Acoustics Classification for Buildings

Noise pollution is increasingly recognised as a significant environmental issue with serious impacts on public health. The Frontiers Report by the UN Environment Programme (UNEP)[1] in February 2022 identified noise pollution as one of the top three environmental challenges. Alongside wildfires and disruptive timing of life cycles, noise pollution is described as a "raucous killer" due to its adverse effects on health and well-being.

In the UK, noise is the single largest cause of complaints to local authorities. A survey[2] conducted by the Chartered Institute of Environmental Health (CIEH) in 2020 revealed that there were 143,054 noise complaints, equating to 61 complaints per 10,000 people, with residential noise accounting for the majority of these complaints.

Why Acoustic Classification is important

Britons spend 80 – 90%[3], of their time indoors, making the quality of indoor environments crucial to our health and well-being. Yet 20% of housing in England does not meet the Decent Homes Standards[4], as reported in a 2016 review of housing stock conditions.

While building regulations specify minimum acoustic performance requirements for new dwellings, these often fall short in ensuring an adequate living environment. Many residents still experience high levels of disruptive noise, especially in multi-dwelling buildings. Therefore, there is growing recognition of the need for a more detailed acoustic classification system that addresses these shortcomings and promotes higher standards of acoustic comfort.

What is Acoustic Quality?

Acoustic quality refers to how well a building's design can prevent unwanted noise from entering or being generated within the dwelling. This typically includes sound insulation from external sources like traffic, and between internal walls or floors in multi-occupancy buildings. Inadequate sound insulation can have serious impacts on residents' comfort and mental health.

The ISO/TS 19488:2021 Acoustic Classification System

To help address these issues, ISO/TS 19488:2021[5] was introduced in May 2021. This classification system provides a standard framework for assessing the acoustic quality of dwellings, making it easier for developers and builders to specify and ensure higher levels of acoustic comfort.

ISO/TS 19488 defines six acoustic classes for dwellings, ranging from Class A (highest quality) to Class F (lowest quality). This system allows builders to set clear expectations

[1] https://www.unep.org/news-and-stories/press-release/deadly-wildfires-noise-pollution-and-disruptive-timing-life-cycles

[2] https://www.cieh.org/news/press-releases/2020/cieh-releases-latest-noise-complaints-statistics-for-england/

[3] POST-PB-0054.pdf (parliament.uk)

[4] https://breeam.com/home-quality-mark

[5] ISO/TS 19488:2021. Acoustics — Acoustic classification of dwellings. Geneva: International Organization for Standardization, 2021.

for acoustic performance and provides authorities with a tool for updating building regulations. The classification also serves as a valuable resource for assessing the acoustic performance of existing housing, particularly before and after renovations.

Class	General
A	A quiet atmosphere with a high level of protection against intruding sound. This class may be applied where a considerably better acoustic climate than Class C is asked for.
B	Under normal circumstances, a good protection against sound without significant restriction on the behaviour of the neighbours. This class may be applied where a better acoustic climate than Class C is asked for.
C	Protection against significant disturbance, given normal behaviour of neighbours who are considerate of other occupants. Newer building constructions in many countries are likely to fulfil or exceed this class.
D	Disturbance by intruding noise can be expected more than occasionally, even in case of considerate behaviour of neighbours, adjusted to these conditions. Newer building constructions in most countries are likely to fulfil or exceed this class.
E	A low protection is offered against intruding sounds. To be applied mainly for classification of existing housing (before renovation).
F	A very low protection is offered against intruding sounds. To be applied only for classification of older, existing housing (before renovation).
NPD	No performance determined.

Real-World Example: Footfall Noise in Apartments

One of the most common complaints in apartment buildings is noise from footfall on the floor above. Under Approved Document E, England and Wales currently specify the sound impact performance for new build separating residential floors is to be no more than 62 dB (L'_{nTw}). A higher standard is specified in Scotland, where the limit is set at 56 dB. The 'acoustic quality classification' table given in ISO/TS 19488:2021 (see left) describes an impact level of 62 dB as Class E (*'low protection against intruding sounds'*), whereas the limit of 56 dB is Class C (*'protects against significant disturbance'*). The Standard is recognised internationally and provides advice for evaluating acoustic performance across all UK nations, independent of regional building codes. This means that, while each UK nation may have its specific regulatory requirements, all can adopt or adapt the ISO framework to support higher acoustic standards based on their unique needs and priorities.

The Role of Acoustic Classification in National Policy

The ISO/TS 19488:2021 framework is not legally binding unless adopted by national authorities, but it serves as a comprehensive, nation-neutral reference for any UK nation seeking to improve acoustic standards. By using this classification, authorities across Scotland, Northern Ireland, England, and Wales can develop regulations that address local noise challenges while aligning with internationally recognised standards.

Given the increasing awareness of noise pollution's impact on public health, integrating acoustic classifications into housing regulations could be an important step towards creating quieter, healthier living environments.

It would also provide homeowners and tenants with clear information on the acoustic performance of their homes, enabling them to make informed decisions.

To find out more: email: Briefings@ioa.org.uk

With thanks to EUR ING Teli Chinelis MIOA, CEng, CEnv (BWB Consulting) for preparing this note.