

# DB44

DB44/816- 2010

---

Emission standard of volatile organic compounds for surface coating of automobile  
manufacturing industry

2010-10-22

2010-11-01

---



	.....	II
	.....	III
1	.....	1
2	.....	1
3	.....	1
4	.....	2
4.1	.....	2
4.2	.....	2
5	.....	2
5.1	..... VOCs .....	2
5.2	VOCs .....	3
5.3	..... VOCs .....	3
5.4	.....	4
6	.....	4
6.1	.....	4
6.2	.....	4
6.4	.....	5
7	.....	5
A	..... VOCs .....	6
B	..... VOCs .....	7
C	.....	8
D	.....	9
E	..... VOCs .....	10
	.....	14

DB44/ 816-2010

Compounds

VOCs

VOCs

VOCs

Volatile Organic

GB/T 1.1-2009

DB44/27-2001

2010 10 22  
2010 10 22

VOCs



1

VOCs

VOCs  
VOCs

2

GB/T 3186  
GB/T 15089  
GB/T 16157  
GB 16297  
GB 24409  
HJ/T 1  
HJ/T 55

3

3.1

automobile

/

/

a

b

400 kg

3.2

surface coating

3.3

drying room

3.4

volatile organic compounds

101325 Pa

250

VOCs

3.5

standard state

273.15 K

101325 Pa

[GB 16297-1996, 3.1]

DB44/ 816-2010

3.6

maximum acceptable emission concentration

1 h

1 h

[GB 16297-1996, 3.2]

3.7

maximum acceptable emission rate

1 h

[GB 16297-1996, 3.3]

3.8

fugitive emission

3.9

concentration limit at fugitive emission reference point

HJ/T 55

1 h

3.10

emission pipe height

[GB 16297-1996, 3.10]

3.11

VOCs

total VOCs emission of automobile surface coating line

VOCs

4

4.1

2010 11 01  
2010 11 01

4.2

4.2.1

2013 1 1

2012 12 31

4.2.2

5

5.1

VOCs

VOCs

1



1

VOCs

	VOCs g/m <sup>2</sup>			
	40	20	GB/T 15089	M1
	75	55	GB/T 15089	N2 N3
	90	70	GB/T 15089	N1 N2 N3
	225	150	GB/T 15089	M2 M3

GB/T 15089

M1 M2 M3

3

VOCs

	mg/m <sup>3</sup>
	0.1
	0.6
	0.2
	0.2
VOCs	2.0

5.4

5.4.1 15 m 50% C 2

5.4.2 2

C

60m

60m

5.4.3

5.4.1

200m

5 m

2

50%

5.4.4

VOCs

D

6

6.1

6.1.1

VOCs

GB/T 16157

6.1.2

HJ/T 55

6.2

6.2.1

HJ/T 1

GB/T 16157

6.2.2

VOCs

1 h

1 h

1 h

3

6.2.3

1 h

6.2.4

1 h

3

6.2.5 VOCs

4

4 VOCs

1		
2		a
3		

4

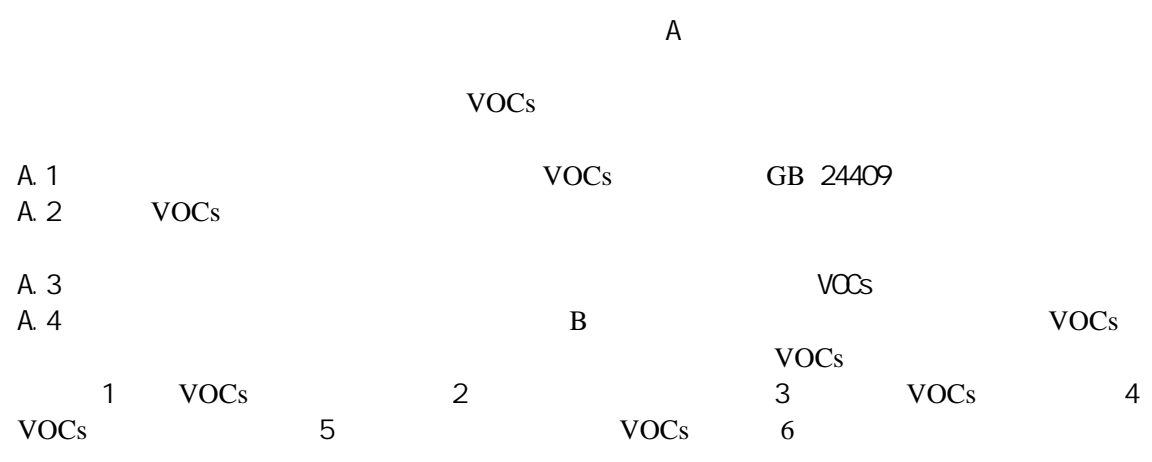
4		a
5	VOCs	
a		

6.4

6.4.1

6.4.2

7



				B		
				VOCs		
B. 1	VOCs				VOCs	
	$m^2$	$2 \times$	$(kg)/$	B1 $(m) \times$	$(kg/m^3)$	..... (B1)
B. 2	VOCs		VOCs	B2 $I \quad O_1 \quad O_2$		..... (B2)
	$I$ ---				VOCs	kg
	$O_1$ ---	VOCs			kg	
	$O_2$ ---		VOCs	kg		
B. 3	VOCs	$g/m^2$	VOCs	$g/m^2$	B3	..... (B3)

C

C.1

$$Q = Q_a + (Q_{a+1} - Q_a)(h - h_a) / (h_{a+1} - h_a)$$

C1

.....(C1)

$Q$  ——

kg/h

$Q_a$  ——

$h_a$

kg/h

$Q_{a+1}$  ——

$h_{a+1}$

kg/h

$h$  ——

m

$h_a$  ——

m

$h_{a+1}$  ——

m

C.2

15m

C2

$$Q = Q_c (h/15)^2$$

.....(C2)

$Q$  ——

kg/h

$Q_c$  ——

kg/h

$h$  ——

m

D

D.1 1 2 ,

D.2

D.2.1 VOCs ;  
 $Q = Q_1 + Q_2$  .....(D1)

$Q$  --- VOCs kg/h  
 $Q_1$  --- 1 VOCs kg/h  
 $Q_2$  --- 2 VOCs kg/h  
 D.2.2 :

$$H = \sqrt{\frac{1}{2}(h_1^2 + h_2^2)}$$
 .....(D2)

$H$  --- m  
 $h_1$  --- 1 m  
 $h_2$  --- 2 m

D.2.3 1 2 1  
 :

$$x = a(Q - Q_1) / Q = aQ_2 / Q$$
 ..... (D3)

$x$  --- 1 m  
 $a$  --- 1 2 m  
 $Q$   $Q_1$   $Q_2$  --- D.2.1

E

VOCs

E. 1

VOCs

VOCs

E. 2

E. 2 1

1 EPA Mehtod TO-17.

2 GB/T 16157

3 GB50325

2006

E

(TVOC)

E. 2 2

E. 2 2 1

VOCs

VOCs

1)

2)

E. 2 2 2

E.1

E. 2 2 3

E.3

E. 1 VOCs

1		a
2		
3		
4		
5	VOCs	
a		

E. 2 3

VOCs

80%

E.2



E. 2

	( )

E. 3

E. 3.1

0.01mg/m<sup>3</sup>

E. 3.2

E. 3.2.1

GB/T 16157

E. 3.2.2

E. 3.2.3

E. 3.2.4

E. 3.2.5

/

E. 3.2.6

a)

b)

c)

2 3%

E. 3.3

/

a)

b)

c)

E. 3.4

E. 3.4.1

E. 3.4.2

GB/T 16157

E.4.6

E. 4 VOCs

E. 4.1

FID,ECD MSD

E. 4.2

E. 4.2.1

E. 4.2.2

E. 4.2.3

E. 4.3

E. 4.3.1

DB44/ 816-2010

E. 4. 3. 2

E. 4. 3. 3

E. 4. 3. 4

E. 4. 3. 5

E. 4. 3. 6

E. 4. 3. 7

E. 4. 3. 8

E. 4. 4

E. 4. 4. 1

E. 4. 4. 1. 1

E. 4. 4. 1. 2

E. 4. 4. 2

16157 9. 4. 1

E. 4. 4. 3

E. 4. 5

E. 4. 5. 1

E. 4. 5. 2

E. 4. 5. 3

5

E. 4. 5. 4 g

E. 4. 5. 5

E. 4. 5. 5. 1

$$C_c = \frac{m_i - m_o}{V_{nd} R} \dots\dots\dots (E1)$$

$C_c$  ———  $mg/m^3$

$m_i$  ——— i g

$m_o$  ——— i g

$V_{nd}$  ——— L

$R$  ———

E. 4. 5. 5. 2 ( VOCs)

$$C_{VOCs} = \sum_{i=1}^{i=n} C_c \dots\dots\dots (E2)$$

$C_{VOCs}$  ——— VOCs  $mg m^3$   
1

HP-VOC

0 0.5L/min

GB/T 16157 9. 3. 5

GB/T

2

E. 4. 6  
E. 4. 6. 1

2. 5cm  
40 60%

R

$$R = \frac{(t - u) \times V_s}{S} \times 100\% \dots\dots\dots (E3)$$

R ——  
t ——  
u ——  
V<sub>s</sub> ——  
S ——

mg/m<sup>3</sup>  
mg/m<sup>3</sup>  
L  
g

60%<R<120%

R  
E. 4. 6. 2  
E. 4. 6. 2 1  
10%  
E. 4. 6. 2 2  
10%  
E. 4. 6. 3

5% 10%

4. 6. 3

DB44/ 816-2010

[1]

[M].

. 2003.

[2] GB 50325

---