

6	IEQ	6.3 INDOOR AIR QUALITY
		IEQ 7 INDOOR SOURCES OF AIR POLLUTION
	EXCLUSIONS	Items a) & b) are excluded for buildings that are designed for natural ventilation or using de-centralised air-conditioning system and without interior decoration.
	OBJECTIVE	Demonstrate that airborne contaminants, predominantly from inside sources, do not give rise to unacceptable levels of indoor air pollution in normally occupied spaces.
	CREDITS ATTAINABLE	3
	PREREQUISITES	None.
	CREDIT REQUIREMENT	<p>a) Volatile organic compounds (VOCs)</p> <p>1 credit for demonstrating compliance with the appropriate criteria for VOCs.</p> <p>b) Formaldehyde (HCHO)</p> <p>1 credit for demonstrating compliance with the appropriate criteria for HCHO.</p> <p>c) Radon (Rn)</p> <p>1 credit for demonstrating compliance with the appropriate criteria for Rn.</p>
	ASSESSMENT	<p>The Client shall provide a report prepared by a suitably qualified person detailing the criteria adopted for indoor air quality for each type of normally occupied area within the building development.</p> <p>Where the Client does not offer criteria, BEAM aligns with the HKSAR IAQ Certification Scheme [1]. The criteria for air-conditioned buildings shall be those defined under Good Class in Table 1 of the scheme. For other occupied areas and habitable rooms, the criteria can be that defined in the Scheme, in ASHRAE 62.1-2007 [2] or equivalent standard.</p> <p>Compliance shall be demonstrated by measurement. The report shall identify the measurement protocol. i.e., the measuring equipment used, duration of measurements, number and details of the sampling points, the measurement results, and overall conclusions from the measurements survey. The number of measurement points shall make reference to IAQ Certification Scheme.</p> <p>A sample at the lowest outdoor air intake location can help to identify the relative contribution of VOCs from indoor and outdoor. However, the common alpha track detector and gamma ray detector for Rn detection are not regarded as suitable for measurement. Scintillation cells and electronic monitors are more suitable for both grab sampling and continuous measurements.</p> <p>The objective of sampling is to ensure that the building will not suffer unduly from outside sources of pollution. The sampling protocol (number and locations of samples) shall follow as a minimum that given in Appendix 8.7. Any other protocol demonstrated to be of equal rigour appropriate to the nature of the premises surveyed would be acceptable.</p> <p>In the case of occupied/habitable rooms in air-conditioned/naturally ventilated buildings the measurement of indoor air pollutants shall take</p>

- 1 Indoor Air Quality Management Group. A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places. <http://www.iaq.gov.hk/cert/doc/CertGuide-eng.pdf>
- 2 American Society of Heating Refrigeration and Air Conditioning Engineers. ASHRAE Standard 62.1. Ventilation for Acceptable Indoor Air Quality, Atlanta 2007.

place whilst operating in the background ventilation mode, or where there is no specific provision for background ventilation, with all windows and doors closed.

Where it can be demonstrated that the identified pollutants are unlikely to exceed the limits prescribed, and as determined from an appropriate sample of measurements, relevant credit(s) shall be awarded.

BACKGROUND

This section deals with pollutants found in indoor air, which are mainly attributable to indoor sources. In the case of occupied/habitable rooms in air-conditioned/naturally ventilated buildings the concern is indoor air pollutant from indoor sources whilst operating in the background ventilation mode, i.e. all openings other than those provided for background ventilation are 'closed'.

VOCs includes hundreds of chemical compounds found in indoor environments from trace levels to levels that can cause various symptoms such as eye and throat irritations, respiratory problems, headaches, etc. Reactions can occur as a result of exposure to a single sensitizing dose or sequence of doses, even at low levels. VOCs may enter from outdoors, but are more likely to be emitted from building materials, finishes and furnishings, pesticides and cleaning products.

HCHO is a type of volatile organic compound which is separately identified due to its abundance in many building materials, adhesives, fabrics and carpets, etc. HCHO is a suspected human carcinogen, and in sufficiently high concentrations is known to cause eye, nose and respiratory irritation and sensitisations. Since formaldehyde is most likely to come from indoor sources, sampling should be carried out in at least one representative zone of each type of occupied area.

Rn is a colourless radioactive gas that exhibits no taste or smell. There is concern that exposure to elevated levels of Rn indoors increases the risk of lung cancer. Rn is mainly emitted from granite and marble which are major building materials in Hong Kong. The concentration of Rn may accumulate to an unaccepted level in an enclosed space without adequate ventilation. Choice of building materials and surface coverings can have significant impact on emission rates. Since outdoor Rn infiltration is minimal. Rn and its progenies are mainly generated indoors.

Q21. EU 10e, For BEAM Plus New Buildings Version 1.1 & 1.2, What should be submitted to demonstrate credit compliance in the Provisional Assessment (PA) stage?

Q22. EU 12, For BEAM Plus New Buildings Version 1.1 & 1.2, What are the requirements for metering and monitoring for clubhouse and carpark?

Water Use

Q1. WU P1 & WU 1, Do I need to consider the water pressure indicated in the baseline figures for different water appliances when predicting the water consumption?

Q2. WU P1, Is water sample necessary to be taken from the supply point of WSD for water quality analysis under WU P1?

Q3. WU P1, WU P2/WU 1, For BEAM Plus New Buildings / Existing Buildings Version 1.1 and 1.2, is a conceptual plumbing sketch satisfactory for PA stage?

Q4. WU 5, For BEAM Plus New Buildings Version 1.2, how is WU 5 applied to different building types?

Q5. WU 5, For BEAM Plus New Buildings Version 1.1, how is WU 5 applied to different building types?

Q6. WU 5, For BEAM Plus New Buildings Version 1.1 & 1.2, how is WU 5 applied to different building types?

Q7. WU 5, For BEAM Plus New Buildings Version 1.1 & 1.2, what type of appliances shall be included into the assessment of this credit?

Q8. WU 5, For BEAM Plus New Buildings Version 1.1 & 1.2, what type of washing machine would meet the credit requirement and what type of substantiations shall be provided to justify for the performances of the washing machine?

Indoor Environmental Quality

Q1. IEQ P1, How to achieve the outdoor air quality standard in local context of Hong Kong?

Q2. IEQ P1, IEQ 6 and IEQ 7, For BEAM Plus New Buildings Version 1.2, please clarify the assessment criteria under the new Indoor Air Quality (IAQ) objectives (IAQ Objective 2019) under the Indoor Air Quality Certification Scheme for Offices and Public Places

The assessment criteria shall follow the Good Class of the IAQ Objectives and they are extracted below for reference. Please be reminded for nitrogen dioxide (NO₂) and formaldehyde (HCHO), limit for BOTH averaging time shall be complied.

IEQ P1 and IEQ 6

	Parameter	Averaging Time	IAQ Objectives
1.	Carbon monoxide (CO)	8-hour averaging time	7000µg/m ³ or 6.1ppmv
2a.	Nitrogen dioxide (NO ₂)	8-hour averaging time	150µg/m ³ or 80ppbv
2b.		1-hour averaging time	200µg/m ³ or 106ppbv
3.	Ozone (O ₃)	8-hour averaging time	120µg/m ³ or 61ppbv
4.	Respirable Suspended Particulates (RSP)	8-hour averaging time	100µg/m ³

IEQ 7

	Parameter	Averaging Time	IAQ Objectives
1.	Volatile organic compounds (VOCs)	8-hour averaging time	600µg/m ³ or 261ppbv
2a.	Formaldehyde (HCHO)	8-hour averaging time	100µg/m ³ or 81ppbv
2b.		30-minute averaging time	100µg/m ³ or 81ppbv
3.	Radon (Rn)	8-hour averaging time	167Bq/m ³

Q3. If a clubhouse is provided with VRV or split type units but with fresh air provided by PAU or fresh air fans, are IEQ P1 and IEQ 9 (NB) / IEQ 10 (EB) applicable?

Q4. IEQ P1, IEQ 9 and IEQ 12a, For BEAM Plus New Buildings Version 1.1 and 1.2, should T&C records showing the measured flow rate of the Fresh Air Equipment such

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Q22. EU 12, For BEAM Plus New Buildings Version 1.1 & 1.2, What are the requirements for metering and monitoring for clubhouse and carpark?

Water Use

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Indoor Environmental Quality

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Q4. IEQ P1, IEQ 9 and IEQ 12a, For BEAM Plus New Buildings Version 1.1 and 1.2, should T&C records showing the measured flow rate of the Fresh Air Equipment such as Fresh Air Fan (FAF) or Primary Air Handling Unit (PAU) be submitted in the Final Assessment (FA) stage?

Q5. IEQ 2, For BEAM Plus New Buildings Version 1.1 and 1.2, sub-item 7 “maintenance of water seals”, are water seal traps required for all floor drains?

Q6. Should the noise level of the ventilation system or de-odourising system be considered under IEQ 4 (NB and EB)?

Q7. IEQ 5, For BEAM Plus New Buildings Version 1.1 and 1.2, how frequent should the records/evidence be submitted to demonstrate the implementation of IAQ management practice during construction?

Q8. IEQ 6 & 7, For BEAM Plus New Buildings Version 1.1 and 1.2, is HOKLAS accredited laboratory considered as acceptable to conduct the measurement of airborne contaminants?

No. The measurement must be conducted by IAQ Certificate Issuing Body (CIB) accredited under Hong Kong Accreditation Service (HKAS).

(Released on 29 November 2019)

Q9. IEQ 6, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary to demonstrate that the measurement is taken at naturally ventilated mode?

Q10. IEQ 7, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the sampling points be selected for multi-storey residential development?

The sampling points shall include at least one representative sample from each of the high, middle and low-level zone. Moreover, different sampling points shall be selected for different types of premises.

(Released on 29 November 2019)

Q11. IEQ 7, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary to demonstrate that the measurement is taken at background mode?

Q12. IEQ 8 (second Bonus credit), for BEAM Plus Existing Building Version 2.0 Comprehensive Scheme, whether the “Indoor Air Quality Certification Scheme for Office and Public Place” certificate should cover the whole development or part of the development:

Q13. IEQ 10, For BEAM Plus New Buildings Version 1.1 and 1.2, should domestic kitchen be considered as normally occupied premises?

Q14. IEQ 11a, for BEAM Plus New Buildings Version 1.1 & 1.2, if the Applicant does not provide any ventilation equipment for kitchen and toilet areas, should these areas be included in the assessment?

Q15. IEQ 11a, For BEAM Plus New Buildings Version 1.1 and 1.2, should T&C records of window fan/propeller fan without air duct required to be submitted in the Final Assessment?

Q16. IEQ 11b, For BEAM Plus New Buildings Version 1.1 & 1.2, is clubhouse applicable to this credit?

Q17. IEQ 12, For BEAM Plus New Buildings Version 1.1 and 1.2, can lift lobby served by firemen’s lift be exempted from the assessment?

Q18. IEQ 12a, For BEAM Plus New Buildings Version 1.1 and 1.2, is enclosed common areas ventilated via “fresh air louver + EAF” / “transfer air duct” comply with BEAM Plus requirement?

Q19. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2. what should be the duration of temperature measurement?

Q20. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?

Q21. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2, can T&C records of split type A/C for residential portion be accepted as evidence to demonstrate the performance of the air-conditioning units?

Q22. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary for an SQP to endorse the measurement records?

Q23. What features can be considered as glare control under IEQ 15 in BEAM Plus Version 1.1?

Q24. IEQ 15, For BEAM Plus NB V1.1 and 1.2, there are a number of methodologies in the computation of the average daylight factor from various software. Will it be acceptable if the output provides the average daylight factor for the entire area of a room?

Q25. IEQ 16&17, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected and what is the percentage of compliance of the sampling points in order to achieve the credit?

Q26. IEQ 16&17, For BEAM Plus New Buildings Version 1.1 and 1.2, should decorative lighting be assessed?

Q27. IEQ 18, 19, 20 & 21, For BEAM Plus New Buildings Version 1.1 and 1.2, what is the definition of “suitably qualified person” (SQP)?

Q28. IEQ 18, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?

Q29. IEQ 19, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?

Q11. IEQ 7, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary to demonstrate that the measurement is taken at background mode?

No. The measurement should be conducted in accordance with the methodology as stated in IAQ Certification Scheme.

(Released on 29 November 2019)

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Q30. IEQ 19, For BEAM Plus New Buildings Version 1.1 and 1.2, in normal credit, is impact noise isolation (IIC) between floors required for Office, Hotel and Residential premises?



Circular Letter No.: 2019.161

Issue Date: 11 September 2019

Application: BEAM Plus NB Version 1.1 & 1.2

Effective Date: 11 September 2019

IEQ P1, 6 & 7 – Application of New IAQ Objectives for Minimum Ventilation Performance and Outdoor / Indoor Sources of Air Pollutants

1. The Environmental Protection Department (EPD) has launched the new Indoor Air Quality (IAQ) objectives (“IAQ Objective 2019”) under the Indoor Air Quality Certification Scheme for Offices and Public Places on 1 July 2019. The IAQ objective 2019 takes into account of local circumstances and the latest World Health Organization’s IAQ guideline¹.
2. To better align the credit assessment criteria for IEQ P1, IEQ 6 & 7 under BEAM Plus New Buildings (NB) against the IAQ Objective 2019, this Technical Circular Letter hereby announces the transitional arrangement as follow:
 - i. All projects registered after the effective date of this Technical Circular must adopt the criteria under IAQ Objective 2019; and
 - ii. For all project registered on or before the effective date, the project proponents can opt to adopt the criteria under previous IAQ objectives (“IAQ Objective 2003”)² or IAQ Objective 2019³ for the assessment. However, the Applicant must apply either one of the IAQ objectives throughout the project assessment (i.e. If the project proponent decides to use the IAQ Objective 2019, then all parameters under IEQ 6 & 7 must follow the IAQ Objective 2019 throughout); and;
 - iii. For all projects commence Final Assessment on or after 1 July 2024, including those fall under paragraph (2)(ii) above, the project proponent must adopt the criteria under IAQ Objective 2019.
3. For projects that were registered on or before the effective date but are unable to commence Final Assessment before 1 July 2024, the project shall adopt the criteria under IAQ Objective 2019 under normal circumstance. For special case project, the Applicant is encouraged to file a Credit Interpretation Request for clarification and the Technical Review Committee will consider on a case-by-case basis.

¹ Government announcement on new IAQ objectives under the Indoor Air Quality Certification Scheme for Offices and Public Places, <https://www.iaq.gov.hk/en/iaq-certification-scheme/newiaqo.aspx>

² A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places (2003), <https://www.iaq.gov.hk/media/8694/certguide-eng.pdf>

³ A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places (2019), https://www.iaq.gov.hk/media/65346/new-iaq-guide_eng.pdf

4. Approved PA Projects: For projects that have already completed PA and have certain measurement report approved, the Applicant may opt to adopt the same assessment criteria for FA or voluntarily comply with this Technical Circular. For the avoidance of doubt, the Applicant shall provide PA evidences (e.g. extract of the PA report, documents submitted for assessment in PA, etc) in subsequent assessments to support the intention of using the same assessment methodology as in PA.



Mr KM So
Chairperson of Standards Sub-committee



Circular Letter No.: 2020.168

Issue Date: 5 June 2020

Application: BEAM Plus NB Version 1.1 and 1.2

Effective Date: 5 June 2020

Updated Exclusion Clauses for IEQ Credits

1. **Technical Circular Letter No. 2016.134 dated 09 August 2016 will be withdrawn on the effective date.**
2. This Circular Letter clarifies the exclusion clause for the following credits:

Credits	New Exclusions
IEQ P1 IEQ 9	Residential premises, or Premises without any fresh air provision ¹ .
IEQ 3	Residential premises, or Premises without any provision of air-conditioning equipment.
IEQ 5	Residential premises, or Premises without any fresh air provision ¹ and HVAC system.
IEQ 6	Residential premises, or Premises without any fresh air provision ¹ .
IEQ 7a IEQ 7b	Residential premises without any interior decoration, or Premises without any fresh air provision ¹ and interior decoration.
IEQ 10	Premises with fresh air provision ¹ .
IEQ 11b	Residential premises, or Premises without any future tenant (for example, single owner occupier premises).
IEQ 12	Premises without any enclosed common area in the main circulation route.
IEQ 13a	Normally occupied premises ² without any air-conditioning equipment installed and provided by the project proponent, or without any fresh air provision ¹ .
IEQ 13b	Normally occupied premises ² without any installation of air diffuser in the air-conditioning system.
IEQ 14a	Normally occupied premises ² with fresh air provision ¹ .
IEQ 14b	Normally occupied premises ² with fresh air provision ¹ , or without any air-conditioning equipment installed and provided by the project proponent.

Ir SK Ho
Chairperson of Standards Sub-committee

¹ Fresh air provision means any fresh air equipment such as PAU, AHU, FAU, FAP, FAF, etc.; and/or premises with fresh air louvers, etc.

² Normally occupied premises are enclosed spaces / areas where people normally stay there for more than 1 hour per person per day on average.