

OHTA pre-registration self-assessment for candidates

W503 Noise – measurement and effects

The following are examples of topics covered in the course and calculations. Answers to all the following, and exam and homework questions are covered in the training course.

- When is the sound power level of a source quoted in preference to the sound pressure level?
- The noise level in the machine area is 83 dBA. The noise level from a new machine at the operator location is quoted as 82 dBA. Will this installation require any changes in the work area?
- Assume the allowable noise exposure limit for an 8-hour day is 85 dBA, and a 3-dBA exchange rate is used.
- What is the allowable duration or time a person may be exposed to 88 dBA, assuming there is no additional noise exposure above 80 dBA for the remainder of the day?
- How long can a worker be exposed to 92 dB(A) without exceeding an L_{Aeq8h} of 85 dB(A)?
- Calculate the Daily Noise Exposure for the following typical work day for an employee

Task	L_{Aeq}	Pa^2	Time (hr)	E_{AT} Pa^2h
Grinder	101		1.0	
Sand Blasting	103		0.5	
Polishing	95		1.0	
Wash-up	85		2.5	
General duties	75		2	
Total Pa^2h				
Normalize to 8 hours				Pa^2
Find corresponding $L_{Aeq,8h}$ from table				dBA

- Using the formula Wavelength (λ) = c/f , what is the wavelength for sounds with the following frequencies? 100 Hz, 500 Hz, 2,000Hz
- Using the following equation, calculate the total sound power for 89dB + 85dB + 90dB:

$$L_{p_{TOTAL}} = 10 \log \left(\sum_{i=1}^n 10^{L_{p_i}/10} \right)$$

- Using the following equation, calculate the sound pressure in pascals for 95 dB:
decibel = $20 \log (p/p_0)$