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ELECTROTECHNICAL VOCABULARY

PART III ACOUSTICS

Section 8 Architectural Acoustics

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ELECTROTECHNICAL VOCABULARY

PART III ACOUSTICS

Section 8 Architectural Acoustics

0. FOREWORD

0.1 This Indian Standard (Part III/Sec 8) was adopted by the Indian Standards Institution on 12 December 1974, after the draft finalized by the Electrotechnical Standards Sectional Committee, in consultation with the Acoustics Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This standard covers terms and definitions of Architectural Acoustics. Attempt has been made to line up the standard with the recommendations of the International Electrotechnical Commission.

0.3 This standard is one of a series of Indian Standards on electrotechnical vocabulary. A list of standards so far published in this series is given on page 8.

0.4 Assistance has been derived from IEC document 29 (IEV-08) (Secretariat) 100 ' Draft International electrotechnical vocabulary (3rd edition) Group 08 : Electro-acoustics, particularly Section 08-40 ' Architectural acoustics ', issued by the International Electrotechnical Commission.

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1. SCOPE

1.1 This standard (Part III/Sec 8) covers terms and definitions relating to architectural acoustics.

2. TERMS AND DEFINITIONS

2.1 Acoustic Resonator — Under consideration.

2.2 Acoustical Insulation Material — Material used in insulating against flow of sound into a room.

2.3 Audiometric Room — Room insulated against outside noise and having some sound absorption characteristics, intended for testing of hearing.

2.4 Dead Room — Room characterized by an unusually large amount of sound absorption.

2.5 Decay Rate — At a given point in a room and at a given frequency, time rate at which the sound pressure level decreases.

2.6 Diffuse-Field Distance — That distance from the acoustic centre of a sound source at which the mean-square sound pressure of the direct sound, average over all directions, is equal to the mean-square sound pressure in the reverberant room in which the source is placed.

2.7 Dissipation — Transfer of sound energy into heat.

2.8 Dissipation Coefficient — Ratio of sound energy dissipated as heat to the energy of the incident sound wave.

2.9 Echo — Sound that has been reflected and arrives with such a magnitude and time interval after the direct sound as to be distinguishable as a repetition of it.

2.10 Equivalent Absorption Area — Of an object or of a surface; area of a surface having a sound power absorption coefficient of unity that would absorb sound energy in a reverberant room at the same rate as the object or the surface. In the case of a surface the equivalent absorption area is the product of the area of the surface and its sound power absorption coefficient.

2.11 Eyring Coefficient — Equivalent sound absorption area attributed to a surface by the eyring reverberation time formula, divided by the area of the surface.

2.12 Flanking Transmission — Transmission of airborne sound from a source room to an adjacent room but not via the common partition.

2.13 Flow Resistance — Quotient of the difference of pressure across a sheet of porous material to the volume velocity of flow per unit area of the sheet.

2.14 Flow Resistivity — Flow resistance divided by thickness of the porous sheet.

2.15 Flutter Echo — Rapid but nearly even succession of echoes coming from the same sound source.

2.16 Free-Field Room/Anechoic Room — Rooms whose boundaries absorb effe tively all the sound incident thereon, thereby affording free-field conditions.

2.17 Helmholtz Resonator — Acoustic resonator consisting of a large volume and a small orifice.

2.18 Impact-Sound Reducing Material — Material producing low noise when struck by impacts or vibrations and attenuating the propagation of the impact sound and the vibration.

2.19 Level Difference/Sound Isolation Between Rooms — Difference between the mean sound pressure level in a room containing a source of sound and the mean sound pressure level in a receiving room.

2.20 Live Room — Room characterized by an unusually small amount of absorption.

2.21 Mean Free Path — Distance travelled by sound waves in an enclosure between successive reflections, averaged over time and all initial directions of propagation.

2.22 Mean Sound Pressure Level in a Room — Ten times the common logarithm of the ratio of the mean square sound pressure in a room to the square of the reference sound pressure, being taken over the entire room with the exception of those parts where the direct radiation of the sound source or the near field of the boundaries (walls, etc) is of significant influence.

2.23 Multiple Echo — A succession of separate echoes from a single sound source.

2.24 Normalized Impact-Sound Level — In the receiving room in a specific frequency band, the mean sound pressure level in the receiving room minus ten times the common logarithm of the ratio between the reference absorption and the total absorption of the receiving room.

2.25 Normalized Level Difference/Normalized Sound Isolation Between Rooms — Level difference between rooms plus ten times the common logarithm of the ratio of the reference absorption to the total absorption in the receiving room.

2.26 Porosity — Ratio of the volume of the internal holes and channels in a porous absorber to its total volume.

2.27 Porous Absorber — Material with internal holes and channels that presents resistance to flow of gas or liquid through the material.

2.28 Radiation Factor — Ratio of the sound power radiated by a plate of a given area, the dimensions of which are large in comparison with the wavelength, to the power which would be radiated as a plane wave by a plate of the same area vibrating in phase with the same effective velocity amplitude.

2.29 Radiation Index — In decibels, ten times the logarithm to the base ten of the radiation factor.

2.30 Random Incidence — Incidence in a diffuse sound field.

2.31 Reverberation Room — Room having a long reverberation time, especially designed to make the sound field therein as diffuse as possible.

2.32 Reverberation Time — Of an enclosure, for a sound of a given frequency or frequency band, the time that would be required for the sound pressure level in the enclosure to decrease by 60 decibels, after the source has been stopped.

2.33 Room Absorption — Sum of sabine absorptions due to objects and surfaces in a room and of dissipation in the medium within the room.

2.34 Sabine — Under consideration.

2.35 Sabine Absorption — Sound absorption defined by the sabine reverberation time equation. Sabine absorption is equal to 24 times the volume of a room divided by the product of the reverberation time therein, the speed of sound, and the common logarithm of the Naperian base.

NOTE 1 — The unit of absorption is the sabine when the unit of area is the square foot or the metric sabine when the unit of area is the square metre.

NOTE 2 — The shortened phrase ' absorption in sabine ' is understood to mean the sabine absorption.

2.36 Sabine Coefficient — Of a surface, increase in sabine absorption, due to introduction of the surface into a room, divided by the area of the surface.

2.37 Sound Absorbing Material — Material characterized by relatively large capability of absorbing sound.

2.38 Sound Absorption (of Materials) — Property possessed by materials and objects of converting sound energy into other forms of energy in an irreversible manner.

2.39 Sound Power Absorption Coefficient — At a given frequency and for specified conditions, of a surface, fraction of incident sound power not reflected from the surface. Unless otherwise specified, a diffuse sound field at the surface is to be understood.

2.40 Sound Power Reflection Coefficient — At a given frequency and for specified conditions, of a surface, fraction of incident sound power reflected by the surface.

2.41 Sound Pressure Reflection Coefficient — At a given frequency and for specified conditions, of a surface, fraction of incident sound pressure reflected by the surface.

2.42 Sound Reduction Index of a Partition/Sound Transmission Loss of a Partition/Sound Insulation of a Partition — Level difference between rooms plus ten times the common logarithm of the ratio of the area of the partition to the total absorption in the receiving room.

2.43 Standardized Impact-Sound — Transmitted noise due to standardized impact-sound machine tapping on a floor.

2.44 Statistical Absorption Coefficient — Absorption coefficient measured or calculated with plane waves at randomly distributed angles of incidence.

2.45 Wall Admittance — Quotient of the particle velocity at a particular frequency normal to a wall to the sound pressure acting on the wall.

2.46 Wall Impedance — Quotient of the sound pressure at a particular frequency acting on a wall (or a wall covering) by the normal particle velocity of the wall.

INDIAN STANDARDS

ON

ACOUSTICS

IS:

1031-1967 Methods of measurements on loudspeaker and loudspeaker systems (*first revision*)
1032-1957 General requirements and tests for pressure unit operated horn loudspeaker systems
1033-1957 General requirements and tests for direct radiator moving coil loudspeakers
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1302-1958 Methods of measurements on audio amplifiers
1490-1959 Recommendations for minimum performance requirements of mains-operated public address amplifiers
1819-1961 Recommendations for general requirements of public address amplifiers
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1882-1961 Code of practice for outdoor installation of public address systems
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1885 (Part III/Sec 3)-1967 Electrotechnical vocabulary: Part III Acoustics; Section 3 Sound recording and reproduction
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7194-1973 Assessment of noise exposure during work for hearing conservation purposes

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