



Vescom bv
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Netherlands

Your notice of
20-06-2024

Your reference

Date
27-08-2024

Analysis Report 24.03383.03

Required tests :

EN 16516 (2017)+A1 (2020)
ISO 16000-3 (2011)

Emission of volatile organic compounds (chamber method)
Determination of carbonyl compounds (eg formaldehyde) -
DNPH method

Sample id	Information given by the client	Date of receipt
T2412868	BOYD - design 106710	20-06-2024

Kristina De Temmerman
Order responsible

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The results of the analysis cover the received samples. Centexbel is not responsible for the representativeness of the samples.
In assessing compliance with the specifications, we did not take into account the uncertainty on the test results.



Reference: T2412868 - BOYD - design 106710

Emission of volatile organic compounds (chamber method)

Date of ending the test	
Standard used	EN 16516 (2017)+A1 (2020)
Product standard	décret Français sur les COV
Preparation	Procedure of sampling, storage of samples and preparation of test specimens as described in the standard EN 16516
Sampling and conditioning	Emission test chamber method at 23°C and 50% RH under ½ air exchange per hour. Sampling (under continuous ventilation) on Tenax TA
Sampling after X days	28 days
Analytical method	Volatile compounds are thermally desorbed, cryo-trapped and injected into a GC-MS.
Detection	Gas chromatography with Agilent MSD detector.
Quantification	Target compounds, non-target and unidentified compounds are quantified using toluene equivalents (TEQ). Target compounds are also calibrated component-specific.
Results	
Determination limit µg/m ³ (emissions)	5
Determination limit µg/m ³ (carcinogenic, mutagenic and toxic substances)	1

Type of test method	Flec	-		
	Test-chamber	x		
Material of test chamber		Steel	Glass	Other
		x		
Test chamber volume		0,25 [m ³]		
Area of sample		0,25 [m ²]		
Air exchange rate		0,5 [h ⁻¹]		
Area specific air exchange rate q		0,5 [mh ⁻¹]		
Temperature		23 [°C]		
Rel. humidity		50 [%]		

Insert of sample into the test chamber	Date	27-06-24
Sampling after 3 days		
Sampling after - days		
Sampling after 28 days	Date	25-07-24

	Limieten	Measured µg/m ³	Calibration
Rating	A+		
Formaldehyde	<10	< 5	component specific DNPH
Acetaldehyde	<200	< 5	component specific DNPH
Toluene	<300	< 5	component specific
Tetrachloroethylene	<250	< 5	component specific
Ethylbenzene	<750	< 5	component specific
Xylene	<200	< 5	component specific
Styrene	<250	< 5	component specific
2 butoxyethanol	<1000	< 5	component specific
1,2,4-trimethylbenzene	<1000	< 5	component specific
1,4-dichlorobenzene	<60	< 5	component specific
TVOC	<1000	478	toluene equivalent
Benzene	<1	< 1	component specific
DBP	<1	< 1	component specific
DEHP	<1	< 1	component specific
Trichloroethylene	<1	< 1	component specific

Table 1: Summary of conditions and results of the emission test

Annex 1

Annex.1_report24.03383.03.pdf

Reference: T2412868_01d - BOYD - design 106710

Determination of carbonyl compounds (eg formaldehyde) - DNPH method

Date of ending the test 01-08-2024
 Standard used ISO 16000-3 (2011)
 Product standard décret Français sur les COV

Deviation from the standard
 Sample preparation The sample is conditioned in a simulation room at 23°C and 50% R.H.

Air exchange rate 0.5 air exchange per hour
 Sampling carbonyl compounds are adsorbed on dinitrophenylhydrazine (DNPH) impregnated silica

Analytical method RP-HPLC (UV 360 nm)

Results
 Determination limit 0.002 mg/m³ for formaldehyde and acetaldehyde, 0.005 mg/m³ for the other components

	CAS	28 days mg/m ³
Formaldehyde	50-00-0	< 0.002
Acetaldehyde	75-07-0	< 0.002
Acrolein	107-02-8	< 0.005
Propionaldehyde	123-38-6	< 0.005
Crotonaldehyde	123-73-9	< 0.005
Butyraldehyde	123-72-8	< 0.005
Isovaleraldehyde	590-86-3	< 0.005
Valeraldehyde	110-62-3	< 0.005
Hexaldehyde	66-25-1	< 0.005

Abundance

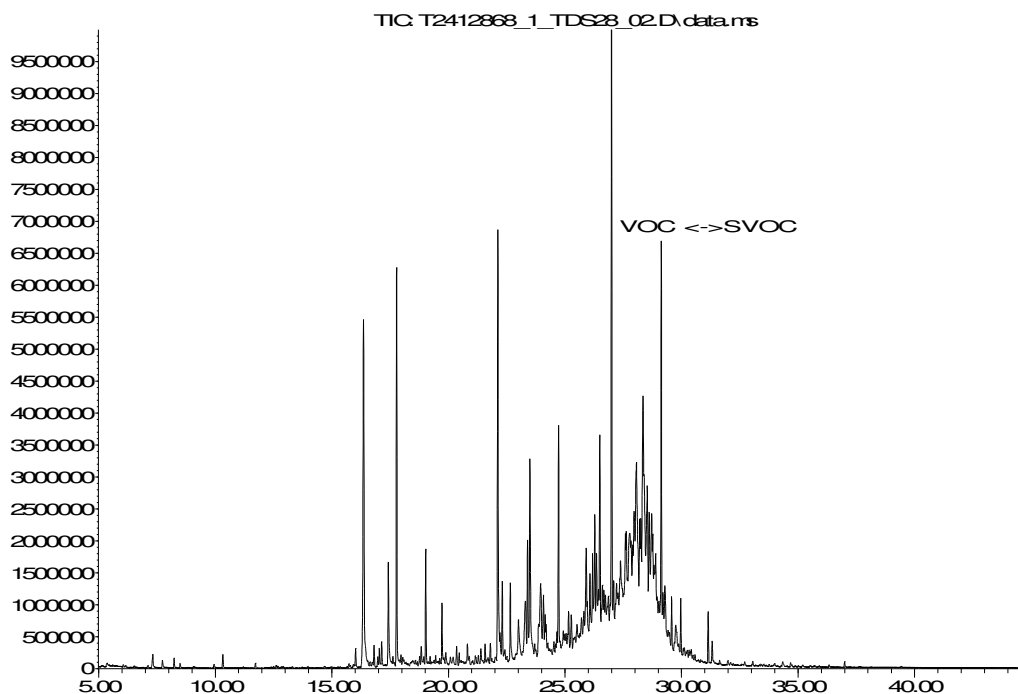


Fig 1: Chromatogram of the emission (28 days – 5l sampling)

Name	CAS nr	Rt (min)	Tol eq ($\mu\text{g}/\text{m}^3$)	Conc ($\mu\text{g}/\text{m}^3$)	SERi ($\mu\text{g}/\text{m}^2\text{h}$)	LCI code	LCI value EU 2023)	Ri
Acetic acid	64-19-7	7,47	<5	33	16,5	09-01	1200	0,027
Phenol	108-95-2	16,36515	19	20	10,0	05-01	70	0,286
Dipropylene glycol monomethyl ether	34590-94-8	17,43	6	10	4,9	06-35	3100	0,003
Ethylhexanol	104-76-7	17,78	12	14	7,1	04-10	800	0,018
Acetophenon	98-86-2	19,03	<5	<5		08-08	490	
n-Undecane	1120-21-4	19,73	<5	<5		02-10	6000	
Diethyleneglycolmonobutyl ether	112-34-5	22,12	16	24	12,1	06-21	350	0,069
A dimethyl-decahydro-naphtalene compound (tR = 22,22')		22,22	<5	<5				
n-Dodecane	112-40-3	22,31	<5	<5		02-06	6000	
An unknown compound (tR = 22,66')		22,66	<5	<5				
An isopropyl-phenol compound (tR = 23,00')		23,00	<5	<5				
Dipropylene glycol, butyl ether	29911-28-2	23,50	16	16	7,8	06-38	250	0,062
Neodecanoic acid cluster	26896-20-8	24,08	23	23	11,3			
n-Tridecane	629-50-5	24,73	8	7	3,3	02-06	6000	0,001
Propofol	2078-54-8	26,28	8	8	4,0			
Cluster of branched + cyclic aliphatic compounds (tR = 24,79' - 26,94')		26,50	93	93	46,5			
n-Tetradecane	629-59-4	27,00	26	20	9,8	02-06	6000	0,003
Cluster of branched aliphatic alcohols (tR = 27,08' - 29,49')		28,35	236	236	118,1			
n-Pentadecane	629-62-9	29,13	16	11	5,3	02-06	6000	0,002
An unknown compound (tR = 29,58')		29,58	<5	<5				
An unknown compound (tR = 29,97')		29,97	<5	<5				
n-Hexadecane	544-76-3	31,15	<5	<5		02-06	6000	
TXIB	6846-50-0	31,32	<5	<5		06-11	1300	
n-Hexadecanoic acid	57-10-3	37,62	<5	<5				

Table 1: Detailed results of the emitted compounds ($>1\mu\text{g}/\text{m}^3$) for the 28 day emission