.00,1,"","Hg
 ","ppb","",",2.08,.000,19290,2.08
 2,1,"D2417-12",21,"09 May 12","19:34:19","chemtech","",15,1.00,1.00,1,"","Hg
 ","ppb","",",5.61,.000,377926,5.61
 2,1,"D2417-13",22,"09 May 12","19:36:19","chemtech","",16,1.00,1.00,1,"","Hg
 ","ppb","",",5.60,.000,377278,5.60
 2,1,"ICB",8,"09 May 12","19:03:45","chemtech","",2,1.00,1.00,1,"","Hg
 ","ppb","",",-040,.000,2838,-.040
 2,1,"ICV",7,"09 May 12","19:01:47","chemtech","",1,1.00,1.00,1,"","Hg
 ","ppb","",",4.00,.000,270996,4.00
 6,1,"Std01Rep1",1,"09 May 12","18:47:47","chemtech",1,1,1,"Hg","ppb","",",
 ",.000,-208
 6,1,"Std02Rep1",2,"09 May 12","18:49:48","chemtech",2,1,1,"Hg","ppb","",",
 ",.200,19272
 6,1,"Std03Rep1",3,"09 May 12","18:51:51","chemtech",3,1,1,"Hg","ppb","",",
 ",2.50,173316
 6,1,"Std04Rep1",4,"09 May 12","18:54:00","chemtech",4,1,1,"Hg","ppb","",",
 ",5.00,313713
 6,1,"Std05Rep1",5,"09 May 12","18:56:18","chemtech",5,1,1,"Hg","ppb","",",
 ",7.50,473970
 6,1,"Std06Rep1",6,"09 May 12","18:59:18","chemtech",6,1,1,"Hg","ppb","",",
 ",10.0,657630
 7,"",0,"09 May 12","18:44:46"

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP11364	05/07/2012	05/08/2012	alpa
FROM 1.000ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 2.500ml of Mercury Stock Solution, 10 ug/ml(M2310) + 96.500ml of DI Water(W1152) = Final Quantity: 100.000 ml					

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1340	Hg 0.00 PPB STD	MP11365	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 247.500ml of DI Water(W1152) = Final Quantity: 250.000 ml					

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1341	Hg 0.2 PPB STD	MP11366	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 247.300ml of DI Water(W1152) + 0.200ml of MERCURY INTERMEDIATE B 250PPB WORKING STD.(MP11364) = Final Quantity: 250.000 ml					

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1342	Hg 2.5 PPB STD	MP11367	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 245.000ml of DI Water(W1152) + 2.500ml of MERCURY INTERMEDIATE B 250PPB WORKING STD.(MP11364) = Final Quantity: 250.000 ml					

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1343	Hg 5.0 PPB STD	MP11368	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 242.500ml of DI Water(W1152) + 5.000ml of MERCURY INTERMEDIATE B 250PPB WORKING STD.(MP11364) = Final Quantity: 250.000 ml					

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1344	Hg 7.5 PPB STD	MP11369	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 240.000ml of DI Water(W1152) + 7.500ml of MERCURY INTERMEDIATE B 250PPB WORKING STD.(MP11364) = Final Quantity: 250.000 ml					

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1345	Hg 10.0 PPB STD	MP11370	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 237.500ml of DI Water(W1152) + 10.000ml of MERCURY INTERMEDIATE B 250PPB WORKING STD.(MP11364) = Final Quantity: 250.000 ml					

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1346	Hg ICV SOLUTION	MP11371	05/07/2012	05/08/2012	alpa
FROM 2.500ml of ICV (HG) STOCK SOLN(M2099) + 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L) (M2352) + 245.000ml of DI Water(W1152) = Final Quantity: 250.000 ml					

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1351	ICB (Hg 0.00 PPB SOLUTION)	MP11372	05/07/2012	05/08/2012	alpa
FROM 2.500ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 247.500ml of DI Water(W1152) = Final Quantity: 250.000 ml					

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1358	CCV (Hg 5.0 PPB SOLUTION)	MP11373	05/07/2012	05/08/2012	alpa
FROM 485.000ml of DI Water(W1152) + 5.000ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) + 10.000ml of MERCURY INTERMEDIATE B 250PPB WORKING STD.(MP11364) = Final Quantity: 500.000 ml					

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
1352	CCB (Hg 0.00 PPB SOLUTION)	MP11374	05/07/2012	05/08/2012	alpa
FROM 495.000ml of DI Water(W1152) + 5.000ml of Nitric Acid, Instra-Analyzed (cs/4x2.5L)(M2352) = Final Quantity: 500.000 ml					

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Metals STANDARD PREPARATION LOG

RecipeID	NAME	NO.	Prep Date	Expiration D	Prepared By
68	STANNOUS CHLORIDE SOLUTION	MP11398	05/09/2012	05/10/2012	alpa
FROM 450.000ml of DI Water(W1152) + 50.000gram of Stannous Chloride (cs/4x500g)(M2287) + 50.000ml of Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)(M2357) = Final Quantity: 500.000 ml					

**QATS INORGANIC REFERENCE MATERIAL
INITIAL CALIBRATION VERIFICATION SOLUTIONS
(ICVs)**

m 2097 - m2101

*see data
11/16/11
A.P.*

ICV4-0499	
Element	Concentration (µg/L) (after 10 fold dilution)
Cd	98.7
Pb	99.8
Ag	101.9
Tl	98.8

ICV5-0508	
Element	Concentration (µg/L) (after 100 fold dilution)
Hg	4.0

ICV6-0400	
Element	Concentration (µg/L) (after 100 fold dilution)
CN-	99

PLASMA-PURE™

Standard Certificate

Catalog Number: 610-8002

Lot Number: 1199004

Starting Material: 99.999% purity Hg metal

Diluent/Matrix: 5% HNO₃

Preparation Date: Dec-11

Expiration Date: Dec-12

Element

Concentration

Mercury Stock Solution

Hg

10.00 ± 0.02 µg/ml

M2310
Rec. date: 01/18/12
A-E

Residual Impurities *

Concentration

None Detected

* Impurities were determined via ICP Emission Spectroscopy. Only elements detected are reported.

Traceability

1. This standard is certified using wet chemistry assay procedures and/or plasma emission spectroscopy, traceable to primary or well-characterized secondary standards. Traceable to: NIST SRM 3133, Hg
Lot#991304
2. Analytical balances are routinely calibrated using NIST weight sets.

Certification

Leeman Labs, Inc. certifies that PLASMA-PURE Standards have been formulated to the concentrations listed above (±0.5% of reported value). This certification does not apply and will be considered null and void if PLASMA-PURE Standards are used in a manner or in an environment not consistent with their intended purpose or are modified by the Customer in any manner.

Limitations

THE ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability

In no event shall Leeman Labs, Inc. be liable for any indirect, incidental, special, or consequential damages, including loss of profits, revenue, or used incurred by Customer or any third party, whether in an action in contract or tort. Leeman Labs Inc's liability for damages hereunder shall in no event exceed the amounts paid for the PLASMA-PURE Standards.

QC Analyst: *SUS*

Date: December 1, 2011



TELEDYNE Leeman Labs

A Teledyne Technologies Company
6 Wentworth Drive Hudson, NH 03051
Tel: 603.886.8400 Fax: 603.886.9141