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Level IV Data Package

MWH Group 242355

Method: EPA 314

2805280375
2805280376

Perchlorate QC Checklist

rev: 27 Mar 03

Analysis Date: 06-16-08 **Analyst:** Raya QC'd by M Date 25 Jun 08

Instrument: IC11 **Calculated MCT Level:** ~~1436~~ 3500 RR 06-26-08 umhos/cm

Original IPC conductance: ~~1436~~ 3475 RR 06-26-08 umhos/cm **Daily IPC conductance:** ~~1440~~ 3475 RR 06-26-08 umhos/cm

Calibration including QCS

✓ QCS (20ppb) recovery is within 90% - 110% (18-22ppb) to verify that the calibration curve (minimum 5 points) still holds.

✓ Calibration curve is reanalyzed if QCS fails. Correlation Coefficient is 0.995 or better.

Initial QC Check Samples (MBLANK, MRL, ICCSCV, IPC) to be analyzed with every batch (up to 20 samples) or part thereof

✓ MLBANK is analyzed before samples. Perchlorate, if present, is < or = half of the MRL.

N/A *L-ClO4 only*: ICCSCV at 2ppb is within 50%-150% (1-3ppb)

✓ *ClO4 only*: MRL at 4ppb is within 75%-125% (3-5ppb)

PDA/H = 0.77%

✓ IPC (25ppb) recovery is between 80%-120% (20-30ppb)

✓ IPC retention time is within 5% of the retention time of the standards

✓ IPC Conductance level is within 10% of the original

LCS/LCSD (25ppb)

✓ Recoveries are between 90%-110% (22.5 – 27.5ppb)

✓ One pair is analyzed per batch (up to 20 samples) or part thereof

MS/MSD (25ppb) NOTE: For UCMR, MS/MSD concentrations alternate between 4ppb and 25ppb

✓ Recoveries are within 80%-120% (20-30ppb) for 25ppb spike N/A (3.2-4.8ppb) for 4ppb spike

✓ One pair is analyzed per batch (up to 20 samples) or part thereof

✓ RPD between MS and MSD is within 15%.

Continuing Calibration Verification (MCV, HCV) NOTE: For UCMR ECV and MCV are required

✓ Verification Checks alternate between mid- and high-level during the analysis (low- and mid-level for UCMR)

✓ MCV (25ppb) recovery is between 85%-115% (21.25 – 28.75ppb)

✓ HCV (100ppb) recovery is between 85%-115% (85-115ppb) N/A ECV (4ppb) recovery is between 75%-125% (3.0-5.0)

Pretreat and include the following QC parameters for any batch or part thereof containing samples requiring pretreatment

N/A One Laboratory Reagent Blank (LRB). Perchlorate is < or = half of MRL.

N/A One pair of Laboratory Control Samples (LCS/LCSD). Recovery of perchlorate is between 85%-115%.

N/A One Pair of Laboratory Fortified Matrices (MS/MSD). Recoveries are between 80%-120%

Samples

NO All samples are analyzed within 28 days of collection. 52 samples were reanalyzed outside of holding time]

✓ All samples are analyzed within MCT Conductance limit.

QIR

N/A QIR needed for failed QC

Yes QIR needed for samples analyzed outside of hold time

Sample No.	Sample Name	Dil.Fac.	Comment	Time	Amount CLO4 CD_1	
1	WASH	1.0		06.13.08 15:29	n.a.	
2	WASH	1.0		06.13.08 15:52	n.a.	
3	WASH	1.0		06.13.08 16:14	n.a.	
4	autocal1	1.0		06.13.08 16:37	n.a.	
5	autocal2	1.0	2	06.13.08 16:59	1.8286	
6	autocal3	1.0	4	06.13.08 17:22	4.1573	
7	autocal4	1.0	10	06.13.08 17:44	9.9213	
8	autocal5	1.0	25	06.13.08 18:07	25.2092	
9	autocal6	1.0	50	06.13.08 18:29	49.8618	
10	autocal7	1.0	100	06.13.08 18:52	100.0218	
11	QCS	1.0	20	06.16.08 10:33	18.1853	90.9%
12	IPC	1.0	25	06.16.08 10:56	23.5658	94.3%
13	-MBLK	1.0		06.16.08 11:18	n.a.	
14	-MRLCHK-2	1.0		06.16.08 11:41	1.9257	96.3%
15	-MRLCHK-4	1.0		06.16.08 12:03	3.8797	97.0%
16	-LCS1	1.0		06.16.08 12:25	23.0869	92.3%
17	-LCS2	1.0		06.16.08 12:48	23.1534	92.6%
18	2805160298_1/500	500.0		06.16.08 13:10	21218.1888	
19	2805200368	1.0		06.16.08 13:33	n.a.	
20	2805210193	1.0		06.16.08 13:55	n.a.	
21	2805210193MS	1.0		06.16.08 14:17	23.5937	25.6-94.4%
22	2805210193MSD	1.0		06.16.08 14:40	22.6349	22.6-90.4%
23	2805290247	1.0		06.16.08 15:02	n.a.	
24	2805290248	1.0	(EP) 25Jun08	06.16.08 15:25	n.a.	
25	2805280375_1/5	5.0 - Dilution insufficient based on 1436 MCT		06.16.08 15:47	n.a.	-DNR
26	2805280376_1/5000	5000.0		06.16.08 16:09	248025.2555	
27	2805280414	1.0		06.16.08 16:32	n.a.	
28	2805290195	1.0		06.16.08 16:54	n.a.	
29	2805290197	1.0		06.16.08 17:17	n.a.	
30	CCV	1.0	25	06.16.08 17:39	23.3866	93.5%
31	2805290198	1.0		06.16.08 18:01	n.a.	
32	2805290199	1.0		06.16.08 18:24	n.a.	
33	2805290271	1.0		06.16.08 18:46	n.a.	
34	2805290281	1.0		06.16.08 19:09	n.a.	
35	2805290282	1.0		06.16.08 19:31	n.a.	
36	2805290574	1.0		06.16.08 19:53	n.a.	
37	2805300009	1.0		06.16.08 20:16	n.a.	
38	2805300015	1.0		06.16.08 20:38	n.a.	
39	2805300016	1.0		06.16.08 21:01	n.a.	
40	2805300017	1.0		06.16.08 21:23	n.a.	
41	HCV	1.0	100	06.16.08 21:45	99.9267	99.9%

All results can be reported based on new MLT. (EP) 1 Jul 08

Report Date: 6/12/2008 : 12:37 PM

Montgomery Watson Laboratory

Conductivity Results Report

Run Number 2719 **Order Number** 20080611-4

SampleID	RunDate	RunTime	Conductivity uS
WASH	6/11/2008	1:50 PM	1.10
MBLANK	6/11/2008	1:51 PM	-.11
MRL2uS	6/11/2008	1:52 PM	2.30
10uS	6/11/2008	1:54 PM	9.26
1000uS	6/11/2008	1:55 PM	995.00
1412uS	6/11/2008	1:57 PM	1,412.00
RINSE	6/11/2008	1:58 PM	10.77
2805270628	6/11/2008	1:59 PM	289.00
2805280078	6/11/2008	2:01 PM	528.00
2805280088	6/11/2008	2:02 PM	213.00
2805280248	6/11/2008	2:04 PM	8,790.00
2805280250	6/11/2008	2:05 PM	9,110.00
2805280341	6/11/2008	2:07 PM	424.00
2805280342	6/11/2008	2:08 PM	483.00
2805280347	6/11/2008	2:09 PM	346.00
o 2805280375	6/11/2008	2:11 PM	9,130.00
o 2805280376	6/11/2008	2:12 PM	9,080.00
2805280376DUP	6/11/2008	2:14 PM	9,140.00
WASH	6/11/2008	2:15 PM	44.70
LCS1000uS	6/11/2008	2:16 PM	997.00
o 2805280414	6/11/2008	2:18 PM	960.00
o 2805290195	6/11/2008	2:19 PM	719.00
o 2805290197	6/11/2008	2:21 PM	582.00
o 2805290198	6/11/2008	2:22 PM	826.00
o 2805290199	6/11/2008	2:24 PM	835.00

Analyst Name: NEW

Reviewed By: _____

Standards Documentation

1413uS:	R201827	Exp: 09/30/08
10uS:	R201836	Exp: 03/09
1000uS:	R201833	Exp: 01/09
2uS:	R201791	Exp: NA
10000uS:	R201799	Exp: 07/31/08

Run Number 2719 **Order Number** 20080611-4

SampleID	RunDate	RunTime	Conductivity uS
○ 2805290247	6/11/2008	2:25 PM	332.00
○ 2805290248	6/11/2008	2:26 PM	329.00
○ 2805290271	6/11/2008	2:28 PM	1,013.00
○ 2805290281	6/11/2008	2:29 PM	1,182.00
○ 2805290282	6/11/2008	2:31 PM	925.00
2805290282DUP	6/11/2008	2:32 PM	921.00
WASH	6/11/2008	2:33 PM	10.52
MBLANK	6/11/2008	2:35 PM	.17
LCS1000uS	6/11/2008	2:36 PM	1,002.00
○ 2805290574	6/11/2008	2:38 PM	510.00
○ 2805300009	6/11/2008	2:39 PM	156.60
○ 2805300015	6/11/2008	2:41 PM	453.00
○ 2805300016	6/11/2008	2:42 PM	252.00
○ 2805300017	6/11/2008	2:43 PM	314.00
2805300018	6/11/2008	2:45 PM	254.00
2805300232	6/11/2008	2:46 PM	19,190.00
2805300243	6/11/2008	2:48 PM	8,570.00
2805300244	6/11/2008	2:49 PM	12,080.00
WASH	6/11/2008	2:51 PM	66.70
WASH	6/11/2008	2:52 PM	2.51
2805300245	6/11/2008	2:53 PM	2,080.00
2805300245DUP	6/11/2008	2:55 PM	2,090.00
LCS1000uS	6/11/2008	2:56 PM	1,012.00
2805300247	6/11/2008	2:58 PM	2,020.00
2805300248	6/11/2008	2:59 PM	2,020.00
2805300249	6/11/2008	3:00 PM	2,040.00
2805310001	6/11/2008	3:02 PM	279.00
2806020352	6/11/2008	3:03 PM	738.00

Analyst Name: NEM

Reviewed By: _____

Standards Documentation

1413uS:	R201827	Exp: 09/30/08
10uS:	R201836	Exp: 03/09
1000uS:	R201833	Exp: 01/09
2uS:	R201791	Exp: NA
10000uS:	R201799	Exp: 07/31/08

Title:
Datasource: Dionex_USPAS2SDIO2
Location: IC\IC11_CLO4\2008\JUNE
Timebase: IC11
#Samples: 41
Created: 6/16/2008 10:25:41 AM by Maria
Last Update: 6/16/2008 6:16:35 PM by raja

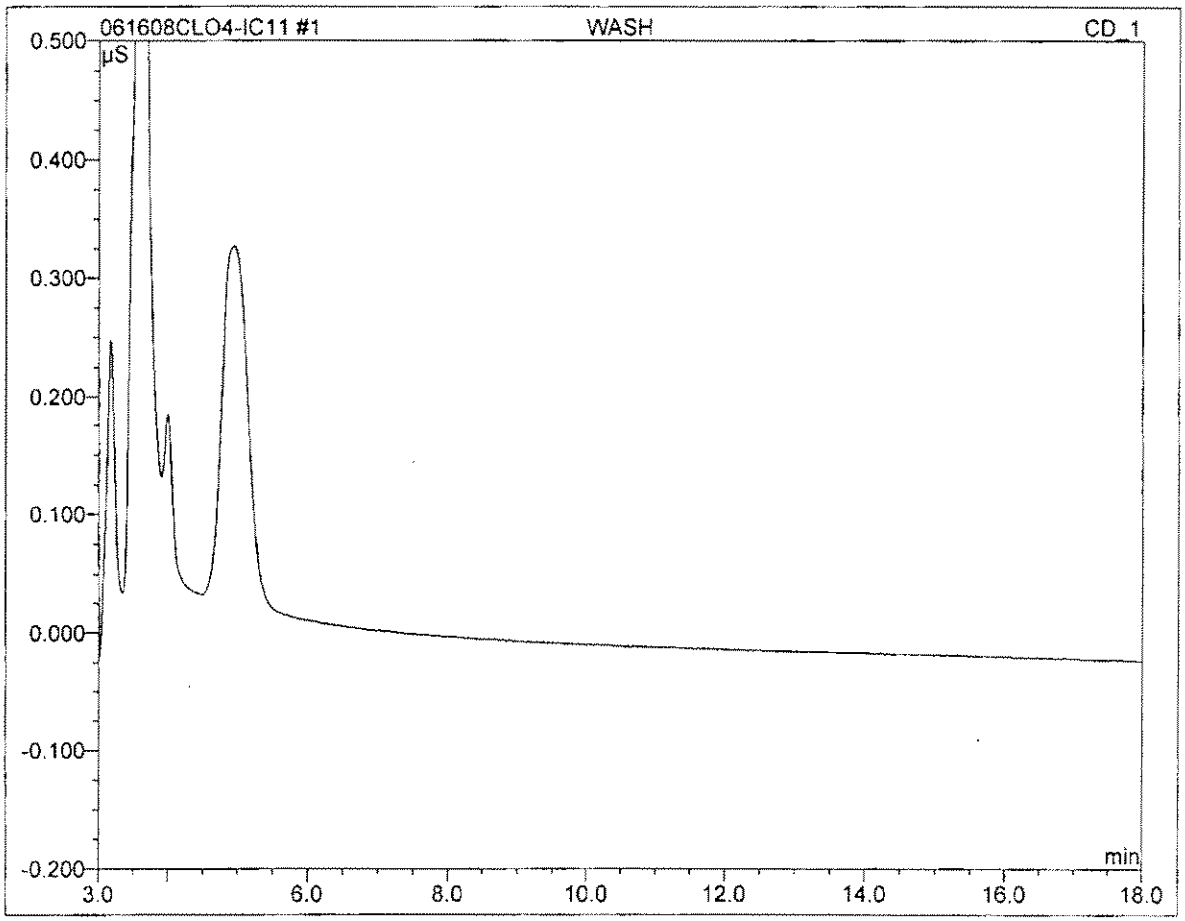
No.	Name	Sample ID	Dil. Factor	Type	Comment	Status	Program
1	WASH		1.0000	Unknown		Finished	Perchlorate-IC11
2	WASH		1.0000	Unknown		Finished	Perchlorate-IC11
3	WASH		1.0000	Unknown		Finished	Perchlorate-IC11
4	autocal1		1.0000	Standard		Finished	Perchlorate-IC11
5	autocal2	R201449 EXP 07/28/09	1.0000	Standard	2	Finished	Perchlorate-IC11
6	autocal3		1.0000	Standard	4	Finished	Perchlorate-IC11
7	autocal4		1.0000	Standard	10	Finished	Perchlorate-IC11
8	autocal5		1.0000	Standard	25	Finished	Perchlorate-IC11
9	autocal6		1.0000	Standard	50	Finished	Perchlorate-IC11
10	autocal7		1.0000	Standard	100	Finished	Perchlorate-IC11
11	QCS	R201789 EXP 07/10/09	1.0000	Unknown	20	Finished	Perchlorate-IC11
12	IPC	EC=1436	1.0000	Unknown	25	Finished	Perchlorate-IC11
13	-MBLK		1.0000	Unknown		Finished	Perchlorate-IC11
14	-MRLCHK-2	2	1.0000	Unknown		Finished	Perchlorate-IC11
15	-MRLCHK-4	4	1.0000	Unknown		Finished	Perchlorate-IC11
16	-LCS1	25	1.0000	Unknown		Finished	Perchlorate-IC11
17	-LCS2	25	1.0000	Unknown		Finished	Perchlorate-IC11
18	2805160298_1/500		500.0000	Unknown		Finished	Perchlorate-IC11
19	2805200368		1.0000	Unknown		Finished	Perchlorate-IC11
20	2805210193		1.0000	Unknown		Finished	Perchlorate-IC11
21	2805210193MS	25	1.0000	Unknown		Finished	Perchlorate-IC11
22	2805210193MSD	25	1.0000	Unknown		Finished	Perchlorate-IC11
23	2805290247		1.0000	Unknown		Finished	Perchlorate-IC11
24	2805290248		1.0000	Unknown		Finished	Perchlorate-IC11
25	2805280375_1/5		5.0000	Unknown		Finished	Perchlorate-IC11
26	2805280376_1/5000		5000.0000	Unknown		Finished	Perchlorate-IC11
27	2805280414		1.0000	Unknown		Finished	Perchlorate-IC11
28	2805290195		1.0000	Unknown		Finished	Perchlorate-IC11
29	2805290197		1.0000	Unknown		Finished	Perchlorate-IC11
30	CCV	25	1.0000	Unknown	25	Finished	Perchlorate-IC11
31	2805290198		1.0000	Unknown		Finished	Perchlorate-IC11
32	2805290199		1.0000	Unknown		Finished	Perchlorate-IC11
33	2805290271		1.0000	Unknown		Finished	Perchlorate-IC11
34	2805290281		1.0000	Unknown		Finished	Perchlorate-IC11
35	2805290282		1.0000	Unknown		Finished	Perchlorate-IC11
36	2805290574		1.0000	Unknown		Finished	Perchlorate-IC11
37	2805300009		1.0000	Unknown		Finished	Perchlorate-IC11
38	2805300015		1.0000	Unknown		Finished	Perchlorate-IC11
39	2805300016		1.0000	Unknown		Finished	Perchlorate-IC11
40	2805300017		1.0000	Unknown		Finished	Perchlorate-IC11
41	HCV	100	1.0000	Unknown	100	Finished	Perchlorate-IC11

Title:
Datasource: Dionex_USPAS2SDIO2
Location: IC\IC11_CLO4\2008\JUNE
Timebase: IC11
#Samples: 41
Created: 6/16/2008 10:25:41 AM by Maria
Last Update: 6/16/2008 6:16:35 PM by raja

No.	Name	Method	Inj. Date/Time	*Analyst
1	WASH	IC#4-CLO4-LOW	6/13/2008 3:29:57 PM	mce
2	WASH	IC#4-CLO4-LOW	6/13/2008 3:52:24 PM	mce
3	WASH	IC#4-CLO4-LOW	6/13/2008 4:14:52 PM	mce
4	autocal1	IC#4-CLO4-LOW	6/13/2008 4:37:19 PM	mce
5	autocal2	IC#4-CLO4-LOW	6/13/2008 4:59:46 PM	mce
6	autocal3	IC#4-CLO4-LOW	6/13/2008 5:22:13 PM	mce
7	autocal4	IC#4-CLO4-LOW	6/13/2008 5:44:40 PM	mce
8	autocal5	IC#4-CLO4-LOW	6/13/2008 6:07:07 PM	mce
9	autocal6	IC#4-CLO4-LOW	6/13/2008 6:29:34 PM	mce
10	autocal7	IC#4-CLO4-LOW	6/13/2008 6:52:02 PM	mce
11	QCS	IC#4-CLO4-LOW	6/16/2008 10:33:55 AM	raja
12	IPC	IC#4-CLO4-LOW	6/16/2008 10:56:18 AM	raja
13	-MBLK	IC#4-CLO4-LOW	6/16/2008 11:18:42 AM	raja
14	-MRLCHK-2	IC#4-CLO4-LOW	6/16/2008 11:41:06 AM	raja
15	-MRLCHK-4	IC#4-CLO4-LOW	6/16/2008 12:03:30 PM	raja
16	-LCS1	IC#4-CLO4-LOW	6/16/2008 12:25:54 PM	raja
17	-LCS2	IC#4-CLO4-LOW	6/16/2008 12:48:18 PM	raja
18	2805160298_1/500	IC#4-CLO4-LOW	6/16/2008 1:10:41 PM	raja
19	2805200368	IC#4-CLO4-LOW	6/16/2008 1:33:05 PM	raja
20	2805210193	IC#4-CLO4-LOW	6/16/2008 1:55:29 PM	raja
21	2805210193MS	IC#4-CLO4-LOW	6/16/2008 2:17:53 PM	raja
22	2805210193MSD	IC#4-CLO4-LOW	6/16/2008 2:40:17 PM	raja
23	2805290247	IC#4-CLO4-LOW	6/16/2008 3:02:41 PM	raja
24	2805290248	IC#4-CLO4-LOW	6/16/2008 3:25:05 PM	raja
25	2805280375_1/5	IC#4-CLO4-LOW	6/16/2008 3:47:28 PM	raja
26	2805280376_1/5000	IC#4-CLO4-LOW	6/16/2008 4:09:52 PM	raja
27	2805280414	IC#4-CLO4-LOW	6/16/2008 4:32:16 PM	raja
28	2805290195	IC#4-CLO4-LOW	6/16/2008 4:54:40 PM	raja
29	2805290197	IC#4-CLO4-LOW	6/16/2008 5:17:04 PM	raja
30	CCV	IC#4-CLO4-LOW	6/16/2008 5:39:28 PM	raja
31	2805290198	IC#4-CLO4-LOW	6/16/2008 6:01:51 PM	raja
32	2805290199	IC#4-CLO4-LOW	6/16/2008 6:24:15 PM	raja
33	2805290271	IC#4-CLO4-LOW	6/16/2008 6:46:39 PM	raja
34	2805290281	IC#4-CLO4-LOW	6/16/2008 7:09:03 PM	raja
35	2805290282	IC#4-CLO4-LOW	6/16/2008 7:31:27 PM	raja
36	2805290574	IC#4-CLO4-LOW	6/16/2008 7:53:51 PM	raja
37	2805300009	IC#4-CLO4-LOW	6/16/2008 8:16:15 PM	raja
38	2805300015	IC#4-CLO4-LOW	6/16/2008 8:38:39 PM	raja
39	2805300016	IC#4-CLO4-LOW	6/16/2008 9:01:02 PM	raja
40	2805300017	IC#4-CLO4-LOW	6/16/2008 9:23:26 PM	raja
41	HCV	IC#4-CLO4-LOW	6/16/2008 9:45:50 PM	raja

1 WASH

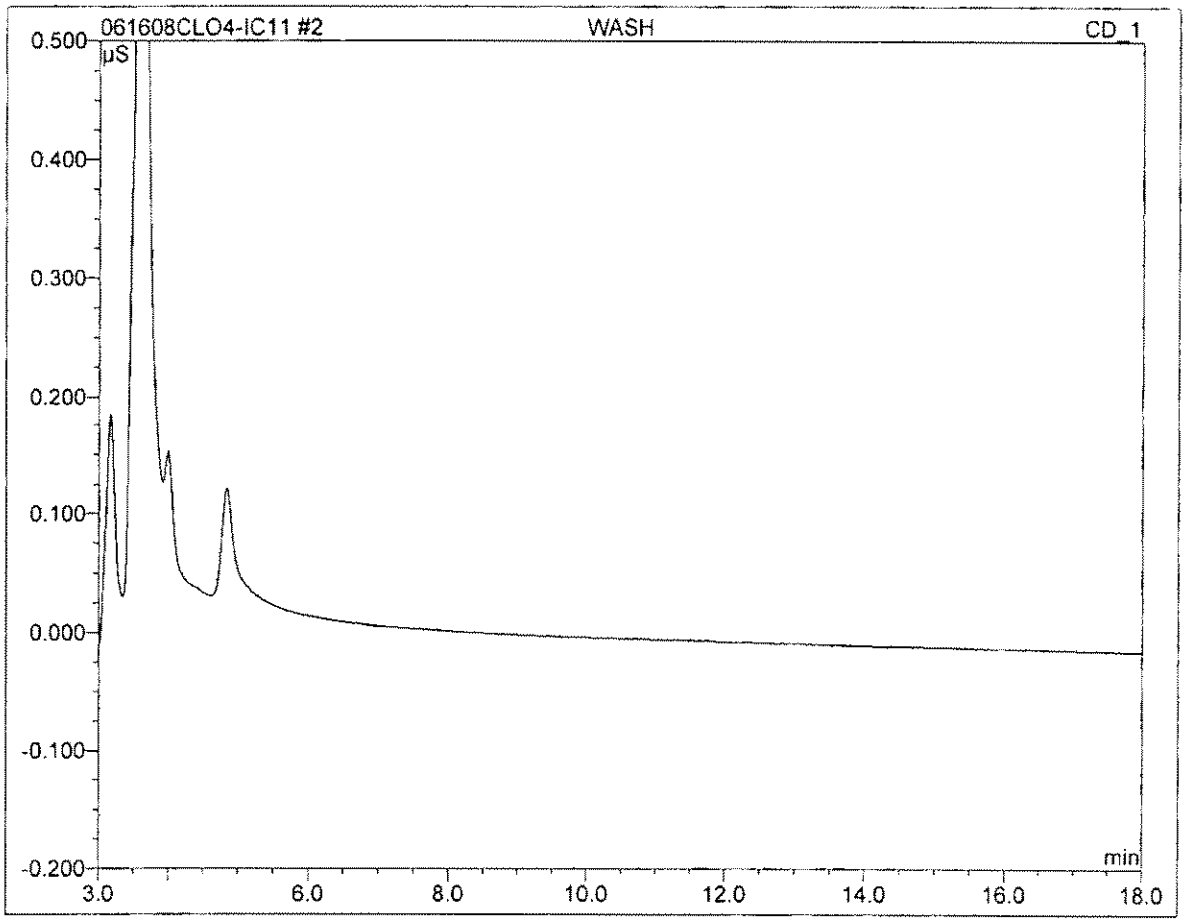
Sample Name:	**WASH**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 15:29**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

2 WASH

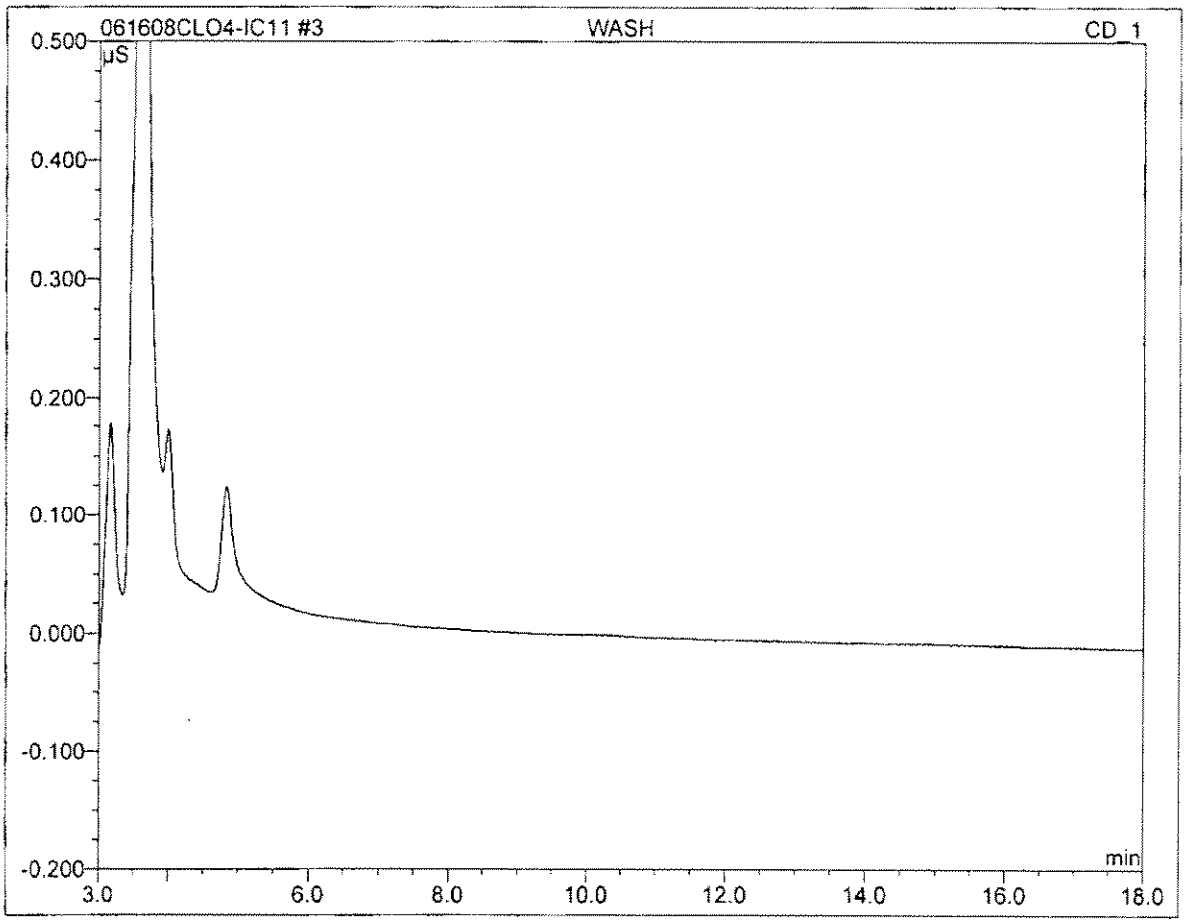
Sample Name:	**WASH**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 15:52**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

3 WASH

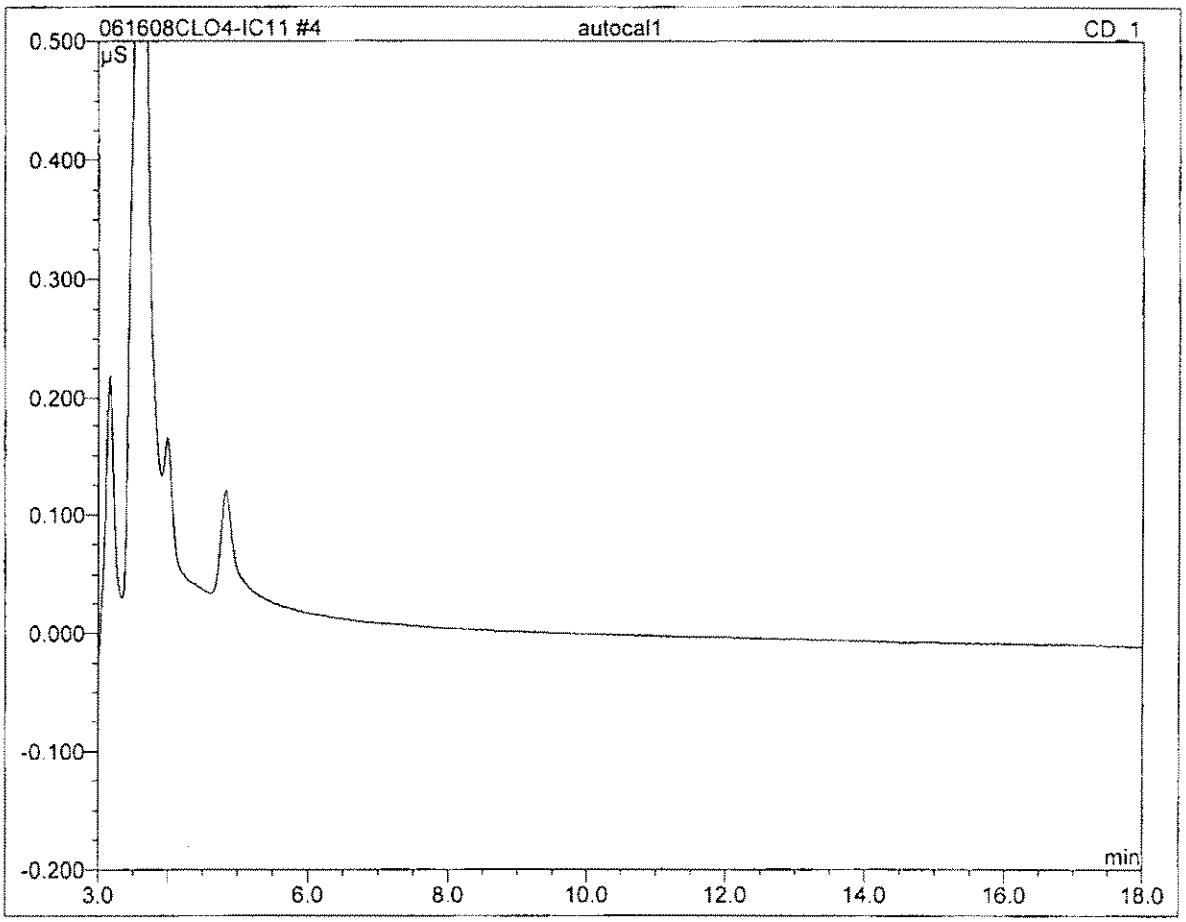
Sample Name:	**WASH**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 16:14**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

4 autocal1

Sample Name:	**autocal1**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 16:37**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

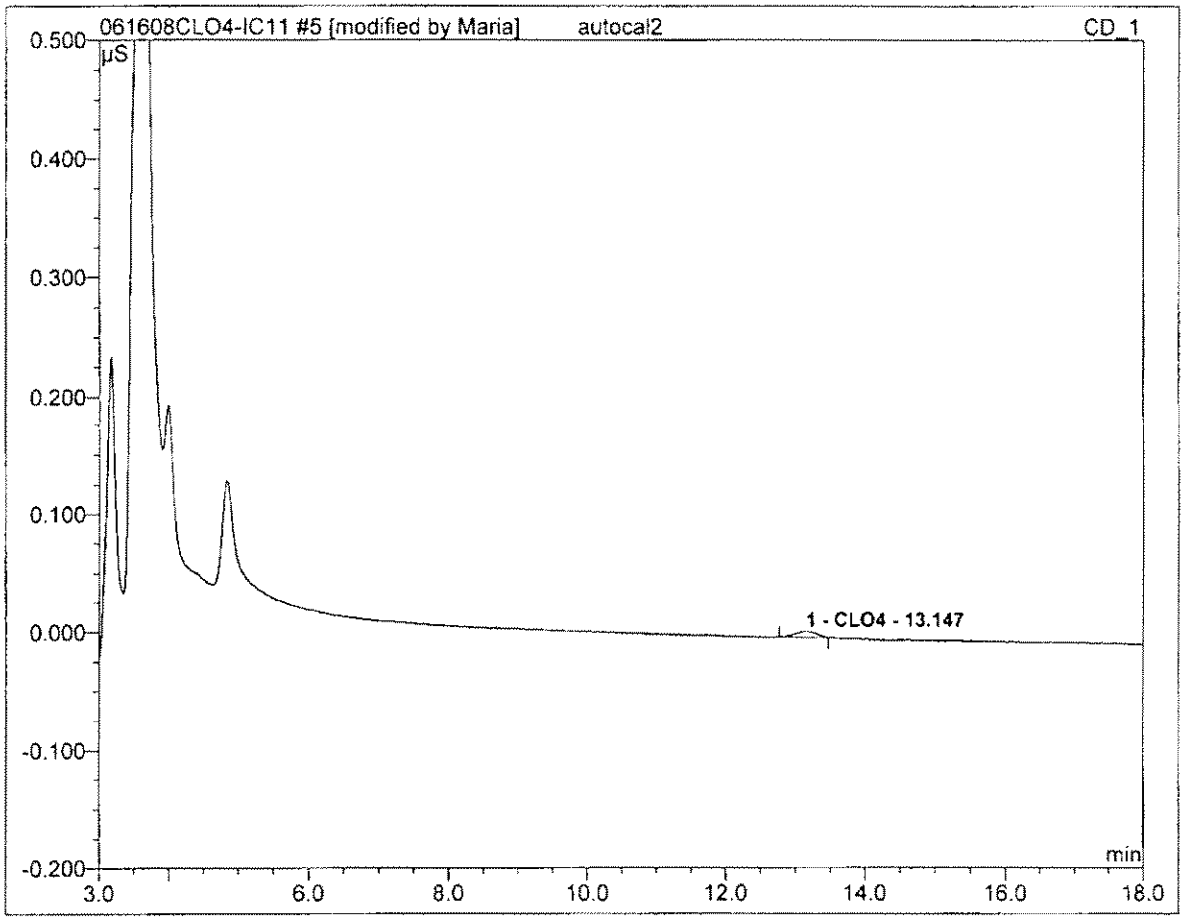


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

5 autocal2

2

Sample Name:	**autocal2**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 16:59**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

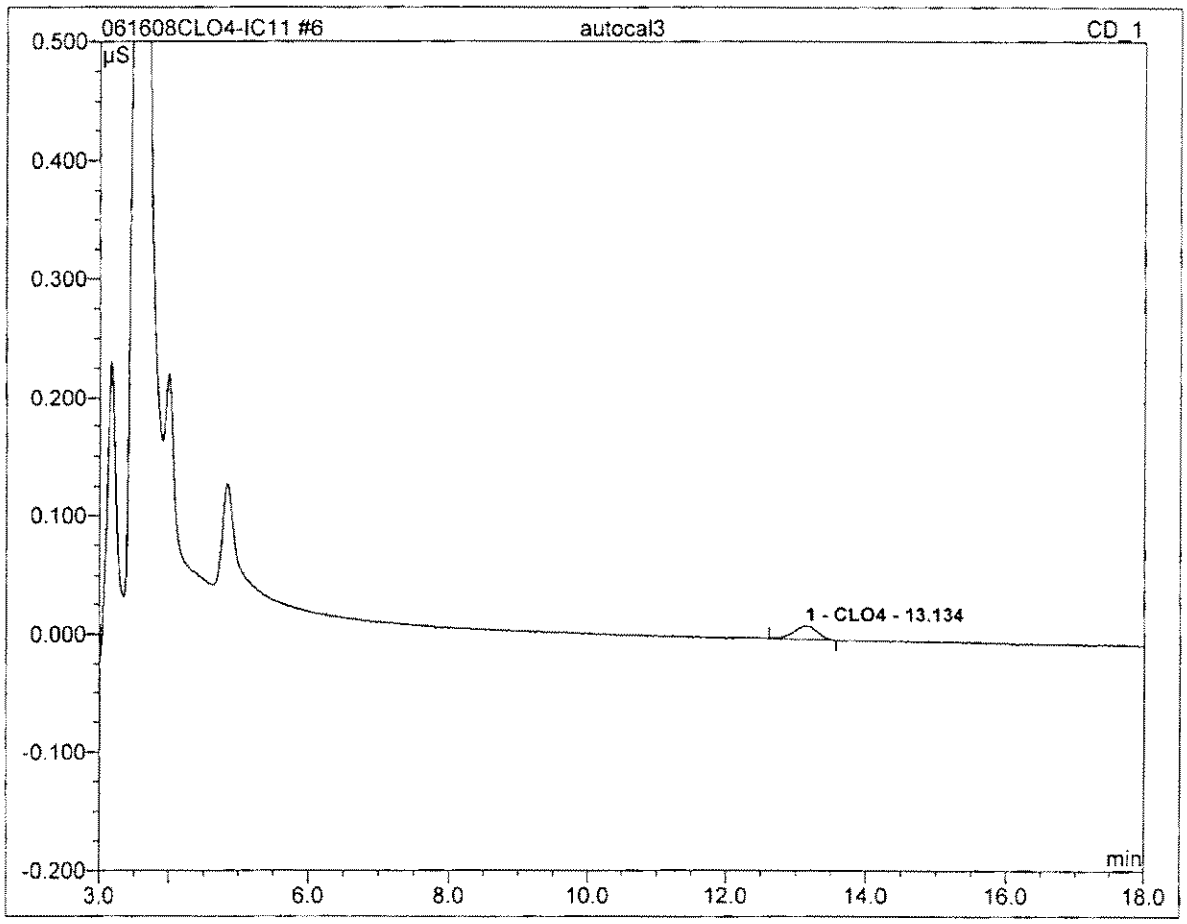


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.15	CLO4	0.005	0.002	100.00	1.829	BMB*
Total:			0.005	0.002	100.00	1.829	

6 autocal3

4

Sample Name:	**autocal3**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 17:22**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

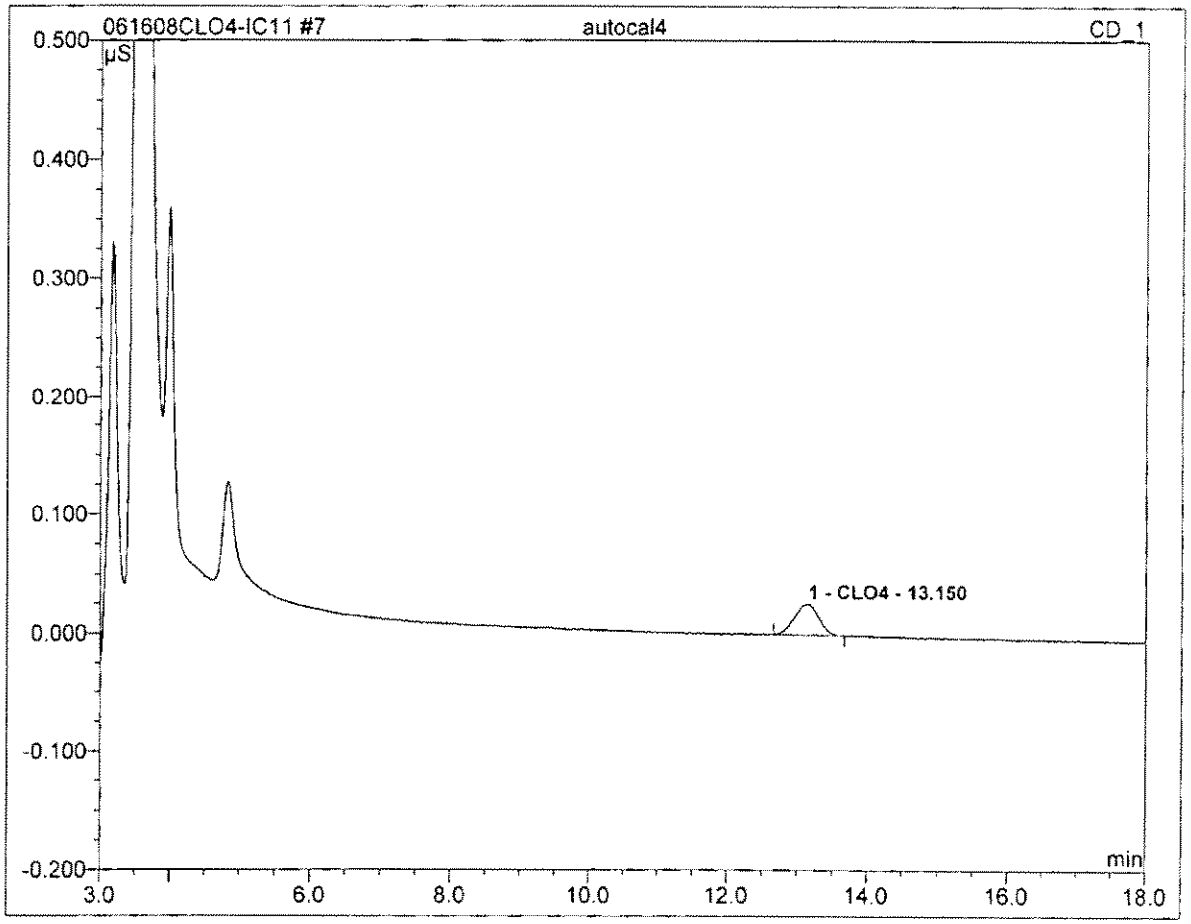


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.13	CLO4	0.011	0.004	100.00	4.157	BMB
Total:			0.011	0.004	100.00	4.157	

7 autocal4

10

Sample Name:	**autocal4**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 17:44**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

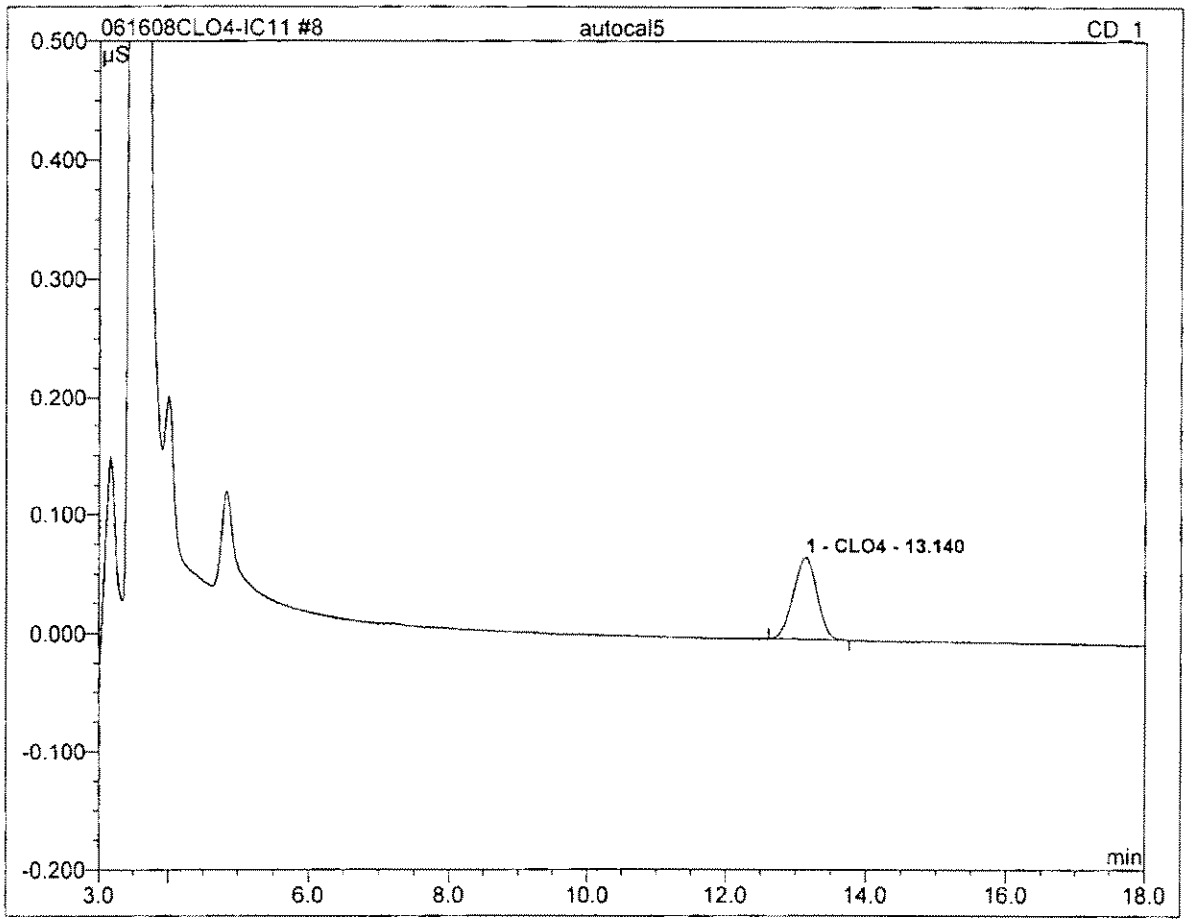


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.15	CLO4	0.027	0.011	100.00	9.921	BMB
Total:			0.027	0.011	100.00	9.921	

8 autocal5

25

Sample Name:	**autocal5**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 18:07**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

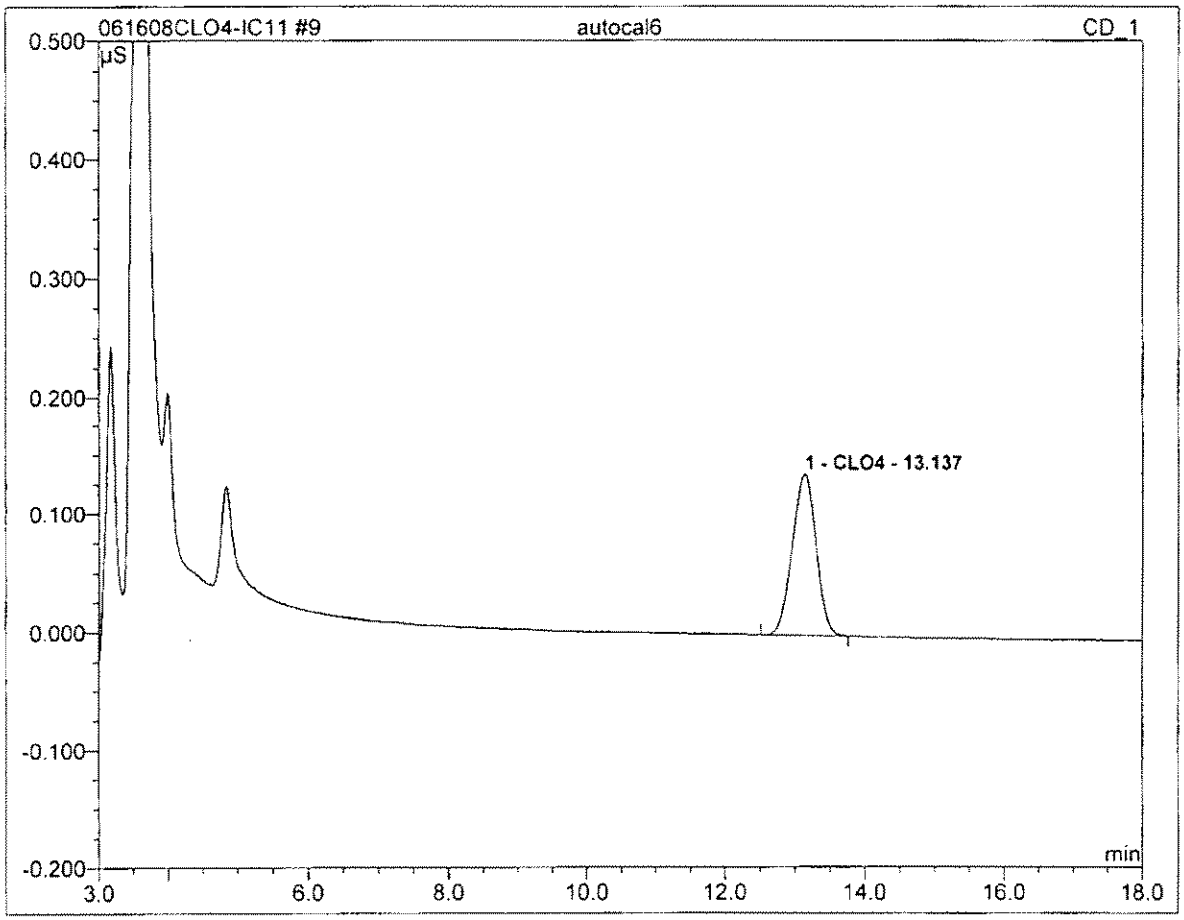


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.14	CLO4	0.069	0.027	100.00	25.209	BMB
Total:			0.069	0.027	100.00	25.209	

9 autocal6

50

Sample Name:	**autocal6**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 18:29**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

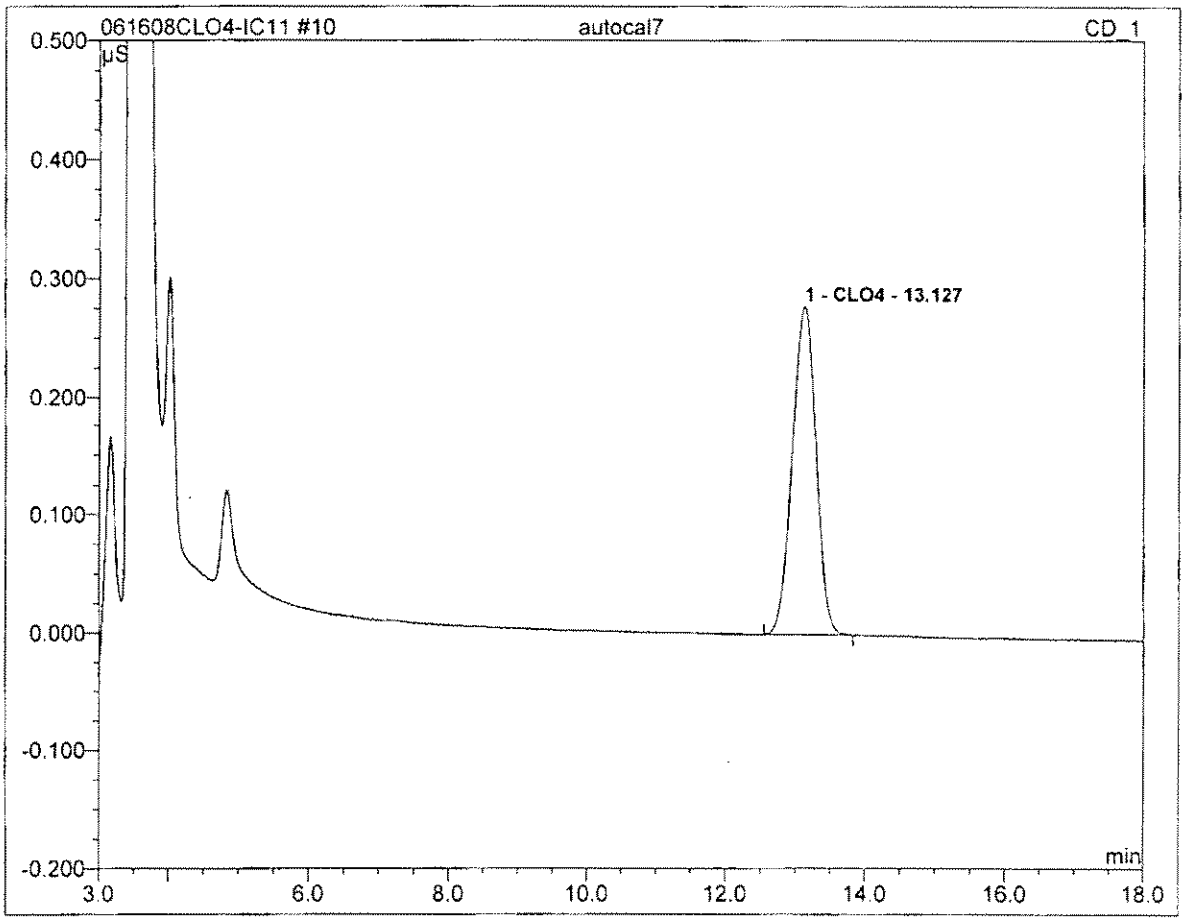


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.14	CLO4	0.137	0.054	100.00	49.862	BMB
Total:			0.137	0.054	100.00	49.862	

10 autocal7

100

Sample Name:	**autocal7**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/13/2008 18:52**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**mce**	*Dilution Factor:*	**1.0000**

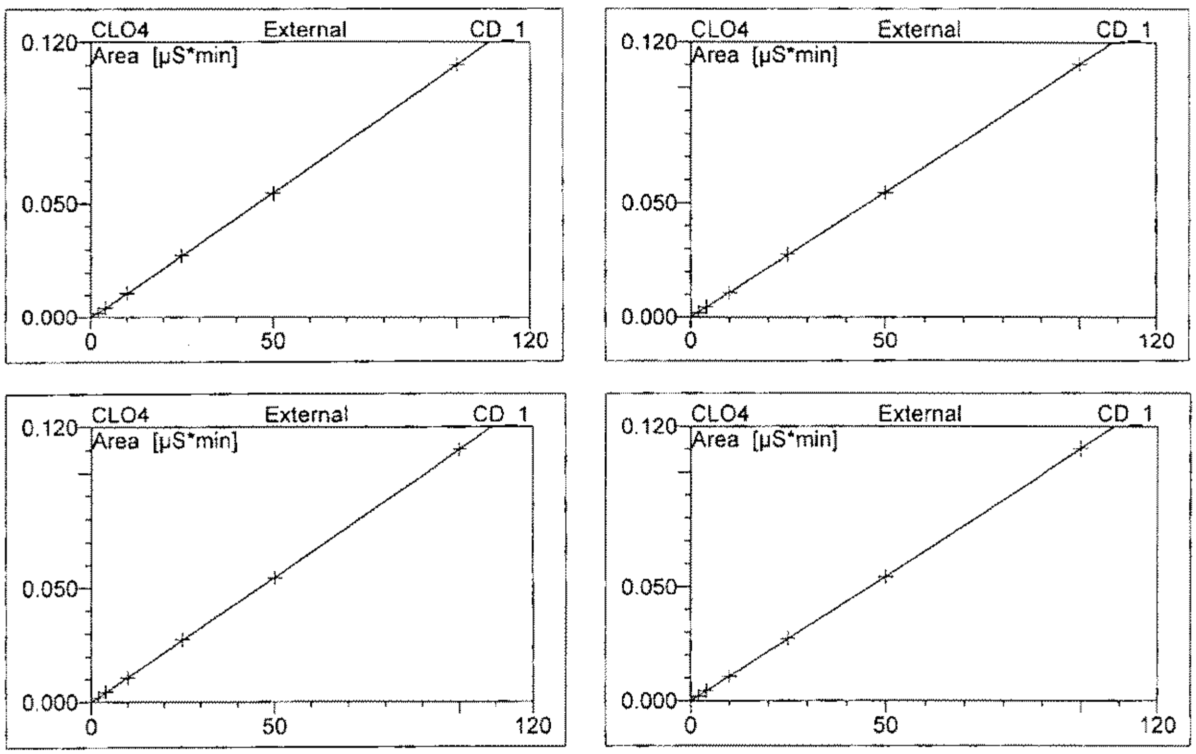


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.13	CLO4	0.279	0.110	100.00	100.022	BMB
Total:			0.279	0.110	100.00	100.022	

10 autocal7

100

Sample Name:	**autocal7**	*Injection Volume:*	**20.0**
Vial Number:	**141**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Perchlorate-IC11**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC#4-CLO4-LOW**	*Dilution Factor:*	**1.0000**
Recording Time:	**6/13/2008 18:52**	*Sample Weight:*	**1.0000**
Run Time (min):	**20.00**	*Sample Amount:*	**1.0000**

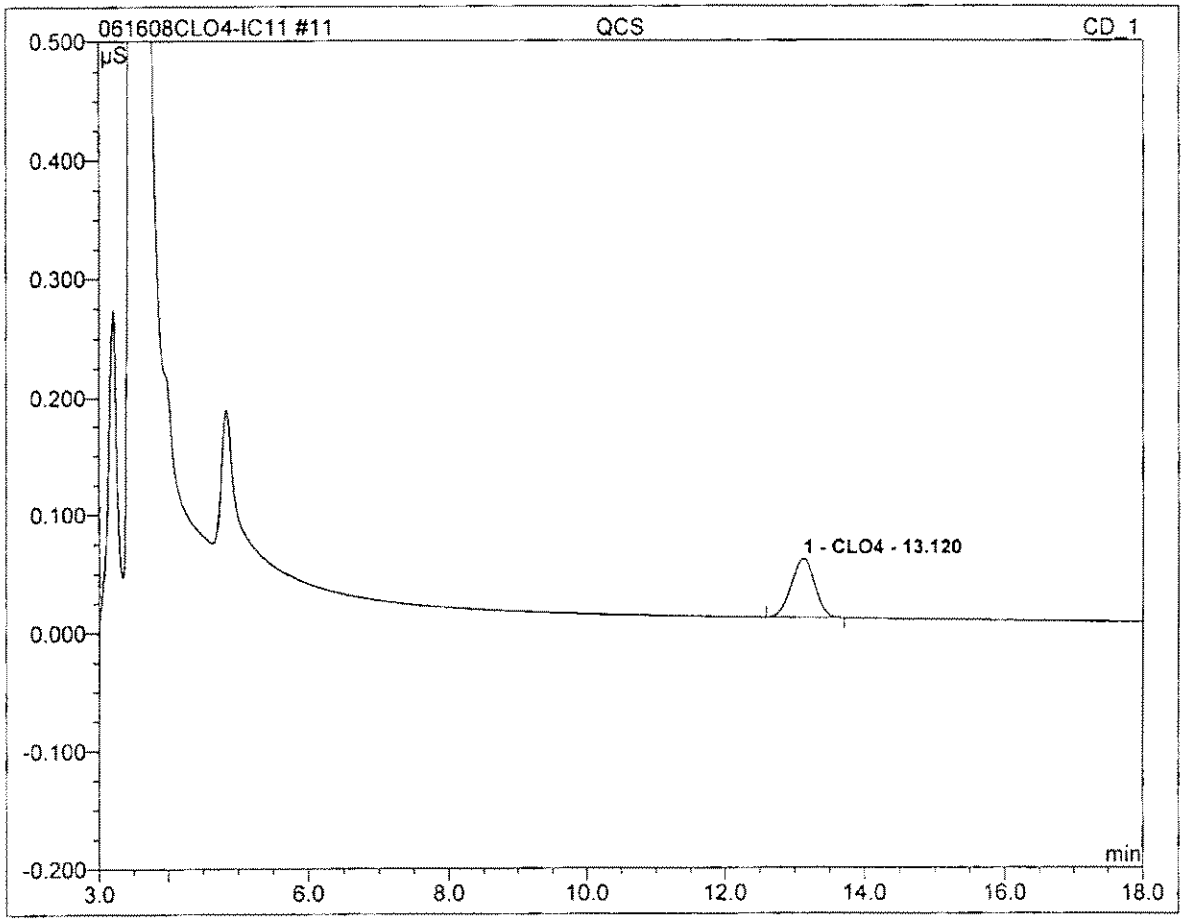


No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
1	13.13	CLO4	QOff	6	99.9982	-0.0001	0.0011	0.0000
Average:					99.9982	-0.0001	0.0011	0.0000

11 QCS

20

Sample Name:	**QCS**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 10:33**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**

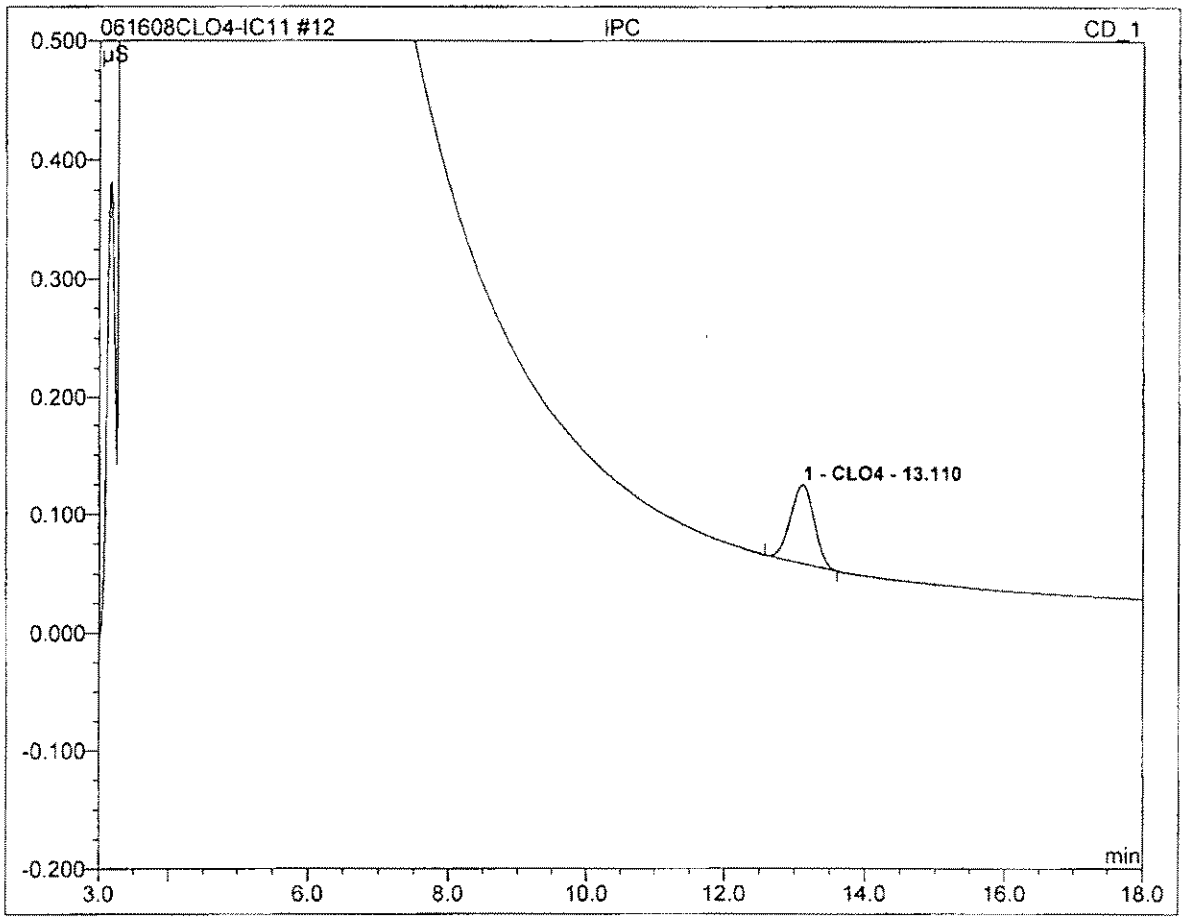


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.12	CLO4	0.050	0.020	100.00	18.185	BMB
Total:			0.050	0.020	100.00	18.185	

12 IPC

25

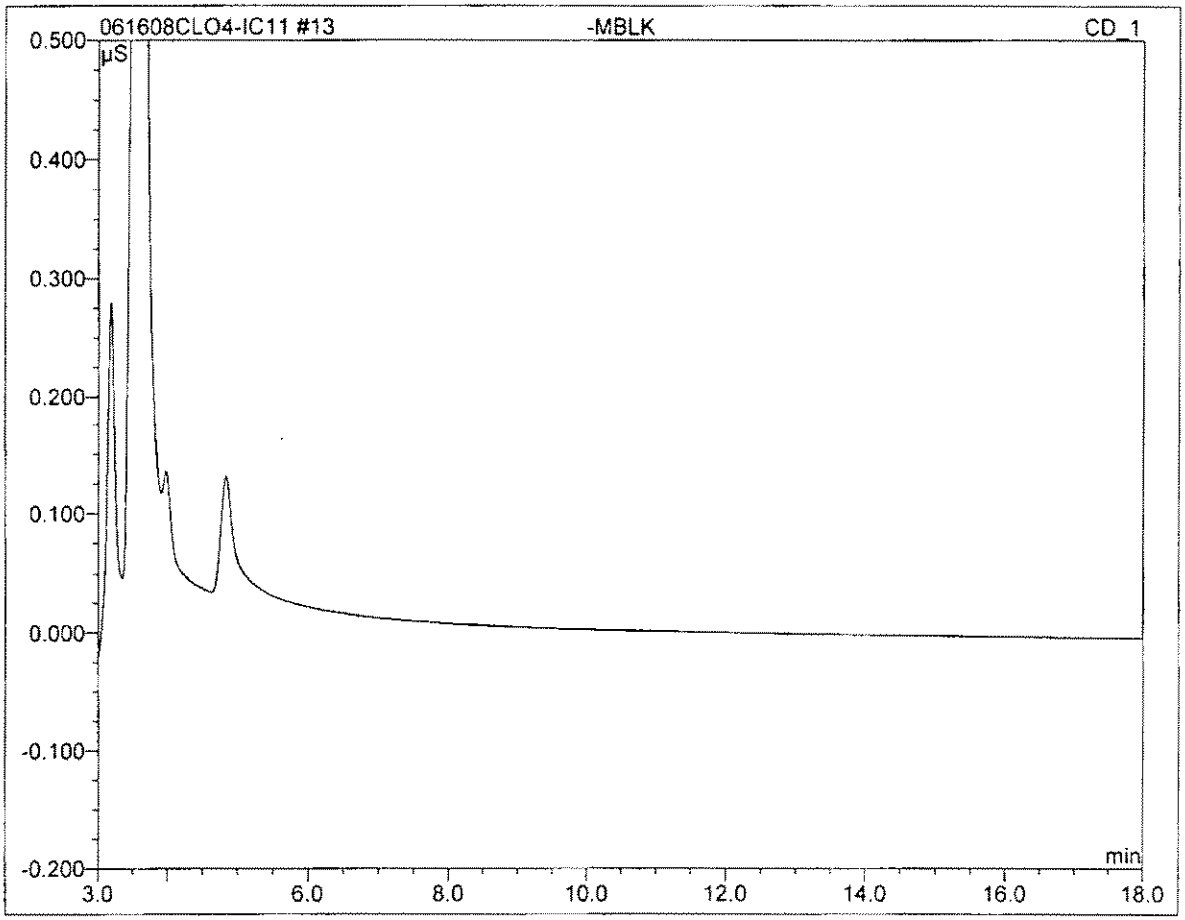
Sample Name:	**IPC**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 10:56**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.11	CLO4	0.066	0.026	100.00	23.566	BMB
Total:			0.066	0.026	100.00	23.566	

13 -MBLK

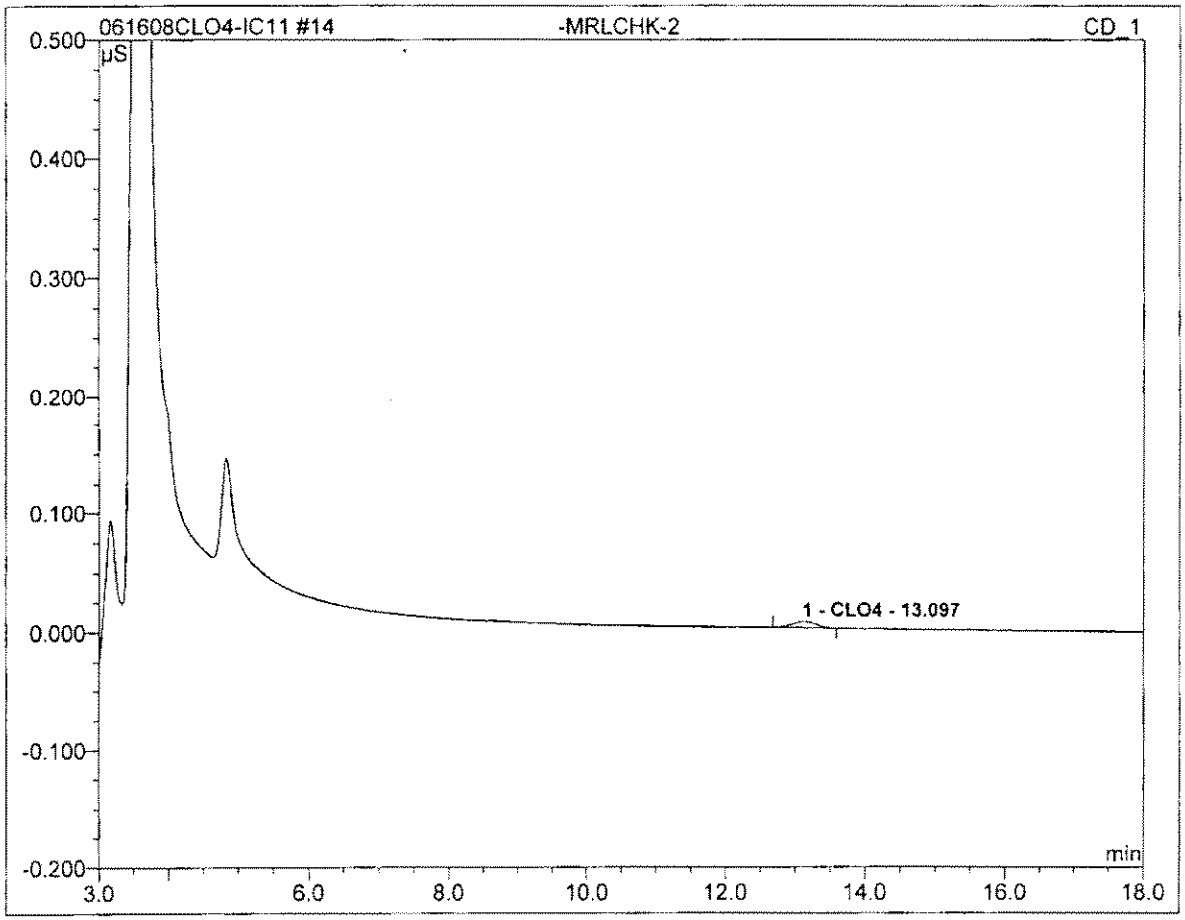
Sample Name:	**-MBLK**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 11:18**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

14 -MRLCHK-2

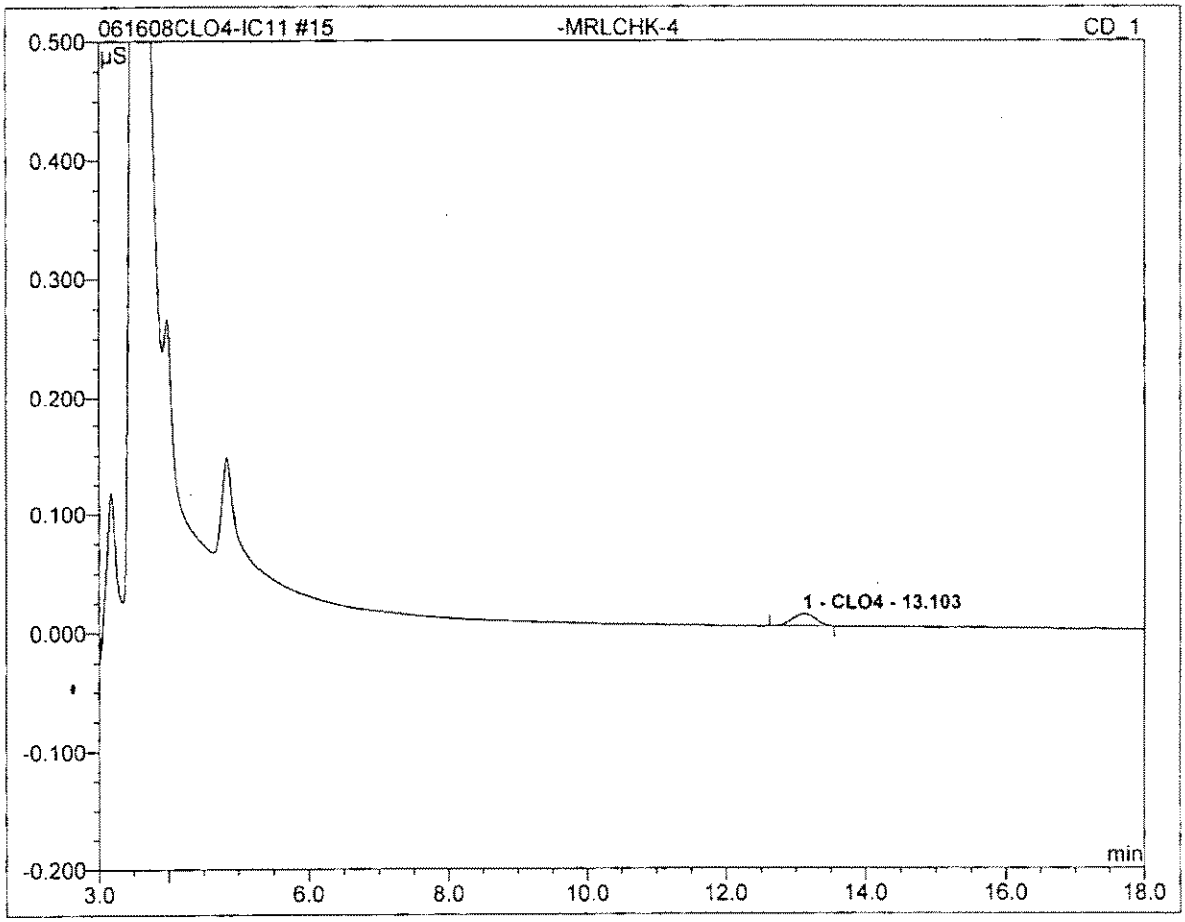
Sample Name:	**-MRLCHK-2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 11:41**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.10	CLO4	0.005	0.002	100.00	1.926	BMB
Total:			0.005	0.002	100.00	1.926	

15 -MRLCHK-4

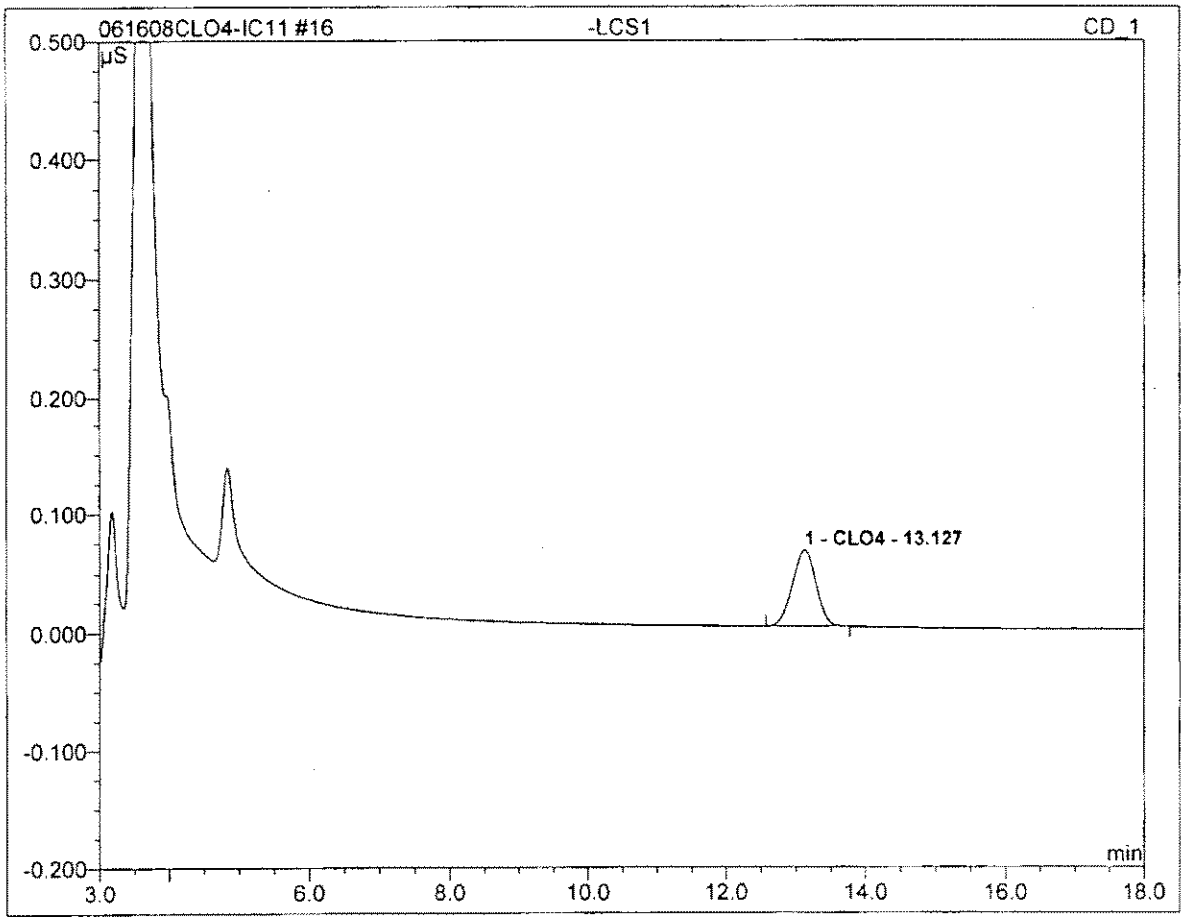
Sample Name:	**-MRLCHK-4**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 12:03**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.10	CLO4	0.011	0.004	100.00	3.880	BMB
Total:			0.011	0.004	100.00	3.880	

16 -LCS1

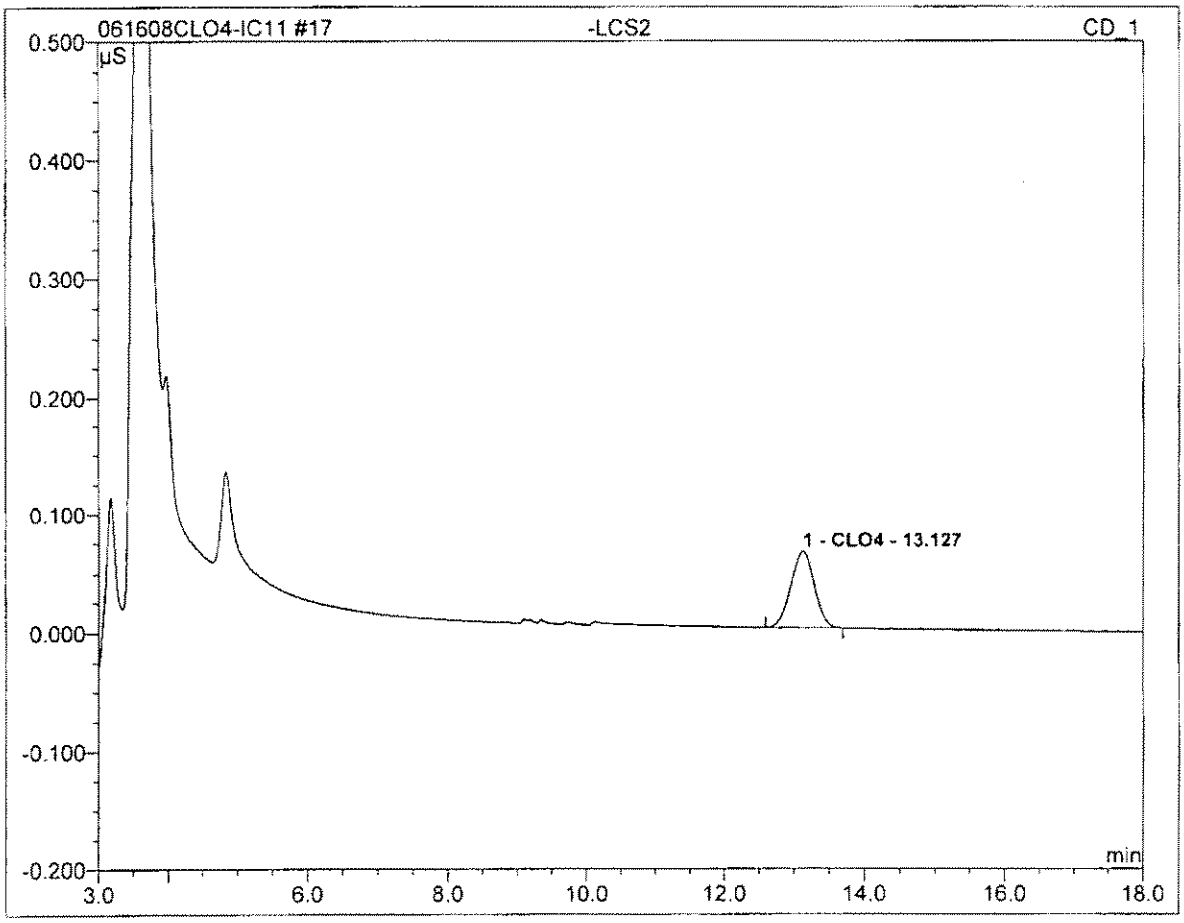
Sample Name:	**-LCS1**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 12:25**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.13	CLO4	0.064	0.025	100.00	23.087	BMB
Total:			0.064	0.025	100.00	23.087	

17 -LCS2

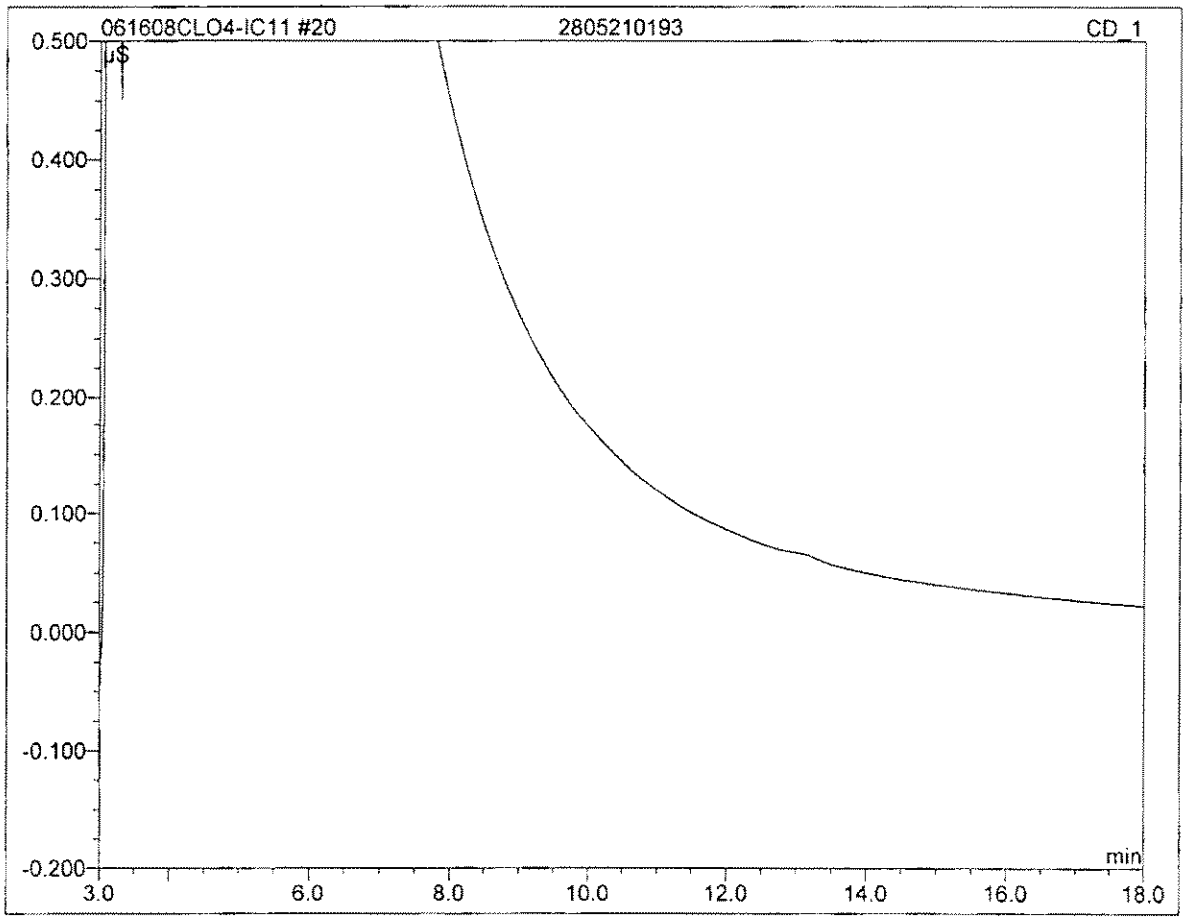
Sample Name:	**-LCS2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 12:48**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.13	CLO4	0.064	0.025	100.00	23.153	BMB
Total:			0.064	0.025	100.00	23.153	

20 2805210193

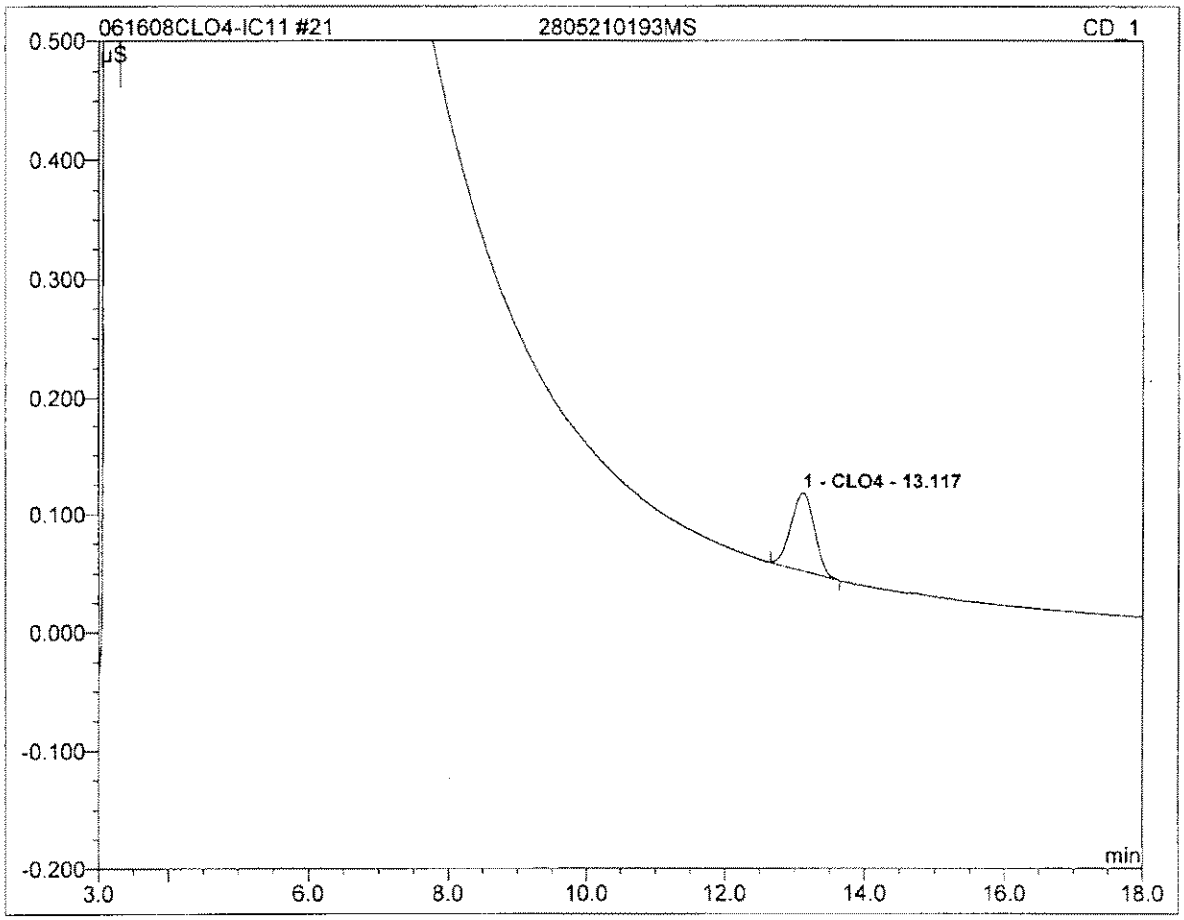
Sample Name:	**2805210193**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 13:55**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

21 2805210193MS

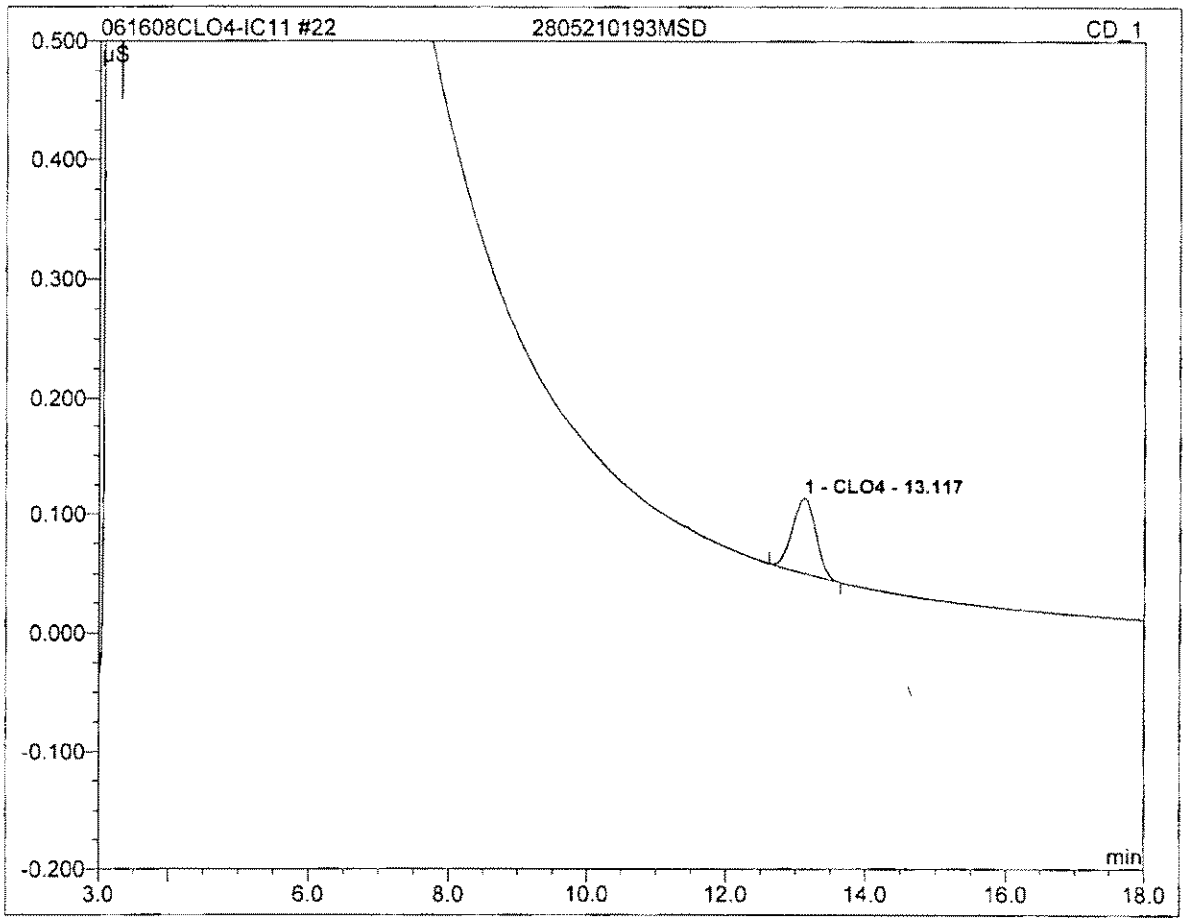
Sample Name:	**2805210193MS**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 14:17**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.12	CLO4	0.066	0.026	100.00	23.594	BMB
Total:			0.066	0.026	100.00	23.594	

22 2805210193MSD

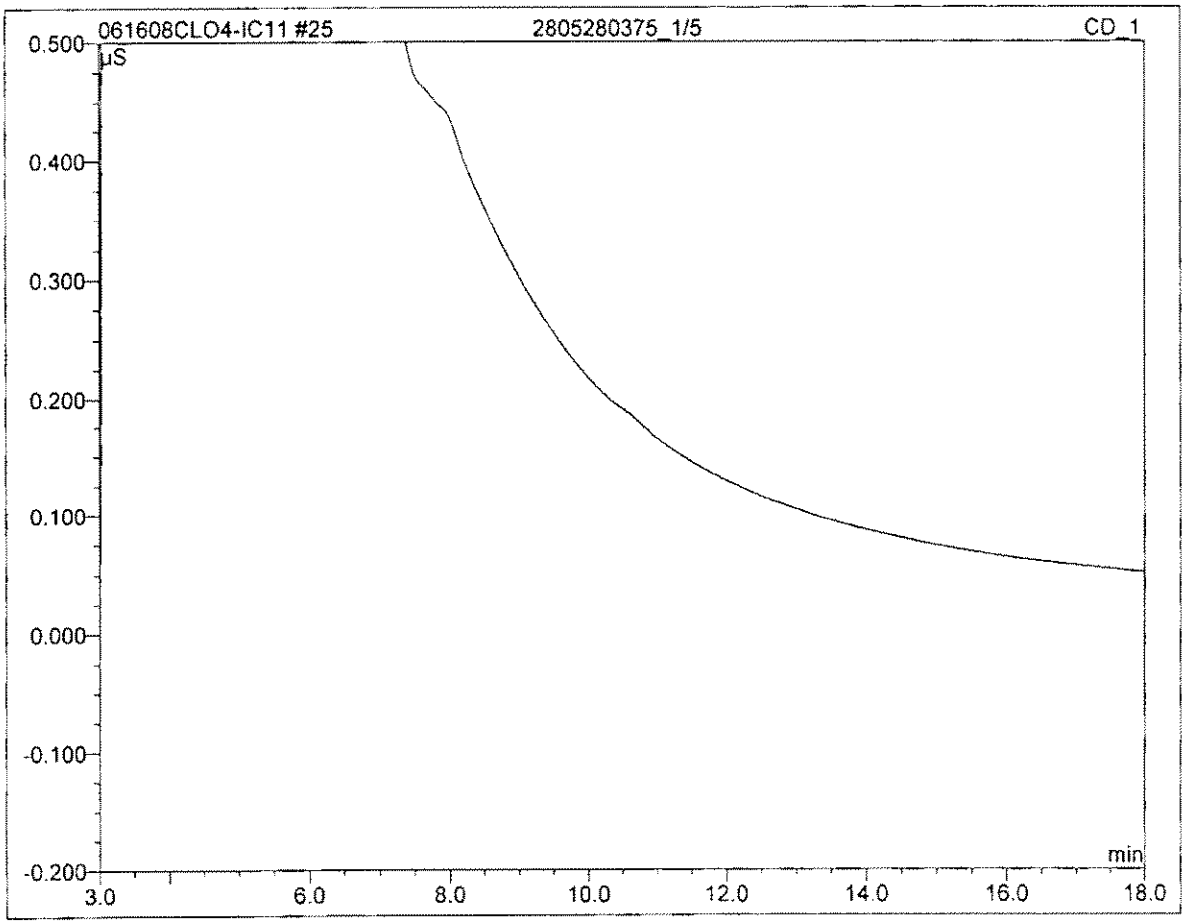
Sample Name:	**2805210193MSD**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 14:40**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.12	CLO4	0.063	0.025	100.00	22.635	BMB
Total:			0.063	0.025	100.00	22.635	

25 2805280375_1/5

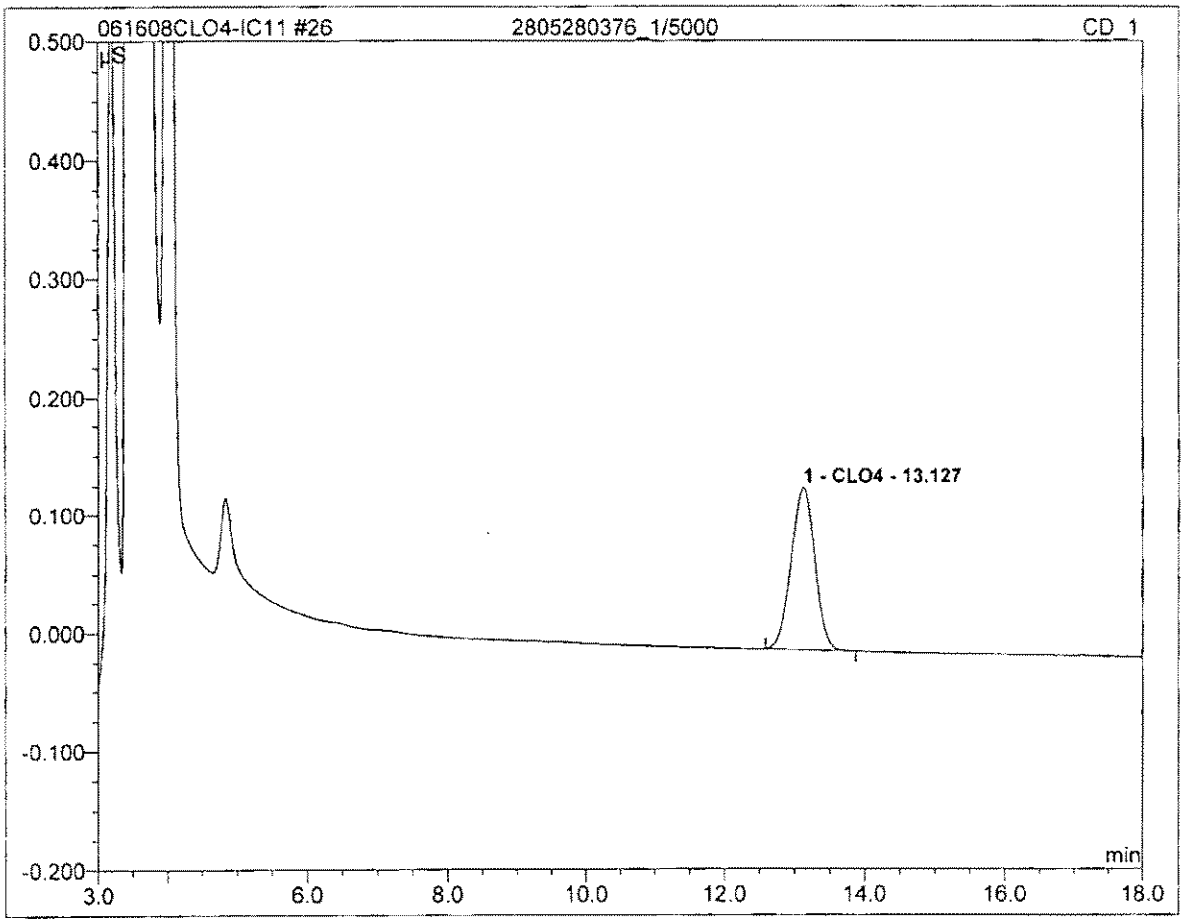
Sample Name:	**2805280375_1/5**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 15:47**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**5.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

26 2805280376_1/5000

Sample Name:	**2805280376_1/5000**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 16:09**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**5000.0000**

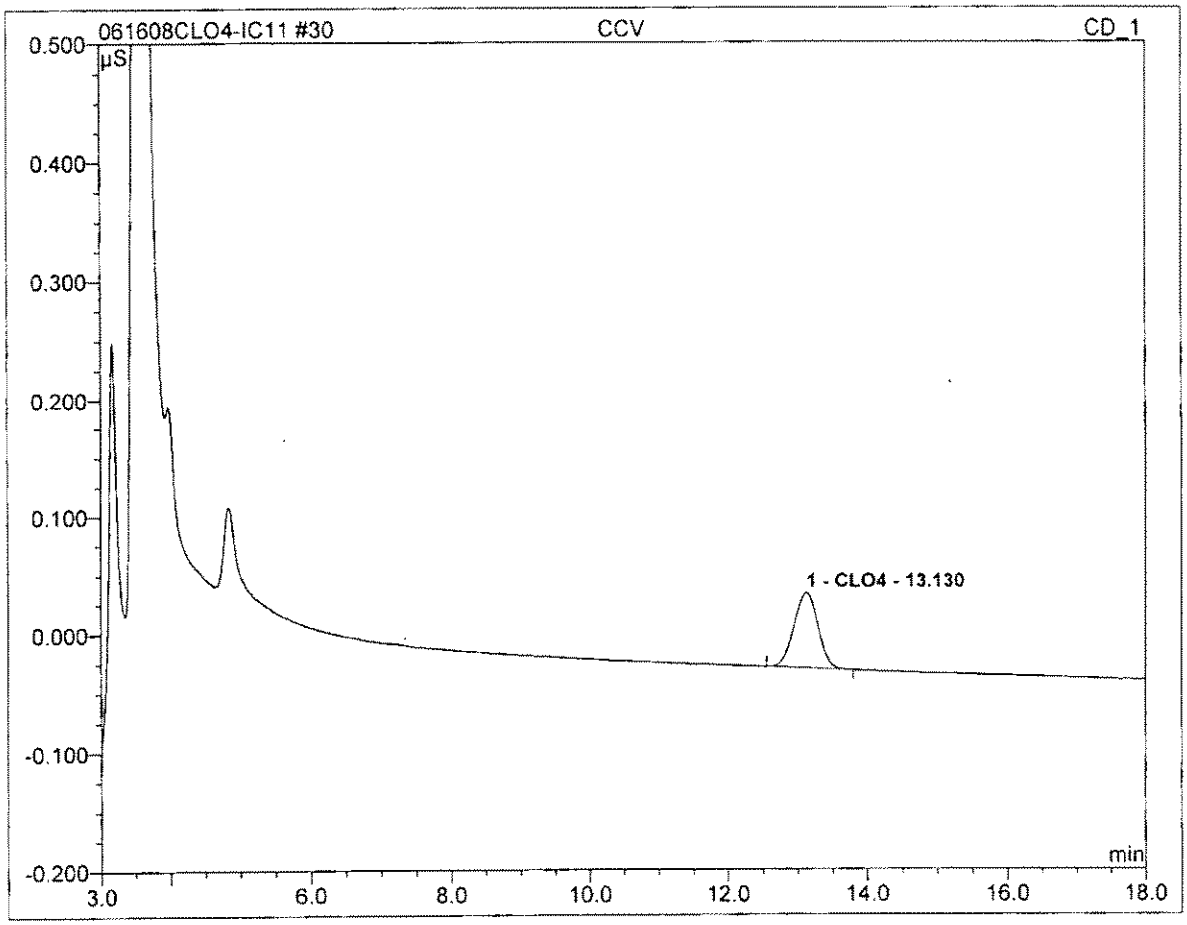


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.13	CLO4	0.138	0.054	100.00	248025.255	BMB
Total:			0.138	0.054	100.00	248025.255	

30 CCV

25

Sample Name:	**CCV**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 17:39**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**

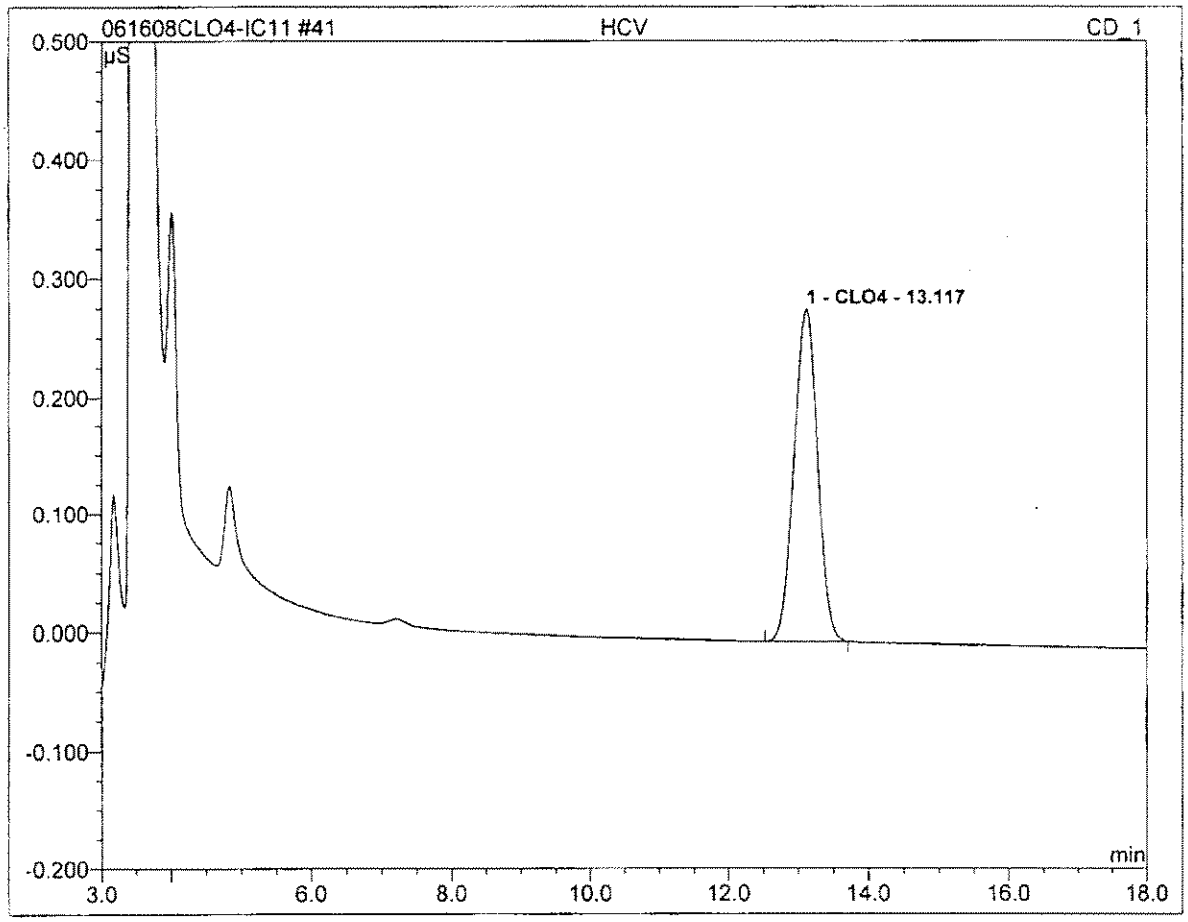


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.13	CLO4	0.064	0.025	100.00	23.387	BMB
Total:			0.064	0.025	100.00	23.387	

41 HCV

100

Sample Name:	**HCV**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**06/16/2008 21:45**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**raja**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	13.12	CLO4	0.283	0.110	100.00	99.927	BMB
Total:			0.283	0.110	100.00	99.927	

Standard Preparation Worksheet & Certificate of Analysis

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ISO 9001:2000 Quality System Registered
ISO/IEC Guide 17025 ANSI Z540 Compliant
DLS ANSI/RAB Accredited

CERTIFIED WEIGHT REPORT:

Part Number: 57001
Lot Number: 072806
Description: Perchlorate

R201449

Expiration Date: 072809

Nominal Concentration (µg/mL): 1000

	Lot #		
Solvent(s):	072806	ASTM Type 1 Water	

5E-05 Balance Uncertainty

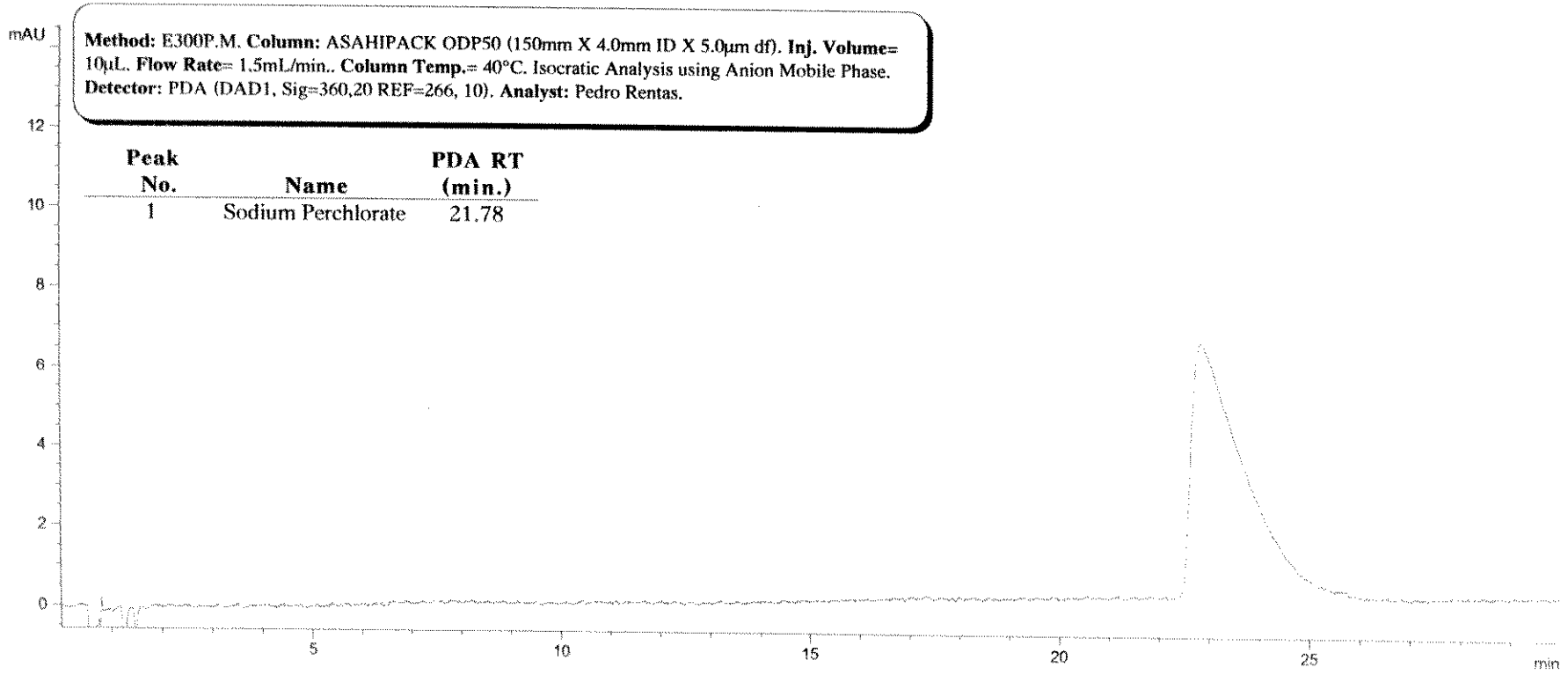
Weight(s) shown below were combined and diluted to (mL): 1000.55 0.084 Flask Uncertainty

Formulated By: Lawrence Barry 072806

Reviewed By: Pedro L. Rentas 072806

MSDS Information

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity	Uncertainty Purity	Assay (%)	*Target Weight(g)	Actual Weight(g)	*Actual Conc (µg/mL)	Expanded Uncertainty (+/-)	(Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Sodium Perchlorate (ClO4)	IN119	AR06730TQ	1000.0	99.0	0.10	81.2	1.2319	1.23216	1000.2	0.00203	07601-89-0	N/A	N/A	3152a



Method: E300P.M. **Column:** ASAHIPACK ODP50 (150mm X 4.0mm ID X 5.0µm df). **Inj. Volume=** 10µL. **Flow Rate=** 1.5mL/min.. **Column Temp.=** 40°C. Isocratic Analysis using Anion Mobile Phase. **Detector:** PDA (DAD1, Sig=360,20 REF=266, 10). **Analyst:** Pedro Rentas.

Peak No.	Name	PDA RT (min.)
1	Sodium Perchlorate	21.78

Reagent: Fluoride Std-1000ppm
Date Received: 7 Sep 06
Date Expired: 1 Oct 07
Manufacturer: Inorganic Ventures
Storage Condition: refrigerate 4±2°C

Reagent #: 201447
By: LMR
Matrix: aq
Amount: 125 ml
Lot #: Y-F01097

Component	Comment	Standard	Concentration
	IV # ICFI-1		

Comment:

Reagent: Phosphate as P 1000ppm std
Date Received: 11 Sep 06
Date Expired: 31 Aug 09
Manufacturer: Absolute Stds
Storage Condition: refrigerate 4±2°C

Reagent #: 201448
By: LMR
Matrix: aq
Amount: 500 ml
Lot #: 083106

Component	Comment	Standard	Concentration
	Abs Std # 54505		

Comment:

Reagent: Perchlorate 1000ppm std
Date Received: 11 sept 06
Date Expired: 28 Jul 09
Manufacturer: Absolute Stds
Storage Condition: refrigerate 4±2°C

Reagent #: 201449
By: LMR
Matrix: aq
Amount: 100 ml
Lot #: 072806

Component	Comment	Standard	Concentration
	Abs std # 54201		

Comment:

LCS 3000

Reagent:	IPC 5 PPB w/ 150 PPM SALT	**MW #:**	MCE080227-2
Date Received/Prepped:	2-27-08 / 03-07-08 / 04-01-08 / / /	**By:**	MCE
Date Expired:	2-27-08 / 03-07-08 / 04-01-08 / / /	**Matrix:**	AQ
Manufacturer:		**Amount:**	100 ML
Storage Condition:		**Lot #:**	

Component	Comment	Standard	Concentration
	0.5 ML 1000 PPB ClO4		
	CO3		
	1.5 ML [10,000 PPM Cl	SOLN]	
	EACH SO4		
	~~ML~~		
	to vol 100 ML w/ DI H2O		

Comment:

EC 1434

Reagent:	10 PPM ClO4 - LCS	**MW #:**	MCE080312-1
Date Received/Prepped:	3-12-08 / 6-11-08 / / / /	**By:**	MCE
Date Expired:	6-12-08 / 9-11-08 / / / /	**Matrix:**	AQ
Manufacturer:		**Amount:**	100 ML
Storage Condition:	R.T.	**Lot #:**	

Component	Comment	Standard	Concentration
	1 ML 1000 PPM ClO4	R201789 (EXP 7/09)	
	TO VOL 100 ML w/ DI H2O		

Comment:

Reagent:	10 PPM ClO4 - CAL	**MW #:**	MCE080312-2
Date Received/Prepped:	3-12-08 / 6-11-08 / / / /	**By:**	MCE
Date Expired:	6-12-08 / 9-11-08 / / / /	**Matrix:**	AQ
Manufacturer:		**Amount:**	100ML
Storage Condition:	R.T.	**Lot #:**	

Component	Comment	Standard	Concentration
	1 ML 1000 PPM ClO4	R201449 (EXP. 7/09)	
	TO VOL 100 ML w/ DI H2O		

Comment:

Reagent: 1000 PPB ClO4 - LCS
Date Received/Prepped: 03-12-08 / 06-11-08 / / /
Date Expired: 06-12-08 / 09-11-08 / / /
Manufacturer:
Storage Condition: R.T.

MW #: MLE080312-3
By: MLE
Matrix: AQ
Amount: 100 ML
Lot #:

Component	Comment	Standard	Concentration
	10 ML 10 PPM ClO4 - LCS	MLE080313-1	
	TO VOL W/ DI H2O		

Comment:

Reagent: 1000 PPB ClO4 - CAL
Date Received/Prepped: 03-12-08 / 06-11-08 / / /
Date Expired: 06-12-08 / 09-11-08 / / /
Manufacturer:
Storage Condition: R.T.

MW #: MLE080312-4
By: MLE
Matrix: AQ
Amount: 100 ML
Lot #:

Component	Comment	Standard	Concentration
	10 ML 10 PPM ClO4 - CAL	MLE080313-2	
	TO VOL. W/ DI H2O		

Comment:

Reagent: 10,000 PPM SO4 SOLN
Date Received/Prepped: 03-12-08 / 06-20-08 / / /
Date Expired: 06-12-08 / 09-11-08 / / /
Manufacturer:
Storage Condition: R.T.

MW #: MLE080312-5
By: MLE
Matrix: AQ
Amount: 100 ML
Lot #:

Component	Comment	Standard	Concentration
	1.48 g SODIUM SULFATE (R201792	EXP 3/13)	
	TO 100 ML W/ DI H2O		

Comment:

Reagent: MNL - 2 PPB CL04 - cal
Date Received/Prepped: 03-12-08/ 6:11 08/ / / /
Date Expired: 06-12-08/ 9:11 08/ / / /
Manufacturer:
Storage Condition: R.T.

MW #: MWE080312-12
By: MWE
Matrix: AQ
Amount: 100 ML
Lot #:

Component	Comment	Standard	Concentration
	200 ml 1000 ppb Cl04 - cal	MWE080312-4	
	to 100 ml w/ DIH_2O		

Comment:

Reagent: MNL - 4 PPB Cl04 - cal
Date Received/Prepped: 03-12-08/ 6:11 08/ / / /
Date Expired: 06-12-08/ 9:11 08/ / / /
Manufacturer:
Storage Condition: R.T.

MW #: MWE080312-13
By: MWE
Matrix: AQ
Amount: 100 ML
Lot #:

Component	Comment	Standard	Concentration
	400 µl 1000 ppb Cl04 - cal	MWE080312-4	
	to 100 ml w/ DIH_2O		

Comment:

Reagent: 10 ppb Cl04 - cal
Date Received/Prepped: 03-12-08/ 6:11 08/ / / /
Date Expired: 06-12-08/ 9:11 08/ / / /
Manufacturer:
Storage Condition: R.T.

MW #: MWE080312-14
By: MWE
Matrix: AQ
Amount: 1 L bottle
Lot #:

Component	Comment	Standard	Concentration
	1.0 ml 1000 ppb Cl04 - cal	MWE080312-4	
	to 1100 ml w/ DIH_2O		

Comment:

Reagent: 25 ppb CLO4 - CCV
Date Received/Prepped: 02-12-08 16-11 BS / / /
Date Expired: 06-12-08 19-11 BS / / /
Manufacturer:
Storage Condition: R.T

MW #: MLE080312-15
By: MLE
Matrix: AG
Amount: 100ML
Lot #:

Component	Comment	Standard	Concentration
	2.5 ML 1000 ppb CLO4 - cal	MLE080312-	4
	to 100 mL w/ DI H2O		

Comment:

Reagent: 50 ppb CLO4
Date Received/Prepped: 02-12-08 16-11 BS / / /
Date Expired: 06-12-08 19-11 BS / / /
Manufacturer:
Storage Condition: R.T.

MW #: MLE080312-16
By: MLE
Matrix: AG
Amount: 100ML
Lot #:

Component	Comment	Standard	Concentration
	5.0 ML 1000 ppb CLO4 - cal	MLE080312-	4
	to 100 mL w/ DI H2O		

Comment:

Reagent: 100 ppb CLO4 - MCV
Date Received/Prepped: 02-12-08 16-11 BS / / /
Date Expired: 02-12-08 19-11 BS / / /
Manufacturer:
Storage Condition: R.T.

MW #: MLE080312-17
By: MLE
Matrix: AG
Amount: 100ML
Lot #:

Component	Comment	Standard	Concentration
	10.0 ML 1000 ppb CLO4 - cal	MLE080312-	4
	to 100 mL w/ DI H2O		mcv

Comment:

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R201803
rec'd 5-28-08

CERTIFICATE OF ANALYSIS

1.0 **INORGANIC VENTURES** is an ISO Guide 34:2000 registered Certified Reference Material (CRM) Manufacturer (Certificate #883-02). The certificate is designed and the data is determined in accordance with ISO Guide 31:2000 (Reference Materials-Contents of Certificates and Labels), ISO Guide 34:2000 "Quality System Guidelines for the Production of Reference Materials," and ISO Guide 35:1989 "Certification of Reference Materials - General and Statistical Principals."

2.0 **DESCRIPTION OF CRM** **Ion Chromatography 1000 µg/mL Chlorate in H2O**

Catalog Number:	ICCLO31-1 and ICCLO31-5
Lot Number:	**A2-CLOX01044**
Starting Material:	Potassium Chlorate
Starting Material Purity (%):	99.9900
Starting Material Lot No.:	02407TF
Matrix:	H2O

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 994 ± 2 µg/mL

Certified Density: 0.999 g/mL (measured at 22° C)

The Certified Value is based upon the most precise method used to analyze this CRM. The following equations are used in the calculation of the certified value and the uncertainty:

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

The independent samples t-test was used to determine if there is agreement between the above assay methods at the 95% confidence interval. Both methods were compared and showed agreement within the stated uncertainties. This agreement is a confirmation of the accuracy of this CRM.

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

- "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)
- This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

Assay Method #1 **1003 ± 5 µg/mL**
ICP Assay NIST SRM 3182 Lot Number: 990506

Assay Method #2 **994 ± 2 µg/mL**
IC Assay NIST SRM Lot Number: in-house std