

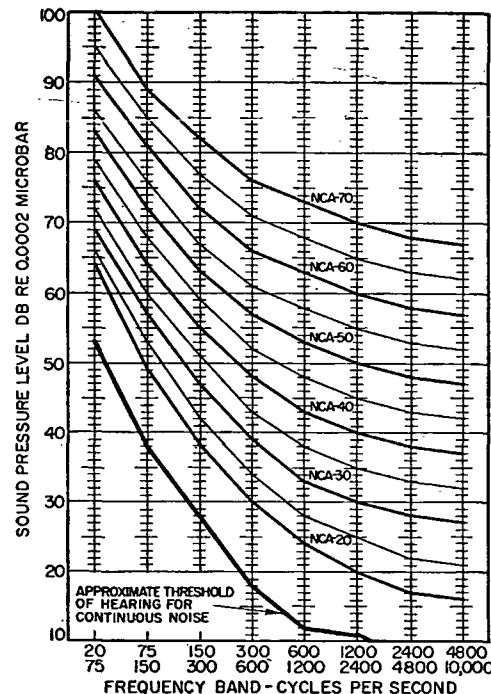


FIG. 4. CRITERION CURVES FOR USE WITH TABLE 1 IN DETERMINING THE PERMISSIBLE (OR DESIRABLE) L_p VALUES IN 8 OCTAVE FREQUENCY BANDS

Same as Fig. 3 except that each NCA curve has a loudness level in phons that is 30 units greater than the Speech Interference Level in decibels (expressed by the NCA number of the curve). These curves may be used in design or specifications in place of those of Fig. 3 wherever economy dictates a maximum compromise and where, in addition, the fan and turbulence noise is steady and free of low frequency pure tone components (see text).

whenever possible, particularly where there is a possibility that the sound may be fluctuating, such as often occurs with turbulence in a ventilating system. Fig. 4, or numbers in the range between Figs. 3 and 4, may be used when economic factors dictate a compromise and when there is a definite assurance that the noise will not be of a fluctuating type.

In engineering design, all eight octave band levels selected from the curves of Fig. 3 or 4 should be used. In construction specifications, reference may be made to the Guide and the selected NC or NCA curve may be referred to by number, e.g., NC-35.

Where octave band analyses of the noise cannot be made and a rough approximation of accepted criteria must be obtained by use of a sound level meter only, the A-scale values which would be read for the noise spectra specified in Column 1 are given in Column 2 for comparison purposes. It should be understood, however, that an A-scale reading gives a measure of the overall noise using a weighted network; it does not specify the spectrum. For example, the noise spectrum shown as NC-25 in Fig. 3 would give an overall A-scale measurement of 35 dba, but a measured

TABLE 1. RECOMMENDED NOISE CRITERIA FOR ROOMS*
Noise Levels to be Measured in Unoccupied Rooms

TYPE OF SPACE	RECOMMENDED NOISE CRITERION CURVE	COMPUTED EQUIVALENT SOUND LEVEL METER READINGS*
		WEIGHTING SCALE-A dba
Broadcast Studios	NC 15-20	25-30
Concert Halls	NC 20	30
Legitimate Theatres (500 seats, no amplification)	NC 20-25	30-35
Music Rooms	NC 25	35
Schoolrooms (no amplification)	NC 25	35
Conference Rooms for 50	NC 25	35
Apartments and Hotels	NC 25-30	35-40
Assembly Halls (amplification)	NC 25-30	35-40
Homes (sleeping areas)	NC 25-35	35-45 ^b
Conference Rooms for 20	NC 30	40
Motion Picture Theatres	NC 30	40
Hospitals	NC 30	40
Churches	NC 30	40
Courtrooms	NC 30	40
Libraries	NC 30	40
Small Private Offices	NC 30-35	40-45
Restaurants	NCA 45	55
Coliseums for Sports Only (amplification)	NCA 50	60
Stenographic Offices (typing and business machines)	NC 50	60
Factories	NCA 40-65	50-75

Note: Each noise criteria curve is a code for specifying permissible sound pressure levels in eight octave bands. It is intended that in no one frequency band should the specified level be exceeded. The computed equivalent dba numbers in the right-hand column are presented for information only and are no longer recommended for use in specifications.

* If the noise is predominantly in the speech bands so that the spectrum does not have the shape of the recommended noise criterion curve, the recommended dba numbers should be lower by 5 dba.

^b Room air conditioners prior to 1957 commonly produce levels of 50 to 60 dba in sleeping areas.

value of 35 dba does not mean that the actual noise measured has the same spectral shape or is as satisfactory as the specified NC-25 spectrum. The lack of octave band analysis can be partly offset by a subjective observation; if the noise sounds unnatural because of excessive amounts of high pitched or low pitched noise or has particularly noticeable amounts of pure tones, the spectrum will probably depart widely from the specified one. In such cases it is advisable to make an octave band analysis of the noise, if possible.

KINDS OF NOISE

The noise introduced into a room or building by ventilating or air conditioning equipment may be divided into two general kinds, depending on how it reaches the room:

1. Noise transmitted through the ducts.
 - a. From equipment such as fans, motors, sprays, etc.
 - b. From outside, and transmitted through duct walls into air stream.
 - c. From duct wall vibrations, transmitted into air stream.
 - d. From air currents, including eddying noises.
 - e. Cross talk and cross noises between rooms connected by the same duct system.
 - f. Noise produced by the grilles.
2. Noise transmitted through the building construction.
 - a. From machine mountings as vibration.
 - b. From equipment through room wall surfaces.