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Acoustics — Acoustic insulation for pipes, valves and flanges

Acoustique — Isolation acoustique des tuyaux, clapets et brides

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This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This second edition cancels and replaces the first edition (ISO 15665:2003), which has been technically revised. It also incorporates the Technical Corrigendum ISO 15665:2003/Cor.1:2004.

The main changes are as follows:

— addition of Class D2 and D3 Insertion Loss from Shell DEP 31.46.00.31 to expand the purview of this document;

— addition of new pipe sound sources to incorporate pneumatic pumps and solid pellet conveyors;

— updates to Clause 6 relating to insulation construction and system material components to incorporate newer technologies and materials;

— change of previous Clause 9: "*Acoustic insulation constructions that meet the insulation class requirements*" into Annex A to update and expand the use of various, newer material system constructions. Additional emphasis placed on the requirement for insertion loss testing, as defined in this standard, for determining acoustic performance of pipework insulation systems

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Acoustics — Acoustic insulation for pipes, valves and flanges

1 Scope

This document defines the acoustic performance of four classes (Classes A, B, C and D) of pipe insulation. It also defines a standardized test method for measuring the acoustic performance of any type of material system construction, thereby allowing existing and new insulation constructions to be rated against the four classes. Furthermore, this document presents some typical types of construction that would be expected to meet these acoustic performance classes.

This document is applicable to the acoustic insulation of cylindrical steel pipes and to their piping components. It is valid for pipes up to 1 m in diameter and a minimum wall thickness of 4,2 mm for diameters below 300 mm, and 6,3 mm for diameters from 300 mm and above. It is not applicable to the acoustic insulation of rectangular ducting and vessels or machinery.

This document covers both design and installation aspects of acoustic insulation and provides guidance to assist noise control engineers in determining the required class and extent of insulation needed for a particular application. It gives typical examples of construction methods, but the examples are for information only and not meant to be prescriptive.

This document emphasises the aspects of acoustic insulation that are different from those of thermal insulation, serving to guide both the installer and the noise control engineer. Details of thermal insulation are beyond the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 354, *Acoustics — Measurement of sound absorption in a reverberation room*

ISO 3741:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Precision methods for reverberation test rooms*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
piping
cylindrical pipes and fittings such as valves, flanges, bellows and supports

Note 1 to entry: Piping is a pipe, or a system of pipes used to convey fluids (solids, liquid or gas) from one location to another. Piping fittings: Fittings are used in pipe systems to connect straight sections of pipe and adapt to different sizes or shapes.