



Possible 2 points

Intent

To establish better quality indoor air in the building after construction and during occupancy.

Requirements

Select one of the following two options, to be implemented after construction ends and the building has been completely cleaned. All interior finishes, such as millwork, doors, paint, carpet, acoustic tiles, and movable furnishings (e.g., workstations, partitions), must be installed, and major VOC punch list items must be finished. The options cannot be combined.

Option 1. Flush-out (1 point)**Path 1. Before occupancy**

Install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot (4 267 140 liters of outdoor air per square meter) of gross floor area while maintaining an internal temperature of at least 60°F (15°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%.

OR**Path 2. During occupancy**

If occupancy is desired before the flush-out is completed, the space may be occupied only after delivery of a minimum of 3,500 cubic feet of outdoor air per square foot (1 066 260 liters of outdoor air per square meter) of gross floor area while maintaining an internal temperature of at least 60°F (15°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%.

Once the space is occupied, it must be ventilated at a minimum rate of 0.30 cubic foot per minute (cfm) per square foot of outdoor air (1.5 liters per second per square meter of outdoor air) or the design minimum outdoor air rate determined in EQ Prerequisite Minimum Indoor Air Quality Performance, whichever is greater. During each day of the flush-out period, ventilation must begin at least three hours before occupancy and continue during occupancy. These conditions must be maintained until a total of 14,000 cubic feet per square foot of outdoor air (4 267 140 liters of outdoor air per square meter) has been delivered to the space.

OR**Option 2. Air testing (2 points)**

After construction ends and before occupancy, but under ventilation conditions typical for occupancy, conduct baseline IAQ testing using protocols consistent with the methods listed in Table 1 for all occupied spaces. Use current versions of ASTM standard methods, EPA compendium methods, or ISO methods, as indicated. Laboratories that conduct the tests for chemical analysis of formaldehyde and volatile organic compounds must be accredited under ISO/IEC 17025 for the test methods they use. Retail projects may conduct the testing within 14 days of occupancy.

Demonstrate that contaminants do not exceed the concentration levels listed in Table 1.

Table 1. Maximum concentration levels, by contaminant and testing method

[click the link to view full table](#)

Contaminant		Maximum concentration	ASTM and U.S. EPA methods	ISO method
Particulates	PM10 (for all buildings)	50 µg/m ³	EPA Compendium Method IP-10	ISO 7708
	PM2.5 (for buildings in EPA nonattainment areas for PM2.5, or local equivalent)	Healthcare only: 20 µg/m ³ 15 µg/m ³		
Ozone (for buildings in EPA nonattainment areas for Ozone, or local equivalent)		0.075 ppm	ASTM D5149 - 02	ISO 13964
Carbon monoxide (CO)		9 ppm; no more than 2 ppm above outdoor levels	EPA Compendium Method IP-3	ISO 4224
Total volatile organic compounds (TVOCs)		500 µg/m ³ Healthcare only: 200 µg/m ³	EPA TO-1, TO-17, or EPA Compendium Method IP-1	ISO 16000-6
Formaldehyde		27 ppb Healthcare only: 16.3 ppb	ASTM D5197, EPA TO-11, or EPA Compendium Method IP-6	ISO 16000-3
Target volatile organic compounds*	1 Acetaldehyde	140 µg/m ³	ASTM D5197; EPA TO-1, TO-17, or EPA Compendium Method IP-1	ISO 16000-3, ISO 16000-6
	2 Benzene	3 µg/m ³		
	3 Carbon disulfide	800 µg/m ³		
	4 Carbon tetrachloride	40 µg/m ³		
	5 Chlorobenzene	1000 µg/m ³		
	6 Chloroform	300 µg/m ³		
	7 Dichlorobenzene (1,4-)	800 µg/m ³		
	8 Dichloroethylene (1,1)	70 µg/m ³		
	9 Dimethylformamide (N,N-)	80 µg/m ³		
	10 Dioxane (1,4-)	3000 µg/m ³		
	11 Epichlorohydrin	3 µg/m ³		
	12 Ethylbenzene	2000 µg/m ³		
	13 Ethylene glycol	400 µg/m ³		
	14 Ethylene glycol monoethyl ether	70 µg/m ³		
	15 Ethylene glycol monoethyl ether acetate	300 µg/m ³		

16	Ethylene glycol monomethyl ether	60 µg/m ³
17	Ethylene glycol monomethyl ether acetate	90 µg/m ³
19	Hexane (n-)	7000 µg/m ³
20	Isophorone	2000 µg/m ³
21	Isopropanol	7000 µg/m ³
22	Methyl chloroform	1000 µg/m ³
23	Methylene chloride	400 µg/m ³
24	Methyl t-butyl ether	8000 µg/m ³
25	Naphthalene	9 µg/m ³
26	Phenol	200 µg/m ³
27	Propylene glycol monomethyl ether	7000 µg/m ³
28	Styrene	900 µg/m ³
29	Tetrachloroethylene (Perchloroethylene)	35 µg/m ³
30	Toluene	300 µg/m ³
31	Trichloroethylene	600 µg/m ³
32	Vinyl acetate	200 µg/m ³
33-35	Xylenes, technical mixture (m-, o-, p-xylylene combined)	700 µg/m ³

ppb = parts per billion; ppm = parts per million; µg/cm = micrograms per cubic meter

*The target volatile organic compounds are from CDPH Standard Method v1.1, Table 4-1. The Maximum concentration limits for these target compounds are the full CREL adopted by Cal/EPA OEHHA in effect on June 2014
<http://oehha.ca.gov/air/allrels.html>

Conduct all measurements before occupancy but during normal occupied hours, with the building ventilation system started at the normal daily start time and operated at the minimum outdoor airflow rate for the occupied mode throughout the test.

For each sampling point where the concentration exceeds the limit, take corrective action and retest for the noncompliant contaminants at the same sampling points. Repeat until all requirements are met.