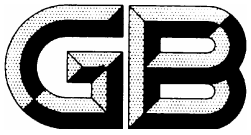


1

2

3

4

5

6

A( )

B( ) 5-Br-PADAP

C( ) 5-Br-PADAP

D( ) -

E( )

F( )

GB 8978-1996 GB 16297-1996

GB 9078-1996

A F

2008

2008

( )

GB 6920-86 pH

GB 11914-89

GB 11901-89

HJ/T 195-2005

GB 7479-87

GB 7481-87

GB 7478-87

GB 11893-89

GB 11894-89

HJ/T 199-2005

GB 18871-2002

HJ/T 56-2000

HJ/T 57-2000

GB 4920-85

GB/T 15264-94

HJ/T 65-2001

(28 2005-09-19)

273.15K 101325Pa

2009 1 1

1	pH		6 9	6 9	6 9	
2	(COD_{Cr} mg/L)		150	150	150	
3	(mg/L)		1.0	1.0	1.0	
4	(mg/L)		20	20	20	
5	(mg/L)		8	8	8	
6	(mg/L)		10	10	10	
7	(SS) (mg/L)		150	150	150	
			100	100	100	
8	(mg/L)		1.5	1.5	1.5	
9	(mg/L)		1.0	1.0	1.0	
10	(mg/L)		5.0	5.0	5.0	
11	(mg/L)		6	6		
12	(mg/L)		6	6		
13	(mg/L)				0.05	
14	(mg/L)		0.1	0.1	0.1	
15	(mg/L)		1.0	1.0	1.0	
16	(mg/L)		0.5	0.5	0.5	
17	(mg/L)		0.5	0.5	0.5	

2010 7 1 2

2008 7 1 2

1	pH		6 9	6 9	6 9	
2	(COD_{Cr} mg/L)		100	100	100	
3	(mg/L)		1.0	1.0	1.0	
4	(mg/L)		15	15	15	
5	(mg/L)		5	5	5	
6	(mg/L)		5	5	5	
7	(SS) (mg/L)		100	100	100	
			70	70	70	
8	(mg/L)		1.0	1.0	1.0	
9	(mg/L)		0.5	0.5	0.5	

10	(mg/L)		2.0	2.0	2.0	
11	(mg/L)		5	5		
12	(mg/L)		5	5		
13	(mg/L)				0.04	
14	(mg/L)		0.1	0.1	0.1	

$$C = \frac{Q}{\sum Y_i Q_i} \times C \quad (1)$$

C

Q

Y_i

Q_i

C

Q $\sum Y_i Q_i$

2009 1 1 5

			/mg N·m ^{3}								
1			960	50[1]	45						
			860								
2			310	120		60	10	0.015	1.0	0.9	3.0
			650								
3			500	30		10	24	0.015	1.0	0.9	3.0
4			960	100				0.015	1.0	0.9	3.0
5				150		10	10	0.015	1.0	0.9	3.0
				100							

[1] 100 mg/N·m

2010 7 1 6

2008 7 1 6

			/ mg N·m 3								
1			800	50[1]	40						
2			260	100		50	10	0.012	0.85	0.7	2.5
			550								
3			425	30		8.5	24	0.012	0.85	0.7	2.5
4			815	85				0.012	0.85	0.7	2.5
5				120		8.5	8.5	0.012	0.85	0.7	2.5
				85							

[1] 100 mg N·m 3

7

		/ mg N·m 3		
1		0.3	0.3	0.3
2		0.8	0.8	0.8
3		1.0	1.0	1.0
4		0.24	0.24	
5		0.025	0.025	
6				0.012
7		0.05	0.05	0.05
8		0.006	0.006	0.006
9		0.045	0.045	0.045

15m

200m 4.2.5

3m

1.7

8

1	pH	pH	GB 6920-86
2	(COD)		GB 11914-89
3			GB 11893-89
4			GB 11894-89
			HJ/T 199-2005
5			GB 7479-87
			GB 7481-87
			GB 7478-87
			HJ/T 195-2005
6			GB/T 16488-1996
7	(SS)		GB 11901-89
8			GB/T 16489-1996
			HJ/T 60-2000
9			GB 7475-87
10			GB 7475-87
11			GB 7475-87
12			GB 7475-87
13			A
14		5-Br-PADAP	B
15			GB 7468-87
16			GB 7485-87
17			GB 7467-87

9

1			GB/T 1657-1996
2			HJ/T 56-2000
			HJ/T 57-2000

3			GB 4920-85
4			HJ/T 65-2001
5		5-Br-PADAP	C
6			D
7			E
8			GB/T 15264-94
9			F

20mL

50mL 100mL

10mL 2mL

1.00mL 5.00mL 25mL

0 0.20 0.40 0.60 0.80 1.00mL (0 2.0 4.0 6.0 8.0 10.0 μ g

) 25mL

0.5mL (100g/L) 1

(1 1) 3mL (1 9) 1mL (5g/L) 2.5mL

(10g/L) 25mL 2mL (0.1g/L) 1h

2cm 490nm

c(mg/L) (A.1)

$$c(\text{mg/L}) = \frac{(m_1 - m_2) \times 1\,000}{m_3 \times (V_2/V_1) \times 1\,000} \qquad \text{……..(A.1)}$$

m_1 — μ g

m_2 — μ g

m_3 — g

V_1 — mL

V_2 — mL

3

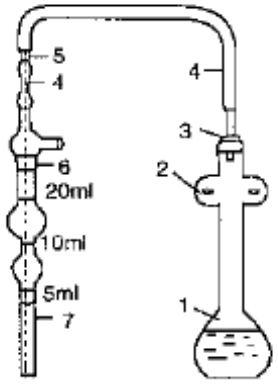
10%

B

0.02 0.1mol/L (III) 2-(5- -2-
)-5- (5-Br-PADAP) 600nm
5.0 10^4L·mol $^{-1}$·cm $^{-1}$ 420nm

1.2mg/L
0.05mg/L(0.01)

10mm
B1



1—100ml 容积发生瓶；2—硼氢化钾存放处；
3—橡皮塞；4—乳胶软管；5—塑料管（一端拉
成毛细管状，出气口内径小于 1mm）；
6—14mm 标准磨口；7—吸收液，高度不低于 5cm

(≥99.9%)0.5000g 50mL 12.5mL (ρ_{20}
1.84g/mL) 500mL (1 1)
5% 12.5mL (1 1) 1.00mg

6mol/L 10.0μg

1

2-(5- -2-)-5- (5-Br-PADAP) 2 10 ^{3}mol/L (0.07%)

0.015mol/L 0.03%

25%

5%

20%

(1 1)

0.5mol/L

① 8 0 0.50 1.00 2.00 2.50 3.00 3.50mL

25% 4mL 5% 4mL (1 1) 12mL 25mL

② 5mL B1 2

③ 0.5mol/L 2.5mL 5% 3

20% 0.5mL 12mL 2 10 ^{3}mol/L5-Br-PADAP

2mL

④ 10mm 600nm

2 10mL( ) 1 2 20%

(1 1) 8mL 5% 4mL 25mL

c(mg/L) (B.1)

c(mg/L) m/V……(B.1)

m — μg

V — mL

7 0.12mg/L 0.6mg/L 10.8mg/L

1% 7% 0.7% 2% 0.6% 3% 8 85%

102%

25mL 2000mgF 400mgAl^{3} 100mgK Na Cl 20mgMn^{2} Zn^{2} 10mgNH_4
4mgCa^{2} 2mgNO_3 SO_4^{2} 0.5mgCd^{2} Hg^{2} Pb^{2} PO_4^{3} AsO_3^{3}
Fe^{3} Cu^{2} Sn^{4} Co^{2} Cr^{3}

(III) SbH_3 Fe^{3} Cu^{2}
Sn^{4} Co^{2} Cr^{3} 3
(III)

① SbH_3
② 1mm 5cm
(V) (III)
(V)
pH 1

C

0.020 0.10mol/L

(2-(5- -2-)-5-)(

5-Br-PADAP)

25mL Fe^{3} Cu^{2} Sn^{4} Co^{2} Cr^{3}

(SbH_3)

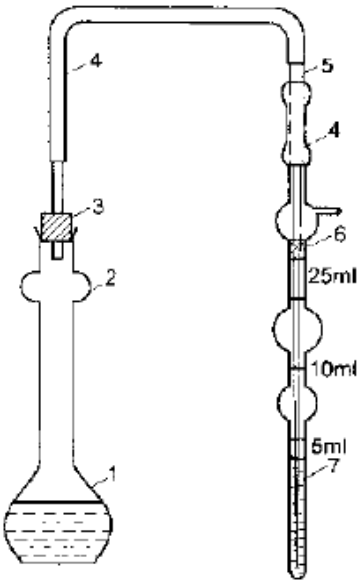
Fe^{3} Cu^{2} Sn^{4} Co^{2} Cr^{3}

0.5μg/50mL(0.01)

$50m^{3}$ 1 10^{-5} mg/m^{3} 7 $10^{-5}mg/m^{3}$

① 200mL

② C1



1 100mL 2 3 4

5 1mm 6 14mm

7 5cm

③

④

①

②

③ (1 1)

④ *c*(HCl) 0.50 2.0 6.0mol/L

⑤ 0.03%(m/V) 0.015mol/L

⑥ 5%(m/V)

⑦ 20%(m/V)

⑧ 0.30g

⑨ 5-Br-PADAP *c* 2.0 10 ^{3}mol/L 0.7982g[2-(5- -2-)-5-

](5-Br-PADAP) 1000mL

⑩

11 0.1197g ( ) 6.0mol/L

100mL 6.0mol/L 1000μg

12 6.0mol/L

10.0μg

GB/T 16157-1996

1.1 1.7m^{3}/min 24h

8cm 50 150L/min 20 40m^{3}

8 50mL C1

	0	1	2	3	4	5	6	7
	0	0.50	1.00	1.50	2.00	2.50	3.00	3.50
	9	8.5	8.0	7.5	7.0	6.5	6.0	5.50
μ	0	5.0	10.0	15.0	20.0	25.0	30.0	35.0

② 5% 4.0mL (1 1) 12.0mL

③ 5.0mL

④ 0.05mol L 2.5mL 5%

3

⑤ 20% 0.50mL 12mL 2.0 10 ^{3}mol/L 5-BT-PADAP

2.00mL 25mL

⑥ 610nm 1cm (μg)

200mL 20mL

7.0mL ( ) 5 10min( ) 10mL(

5mL) ( )

10mL ( )

2mL (1 1)

10mL 100mL 2.0mol/L

2.0mol/L

20 50mL 5% 4.0mL

③

c(mg/m^{3}) (D.1)

$$c(mg/m^{3}) = \frac{W - W_0}{V_n} \times \frac{V_t}{V_a} \times \frac{S_t}{S_a} \quad \text{……..……(C.1)}$$

W — μg

W_0 — μg

Vt — mL

V_a — mL

S_t — cm^{2}

S_a — cm^{2}

V_n — m^{3}

1mm 5cm

③ Fe^{3} Cu^{2} Sn^{4} Co^{2} Cr^{3}

④ 24h

D

$$Hg^{2+} + 2H-SR \rightleftharpoons Hg\begin{matrix}SR\\SR\end{matrix} + 2H^{+}$$

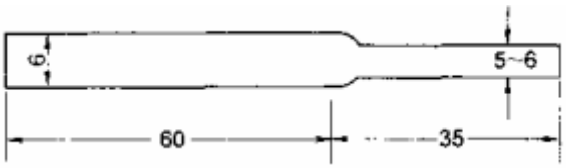
$$CH_3HgCl + H-SR \rightleftharpoons CH_3Hg-SR + HCl$$

4.0mol/L

0.1mg 15L

6.6 10^6mg/m^3

D1



(mm)

50μl 1mL

0 1L/min

1.0%(*m/V*)

4.0mol/L 4.0mol/L

- 2.8g ($KBrO_3$) 10.0g (KBr)
1000mL

- 12.0g 12.0g 100mL
10%(*m/V*) 10.0g ($SnCl_2 \cdot 2H_2O$) 150mL
10mL 100mL 1L/min

pH 3 2.0mol/L 0.50mL 1000mL

20mL 17.5mL 8.5mL 0.10mL
1.6mL 150mL 40 5g
40 ±1 4

0.10g
6mm 3cm 0.40mLpH 3

0.1353g ($HgCl_2$) 10% 5.0mL 1%
10mL 100mL 1000μg
1.00mL 200mL 10%
10.0mL 1% 2.0mL 5.0μg
10.00mL 100mL 10% 5.0mL 1% 1.0mL
0.50μg

0.3 0.5L/min 30 60min

① 7 5mL D1

	0	1	2	3	4	5	6
μ	0	5.0	10.0	20.0	30.0	40.0	50.0
	0	2.5	5.0	10.0	15.0	20.0	25.0

② 4.0mol/L 5mL

③ 0.10 5min 1

④ 1.0mL 0.5min

(ng)

10mL 1 2mL/min 4.0mol/L

1000mg/L (CH_3HgCl) 100mL

22 27.8ng/mL 4.1ng/mL

2.0mol/L

E

(KI-MIBK) ( )

0.05 0.5μg/m^3($10m^3$ 10mL

)

②

20 30mL

0.7%(V/V)

1%(V/V)

c(HNO_3)=0.16mol/L

5%(m/V) 0.5g 100mL

c(KI)=1.0mol/L

(99.99%)0.5000g (1 1) 5.0mL 5.0mL

500mL 1.00mg

10.00mL 100mL 1.0mL

100μg

GB/T 16157-1996

E1 E2

					μ
Cd	228.8	0.7	2		0.2 1

1	/ s ^{1}	150/15
2	/ s ^{1}	350/30
3	/ s ^{1}	1700/6
4	/ s ^{1}	2000/5
5	/ng mL ^{1}	0.1 2.0
6	( )	

8 100mL E3

(μg/mL)

	0	1	2	3	4	5	6	7
	0	0.20	0.30	0.40	0.50	0.60	0.80	1.00
μ	0	0.20	0.30	0.40	0.50	0.60	0.80	1.00

0.7%

2mL 1h

400 ±10 4h 300

4 6 7 8

0.16mol/L 10nl

c(mg/m^3) (E.1)

$$c(mg/m\ ) = \frac{(C - C\ )V}{V_n \times} \times \frac{S}{S} \quad \text{.....(E.1)}$$

C — μg/mL

C_0 — μg/mL

V — mL

S_1 — cm^2

V_n — m^3

S_2 — cm^2

(KI-MIBK) 0.10mol/L

25mL 1.0mol/L 5.0mL 5% 2.5mL

5.00mL 1.5min

0 0.050 0.100 0.150

0.200 0.300 0.400 0.500μg/mL

F

$(C_2H_3C_5H_4.NO)_n$ P_{204}

( ) 5 9cm 0.4μg

10g 10mL 100mL

6h

⑤ (AgDDC)

15%(m/V)

40%(m/V) 40g 50mL 100mL

(3 2)

11 10g 10% 100mL 30min

0.25μg (AgDDC) 1.0mL 100mL

13 0.1320g (105 2h) 1mol/L

2.0mL 50mL lmol/L 2.0mL 100mL

1000μg

14 100μg

GB/T 16157-1996

5cm 10 5L/min $5m^3$ 8cm

50 70L/min 10 $15m^3$

8 1/2 F1

	0	1	2	3	4	5	6	7
	0	1.00	2.00	3.00	5.00	10.00	15.00	20.00
	70	69	68	67	65	60	55	50
μ	0	1.00	2.00	3.00	5.00	10.0	15.0	20.0

(3 2) 30mL 15% 2.0mL 0.4mL

15min

4 1/4

(3 2) 30mL 60 2h

70mL

c(mg/m^3) (F.1)

$$c(mg/m^3) = \frac{W - W_0}{V_n \times} \times \frac{S_t}{S_a} \quad \text{……..……..(F.1)}$$

W μg

W_0— μg

S_t— cm^2

S_n— cm^2

V_n— m^3

97 %

24h