Where

L2 = Sound pressure level in receiving room (dB)

L1 = Sound pressure level 1m from the facade (dB)

R = Sound reduction index (dB)

S = Element area ($m^2$)

A = Total absorption equivalent area in receiving room ($m^2$)

# Internal Noise Calculator

**External properties**

Sound pressure level at 1m from facade (dB)

55.5

Facade or free-field noise level

Facade

A facade noise level is the measurement of noise taken at 1m from a reflective surface such as from the side of a building. Noise will be reflected from this surface and increase the measured noise level by around 3 dB. A free-field noise level is the measurement of noise taken with no reflecting surfaces nearby other than the ground.

Typical examples of sound reduction indexs of materials are provided in BS 12354-3. Additional free resources are provided below.

Sound reduction of external wall (dB)


- Generator Noise Calculator
- Pump Noise Calculator
- Wind Turbine Noise Calculator
- Vent Noise Calculator
- Acoustic Induced Vibration (AIV) Screening Tool
- Flow-Induced Vibration LOF Calculator
- Blast Overpressure and Grounde-Bourne Vibration Calculator
- BS4142 Industrial and Commercial Sound Assessment Tool
- Noise Barrier Calculator

Air Quality Tools

25

See engineeringtoolbox.com for sound transmission loss data for some typical building elements.

External wall area ($m^2$)

20

Sound reduction of window (dB)

29

See metroglass.co.za for specific glazing sound transmission loss data.

Window area ($m^2$)

5

Sound reduction of door (dB)

30

See asdma.com's pdf guide to acoustic performance of doors.

Door area ($m^2$)

.5

**Internal properties**

Receiver room length (m)

20


- Emissions Calculator for Engines, Turbines and Heaters
- Gas Turbine Emissions Calculator – US EPA AP-42
- Online Air Dispersion Model
- Flare Effective Height & Diameter Calculator
- Calorific Value Reference Tool
- Do I need an Atmospheric Emission Licence?
- Correction from Actual to Normal Stack Data Calculator
- Stack Gas Volumetric Flow Correction Calculator

Marine Tools

Receiver room width (m)

15

Receiver room height (m)

8

Receiver Room Volume ($m^3$)

2400

Reverberation time of receiver room (seconds)

0.5

Reverberation time is the time taken for a sound source to decay. Usually taken to be a drop in noise level of 60 dB. The default reverberation time for dwellings is 0.5 seconds.

L2 (Wall)

14.7

Resultant Internal noise level (dB)

15.1

## Comments and Suggestions

Is there an environmental engineering tool you would like to see at wkcgroup.com, or do you have recommendations on the tools we have? Please complete our online tools feedback form.

› Seawater Density Calculator