

Centek Laboratories - LEED Maximum Allowable Concentration#

Centek Laboratories is always striving to stay on top of detection limits that will affect your LEED program. Due to the continuing growth of the Indoor Air Quality testing for the LEED programs (IEq 3.2, V4 & V4.1), the Maximum Allowable Concentration Limits may change. Refer to USGBC website to cross reference any changes.

LEED 3.2

Total Volatile Organic Compounds (TVOC)	500ug/m3
Formaldehyde	27ppb (34ug/m3)
PM10	50 ug/m3
Carbon Monoxide (CO)	9ppm (also, no more than > 2ppm above outdoor levels)
4-Phenylcyclohexene (4-PCH)	6.5ug/m3 (This measurement is only required for spaces where carpeting or fabrics with styrene butadiene rubber (SBR) backing has been installed)

LEED V4

Total Volatile Organic Compounds (TVOC)	500ug/m3
Formaldehyde	27ppb (34ug/m3)
PM10	50ug/m3
Carbon Monoxide (CO)	9ppm (also, no more than > 2ppm above outdoor levels)

Only test if the location of the site *is in* a non-attainment area.
See <https://www3.epa.gov/airquality/greenbook/ancl.html>

PM 2.5	15 ug/m3
Ozone	75ppb This is done by a handheld that need to be rented by the client

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LEED V4 (cont) - Target CREL VOCs and their maximum allowable concentrations.

No	Compound Name	CAS No.	Allowable Conc (µg/m3)
1	Acetaldehyde	75-07-0	140
2	Benzene	71-43-2	3
3	Carbon disulfide	75-15-0	800
4	Carbon tetrachloride	56-23-5	40
5	Chlorobenzene	108-90-7	1,000
6	Chloroform	67-66-3	300
7	Dichlorobenzene (1,4-)	06-46-7	800
8	Dichloroethylene (1,1)	5-35-4	70
9	Dimethylformamide (N,N-)	68-12-2	80
10	Dioxane (1,4-)	123-91-1	3,000
11	Epichlorohydrin	106-89-8	3
12	Ethylbenzene	100-41-4	2,000
13	Ethylene glycol	107-21-1	400
14	Ethylene glycol monoethyl ether	110-80-5	70
15	Ethylene glycol monoethyl ether acetate	111-15-9	300
16	Ethylene glycol monomethyl ether	109-86-4	70
17	Ethylene glycol monomethyl ether acetate	110-49-6	90
18	Formaldehyde	50-00-0	34
19	Hexane (n-)	110-54-3	7,000
20	Isophorone	78-59-1	2,000
21	Isopropanol	67-63-0	7,000
22	Methyl chloroform	71-55-6	1000
23	Methylene chloride	75-09-2	400
24	Methyl t-butyl ether	1634-04-4	8,000
25	Naphthalene	91-20-3	9
26	Phenol	108-95-2	200
27	Propylene glycol monomethyl ether	107-98-2	7,000
28	Styrene	100-42-5	900
29	Tetrachloroethylene	127-18-4	35
30	Toluene	108-88-3	300
31	Trichloroethylene	79-01-6	600
32	Vinyl acetate	108-05-4	200
33-35	Xylenes, technical mixture	108-38-3	700
	(m-, o-, p-xylene combined)	95-47-6	
		106-42-3	

a) Refer to http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html. All maximum allowable concentrations are one-half the corresponding CREL adopted by Cal/EPA OEHHA with the exception of formaldehyde. For any future changes in the CREL list by OEHHA, values in Table 4.1 shall continue to apply until these changes are published in the Standard Method.

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LEED V4.1

****Important** – Biggest change between V4 & V4.1 is that Formaldehyde **and** Acetaldehyde has to be done by tube.

1 Point

Carbon Monoxide (CO)	9ppm (also, no more than > 2ppm above outdoor levels)
PM10 -For Healthcare	50ug/m3 20ug/m3
PM2.5	12ug/m3 or 35ug/m3**
Ozone	70ppb This is done by a handheld that need to be rented by the client

**Projects in areas with high ambient levels of PM2.5 (known EPA nonattainment areas for PM2.5, or local equivalent) must meet the 35 ug/m3 limit; all other projects should meet the 12 ug/m3 limit.

2 Points

<i>Everything in the 1 Point criteria</i> Carbon Monoxide (CO) PM10 -For Healthcare PM2.5 Ozone	See 1 Point for Allowable Limits
Total Volatile Organic Compounds (TVOC)	500ug/m3
Formaldehyde	16ppb (20ug/m3)

Target CREL VOCs and their maximum allowable concentrations (*Short List*)

No Compound Name	CAS No.	Allowable Conc (ug/m3)
1 Acetaldehyde	75-07-0	140
2 Benzene	71-43-2	3
18 Formaldehyde	50-00-0	20
19 Hexane (n-)	110-54-3	7,000
25 Naphthalene	91-20-3	9
26 Phenol	108-95-2	200
28 Styrene	100-42-5	900
29 Tetrachloroethylene	127-18-4	35
30 Toluene	108-88-3	300
32 Vinyl acetate	108-05-4	200
33-35 Xylenes, technical mixture (m-, o-, p-xylene combined)	108-38-3	700
	95-47-6	
	106-42-3	

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LEED V4.1 (cont)

Exemplary performance is available for projects that test for the additional target volatile organic compounds specified in CDPH Standard Method v1.2-2017, Table 4-1 and do not exceed the full CREL levels for these compounds adopted by Cal/EPA OEHHA in effect on June 2016.

3 Points

<p><u>Everything in the 1 & 2 Points criteria</u></p> <p>Carbon Monoxide (CO) PM10 -For Healthcare PM2.5 Ozone Total Volatile Organic Compounds (TVOC) Formaldehyde</p>	<p>See 1 & 2 Points for Allowable Limits</p>
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Target CREL VOCs and their maximum allowable concentrations (**Long List**)

****note** - detection limits are half of the short list

No	Compound Name	CAS No.	Allowable Conc (µg/m3)
1	Acetaldehyde	75-07-0	70
2	Benzene	71-43-2	1.5
3	Carbon disulfide	75-15-0	400
4	Carbon tetrachloride	56-23-5	20
5	Chlorobenzene	108-90-7	500
6	Chloroform	67-66-3	150
7	Dichlorobenzene (1,4-)	06-46-7	400
8	Dichloroethylene (1,1)	5-35-4	35
9	Dimethylformamide (N,N-)	68-12-2	40
10	Dioxane (1,4-)	123-91-1	1,500
11	Epichlorohydrin	106-89-8	1.5
12	Ethylbenzene	100-41-4	1,000
13	Ethylene glycol	107-21-1	200
14	Ethylene glycol monoethyl ether	110-80-5	35
15	Ethylene glycol monoethyl ether acetate	111-15-9	150
16	Ethylene glycol monomethyl ether	109-86-4	30
17	Ethylene glycol monomethyl ether acetate	110-49-6	45
18	Formaldehyde	50-00-0	34
19	Hexane (n-)	110-54-3	3,500
20	Isophorone	78-59-1	1,000
21	Isopropanol	67-63-0	3,500
22	Methyl chloroform	71-55-6	500
23	Methylene chloride	75-09-2	200
24	Methyl t-butyl ether	1634-04-4	4,000

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Target CREL VOCs and their maximum allowable concentrations (*Long List*)

**note - detection limits are half of the short list

(*cont*)

25 Naphthalene	91-20-3	4.5
26 Phenol	108-95-2	100
27 Propylene glycol monomethyl ether	107-98-2	3,500
28 Styrene	100-42-5	450
29 Tetrachloroethylene	127-18-4	17.5
30 Toluene	108-88-3	150
31 Trichloroethylene	79-01-6	300
32 Vinyl acetate	108-05-4	100
33-35 Xylenes, technical mixture	108-38-3	350
(m-, o-, p-xylene combined)	95-47-6	
	106-42-3	

a) Refer to http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html. All maximum allowable concentrations are one-half the corresponding CREL adopted by Cal/EPA OEHHA with the exception of formaldehyde. For any future changes in the CREL list by OEHHA, values in Table 4.1 shall continue to apply until these changes are published in the Standard Method.