HJ

Specifications and Test Procedures for Ambient Air Quality Continuous Monitoring System with Gas Chromatography for Volatile Organic Compounds

本电子版为发布稿。请以中国环境出版集团出版的正式标准文本为准。

A~ B

2018 12 29

2019 7 1

GB/T 30431

GB/T 33864

HJ 212

HJ 654 SO_2 NO_2 O_3 CO

reference state

298.15 K 1013.25 hPa

validated data rate

FID

MSD

5.4.1

5.4.2

5.4.3

5.4.4

5.4.5

20 30

≤ 85%

800 1060 hPa

AC 220±22 V 380±38 V 50±1 Hz

20 30 ≤ 85%

20 MΩ

20 30 ≤ 85% 1500 V 50 Hz

1 min

AC 220±22 V 380±38 V 50±1

Hz

GB/T 30431 0.3 MPa

30 min 0.01 MPa

HJ 654

30 ~50

≤ 5 μm

30 min

/

5.3.4

CO_2

GB/T 30431 GB/T 33864

/ /

1 h

μg/m³ nmol/mol 0.01 μg/m³ 0.01 nmol/mol

HJ 212

6 h

57 57 A 50 nmol/mol

≥ 0.98

≤ 15%

≤ 0.05 nmol/mol

90% ≤ 0.1 nmol/mol

±10%

≤ 10%

2,3- 2- -

1.0

10 nmol/mol 24 h ± 1 nmol/mol

30 d ≤ 15%

≤ 30% ≤ 0.5 min

30 d ≥ 80%

≤ 20%

6 h ±20 s

3 20 s 2 min 20 min

10 min 6 h 2 min

90% ≤ 0.1 nmol/mol

2

5.4.1.5 5.4.5.2

≤ 2

57

57

1,4- -d5 1- -4

0.5 2 4 6 8 10 nmol/mol

3

1 6.2

$$d = \frac{\left|\overline{C_{test}} - C_l\right|}{C_l} \times 100\% \quad (1)$$

d—— %

$\overline{C_{test}}$—— nmol/mol

C_l—— nmol/mol

7

r_i i i=1,2...,n 2

S_0 6.3

$$S_0=\sqrt{\frac{\sum_{i=1}^{n}\left(r_i-\bar{r}\right)^2}{n-1}} \quad 2$$

S_0——— nmol/mol

r_i——— i nmol/mol

$\bar{r}$———n nmol/mol

i——— i=1 n

n———

$MDL<$

$<10\times MDL$ 0.5 nmol/mol 7 X_i

i i=1,2...,n 3 S

$$S=\sqrt{\frac{\sum_{i=1}^{n}\left(X_i-\overline{X}\right)^2}{n-1}} \quad 3$$

S——— nmol/mol

X_i——— i nmol/mol

$\overline{X}$———n nmol/mol

i——— i=1 n

n———

4 MDL 6.4

$$MDL=t_{n-1,0.99}\times S \quad 4$$

5 nmol/mol

Y_i 7 5

6.5 6

RSD 6.6

$$\delta=\frac{\left|\overline{Y}-Y_s\right|}{Y_s}\times 100\% \quad 5$$

δ—— %

$\overline{Y}$—— nmol/mol

Y_s—— nmol/mol

$$RSD = \frac{\sqrt{\sum_{i=1}^{n}\left(Y_i - \overline{Y}\right)^2}}{\overline{Y}} \times 100\% \qquad 6$$

RSD—— %

Y_i—— i nmol/mol

$\overline{Y}$—— nmol/mol

n——

1~5 nmol/mol

2,3-

2- - 6.7

$$R_i = \frac{2(t_{Rj} - t_{Rj-1})}{W_j + W_{j-1}} \qquad 7$$

R_i——

t_{Rj}—— min

t_{Rj-1}—— min

W_j—— min

W_{j-1}—— min

10 nmol/mol 3

24 h

24 h 3 8 24 h 6.8

8

——— 24 h nmol/mol

———24 h 3 nmol/mol

———24 h 3 nmol/mol

30 d 2 nmol/mol

9 10 D_n

DT_n 6.9

$$D_n = \frac{\left| C_n - C_s \right|}{C_s} \times 100\% \qquad 9$$

D_n—— n %

C_n—— n nmol/mol

C_s—— nmol/mol

$$DT_n = \frac{\left| RT_n - RT_0 \right|}{RT_0} \times 100\% \qquad 10$$

DT_n—— n %

RT_n—— n min

RT_0—— 1 min

30 d

2 nmol/mol 30 d

24 h 11

6.10

$$D = (1 - \frac{T}{30 \times 24}) \times 100\% \qquad 11$$

D——30 d %

T——30 d h

1 m 3 d

20 C_{ij} i i=1,2...,n j

j=1,2...,m 12

P_j 13

6.11

$$P_j = \frac{\sqrt{\sum_{i=1}^{n}\left(C_{ij} - \overline{C_j}\right)^2}}{\overline{C_j}} \times 100\% \qquad 12$$

P_j——n j

C_{ij}—— i j nmol/mol

——n j nmol/mol

i—— i=1,2...,n

j—— j=1,2...,m

$$P=\sqrt{\frac{1}{m}\times\sum_{j=1}^{m}(P_j)^2} \qquad 13$$

P——

- - t_0

6 h±60 s t_1 t_2

14 6.12

$$\Delta t=t_1-t_0-t_2 \qquad 14$$

Δt—— s

t_0—— - -

t_1—— - -

t_2—— - -

- - t_0

6 h

3 20 s 2 min 20 min

10 min 6 h±60 s t_1 t_2

14 6.12

10 nmol/mol

90%

6.13

	CAS No.				CAS No.		
1	74-84-0	Ethane		29	565-59-3	2,3-Dimethylpentane	2,3-
2	74-85-1	Ethylene		30	589-34-4	3-Methylhexane	3-
3	74-98-6	Propane		31	540-84-1	2,2,4-Trimethylpentane	2,2,4-
4	115-07-1	Propylene		32	142-82-5	*n*-Heptane	
5	75-28-5	*iso*-Butane		33	108-87-2	Methylcyclohexane	
6	106-97-8	*n*-Butane		34	565-75-3	2,3,4-Trimethylpentane	2,3,4-
7	74-86-2	Acetylene		35	108-88-3	Toluene	
8	624-64-6	*trans*-2-Butene	-2-	36	592-27-8	2-Methylheptane	2-
9	106-98-9	1-Butene	1-	37	589-81-1	3-Methylheptane	3-
10	590-18-1	*cis*-2-Butene	-2-	38	111-65-9	*n*-Octane	
11	287-92-3	Cyclopentane		39	100-41-4	Ethylbenzene	
12	78-78-4	*iso*-Pentane		40/41	108-38-3/ 106-42-3	*m,p*-Xylene	-
13	109-66-0	*n*-Pentane		42	100-42-5	Styrene	
14	646-04-8	*trans*-2-Pentene	-2-	43	95-47-6	*o*-Xylene	-
15	109-67-1	1-Pentene	1-	44	111-84-2	*n*-Nonane	
16	627-20-3	*cis*-2-Pentene	-2-	45	98-82-8	*iso*-Propylbenzene	
17	75-83-2	2,2-Dimethylbutane	2,2-	46	103-65-1	*n*-Propylbenzene	
18	79-29-8	2,3-Dimethylbutane	2,3-	47	620-14-4	*m*-Ethyltoluene	
19	107-83-5	2-Methylpentane	2-	48	622-96-8	*p*-Ethyltoluene	
20	96-14-0	3-Methylpentane	3-	49	108-67-8	1,3,5-Tri-m-benzene	1,3,5-
21	78-79-5	Isoprene		50	95-63-6	1,2,4-Tri-m-benzene	1,2, 4-
22	110-54-3	*n*-Hexane		51	526-73-8	1,2,3-Tri-m-benzene	1,2,3-
23	592-41-6	1-Hexene	1-	52	611-14-3	o-Ethyltoluene	
24	96-37-7	Methylcyclopentane		53	124-18-5	*n*-Decane	
25	108-08-7	2,4-Dimethylpentane	2,4-	54	141-93-5	*m*-Diethylbenzene	
26	71-43-2	Benzene		55	105-05-5	*p*-Diethylbenzene	
27	110-82-7	Cyclohexane		56	1120-21-4	Undecane	
28	591-76-4	2-Methylhexane	2-	57	112-40-3	Dodecane	

1		57 57 A 50 nmol/mol	——
2		≥ 0.98 ≤ 15%	7.3
3		≤ 0.05 nmol/mol	7.4
4		90% ≤ 0.1 nmol/mol	7.5
5		± 10%	7.6
6		≤ 10%	
7		2,3- 2- - 1.0	7.7
8	24 h	10 nmol/mol 24 h ± 1 nmol/mol	7.8
9		30 d ≤ 15% ≤ 30% ≤ 0.5 min	7.9
10		30 d ≥ 80%	7.10
11		≤ 20%	7.11
12		6 h 20 s 3 20 s 2 min 20 min 10 min 6 h 2 min	7.12
13		90% ≤ 0.1 nmol/mol	7.13