



HJ/T 400—2007

**Determination of Volatile Organic Compounds and Carbonyl Compounds in
Cabin of Vehicles**

2007-12-07

2008-03-01

	.....	I
1	.....	1
2	.....	1
3	.....	1
4	.....	1
5	.....	4
6	.....	4
A	.....	6
A.1	.....	6
A.2	.....	6
B	.....	7
B.1	.....	7
B.2	.....	7
B.3	.....	7
B.4	.....	7
B.5	.....	8
B.6	.....	8
B.7	.....	9
B.8	.....	10
B.9	.....	10
B.10	.....	11
B.11	.....	11
B.12	.....	12
C	.....	14
C.1	.....	14
C.2	.....	14
C.3	.....	14
C.4	.....	14
C.5	.....	15
C.6	.....	15
C.7	.....	15
C.8	.....	16
C.9	.....	17
C.10	.....	18
C.11	.....	18
C.12	.....	18
D	.....	21

2008 3 1
2007 12 7

1

2

GB/T 15089

3

3.1 M M2 M3 N

GB/T 15089

M

M2

5000 kg

M3

5000 kg

N

3.2

tenax

10

3.3

C

4

4.1

4.1.1

4.1.2

a) 25.0 ± 1.0

b) 50% ± 10%

c) 0.3m/s

d) 0.02mg/m³ 0.02mg/m³

4.2

4.2.1

a) M₁ 1 ()

b) M₂ 2

c) M₃ 3 M₃ 6

d) N 1

4.2.2

4.3

4.3.1

A

4.3.2

4.3.2.1

4.3.2.2 50ml/min~1000ml/min

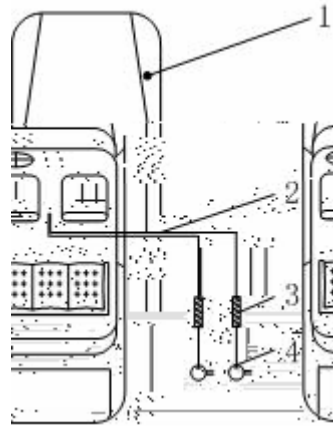
5

4.3.2.3

1

4.3.2.4

4.3.2.5 B C



1— 2— 3— 4—

1

4. 4

4. 4. 1

a)

b)

c)

d)

4h

6h

4.1.2

6.7

4. 4. 2

a)

b)

4.3.2

c)

16h

d)

4.1.2

6.7

4. 4. 3

4.1.2

B

C

100 ml/min ~200ml/min

30min

100ml/min ~500ml/min

30min

5%

0.5m

4.5

<4

30

5

5.1

B

5.2

C

6

6.1

6.2

6.3

6.4

()

6.5

2

6.6

2

20%

6.7

6.7.1

6.7.2

4

4h

1

1

6.7.3

1

0.5m

5

1

0.5m

6.8

$$V_0 = V \cdot \frac{T_0}{T} \cdot \frac{P}{P_0}$$

:

V_0 —

L

V —

L

T_0 —

273K

T —

t

t+273 K

P_0 —

101.3kPa

P —

kPa

6.9

D

A

A 1

A 1.1

0.5m

4.1.2

A 1.2

A 1.3

A 1.4

0.5m

4.1.2

A 1.5

25

±1.0

50%

±10%

2

1

0.5m

A 1.6

4.1.2

0.5m

A 2

B

B.1

1.5 g/m³

3L

B.2

B.2.1

B.2.2

6mm

200mg

B.2.3

<3mm

B.2.4

<10

50m

60m

0.20mm~0.32mm

0.2 m~1.8 m

B.2.5

TIC

B.3

B.4

B.4.1

·
·
·
·
·
·

B. 4. 2

60~80

B.2

B. 4. 3

99.999%

B. 5

B. 5. 1

B. 5. 2

—

B. 5. 2. 1

B. 5. 2. 2 /

/

B. 5. 3

± 5

50 ml/min -100ml/min

B. 6

8

2

3

4

B.7.4

B.8

B.8.1

$$c_m = \frac{m_F - m_B}{V} * 1000$$

c_m — mg/m³

m_F — mg

m_B — mg

V — L

$$c_c = c_m \cdot \frac{p_0}{p} \cdot \frac{T}{T_0}$$

c_c — mg/m³

p_0 — 101.3kPa

p — kPa

T_0 — 273K

T — t + 273 K

B.8.2

a 50 260 5 g/m³

b 25

c

d

B.9

B.9.1

3L 1.5 g/m³

B.9.2

10

10^3
B. 9. 3

0.5 g

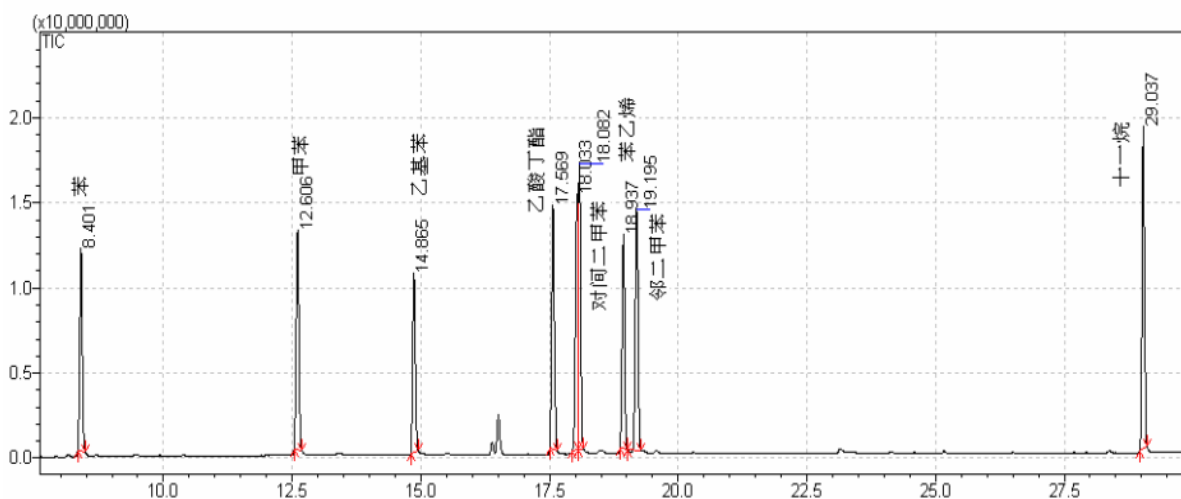
B.12

ISO16000-6 2004

B.2

Carbotrap	
Carbopack	
Carbograph TD-1	
Carbosieve S-	
Carboxen 569	
Carboxen 1000	
Chromosorb 102	/
Chromosorb 106	
Porapak N	
Porapak Q	/
Spherocarb	
Tenax TA	
Tenax GR	

Carbotrap™ Supelco Inc.
 Carbopack™ Enka Research Institute NV NL
 Carbograph TD-1™ Chromosorb™ Manville Corp.
 Carbosieve S-™
 Carboxen™
 Chromosorb™
 Porapak™ WatersAssociates Inc. Spherocarb™ Analabs Inc.
 Tenax™



B.1

TIC

C

C.1

15

C.2

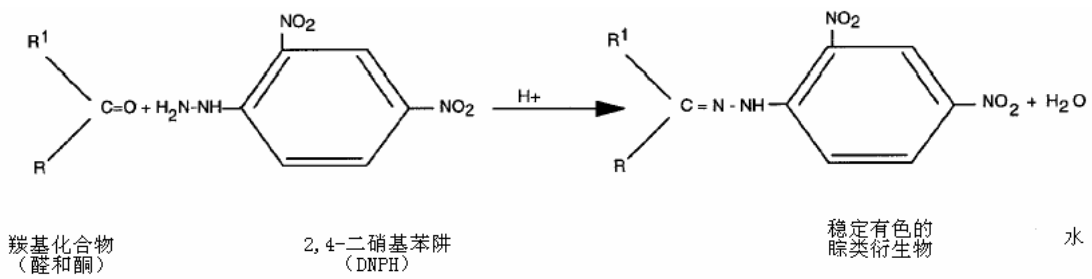
C.2.1 DNPH

2,4-

C.3

DNPH

DNPH



R R¹

C.4

C.4.1 DNPH

DNPH

- 0.15μ g/
- 0.10μ g/
- 0.30μ g/
- 0.10μ g/

C.4.2

HPLC

UV

1.5ng/ml

C.4.3

14

2,4-

.
. .
. .
. .
. .
. .

C. 4. 4

0.45 m

C. 5

C. 5. 1

HPLC

C₁₈

C.1

C. 5. 2

10 1 50 1 100 1

C. 5. 3

5ml

C. 5. 4

C. 5. 5

C. 6

C. 6. 1

C. 6. 2

5ml

5ml

0.45 m

3min-5min

C. 6. 3

5ml

C. 6. 4

4

30d

C. 7

C. 7. 1

a)

C₁₈

b)

/

c)

60% /40%

d) 360nm
 e) 1.0 ml/min
 f) 25 μl
 C. 7. 2
 C. 7. 2 1

3min-5min
 C. 7. 2 2

5ml
 5ml
 5ml
 0.45 m

C. 7. 2 3 5

RF

C. 7. 2 4 0.995

$\alpha = 5\%$

C. 7. 2 5

20

\bar{x}

1

2

3

4

C. 7. 3

C. 8

C. 8. 1

$$c_m = \frac{m_F - m_B}{V} * 1000$$

c_m ——— mg/m³

m_F ——— mg

m_B ——— mg

V ——— L
 DNPB

N

\sqrt{N}

200

$\sqrt{200}$ 14

$$c_c = c_m \cdot \frac{p_0}{p} \cdot \frac{T}{T_0}$$

c_c —

mg/m³

p_0 —

101.3kPa

p —

kPa

T_0 —

273K

T —

t

t+273 K

C.8.2

C.9

C.9.1

3

$$c_{\min} = 2N \frac{Cv}{hV}$$

c_{\min} —

mg/m³

N —

AU

C —

μg/ml

v —

ml

\bar{h} —

AU

V —

L

C.9.2

10

6

Grubbs

1%

C.9.3

20

3

C.7.2.5

C. 10

C. 10. 1

a) DNP

b)

		1.5ng/ml		
		DNP	UV	40 -60
	DNP	UV		HPLC

DNP

0.15μ g

d)

e)

C. 10. 2

$$N = 5.54 \left(\frac{t_R}{W_{1/2}} \right)^2$$

N _____

$W_{1/2}$ _____ s

t_R _____ s

5,000

C. 10. 3

150ng/ml

HPLC

± 10%

75ng/ml

HPLC

25%

± 7%

C. 11

a)

b)

c)

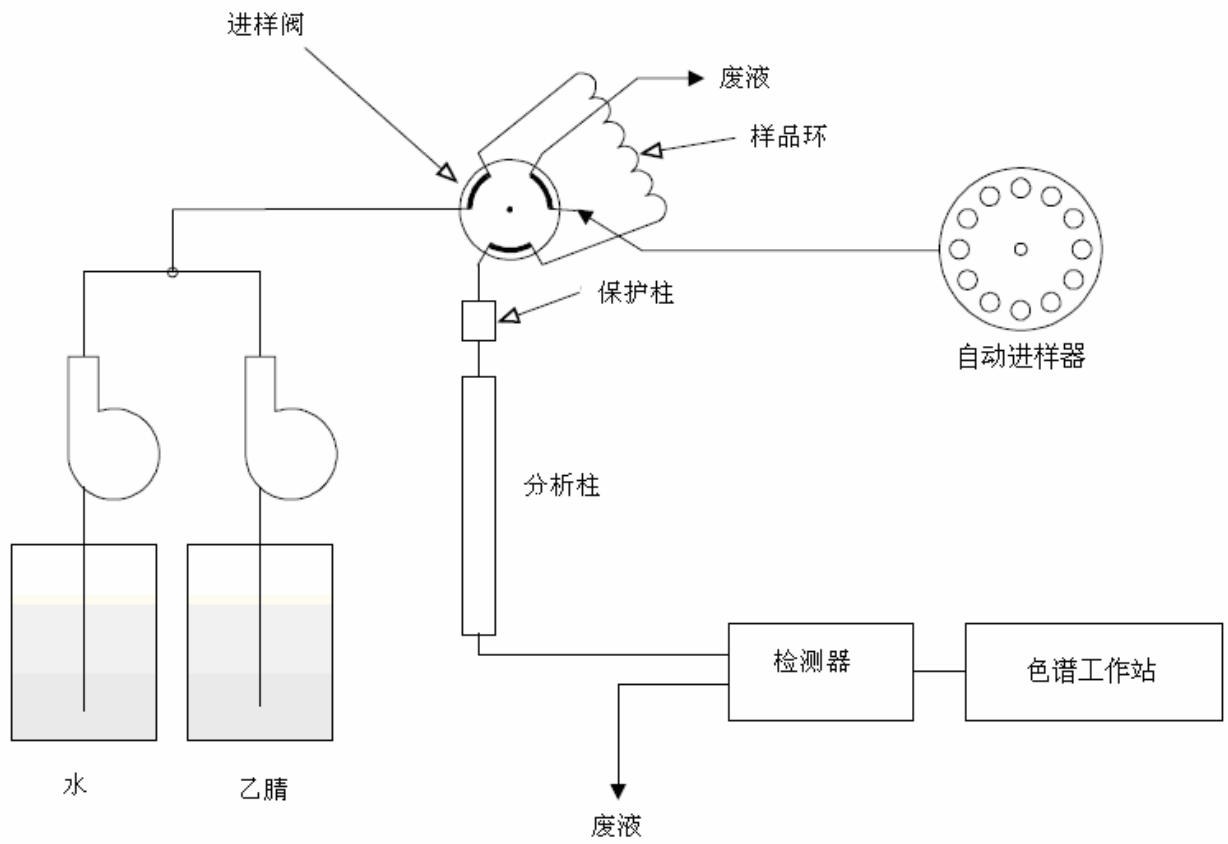
C. 12

ISO16000-3 Determination of Formaldehyde and other carbonyl compounds—Active sampling method.

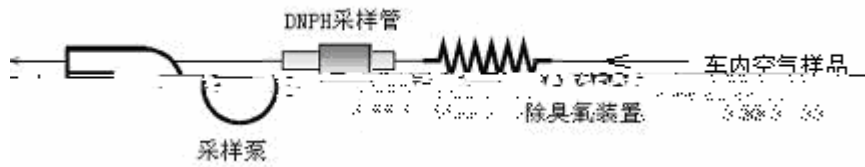
USEPA TO-11A Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology].

" 2 4-DNP

"

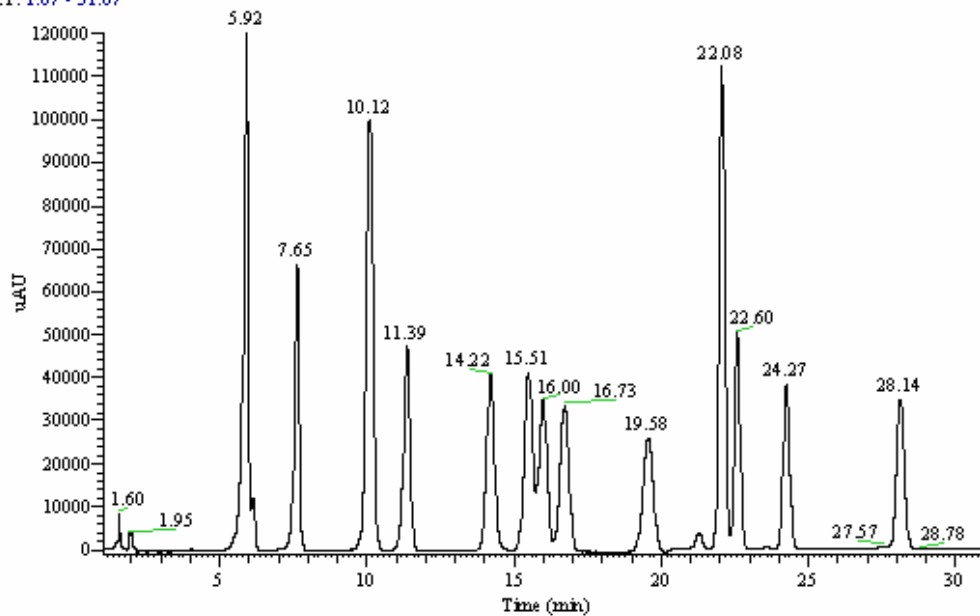


C 1



C 2 DNPH

RT: 1.07 - 31.07



NL:
1.20E5
Channel A
UV
yuanye-01

C.3 DNPH

min		min	
5.92		16.73	
7.65		19.58	
10.12	+	22.08	
11.39		22.60	
14.22		24.27	
15.51		28.14	
16.00			

D

VIN		km		L						
	t		%		m/s					
	t		%		m/s			P	kPa	
				L/min				min	V	L
	()									
