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Level IV Data Package

MWH Group 229554

Method: EPA 314

2802050696
2802050697

Perchlorate QC Checklist

rev: 27 Mar 03

Analysis Date: 02/07/08 **Analyst:** JKZ

Instrument: IC11 **Calculated MCT Level:** ~~1355~~ 3155 µS 02/25/08 umhos/cm **QC'd by** [illegible] **Date** 15 Feb 08

Original IPC conductance: ~~1300~~ 3100 µS 02/25/08 umhos/cm **Daily IPC conductance:** ~~1300~~ 3100 µS 02/25/08 umhos/cm Approximate value. EC was not taken, but copied from an earlier data sheet. 02/29 Mar 08

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.

✓ *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 = 1.412 ✓

✓ 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 ✓ (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) ✓ 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.

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

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

Samples

✓ All samples are analyzed within 28 days of collection.

✓ All samples are analyzed within MCT Conductance limit.

QIR

N/A QIR needed for failed QC

✓ QIR needed for samples analyzed outside of hold time

28 Dec 05; Rev 5
MWH Confidential

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Monrovia, CA 91016-3629

CONDUCTIVITY MW SOP REVISION 5
SM2510B

02/08/08 JK
~~02/07/08 JK~~
~~02/08/08~~

Analysis Date:
Analyst: NM
Reviewed By: JKZ
LIMS Check By:

Was QC Criteria Met: Y N
Was CIR Needed: Y N

Time of Analysis Start: 11:21 End: 11:47
MRL 2umhos/cm: Rx# _____ exp of solution: _____
KCl Std 1412 Rx# 201752 exp of solution 93008
TV = 1412 µmho/cm @ 25°C for 0.0100M
Reading: 1434
Instrument: YSI Model 3200 SN:01A0504, Year Aquired 2001 New

Run #	Sample Number	Sample ID	Client	Date Collected	Temp °C	pH	Scale (µmho/mmho)	Result: Instrument	Result: Reported (µmho/cm)	Comments
Blk	Blank				21	7	µS		0.3299	
STD	MRL 2umhos/cm									1-3—±50% of TV
STD	KCl - 1000 mhos/cm								999.9	950-1050—±5% of TV
1	2801280337	Stab Hyd	Kerr	01/25/08					999.9	
2	336	Outfall 001		↓					999.9	
3	2802050277	Eff Comp		02/02/08					9213	
4	278	Inf Comp		↓					9259	
5	696	Eff		02/04/08					9246	
6	697	Inf							9269	
7	715	WW Upgr							2472	
8	716	6.05							2462	
9	717	5.5							2477	
10	718	↓ 0.55							2401	
DUP	718d	"							2436	RPD < 5%
11	2802050667	M-94							8675	
12	668	PC 54							7274	
13	670	M-48							3641	
14	671	M-44							9701	
15	672	PC-71							9619	
16	673	72							8824	
17	2802050674	73							8597	
18	679	FB-1	↓	↓					1451	
19	2802070410	SD 42	GState	02/07/08					765.6	
20	411	SD 43	"	"					763.9	
DUP	411d	"	"	"					764.6	RPD < 5%
STD	KCl - 10 mhos/cm									8-12—RPD < 20% of TV

% RPD = |S1-S2| * 100 / (S1+S2)/2

S1 = reading of 1st sample
S2 = reading of 2nd sample

Sample No.	Sample Name	Dil.Fac.	Comment	Time	Amount CLO4 CD_1	
1	WASH	1.0	0	01.29.08 10:38	n.a.	
2	autocal1	1.0	0	01.29.08 11:00	n.a.	
3	autocal2	1.0	2	01.29.08 11:23	1.5954	
4	autocal3	1.0	4	01.29.08 11:45	4.3910	
5	autocal4	1.0	10	01.29.08 12:08	9.7539	
6	autocal5	1.0	25	01.29.08 12:30	23.9695	
7	autocal6	1.0	50	01.29.08 12:52	50.8237	
8	autocal7	1.0	100	01.29.08 13:15	99.8626	
9	QCS	1.0	20	02.07.08 12:21	19.3630	96.8%
10	IPC	1.0	25	02.07.08 12:43	24.6207	98.5%
11	-MBLK	1.0		02.07.08 13:06	n.a.	
12	-MRLCHK-2	1.0	2	02.07.08 13:28	1.5170	75.8%
13	-MRLCHK-4DNR	1.0	4	02.07.08 13:50	2.7456	
14	-LCS1	1.0	25	02.07.08 14:13	25.9250	104%
15	-LCS2	1.0	25	02.07.08 14:35	26.4646	106%
16	-MRLCHK-4	1.0	4	02.07.08 14:58	3.9457	98.6%
17	2801280337DNR	1.0		02.07.08 15:20	2.7255	
18	2801280336DNR	1.0		02.07.08 15:42	906.6903	
19	2802050277_1/5	5.0 *		02.07.08 16:05	n.a.	
20	2802050278_1/10000	10000.0		02.07.08 16:27	248942.5173	
21	2802050696_1/5	5.0 *		02.07.08 16:50	18.6084	
22	2802050697_1/10000	10000.0		02.07.08 17:12	278437.0531	
23	2802050715_1/2	2.0		02.07.08 17:34	39.2608	
24	2802050716_1/2	2.0		02.07.08 17:57	26.5423	
25	2802050717_1/2	2.0		02.07.08 18:19	37.4854	
26	2802050718_1/2	2.0		02.07.08 18:42	69.3490	
27	2802050718MS	2.0		02.07.08 19:04	119.0338	25%/100%
28	2802050718MSD	2.0		02.07.08 19:26	119.1768	25.4/100%
29	CCV	1.0		02.07.08 19:49	27.1300	108%
30	2802050667_1/25000	25000.0		02.07.08 20:11	578965.9137	
31	2802050668_1/10000	10000.0		02.07.08 20:34	291492.6790	
32	2802050670_1/5000	5000.0		02.07.08 20:56	195420.9488	
33	2802050671_1/25000	25000.0		02.07.08 21:18	767061.5910	
34	2802050672_1/25000	25000.0		02.07.08 21:41	551242.6378	
35	2802050673_1/10000	10000.0		02.07.08 22:03	341740.9648	
36	2802050674_1/10000	10000.0		02.07.08 22:26	375222.4394	
37	2802050679	1.0		02.07.08 22:48	n.a.	
38	2802070035 410	1.0		02.07.08 23:10	5.0586	
39	2802070036 411	1.0		02.07.08 23:33	3.1937	
40	HCV	1.0		02.07.08 23:55	108.4005	108%
41	CCB	1.0		02.08.08 00:18	n.a.	

*rerun. Samples not diluted sufficiently to be below MCL
22Feb08

3.4.08 MCL written incorrectly. Data suitable for submission.

Sequence: 020708A-CLO4-IC11
Operator: jkz
Printed: 2/8/2008 10:42:22 AM

Title:
Datasource: Dionex_USPAS2SDIO2
Location: IC\IC11_CLO4\2008\FEB
Timebase: IC11
#Samples: 41

Created: 2/7/2008 9:24:11 AM by jkz
Last Update: 2/8/2008 10:10:23 AM by jkz

No.	Name	Sample ID	Dil. Factor	Type	Comment	Status	Program
1	WASH		1.0000	Unknown	0	Finished	Perchlorate-IC11
2	autocal1		1.0000	Standard	0	Finished	Perchlorate-IC11
3	autocal2	R201449 EXP 07/28/09	1.0000	Standard	2	Finished	Perchlorate-IC11
4	autocal3		1.0000	Standard	4	Finished	Perchlorate-IC11
5	autocal4		1.0000	Standard	10	Finished	Perchlorate-IC11
6	autocal5		1.0000	Standard	25	Finished	Perchlorate-IC11
7	autocal6		1.0000	Standard	50	Finished	Perchlorate-IC11
8	autocal7		1.0000	Standard	100	Finished	Perchlorate-IC11
9	QCS	EXP 07/10/09	1.0000	Unknown	20	Finished	Perchlorate-IC11
10	IPC	EC=3155	1.0000	Unknown	25	Finished	Perchlorate-IC11
11	-MBLK		1.0000	Unknown		Finished	Perchlorate-IC11
12	-MRLCHK-2	2	1.0000	Unknown	2	Finished	Perchlorate-IC11
13	-MRLCHK-4DNR	4	1.0000	Unknown	4	Finished	Perchlorate-IC11
14	-LCS1	25	1.0000	Unknown	25	Finished	Perchlorate-IC11
15	-LCS2	25	1.0000	Unknown	25	Finished	Perchlorate-IC11
16	-MRLCHK-4	4	1.0000	Unknown	4	Finished	Perchlorate-IC11
17	2801280337DNR	KERR-STAB H2O	1.0000	Unknown		Finished	Perchlorate-IC11
18	2801280336DNR	KERR-OUTFALL 001	1.0000	Unknown		Finished	Perchlorate-IC11
19	2802050277_1/5	KERR-EFFL-COMP	5.0000	Unknown		Finished	Perchlorate-IC11
20	2802050278_1/10000	KERR-INFL-COMP	10000.0000	Unknown		Finished	Perchlorate-IC11
21	2802050696_1/5	KERR-EFFL	5.0000	Unknown		Finished	Perchlorate-IC11
22	2802050697_1/10000	KERR-INFL	10000.0000	Unknown		Finished	Perchlorate-IC11
23	2802050715_1/2	KERR-LVW UPGR	2.0000	Unknown		Finished	Perchlorate-IC11
24	2802050716_1/2	KERR-LVW 6.05	2.0000	Unknown		Finished	Perchlorate-IC11
25	2802050717_1/2	KERR-LVW 5.5	2.0000	Unknown		Finished	Perchlorate-IC11
26	2802050718_1/2	KERR-LVW 0.55	2.0000	Unknown		Finished	Perchlorate-IC11
27	2802050718MS	25	2.0000	Unknown		Finished	Perchlorate-IC11
28	2802050718MSD	25	2.0000	Unknown		Finished	Perchlorate-IC11
29	CCV	25	1.0000	Unknown		Finished	Perchlorate-IC11
30	2802050667_1/25000	KERR-M-94	25000.0000	Unknown		Finished	Perchlorate-IC11
31	2802050668_1/10000	KERR-PC 54	10000.0000	Unknown		Finished	Perchlorate-IC11
32	2802050670_1/5000	KERR-M-48	5000.0000	Unknown		Finished	Perchlorate-IC11
33	2802050671_1/25000	KERR-M-44	25000.0000	Unknown		Finished	Perchlorate-IC11
34	2802050672_1/25000	KERR-PC-71	25000.0000	Unknown		Finished	Perchlorate-IC11
35	2802050673_1/10000	KERR-PC-72	10000.0000	Unknown		Finished	Perchlorate-IC11
36	2802050674_1/10000	KERR-PC-73	10000.0000	Unknown		Finished	Perchlorate-IC11
37	2802050679	KERR-FB-1	1.0000	Unknown		Finished	Perchlorate-IC11
38	2802070035 410	GSTATE-SD 42	1.0000	Unknown		Finished	Perchlorate-IC11
39	2802070036 411	GSTATE-SD 43	1.0000	Unknown		Finished	Perchlorate-IC11
40	HCV	100	1.0000	Unknown		Finished	Perchlorate-IC11
41	CCB		1.0000	Unknown		Finished	Perchlorate-IC11

2/8/08

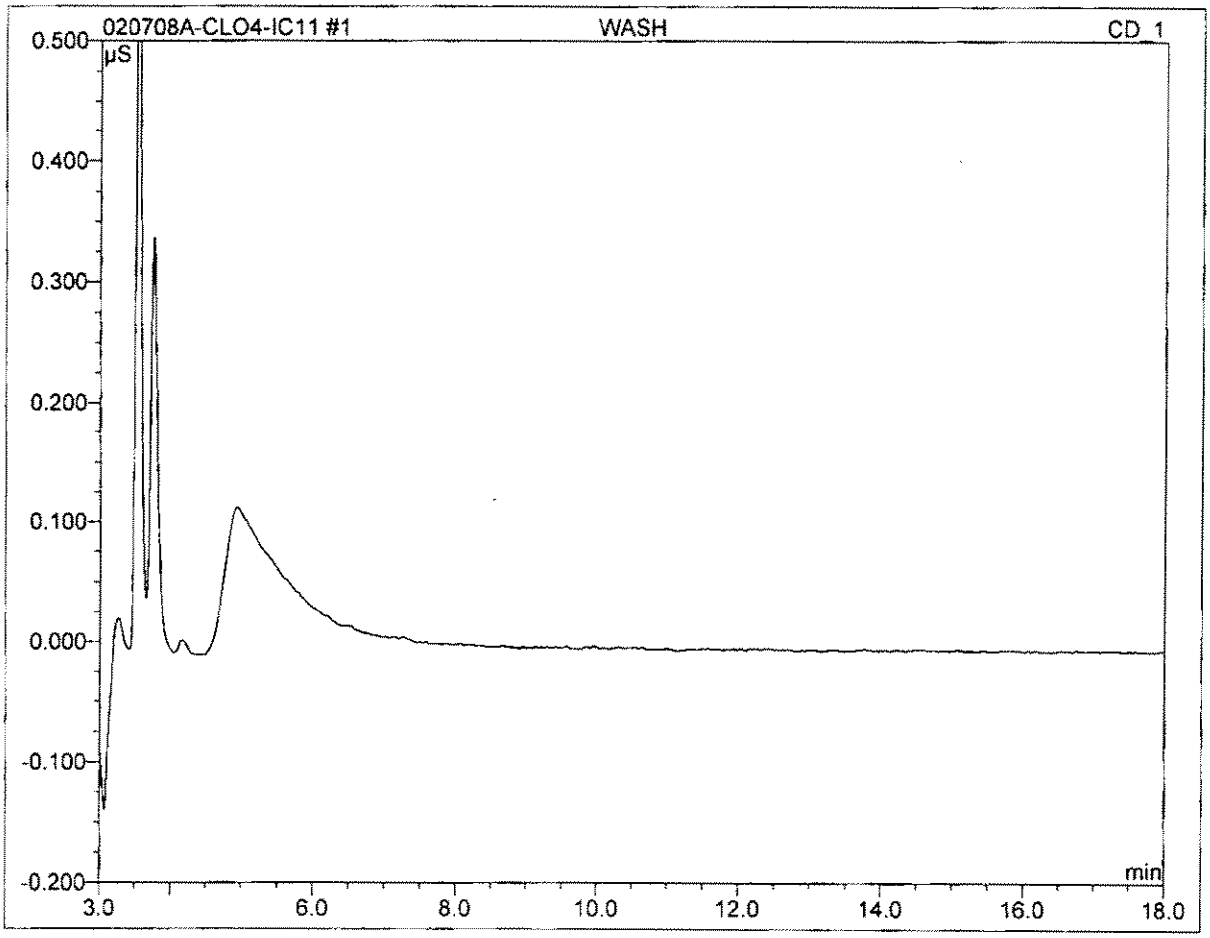
Title:
Datasource: Dionex_USPAS2SDIO2
Location: IC\IC11_CLO4\2008\FEB
Timebase: IC11 Created: 2/7/2008 9:24:11 AM by jkz
#Samples: 41 Last Update: 2/8/2008 10:10:23 AM by jkz

No.	Name	Method	Inj. Date/Time	*Analyst
1	WASH	IC#4-CLO4-LOW	1/29/2008 10:38:35 AM	jkz
2	autocal1	IC#4-CLO4-LOW	1/29/2008 11:00:59 AM	jkz
3	autocal2	IC#4-CLO4-LOW	1/29/2008 11:23:23 AM	jkz
4	autocal3	IC#4-CLO4-LOW	1/29/2008 11:45:47 AM	jkz
5	autocal4	IC#4-CLO4-LOW	1/29/2008 12:08:11 PM	jkz
6	autocal5	IC#4-CLO4-LOW	1/29/2008 12:30:35 PM	jkz
7	autocal6	IC#4-CLO4-LOW	1/29/2008 12:52:58 PM	jkz
8	autocal7	IC#4-CLO4-LOW	1/29/2008 1:15:22 PM	jkz
9	QCS	IC#4-CLO4-LOW	2/7/2008 12:21:20 PM	jkz
10	IPC	IC#4-CLO4-LOW	2/7/2008 12:43:44 PM	jkz
11	-MBLK	IC#4-CLO4-LOW	2/7/2008 1:06:08 PM	jkz
12	-MRLCHK-2	IC#4-CLO4-LOW	2/7/2008 1:28:32 PM	jkz
13	-MRLCHK-4DNR	IC#4-CLO4-LOW	2/7/2008 1:50:56 PM	jkz
14	-LCS1	IC#4-CLO4-LOW	2/7/2008 2:13:19 PM	jkz
15	-LCS2	IC#4-CLO4-LOW	2/7/2008 2:35:43 PM	jkz
16	-MRLCHK-4	IC#4-CLO4-LOW	2/7/2008 2:58:07 PM	jkz
17	2801280337DNR	IC#4-CLO4-LOW	2/7/2008 3:20:31 PM	jkz
18	2801280336DNR	IC#4-CLO4-LOW	2/7/2008 3:42:55 PM	jkz
19	2802050277_1/5	IC#4-CLO4-LOW	2/7/2008 4:05:18 PM	jkz
20	2802050278_1/10000	IC#4-CLO4-LOW	2/7/2008 4:27:42 PM	jkz
21	2802050696_1/5	IC#4-CLO4-LOW	2/7/2008 4:50:06 PM	jkz
22	2802050697_1/10000	IC#4-CLO4-LOW	2/7/2008 5:12:30 PM	jkz
23	2802050715_1/2	IC#4-CLO4-LOW	2/7/2008 5:34:54 PM	jkz
24	2802050716_1/2	IC#4-CLO4-LOW	2/7/2008 5:57:17 PM	jkz
25	2802050717_1/2	IC#4-CLO4-LOW	2/7/2008 6:19:41 PM	jkz
26	2802050718_1/2	IC#4-CLO4-LOW	2/7/2008 6:42:05 PM	jkz
27	2802050718MS	IC#4-CLO4-LOW	2/7/2008 7:04:29 PM	jkz
28	2802050718MSD	IC#4-CLO4-LOW	2/7/2008 7:26:53 PM	jkz
29	CCV	IC#4-CLO4-LOW	2/7/2008 7:49:17 PM	jkz
30	2802050667_1/25000	IC#4-CLO4-LOW	2/7/2008 8:11:40 PM	jkz
31	2802050668_1/10000	IC#4-CLO4-LOW	2/7/2008 8:34:04 PM	jkz
32	2802050670_1/5000	IC#4-CLO4-LOW	2/7/2008 8:56:28 PM	jkz
33	2802050671_1/25000	IC#4-CLO4-LOW	2/7/2008 9:18:52 PM	jkz
34	2802050672_1/25000	IC#4-CLO4-LOW	2/7/2008 9:41:15 PM	jkz
35	2802050673_1/10000	IC#4-CLO4-LOW	2/7/2008 10:03:39 PM	jkz
36	2802050674_1/10000	IC#4-CLO4-LOW	2/7/2008 10:26:03 PM	jkz
37	2802050679	IC#4-CLO4-LOW	2/7/2008 10:48:27 PM	jkz
38	2802070035 410	IC#4-CLO4-LOW	2/7/2008 11:10:51 PM	jkz
39	2802070036 411	IC#4-CLO4-LOW	2/7/2008 11:33:14 PM	jkz
40	HCV (IC) 15 Feb 08	IC#4-CLO4-LOW	2/7/2008 11:55:38 PM	jkz
41	CCB	IC#4-CLO4-LOW	2/8/2008 12:18:02 AM	jkz

1 WASH

0

Sample Name:	**WASH**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 10:38**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

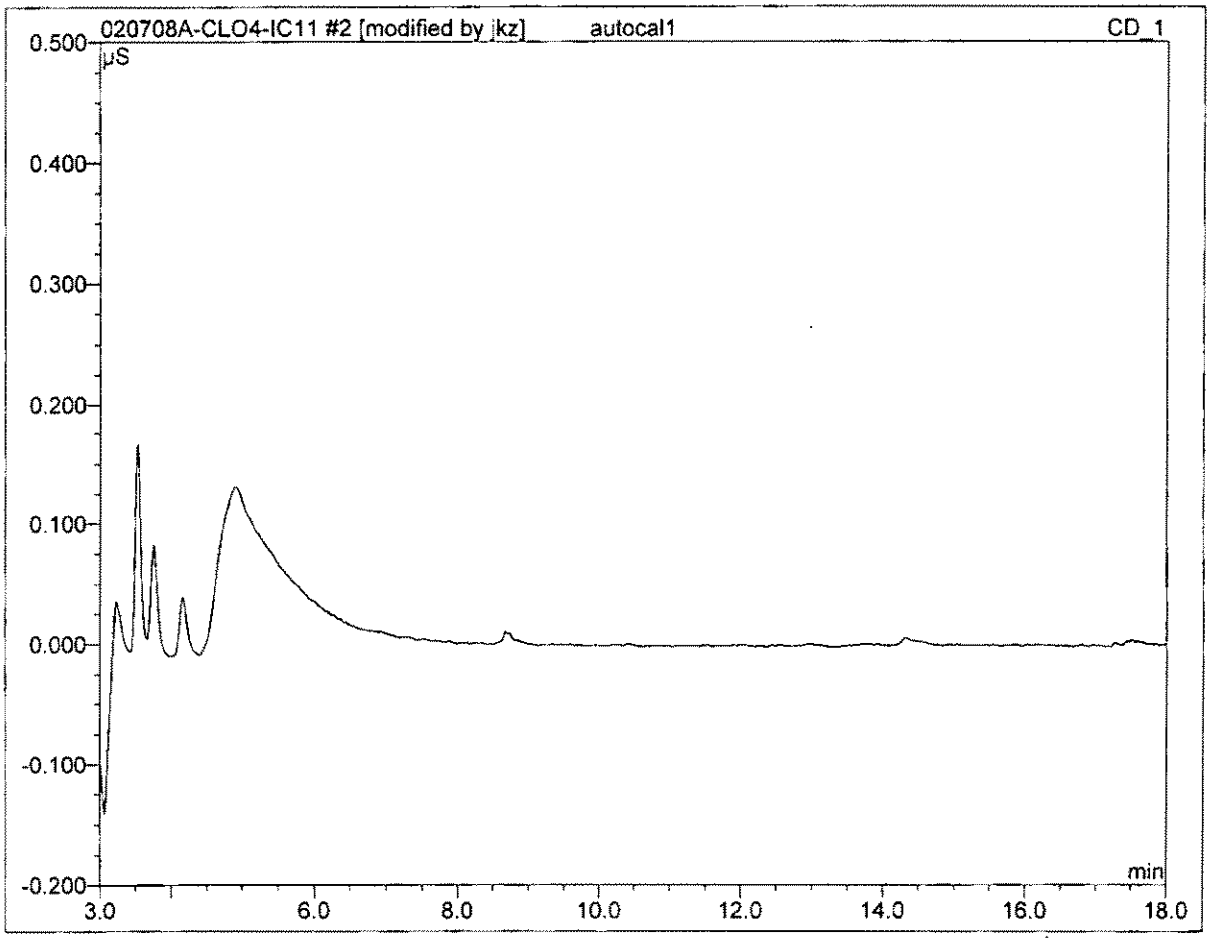


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

2 autocal1

0

Sample Name:	**autocal1**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 11:00**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

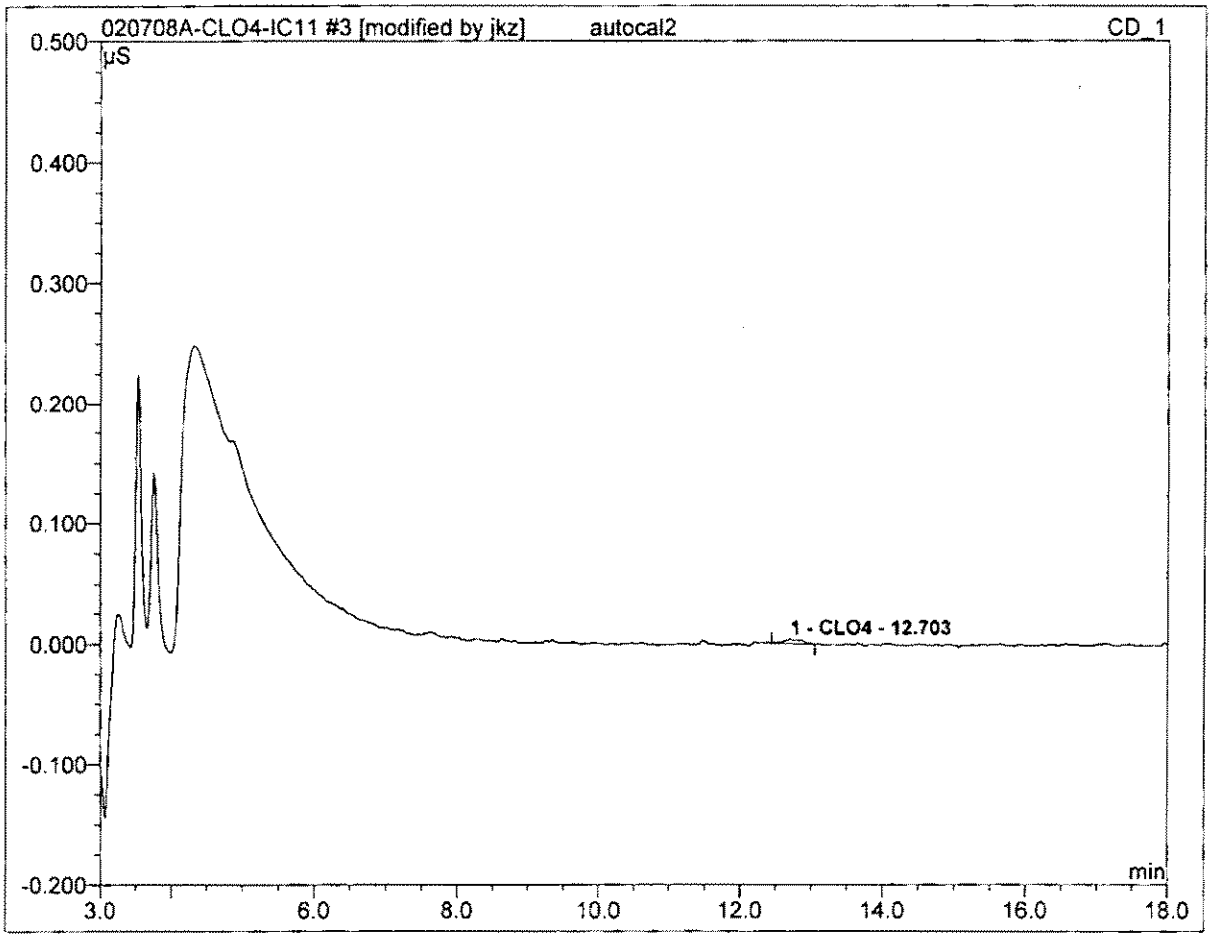


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

3 autocal2

2

Sample Name:	**autocal2**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 11:23**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

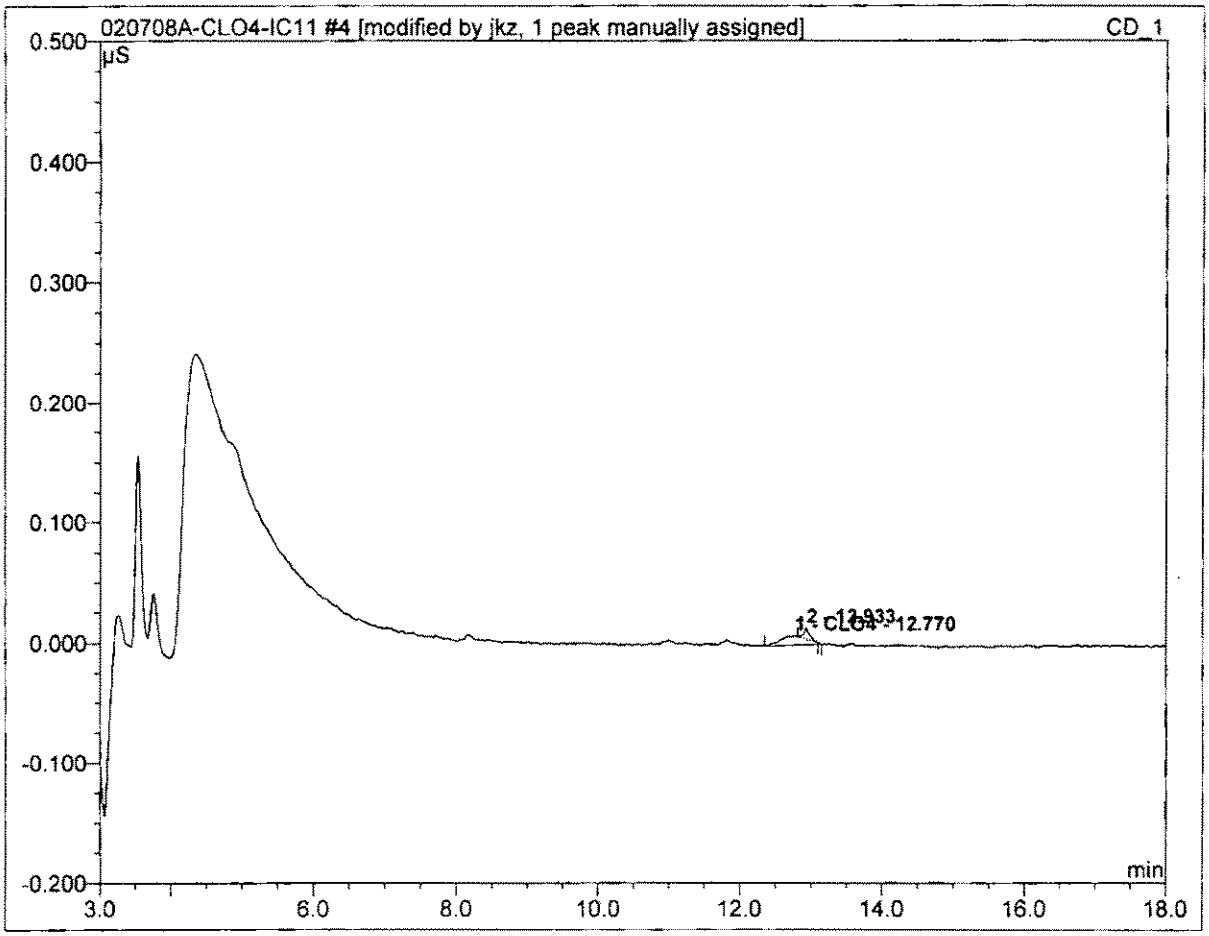


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.70	CLO4	0.004	0.001	100.00	1.595	BMB*
Total:			0.004	0.001	100.00	1.595	

4 autocal3

4

Sample Name:	**autocal3**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 11:45**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

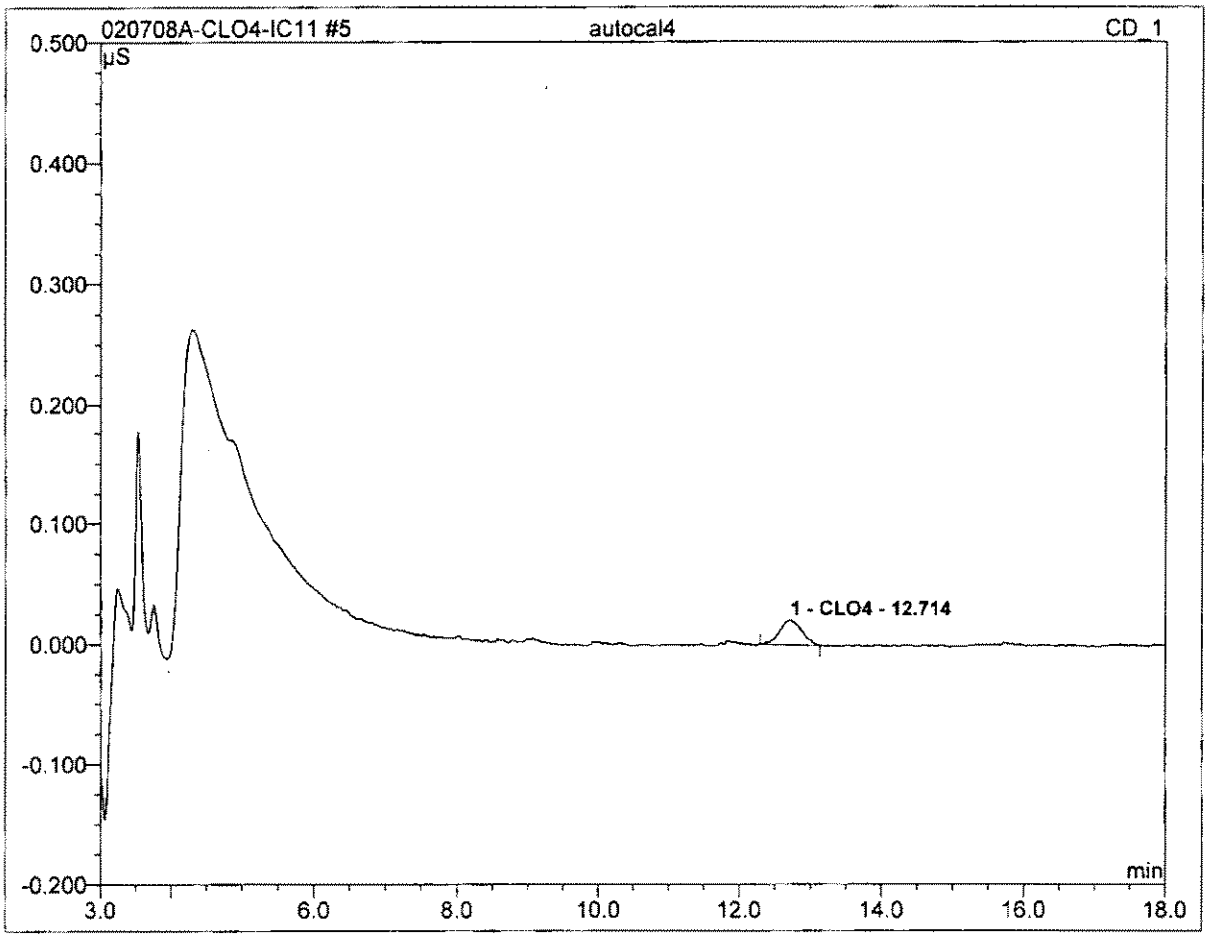


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.77	CLO4	0.008	0.003	78.17	4.391	BMB*^
Total:			0.008	0.003	78.17	4.391	

5 autocal4

10

Sample Name:	**autocal4**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 12:08**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

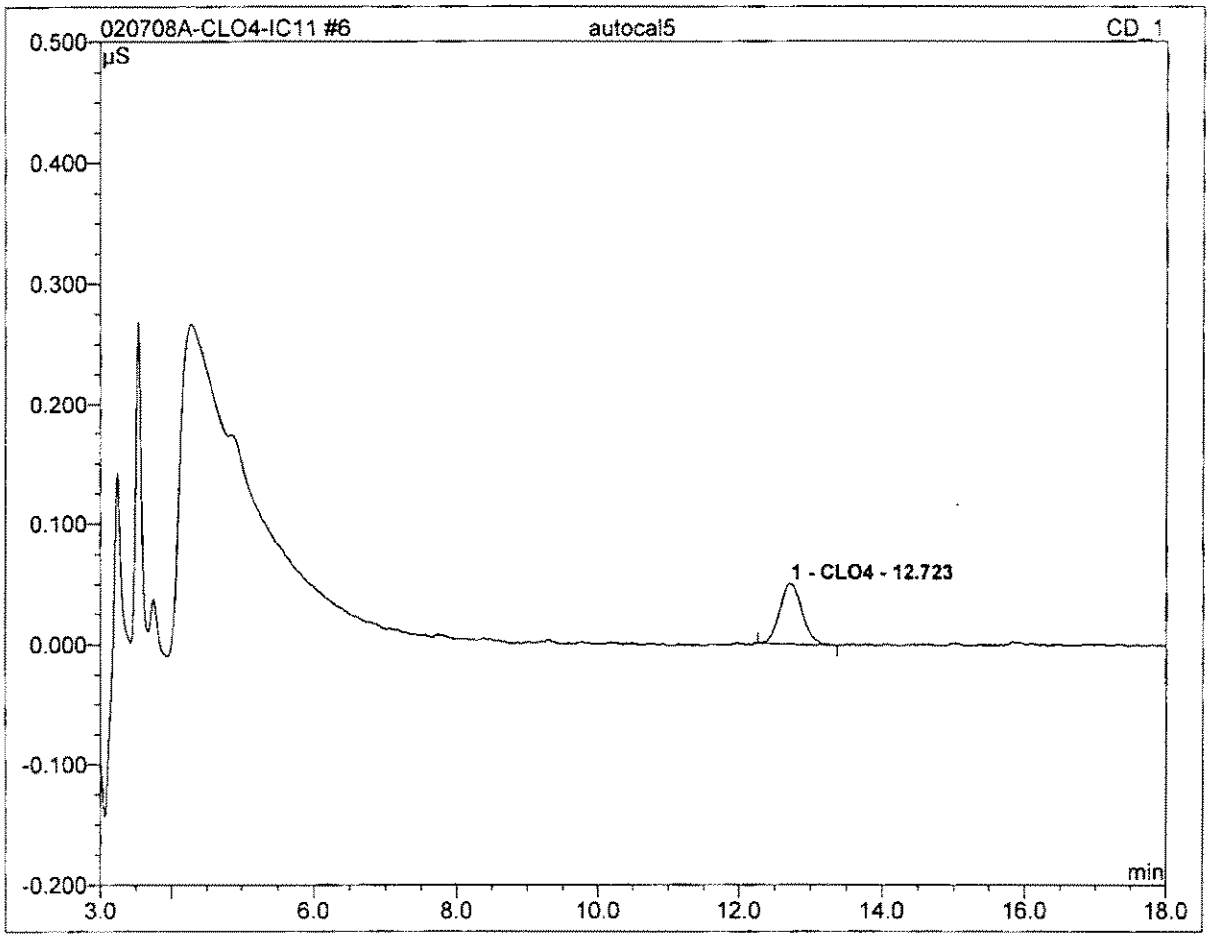


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.71	CLO4	0.021	0.007	100.00	9.754	BMB
Total:			0.021	0.007	100.00	9.754	

6 autocal5

25

Sample Name:	**autocal5**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 12:30**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

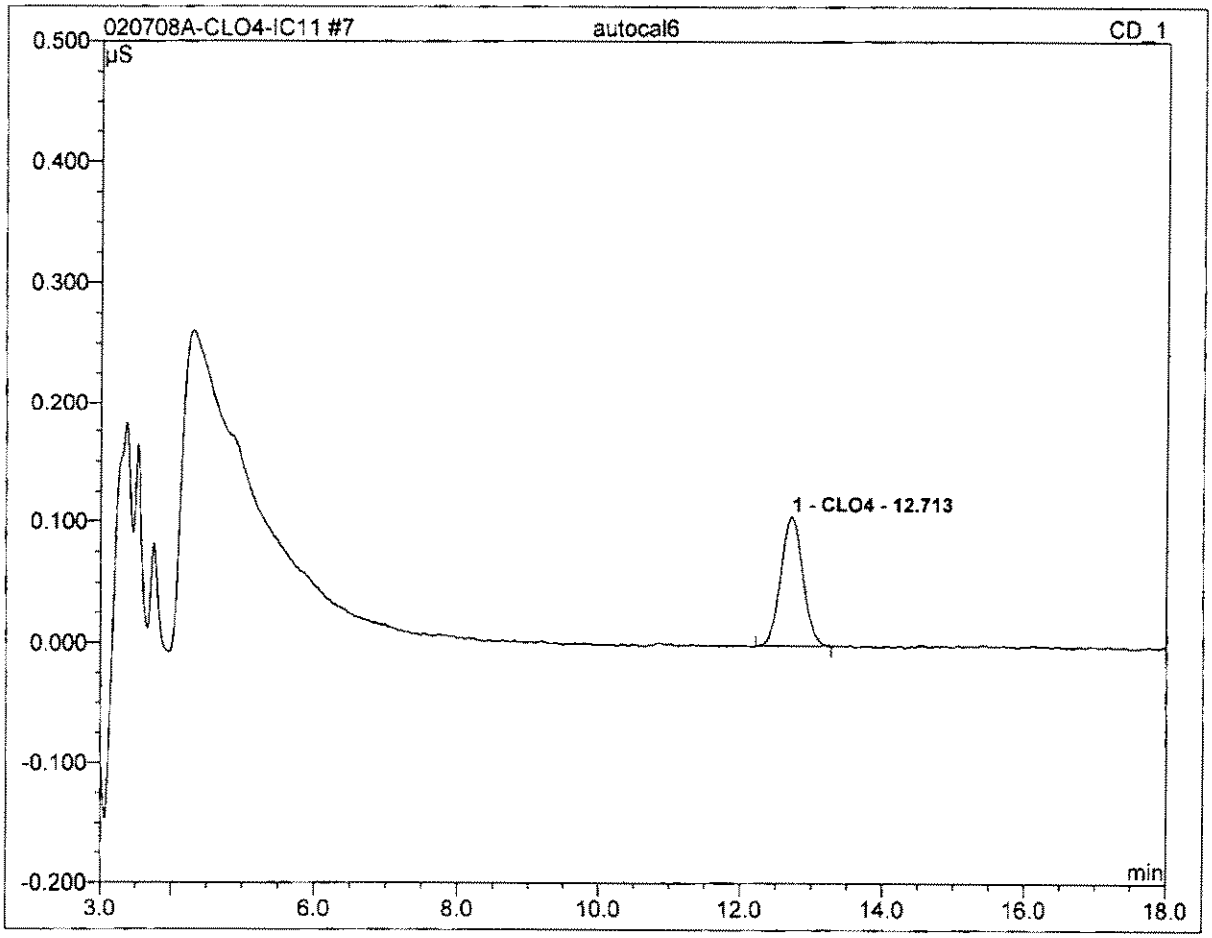


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.72	CLO4	0.050	0.018	100.00	23.969	BMB
Total:			0.050	0.018	100.00	23.969	

7 autocal6

50

Sample Name:	**autocal6**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 12:52**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

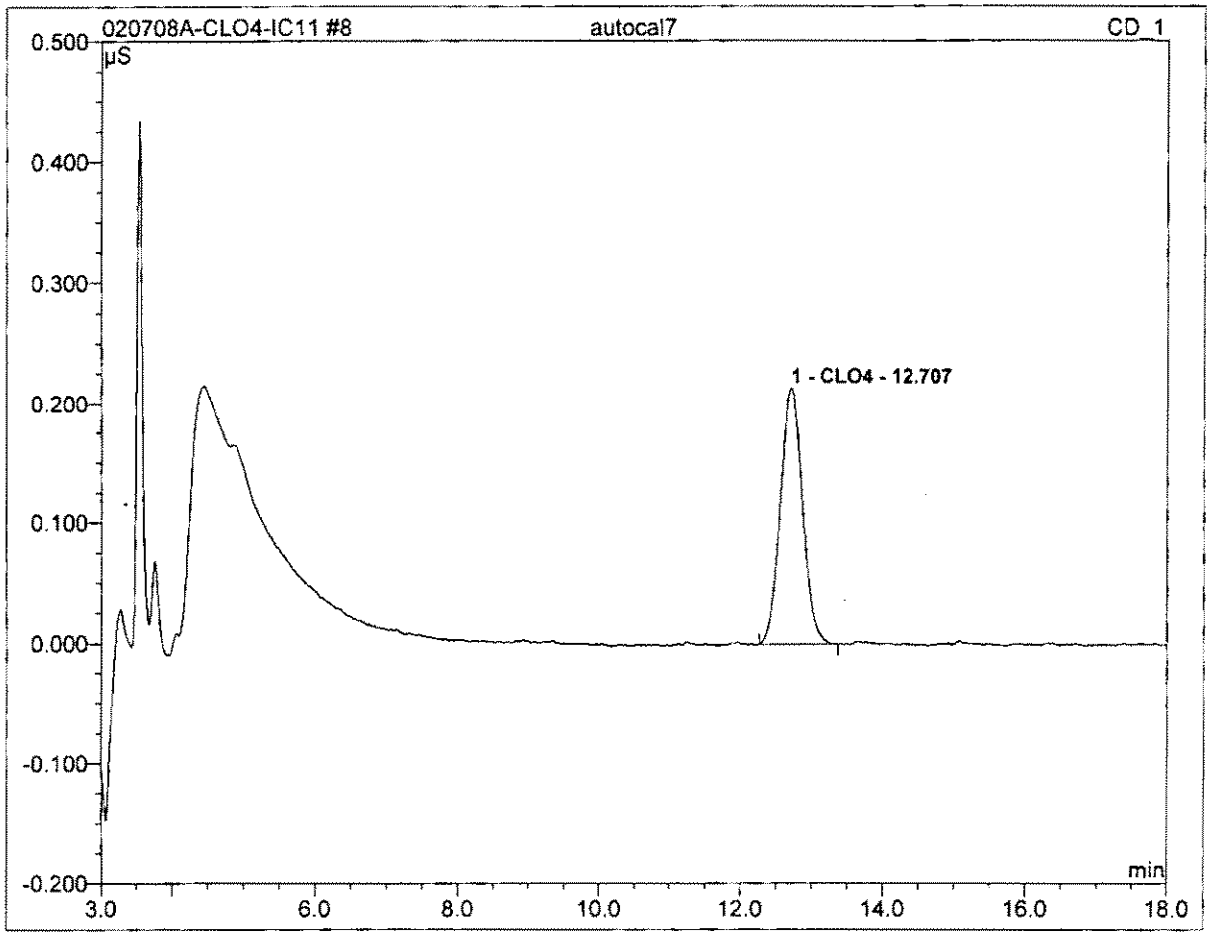


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.71	CLO4	0.108	0.039	100.00	50.824	BMB
Total:			0.108	0.039	100.00	50.824	

8 autocal7

100

Sample Name:	**autocal7**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**01/29/2008 13:15**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

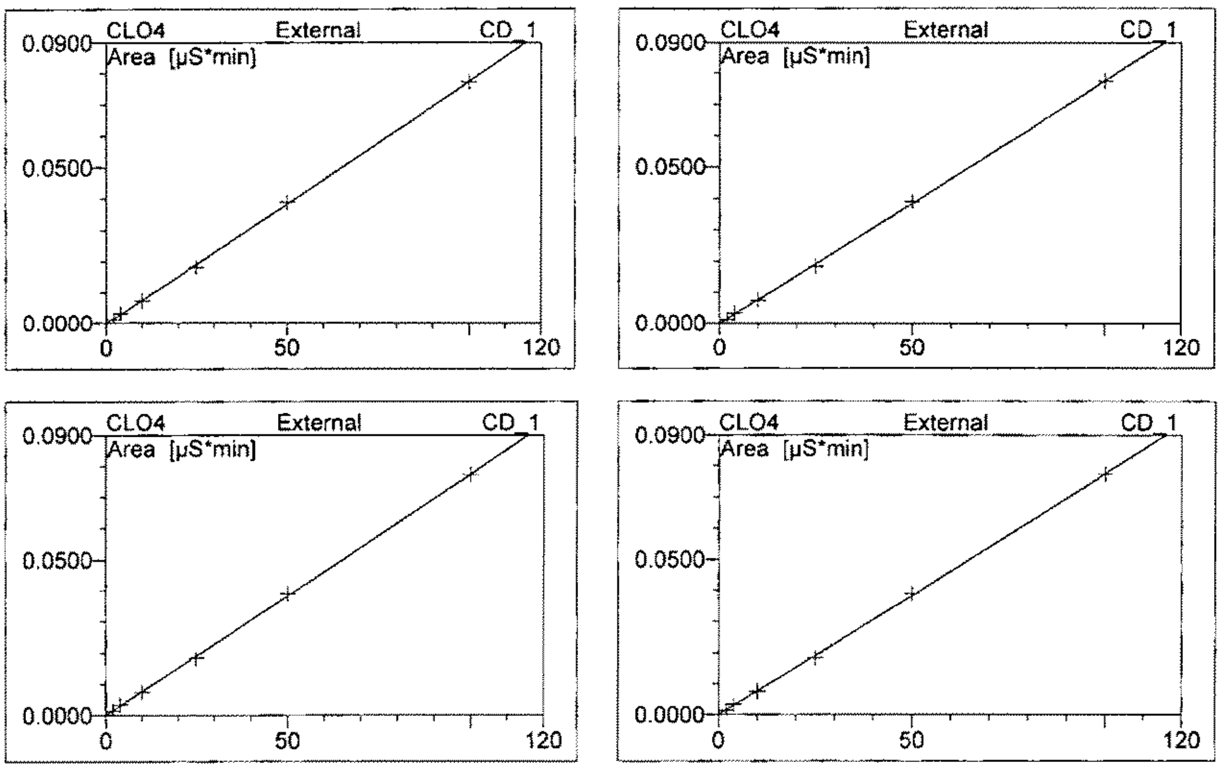


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.71	CLO4	0.214	0.077	100.00	99.863	BMB
Total:			0.214	0.077	100.00	99.863	

8 autocal7

100

Sample Name:	**autocal7**	*Injection Volume:*	**20.0**
Vial Number:	**109**	*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:	**1/29/2008 13:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**20.00**	*Sample Amount:*	**1.0000**

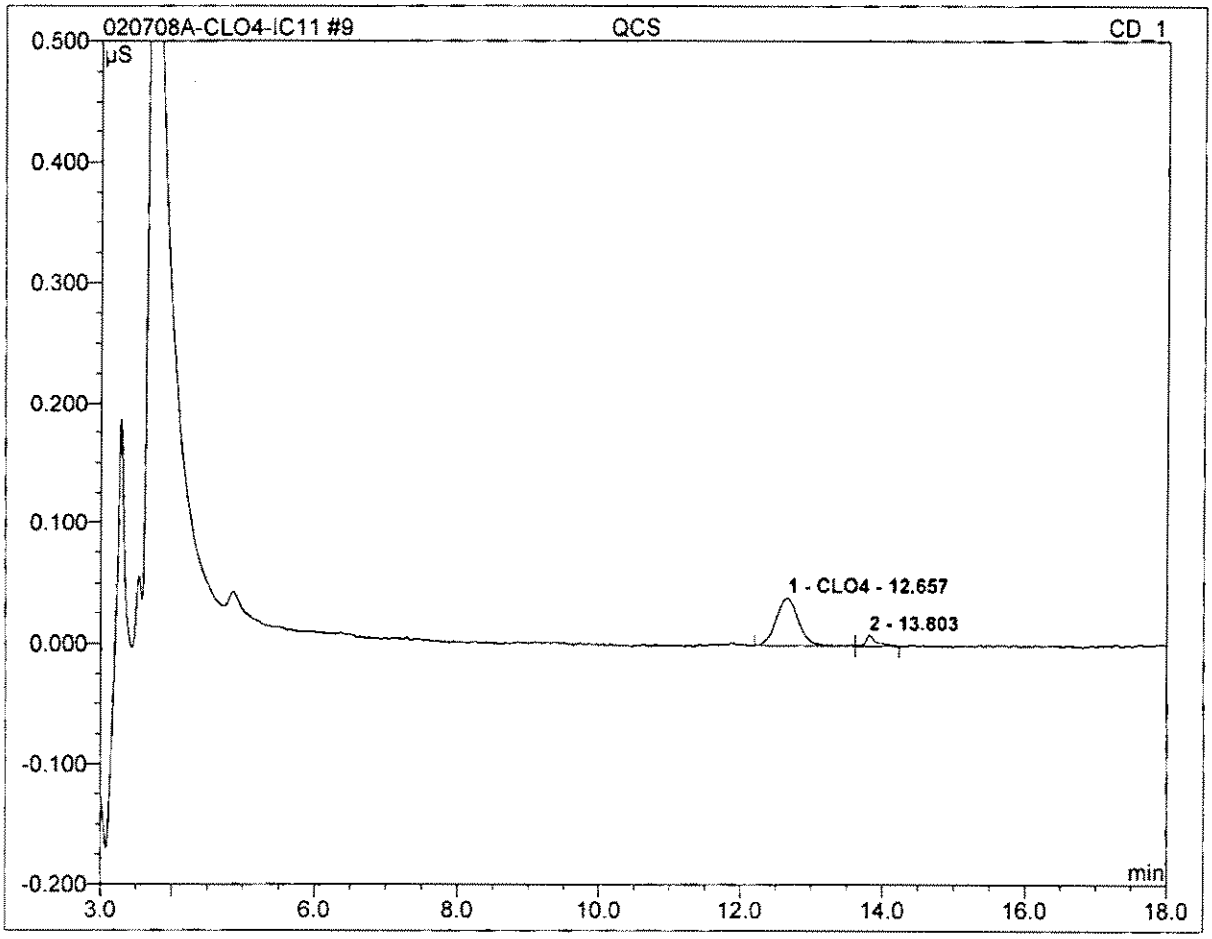


No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
1	12.71	CLO4	Quad	6	99.9863	0.0000	0.0008	0.0000
Average:					99.9863	0.0000	0.0008	0.0000

9 QCS

20

Sample Name:	**QCS**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 12:21**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

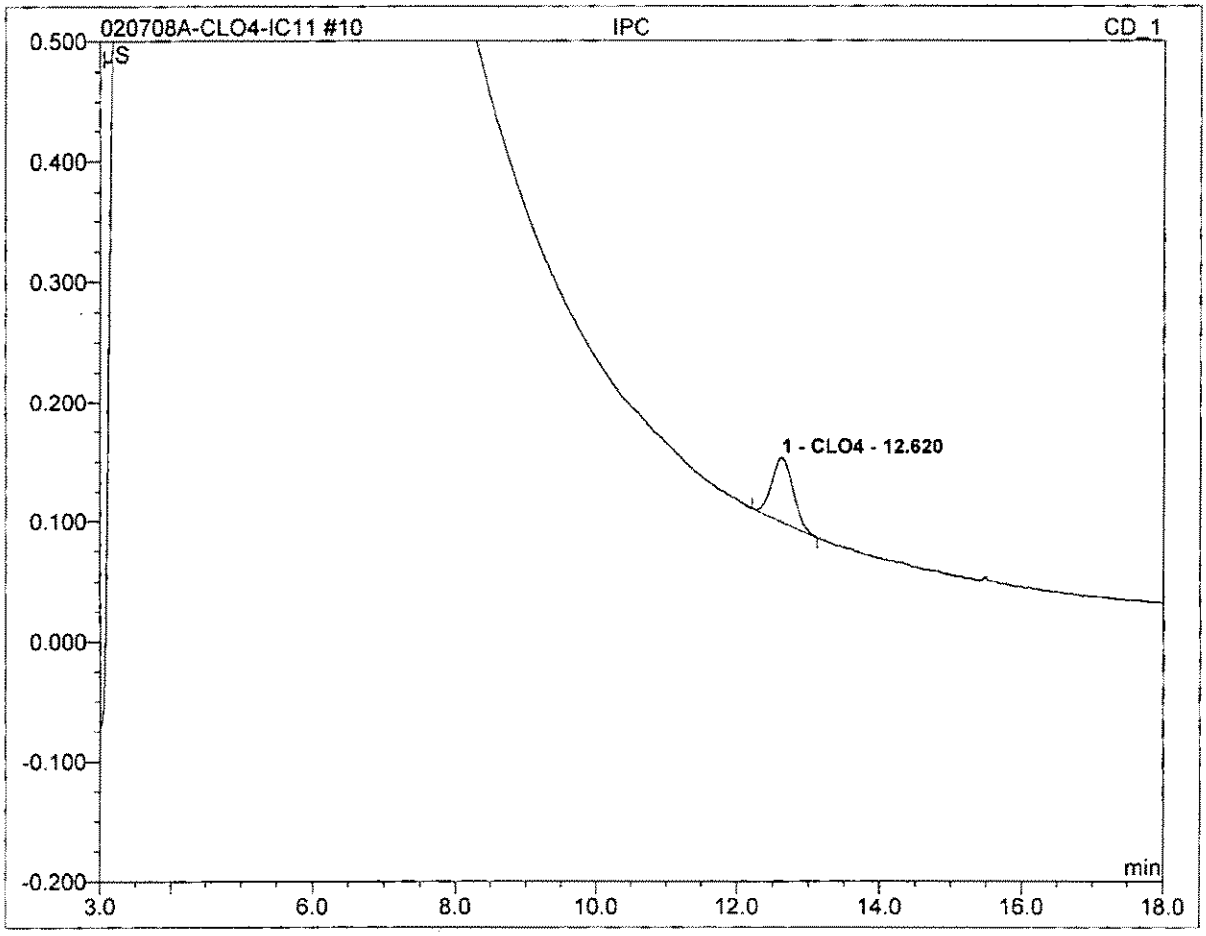


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.66	CLO4	0.040	0.015	89.66	19.363	BM
Total:			0.040	0.015	89.66	19.363	

10 IPC

25

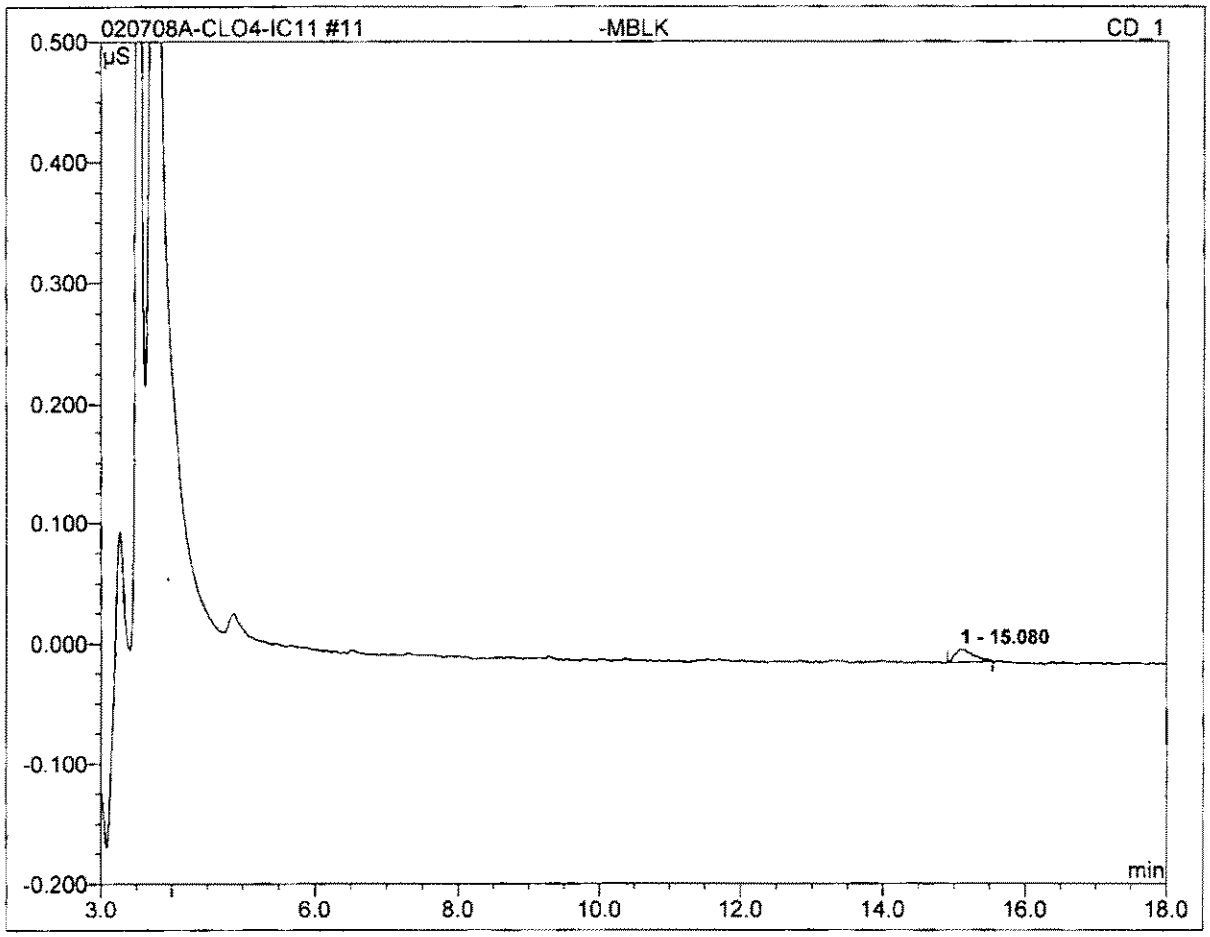
Sample Name:	**IPC**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 12:43**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.62	CLO4	0.053	0.019	100.00	24.621	BMB
Total:			0.053	0.019	100.00	24.621	

11 -MBLK

Sample Name:	**-MBLK**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 13:06**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

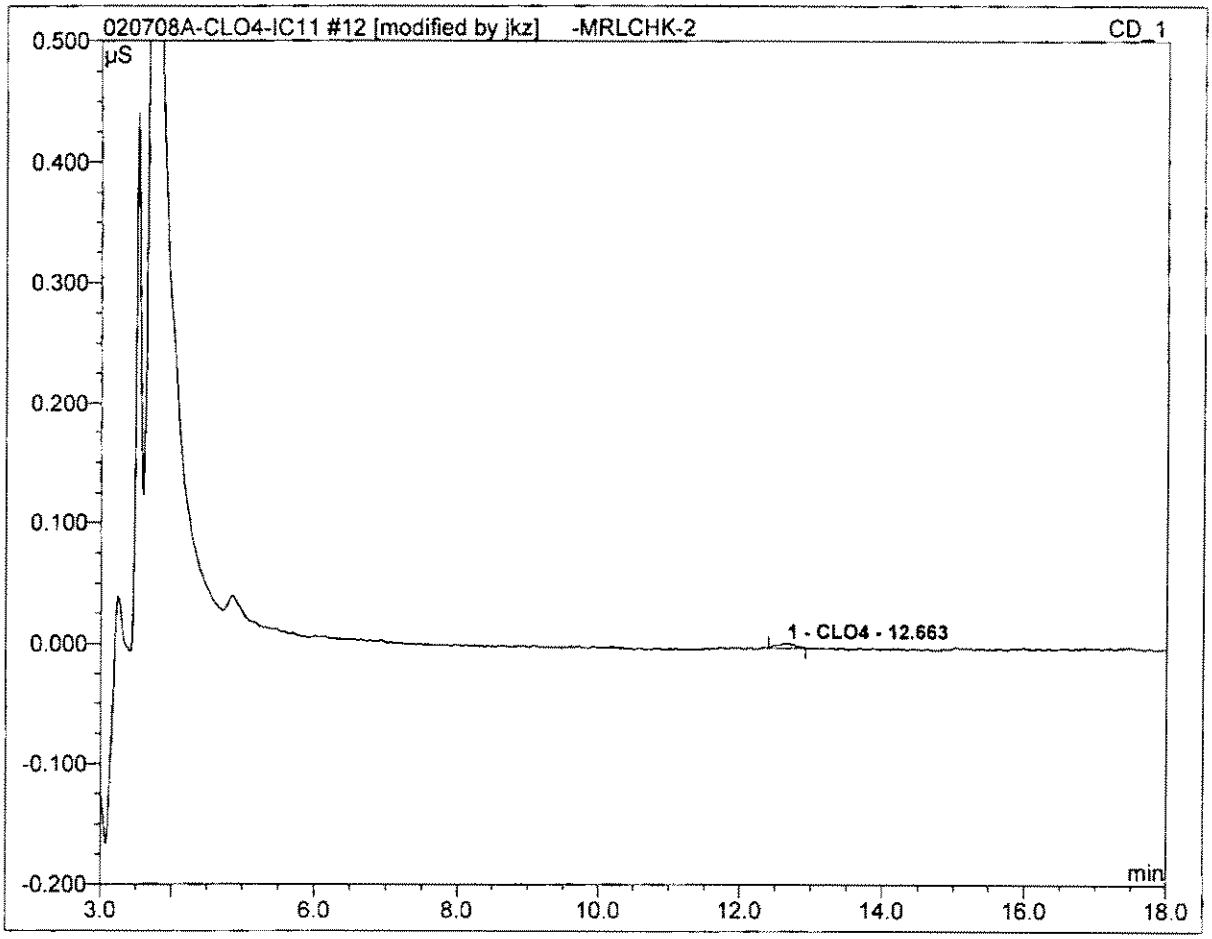


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

12 -MRLCHK-2

2

Sample Name:	**-MRLCHK-2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 13:28**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

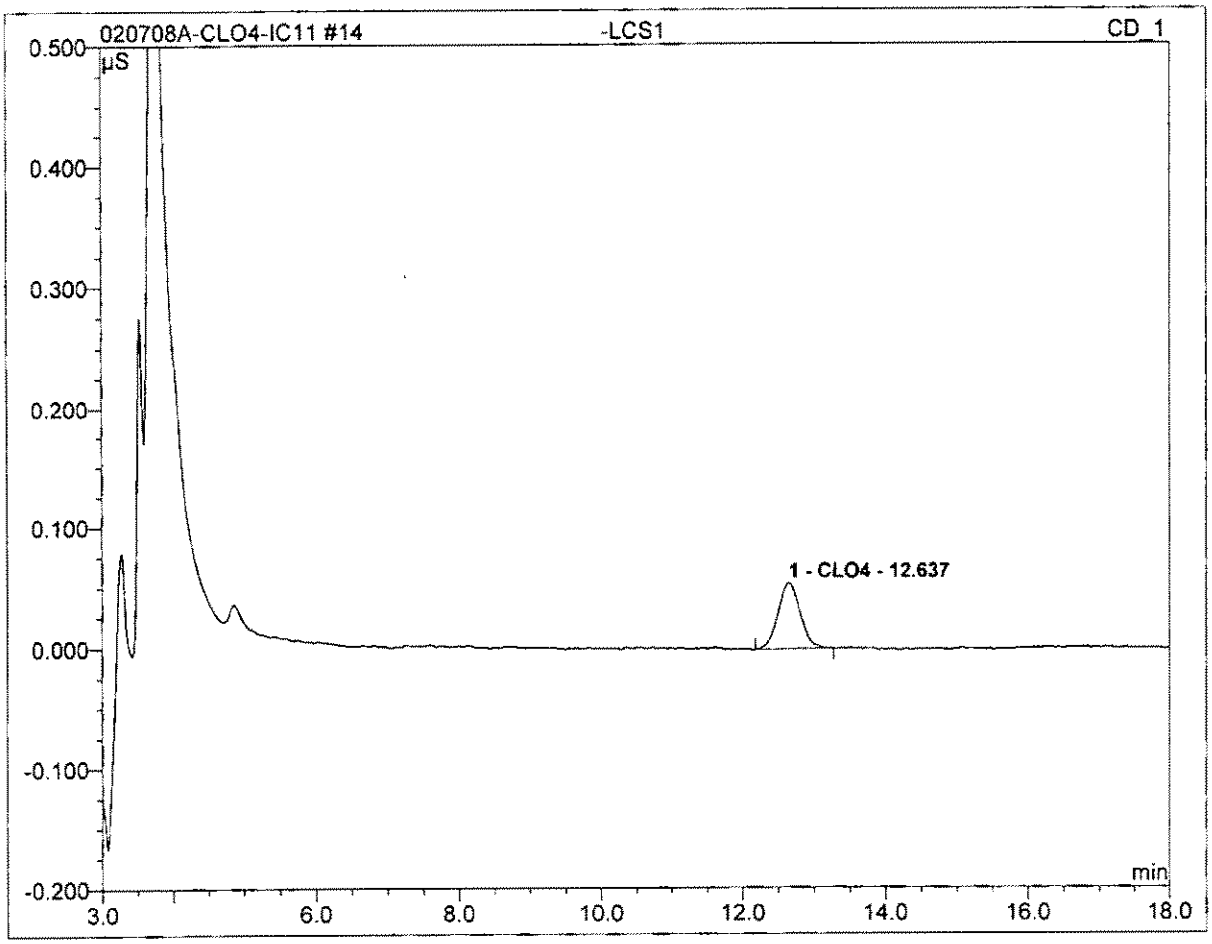


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.66	CLO4	0.004	0.001	100.00	1.517	BMB*
Total:			0.004	0.001	100.00	1.517	

14 -LCS1

25

Sample Name:	**-LCS1**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 14:13**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

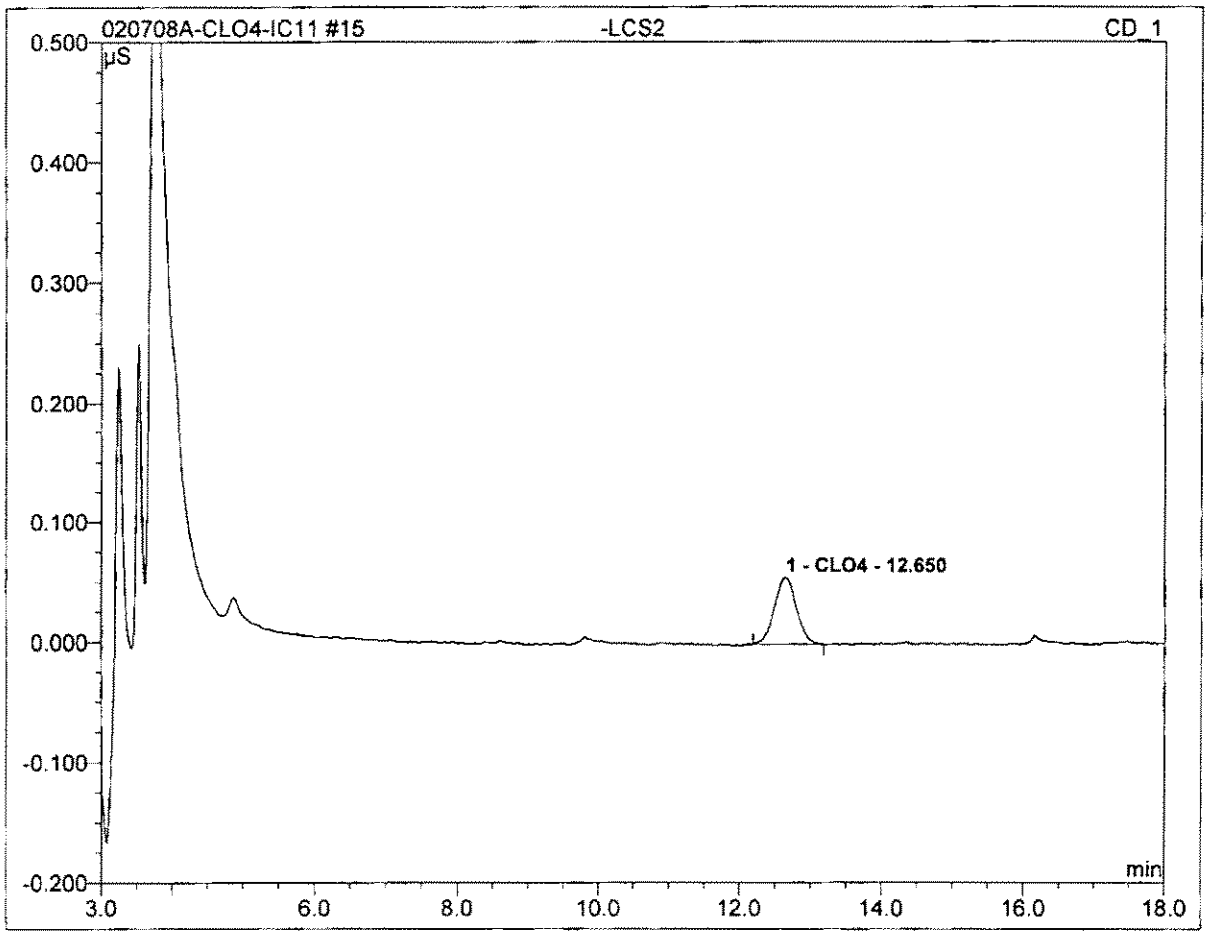


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.64	CLO4	0.055	0.020	100.00	25.925	BMB
Total:			0.055	0.020	100.00	25.925	

15 -LCS2

25

Sample Name:	**-LCS2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 14:35**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**

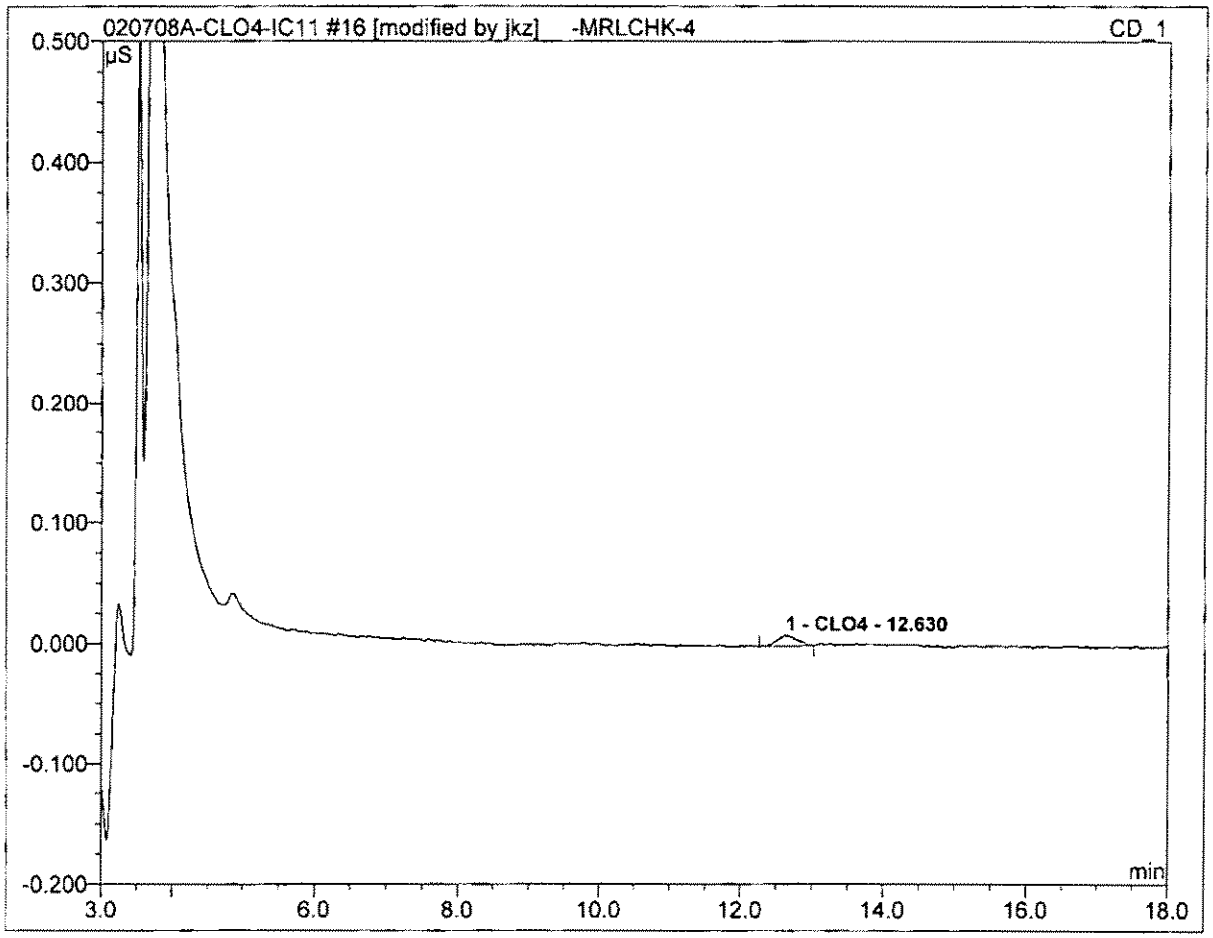


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.65	CLO4	0.056	0.020	100.00	26.465	BMB
Total:			0.056	0.020	100.00	26.465	

16 -MRLCHK-4

4

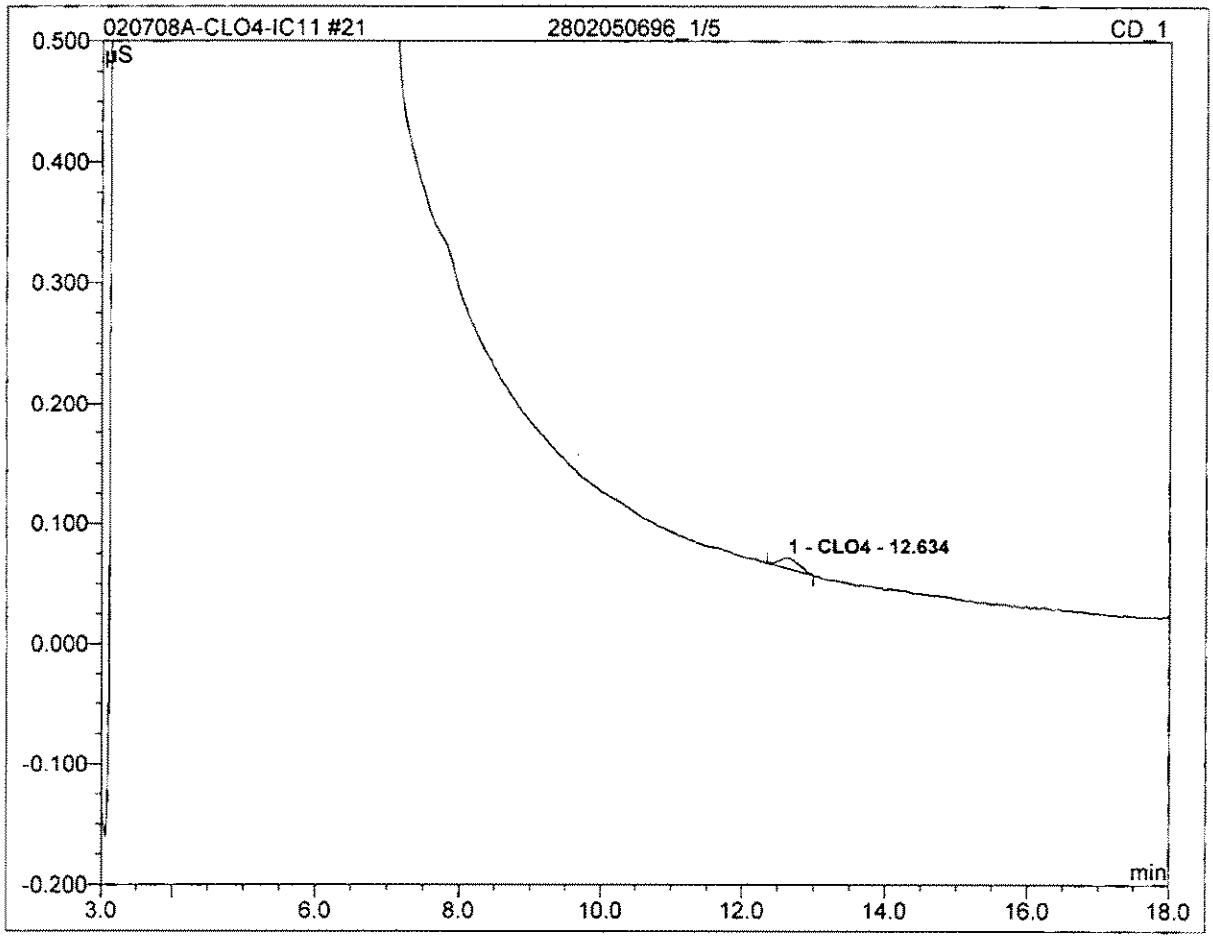
Sample Name:	**-MRLCHK-4**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 14:58**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.63	CLO4	0.009	0.003	100.00	3.946	BMB*
Total:			0.009	0.003	100.00	3.946	

21 2802050696_1/5

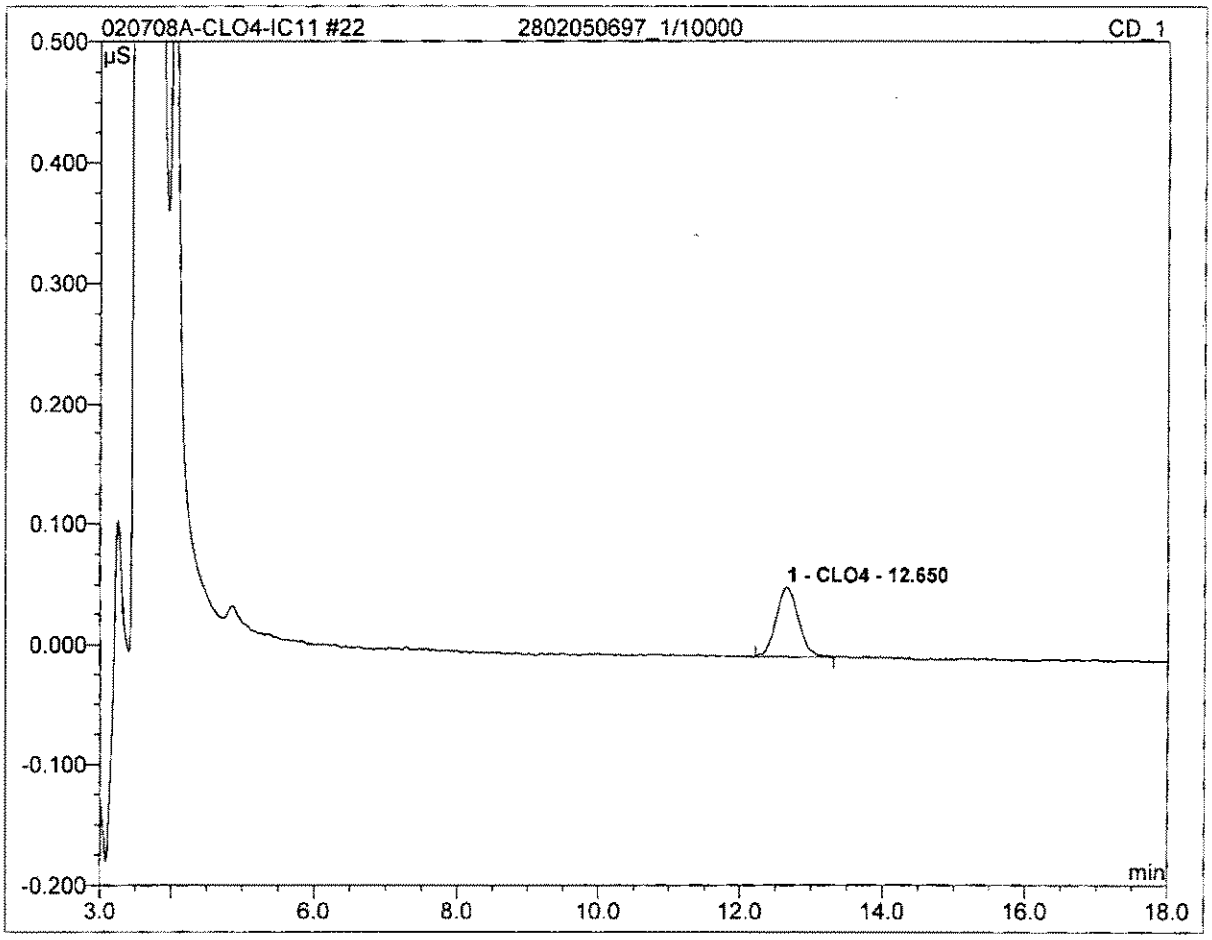
Sample Name:	**2802050696_1/5**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 16:50**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**5.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.63	CLO4	0.009	0.003	100.00	18.608	BMB
Total:			0.009	0.003	100.00	18.608	

22 2802050697_1/10000

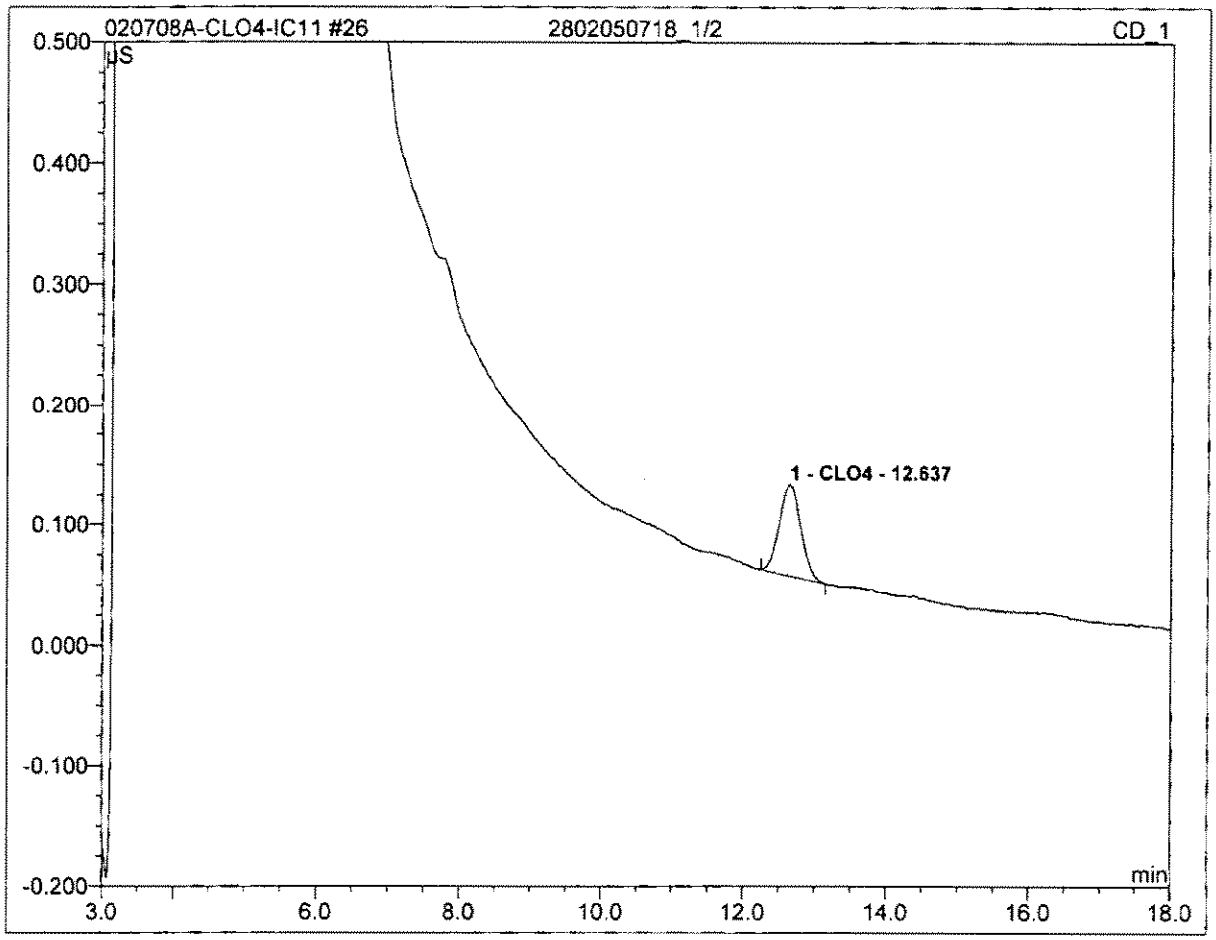
Sample Name:	**2802050697_1/10000**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 17:12**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**10000.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.65	CLO4	0.058	0.021	100.00	278437.053	BMB
Total:			0.058	0.021	100.00	278437.053	

26 2802050718_1/2

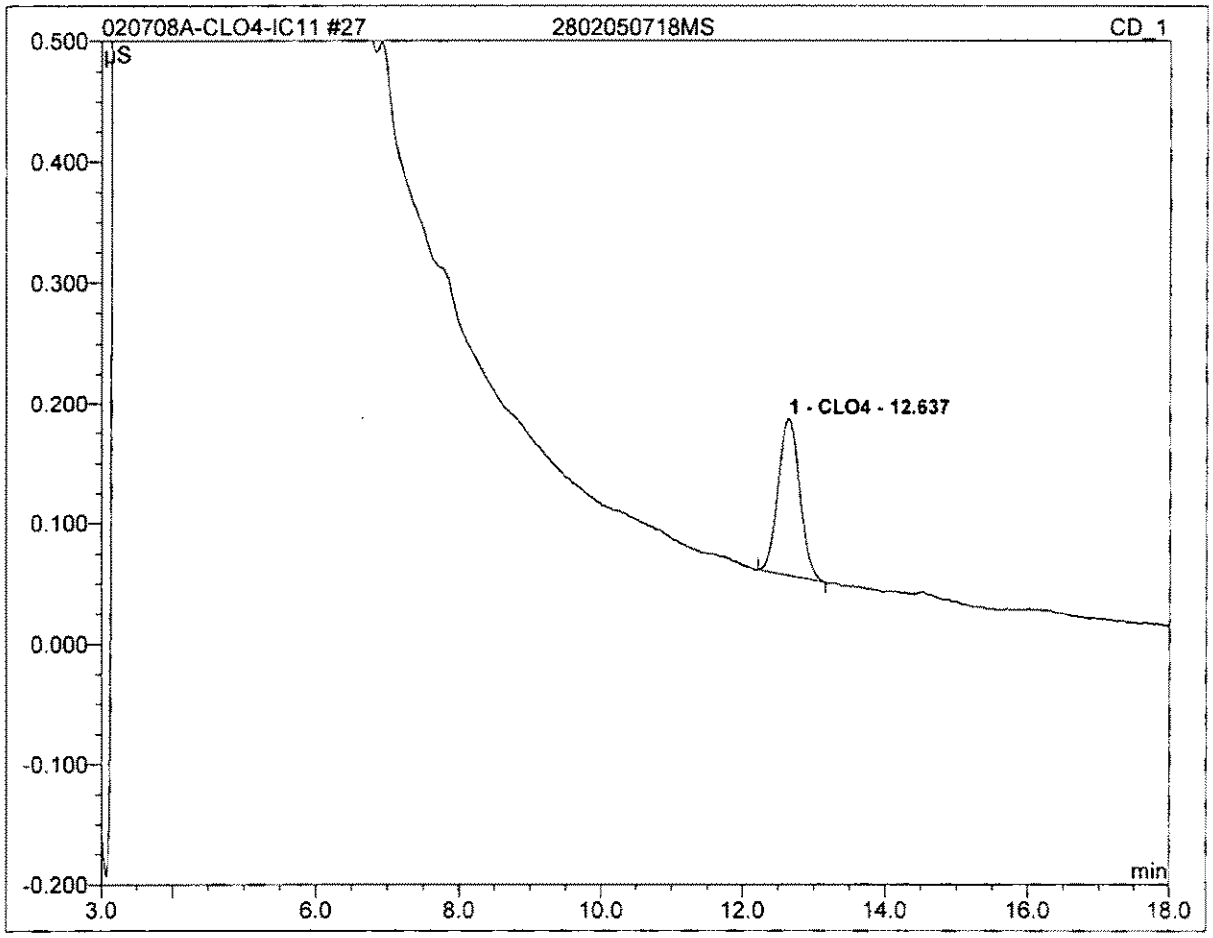
Sample Name:	**2802050718_1/2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 18:42**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**2.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.64	CLO4	0.075	0.026	100.00	69.349	BMB
Total:			0.075	0.026	100.00	69.349	

27 2802050718MS

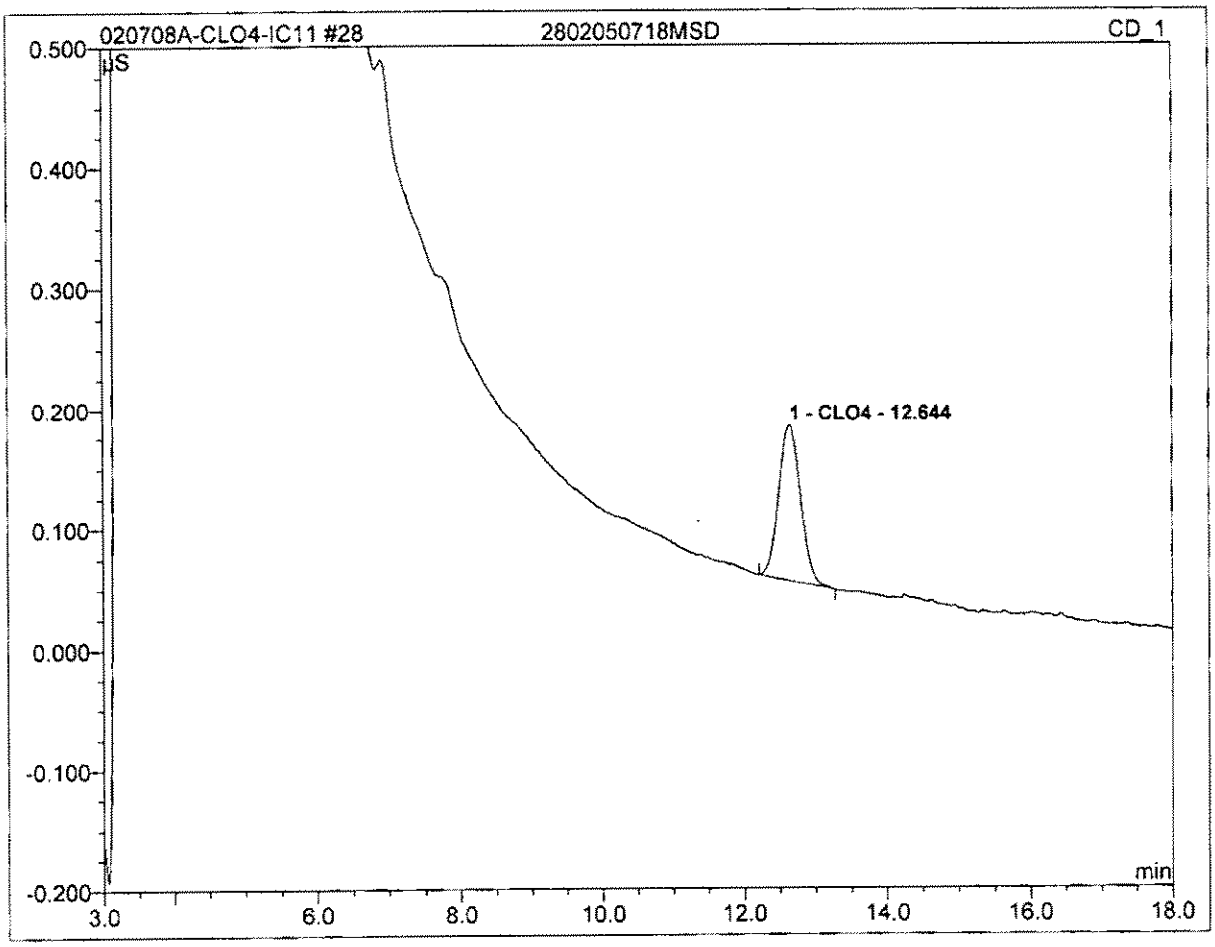
Sample Name:	**2802050718MS**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 19:04**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**2.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.64	CLO4	0.131	0.046	100.00	119.034	BMB
Total:			0.131	0.046	100.00	119.034	

28 2802050718MSD

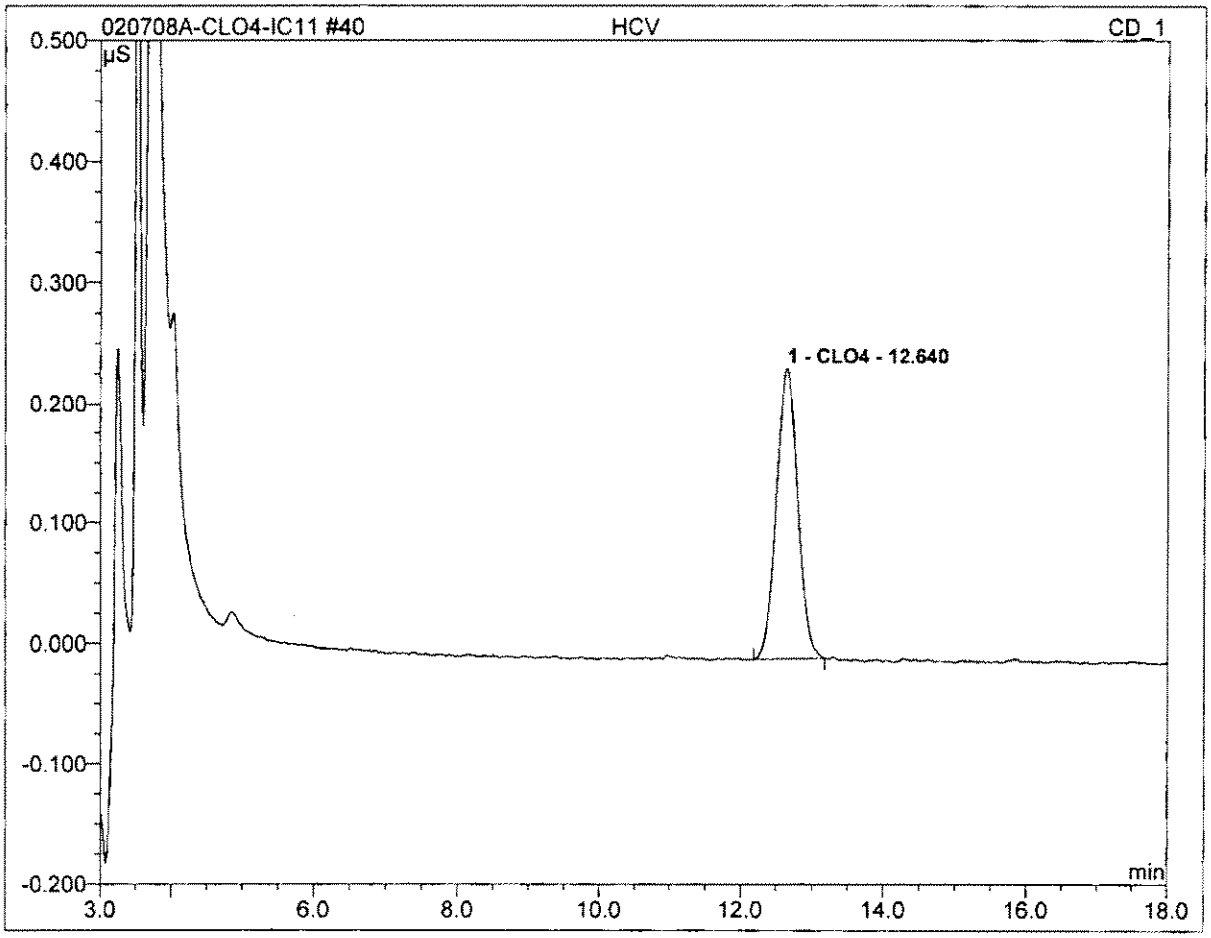
Sample Name:	**2802050718MSD**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 19:26**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**2.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.64	CLO4	0.130	0.046	100.00	119.177	BMB
Total:			0.130	0.046	100.00	119.177	

40 HCV

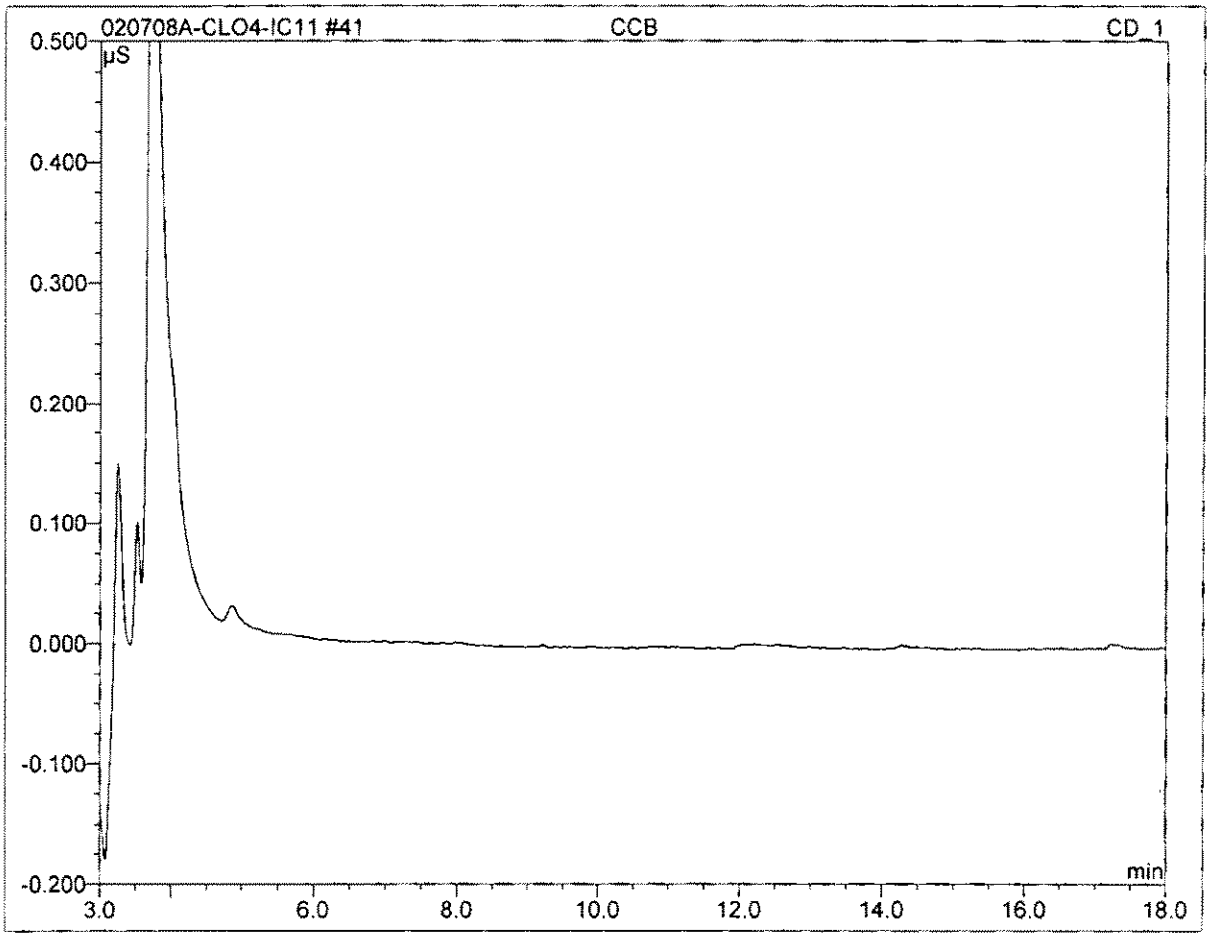
Sample Name:	**HCV**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/07/2008 23:55**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*Dilution Factor:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount	Type
1	12.64	CLO4	0.243	0.084	100.00	108.400	BMB
Total:			0.243	0.084	100.00	108.400	

41 CCB

Sample Name:	**CCB**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Control Program:*	**Perchlorate-IC11**
Recording Time:	**02/08/2008 00:18**	*Quantif. Method:*	**IC#4-CLO4-LOW**
Analyst:	**jkz**	*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	

Standard Preparation Worksheet & Certificate of Analysis

Reagent Preparation Documentation

Reagent: Anions LCS/LCSd Stds.
Date Received/Prepped: / / / / /
Date Expired: / / / / /
Manufacturer:
Storage Condition: fresh daily

MW #:
By: JKZ
Matrix: aq
Amount: 100 ml
Lot #: NA

Component	Comment	Standard	Concentration
Stk A	1 ml	R201752A	
Cl = 2500 ppm			Cl = 25 ppm
NO3 = 250 ↓	dilute to 1 ml w/ DI H2O		NO3 = 1
SO4 = 5000			NOx = 2.5
Stk B	1 ml	R201752B	SO4 = 50 ↓
NO2 100 ppm			

Comment: Stds. expire: 12/01/08

Reagent: ClO4 Dirt. Cal. Std. 1000 ppb MRL Check 2.0 ppb
Date Received/Prepped: 01/15/08 / / / /
Date Expired: / / / / /
Manufacturer: Absolute Grade
Storage Condition: Room Temp

MW #: JKZ080115-1
By: JKZ
Matrix: aq
Amount: 100 ml
Lot #: NA

Component	Comment	Standard	Concentration
0.10 ml R201449	→ 100 ml soln Exp. 072809	ClO4	1000 ppb
@ 1000 ppm			

Comment:

Reagent: ClO4 2nd Source 1000 ppb
Date Received/Prepped: 01/15/08 / / / /
Date Expired: / / / / /
Manufacturer:
Storage Condition: Room Temp

MW #: JKZ080115-2
By: JKZ
Matrix: aq
Amount: 100 ml
Lot #: NA

Component	Comment	Standard	Concentration
0.10 ml	0.10 ml → 100 ml soln	R201789	1000 ppb
1000 ppm ClO4		Exp. 07/10/09	

Comment:

Reagent Preparation Documentation

Page: ___

Reagent: ClO4 LCS/LCSD 25 ppb
Date Received/Prepped: 01/15/08 | 02/06/08 | 02/19/08 | 02/21/08 | 03/03/09
Date Expired: / / / / /
Manufacturer:
Storage Condition:

MW #: 080115-3
By: JKZ
Matrix: Aq
Amount: 100 mL
Lot #:

Component	Comment	Standard	Concentration
1000 ppb ClO4 2nd source	2.5 mL → 100 mL soln	R201789 Exp. 07/10/09	

Comment:

Reagent: ClO4 IPC E.C. = 3155 25 ppb
Date Received/Prepped: 01/15/08 | 02/06/08 | 02/25/08 | / | /
Date Expired: / / / / /
Manufacturer:
Storage Condition:

MW #: 080115-4
By: JKZ
Matrix: Aq
Amount: 100 mL
Lot #:

Component	Comment	Standard	Concentration
~~2.5 mL~~ 10,000 ppm CO_3	3.5 mL } dilute to 100 mL w/ DI H_2O	CLV070205-4	
~~2.5~~ 10,000 ppm SO_4	3.5 mL	CLV070205-3	
10,000 ppm Cl	3.5 mL	CLV070205-2	
1000 ppb ClO4 Dil Col	2.5 mL		
R201449 Exp. 07/28/09			

Comment:

Reagent: ∅ ClO4 QCSV 20 ppb
Date Received/Prepped: 01/15/08 | 02/13/08 | 02/25/08 | / | /
Date Expired: / / / / /
Manufacturer:
Storage Condition:

MW #: 080115-5
By: JKZ
Matrix: Aq
Amount: 100 mL
Lot #:

Component	Comment	Standard	Concentration
1000 ppb ClO4 2nd source	2.0 mL → 100 mL soln	R201789 Exp. 07/10/09	

Comment:

Reagent Preparation Documentation

Page: 23

Reagent: ClO4 CCSV 25 ppb
MW #: JKZ-080115-6
Date Received/Prepped: 01/15/08 / 02/00/08 / 02/20/08 / 03/03/08 /
By: JKZ
Date Expired: / / / / /
Matrix: aq
Manufacturer:
Amount: 100 ml
Storage Condition: Room Temp
Lot #:

Component	Comment	Standard	Concentration
1000 ppb ClO4	2.5 ml ⟶ 100 ml soln		25 ppb
Insit. Cal Std	R 201449 Exp: 07/28/09		
R201449			
exp. 072809			

Comment:

Reagent: ClO4 MRCCHK 2 ppb
MW #: JKZ 080115-7
Date Received/Prepped: 01/15/08 / 02/13/08 / 02/25/08 / / /
By: JKZ
Date Expired: / / / / /
Matrix: Aq 100 ml
Manufacturer:
Amount: 100 ml
Storage Condition: Room Temp
Lot #:

Component	Comment	Standard	Concentration
1000 ppb ClO4	0.20 ml ⟶ 100 ml soln		2 ppb
Insit Cal Soln			
R 201449 exp: 072809			
(initials) 5 May 08			

Comment:

Reagent: ClO4 ECSV 4 ppb
MW #: JKZ 080115-8
Date Received/Prepped: 01/15/08 / 02/13/08 / 02/25/08 / / /
By: JKZ
Date Expired: / / / / /
Matrix: aq
Manufacturer:
Amount: 100 ml
Storage Condition:
Lot #:

Component	Comment	Standard	Concentration
1000 ppb ClO4	0.40 ml ⟶ 100 ml soln		4 ppb
Insit Cal. Std			
R201449 exp 072809			
(initials) 5 May 08			

Comment:

Reagent Preparation Documentation

Reagent: ClO4 10 ppb Cal Std.
Date Received/Prepped: 01/15/08 / / / / /
Date Expired: / / / / /
Manufacturer:
Storage Condition: Room Temp

MW #: JKZ080115-9
By: JKZ
Matrix: aq
Amount: 100 ml
Lot #:

Component	Comment	Standard	Concentration
1000 ppb Int.	1.0 ml → 100 ml soln	R201449	10 ppb
Cal Std		exp 072809	

Comment:

Reagent: ClO4 50 ppb Cal Std
Date Received/Prepped: 01/15/08 / 02/21/08 / / / /
Date Expired: / / / / /
Manufacturer:
Storage Condition: Room Temp

MW #: JKZ080115-10
By: JKZ
Matrix: aq
Amount: 100 ml
Lot #:

Component	Comment	Standard	Concentration
1000 ppb Int.	5.0 ml → 100 ml soln	R201449	50 ppb
Calib. Std		exp. 072809	

Comment:

Reagent: ClO4 HCV 100 ppb
Date Received/Prepped: 01/15/08 / 02/13/08 / 02/25/08 / / /
Date Expired: / / / / /
Manufacturer:
Storage Condition: Room Temp

MW #: JKZ080115-11
By: JKZ
Matrix: aq
Amount: 100 ml
Lot #:

Component	Comment	Standard	Concentration
1000 ppb Int	10 ml → 100 ml soln	R201449	100 ppb
Cal. Std.		exp. 072809	

Comment:

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-F01047

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 1000 ppm 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 # 57001		

Comment:

ABSOLUTE STANDARDS, INC • 44 ROSSOTTO DRIVE • HAMDEN, CT 06514 • (800)-368-1131

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

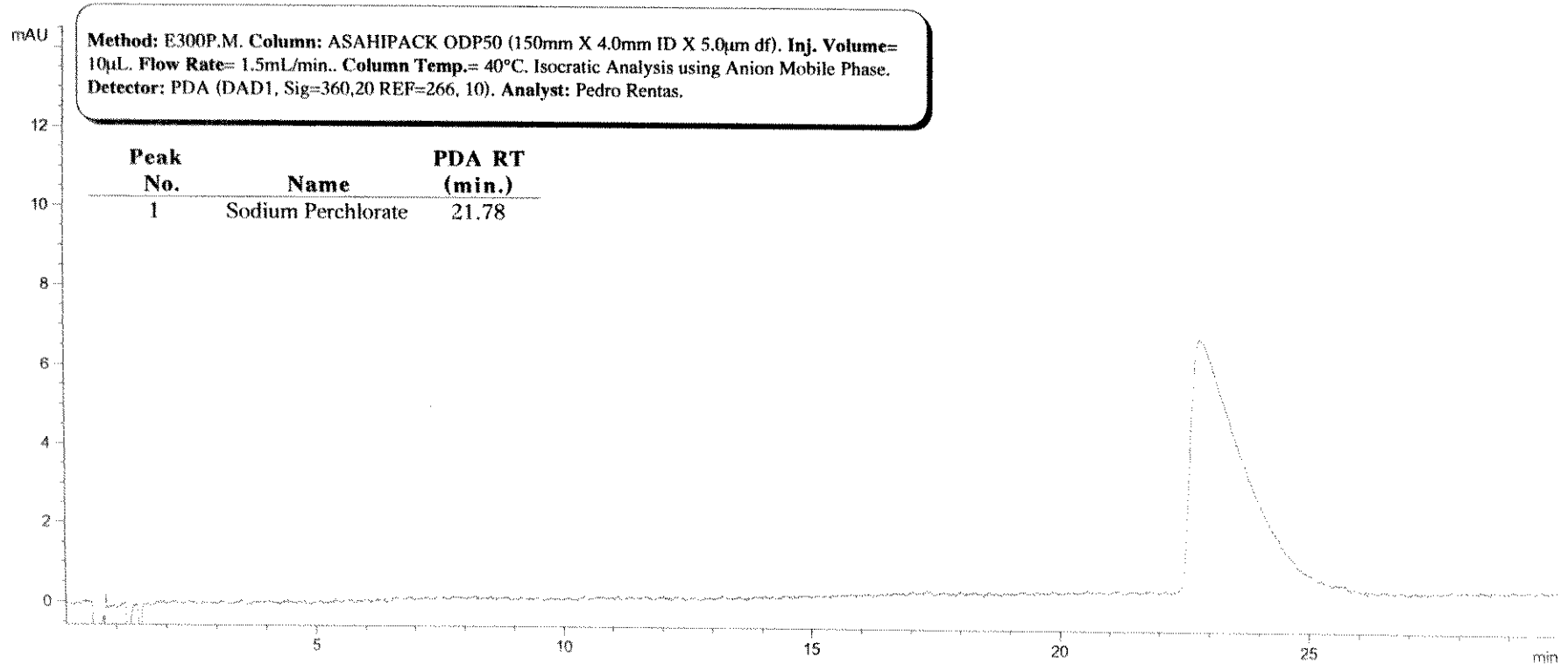
5E-05 Balance Uncertainty

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

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity	Uncertainty Purity	Assay (%)	*Target Weight(g)	Actual Weight(g)	*Actual Conc (µg/mL)	Expanded Uncertainty (+/-)	MSDS Information (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 Documentation

Reagent: Perchlorate Standard (IC) **Reagent #:** 201789
Date Received: 11 Jan 08 **By:** TCH
Date Expired: July 10, 2009 **Matrix:** aq
Manufacturer: CPI **Amount:** 2 x 100mL
Storage Condition: room temperature **Lot #:** 06L058

Component	Comment	Standard	Concentration
	CPI# 4400-010177		

Comment:

Reagent: Magnesium Chloride Reagent 51% w/v **Reagent #:** 201790
Date Received: 11 Jan 08 **By:** TCH
Date Expired: 31 May 09 **Matrix:** aq
Manufacturer: VWR **Amount:** 6 x 1L
Storage Condition: room temp **Lot #:** 7143

Component	Comment	Standard	Concentration
	VWR# VW3899-1		

Comment:

Reagent: Conductivity Standard 2 mS/cm **Reagent #:** 201791
Date Received: 14 Jan 08 Lot Across 06168 **By:** TCH
Date Expired: 4 Jan 2011 06163 **Matrix:** aq
Manufacturer: Inorganic Ventures **Amount:** 8 x 500mL/6x500mL
Storage Condition: room temp **Lot #:** A2-CQCP03072

Component	Comment	Standard	Concentration
	IV# CON-KCL-2		

Comment:

JUL 10 200 recd 1-11-08

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CERTIFICATE OF ANALYSIS

P/N 4400-010177

Ion Chromatography Perchlorate Standard
ClO_4 in H_2O
1000 µg/mL ± 0.5%

Lot # 06L058

Material Source: Sodium Perchlorate ($NaClO_4$)
Source Purity: 98.6%

This standard solution was prepared using a high-purity starting material and 18-megaohm deionized water. The starting material was weighed to five significant figures and diluted in a Class A volumetric glassware calibrated in accordance with National Bureau of Standards Circular 602. All balances are routinely calibrated using Class F NIST traceable weights.

This solution was certified instrumentally against the National Institute of Standards and Technology's SRM 3100 series.

Accuracy and stability are guaranteed to within plus or minus 0.5% of the certified value for 18 months after the date of shipment. The solution should be kept tightly capped and stored under normal laboratory conditions. See attached MSDS for proper handling information.

For questions or comments please call 1-800-878-7654 in the USA or +31 20 638 05 97 in Europe.