

**Subpart A—Whistles**

**§ 86.01 Frequencies and range of audibility.**

The fundamental frequency of the signal shall lie within the range 70-525 Hz. The range of audibility of the signal from a whistle shall be determined by those frequencies, which may include the fundamental and/or one or more higher frequencies, which lie within the frequency ranges and provide the sound pressure levels specified in § 86.05.

**§ 86.03 Limits of fundamental frequencies.**

To ensure a wide variety of whistle characteristics, the fundamental frequency of a whistle shall be between the following limits:

(a) 70-200 Hz, for a vessel 200 meters or more in length;

(b) 130-350 Hz, for a vessel 75 meters but less than 200 meters in length;

(c) 250-525 Hz, for a vessel less than 75 meters in length.

**§ 86.05 Sound signal intensity and range of audibility.**

A whistle on a vessel shall provide, in the direction of the forward axis of the whistle and at a distance of 1 meter from it, a sound pressure level in at least one 1/3-octave band of not less than the appropriate figure given in Table 86.05 within the following frequency ranges (±1 percent):

(a) 130-1200 Hz, for a vessel 75 meters or more in length;

(b) 250-1600 Hz, for a vessel 20 meters but less than 75 meters in length;

(c) 250-2100 Hz, for a vessel 12 meters but less than 20 meters in length.

TABLE 86.05

Length of vessel in meters	Fundamental frequency range (Hz)	For measured frequencies (Hz)	1/3-octave band level at 1 meter in dB referred to $2 \times 10^{-5} \text{ N/m}^2$	Audibility range in nautical miles
200 or more	70-200	130-180	145	2
		180-250	143	
		250-1200	140	
75 but less than 200	130-180	130-180	140	1.5
	130-350	180-250	138	
		250-1200	134	
20 but less than 75	250-525	250-450	130	1.0
		450-800	125	
		800-1600	121	
12 but less than 20	250-525	250-450	120	0.5
		450-800	115	
		800-2100	111	

NOTE. The range of audibility in the table above is for information and is approximately the range at which a whistle may usually be heard on its forward axis in conditions of still air on board a vessel having average background noise level at the listening posts (taken to be 68 dB in the octave band centered on 250 Hz and 63 dB in the octave band centered on 500 Hz).

In practice the range at which a whistle may be heard is extremely variable and depends critically on weather conditions; the values given can be regarded as typical but under conditions of strong wind or high ambient noise level at the listening post the range may be much reduced.

**§ 86.07 Directional properties.**

The sound pressure level of a directional whistle shall be not more than 4 dB below the sound pressure level specified in § 86.05 in any direction in the horizontal plane within ±45 degrees of the forward axis. The sound pressure level of the whistle in any other direction in the horizontal plane shall not be more than 10 dB less than the sound pressure level specified for the forward axis, so that the range of audibility in

any direction will be at least half the range required on the forward axis. The sound pressure level shall be measured in that one-third octave band which determines the audibility range.

**§ 86.09 Positioning of whistles.**

(a) When a directional whistle is to be used as the only whistle on the vessel and is permanently installed, it shall be installed with its forward axis directed forward.