

6	IEQ	<b>6.7 ACOUSTICS AND NOISE</b>	
		<b>IEQ 19 NOISE ISOLATION</b>	
	<b>EXCLUSIONS</b>	Buildings/premises which are inherently noisy and unaffected by noise from adjacent premises/spaces.	1
	<b>OBJECTIVE</b>	Improve the noise isolation of normally occupied premises/rooms to reduce impact of unwanted noise.	
	<b>CREDITS ATTAINABLE</b>	1 + 1 BONUS	
	<b>PREREQUISITES</b>	None.	
	<b>CREDIT REQUIREMENT</b>	<p>1 credit for demonstrating airborne and impact noise isolation between rooms, spaces and premises meets the prescribed criteria.</p> <p>For residential developments only,</p> <p>1 BONUS credit for demonstrating impact noise isolation between floors meets the prescribed criteria.</p> <p>Based on the nature of the building, relaxation should be allowed in considering the acceptance of this credit. The applicant should provide full submission of the design and calculation to justify the relaxation.</p>	
	<b>ASSESSMENT</b>	<p>As there are number of ways to quantify or classify noise isolation (insulation) in buildings, the exact performance criteria used to define both airborne noise isolation and impact noise isolation shall be stated by the Client. However, for the purposes of assessment account should be taken of the criteria given below. Where alternative criteria is used the Client shall provide evidence as to the suitability of the alternative, e.g. by making reference to authoritative guidance. Likewise, where criteria appropriate to the type and use of premises/spaces is not stated herein, the Client shall provide evidence as to the suitability of the criteria adopted.</p> <p>Compliance shall be demonstrated by measurement or by detailed calculations, or both, depending on the Client's preference. Measurements shall follow the protocols given in the referenced standards. Calculations should be done with reference to appropriate standards.</p> <p>The Client shall submit details in the form of a report prepared by a suitably qualified person providing a schedule of the premises and spaces in the building, the noise isolation criteria adopted, relevant structural details as they impact on noise isolation, the rooms/premises subject to field tests or for which detailed calculations have been made, underlying assumptions, and the results of tests or calculations demonstrating compliance with the criteria (expressed in parameters that are consistent with the test and/or calculation methods).</p> <p>Where it can be demonstrated that airborne noise isolation, as measured or calculated for the most susceptible spaces/rooms/premises, meets appropriate performance criteria the credit shall be awarded.</p> <p>For residential development, where it can demonstrate that impact noise isolation (insulation) meet appropriate performance criteria in the most susceptible spaces/ rooms/premises, the BONUS credit shall be awarded.</p>	<p>2</p> <p>3</p> <p>4</p>

## MEASUREMENTS

Procedures for measuring the sound isolation between rooms shall follow that given in either ISO [1], ASTM [2] or equivalent. The measurements shall be undertaken in at least one sample of each type of normally occupied space, but shall include the worst case circumstances likely to occur (e.g., conference rooms adjacent to corridors, hotel rooms adjacent to lift lobbies, etc). No special preparation of the tested spaces or rooms is permitted, i.e., tests are carried out in as-built premises/rooms. The measurements shall be interpreted to a single number indicator using either ISO [3], ASTM [4], or equivalent.

Similar considerations shall apply to the measurement of impact noise isolation, following the methods given in either ISO [5], ASTM [6] or equivalent. No floor coverings, such as carpets, shall be used during the measurements. The measurements shall also be interpreted as a single number using either ISO [7], ASTM [8] or equivalent.

## PERFORMANCE CRITERIA

### a) Office premises

- Between two offices  $D_w = 38$  dB minimum.
- Where privacy is important:  $D_w = 48$  dB.
- Noise Isolation Class (NIC) of at least 40 for cellular offices.

### b) Classrooms

Sound Transmission Class of walls between classrooms to be equal to or greater than STC37 for classrooms on the same floor and equal or greater than STC50, Impact Insulation Class IIC46 between floors.

### c) Residential premises and hotel rooms

- Partitions separating a WC from a noise sensitive room:  $D_{nT,w}$  of at least 38 dB.
- In hotels, partitions and floors between rooms and between rooms and corridors:  $D_{nT,w}$  of at least 50 dB.

### d) Residential premises

- Bedroom to living room: STC46 (same residential unit)
- Bedroom to bedroom: STC52, IIC52 (between residential units); STC44 (same unit)
- Living room to living room: STC52, IIC52 (between residential units).

## BACKGROUND

Noise from outside sources, and consequently the noise isolation provided by the building envelope, is covered under the assessment of background noise. Noise from building equipment is also covered under the assessment of background noise, and to some extent under the assessment of vibration. There remains the problem of noise transmitted between spaces, through walls and floors, which are not addressed under the local Building Regulations, but have been a matter for

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- 1 International Standard Organization. ISO 140-4: 1998. Acoustics - Measurement of sound insulation in buildings and of building elements. Part 4: Field measurements of airborne sound insulation between rooms.
- 2 ASTM International. Designation E 336 - 97. Standard Test Method for Measurement of Airborne Sound Insulation in Buildings.
- 3 International Standard Organization. ISO 717-1. 1996. Acoustics - Rating of sound insulation in buildings and of building elements. Part 1 - Airborne sound insulation.
- 4 ASTM International. Designation: E413 - 04. Classification for Rating Sound Insulation.
- 5 International Standard Organization. ISO 140-7. Acoustics - Measurement of sound insulation in buildings and of building elements. Part 7: Field measurements of impact sound insulation of floors.
- 6 ASTM International. Designation: E 1007 - 97. Standard test method for field measurement of tapping machine impact sound transmission through floor-ceiling assemblies and associated support structures.
- 7 International Standard Organization. ISO 717-2. Acoustics - Rating of sound insulation in buildings and of building elements. Part 2 - Impact sound insulation.
- 8 ASTM International. Designation: E 989 -89. Standard Classification for determination of impact Insulation Class (IIC).

**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)?**

Suitably qualified person (SQP) is a professional who possesses the following qualification:

- a corporate member of HKIOA; or
- a corporate / certified / full member of other International Acoustic Institution; or
- a member of HKIE (Building Services, Mechanical or Environmental discipline) with relevant experience in Acoustic / Vibration Design. SQP should be responsible for the endorsement of the calculation and/or on-site measurement report.

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**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?**

**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?**

**Q31. IEQ 20, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?**

**Q32. IEQ 21, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?**

**Q33. IEQ 22, For BEAM Plus New Buildings Version 1.1, please elaborate on the requirement of enhanced provisions under this credit.**

**Q34. Under BEAM Plus NB IEQ 23, how many times can the same amenity type be counted within the same development?**

**Q35. IEQ 23, For BEAM Plus New Buildings Version 1.1 and 1.2, is there a list of amenity features which comply with the requirements of IEQ 23?**

## Management

**Q1. MAN 1, For BEAM Plus Existing Buildings Version 2.0 Comprehensive Scheme & MAN 2, For BEAM Plus Existing Buildings Version 2.0 Selective Scheme, please elaborate on the documentations required to fulfill the internal audit criteria under this credit.**

**Q2. MAN 3, For BEAM Plus Existing Buildings Version 2.0 Comprehensive Scheme & MAN 4, For BEAM Plus Existing Buildings Version 2.0 Selective Scheme, what is the definition of BEAM Professional with EB credential.**

**Q3. MAN 9b, For BEAM Plus Existing Buildings Version 2.0 Comprehensive Scheme & MAN 11b, For BEAM Plus Existing Buildings Version 2.0 Selective Scheme, regarding bulk purchase of the management company:**

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The sampling points should be selected to represent the airborne and noise isolation of the typical wall, the weakest wall and the floor slab, taking into consideration of the worst-case circumstances likely to occur. The selected sampling points should be endorsed by an SQP.

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No. In normal credit, IIC between floors is required for classroom in school development only. While for residential developments, IIC between floors with appropriate performance criteria as prescribed in BEAM Plus manual is considered as a Bonus credit.

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