

Noise and Vibration: The latest standards

Noise is a serious issue for many people; with excessive noise potentially leading to health problems, stress, financial penalties for businesses and possible delays in planning consents. This is why standards are set relating to noise and vibration – to assess and rate commercial and industrial sounds.

Noise assessment in a variety of sectors and applications is paramount and many businesses employ experts in acoustic solutions to ensure they don't break the law. The measures to combat excessive noise and vibration can include designing, manufacturing and installing noise control products and equipment.

Standard BS 4142

As one of the most important standards, BS 4142 describes methods for assessing and rating noises of an industrial or commercial nature. It enables the assessment of the effects on people nearby, so that the associated risks can be minimised. It gives consistent results across a whole range of situations – from a single installation such as an air-conditioning unit, to a large development such as an oil refinery.

The standard has been revised again because since the last revision in 1997 advances in technology have taught us more about acoustic features, such as tonality and impulsivity. The revisions improve the accuracy of the final assessments.

The standard can assess the sound level at new residential developments and enables complaints investigations. This reduces the likelihood of financial penalties, while supporting UK planning and Environment Agency guidelines.

Often used in planning and public enquiries, it is an invaluable tool for acoustics consultants, environmental health officers and anyone involved in planning or legal matters when excessive sound may be a concern.

Other noise monitoring standards

In addition to the revised standard BS 4142, other noise assessment and noise monitoring standards are used to determine sound levels in various sectors. These include:

- **British Standard BS 7445:** specifies the measurements and descriptions of environmental noise, serving as a guideline for the appropriate procedures that must be followed by a qualified acoustic engineer
- **Vibration assessment (BS 6472):** a guide to evaluating human exposure to vibrations in buildings
- **Document E of the Building Regulations Act 2000:** covers sound insulation tests (impact and airborne)
- **Standard ISO 140:** covers airborne and impact noise tests
- **Standard ISO 717:** covers the provision of acoustic calculations and reports

Guidelines from the Department for Environment, Food and Rural Affairs cover all issues relating to noise from pubs and clubs including entertainment, crowds, mechanical services equipment and deliveries.

In addition, the **World Health Organisation 2000** Guidelines for Community Noise deal with the control of environmental noise in local communities, such as:

- Road, rail and air traffic noise
- Domestic noise
- Transport disturbances
- Public works

The **WHO** guidelines also cover indoor sources of noise, such as:

- Office machines
- Ventilation systems
- Home appliances

Consequences of excessive noise

It's crucial that work is carried out to meet the required standards, as excessive noise can have damaging health effects – hearing loss and impairment; physiological damage, potentially causing high blood pressure; ear discomfort and tinnitus; problems with communication and an inability to hear music, the radio or television; sleep disturbances; headaches and fatigue; impaired ability to perform tasks, leading to reduced productivity.

Research has found that noise impulses are more irritating than a steady noise, leading to feelings of annoyance and displeasure.