

The table below indicates recommended [air change rates](#) (air changes per hour) in some common types of rooms and buildings:

<b>Building / Room</b>	<b>Air Change Rates - n - (1/h, h<sup>-1</sup>)</b>
All spaces in general	min 4
Assembly halls	4 - 6
Attic spaces for cooling	12 - 15
Auditoriums	8 - 15
Bakeries	20 - 30
Banks	4 - 10
Barber Shops	6 - 10
Bars	20 - 30
Beauty Shops	6 - 10
Boiler rooms	15 - 20
Bowling Alleys	10 - 15
Cafeterias	12 - 15
Churches	8 - 15
Classrooms	6 - 20
Club rooms	12
Clubhouses	20 - 30
Cocktail Lounges	20 - 30
Computer Rooms	15 - 20
Court Houses	4 - 10
Dance halls	6 - 9
Dental Centers	8 - 12
Department Stores	6 - 10
Dining Halls	12 - 15
Dining rooms (restaurants)	12
Dress Shops	6 - 10
Drug Shops	6 - 10
Engine rooms	4 - 6
Factory buildings, ordinary	2 - 4
Factory buildings, fumes and moisture	10 - 15
Fire Stations	4 - 10
Foundries	15 - 20
Galvanizing plants	20 - 30
Garages repair	20 - 30
Garages storage	4 - 6
Homes, night cooling	10 - 18
Hospital rooms	4 - 6
Jewelry shops	6 - 10
Kitchens	15 - 60
Laundries	10 - 15
Libraries, public	4
Lunch Rooms	12 - 15
Luncheonettes	12 - 15
Nightclubs	20 - 30
Machine shops	6 - 12
Malls	6 - 10
Medical Centers	8 - 12

Medical Clinics	8 - 12
Medical Offices	8 - 12
Mills, paper	15 - 20
Mills, textile general buildings	4
Mills, textile dye houses	15 - 20
Municipal Buildings	4 - 10
Museums	12 - 15
Offices, public	3
Offices, private	4
Photo dark rooms	10 - 15
Pig houses	6 - 10
Police Stations	4 - 10
Post Offices	4 - 10
Poultry houses	6 - 10
Precision Manufacturing	10 - 50
Pump rooms	5
Residences	1 - 2
Restaurants	8 - 12
Retail	6 - 10
School Classrooms	4 - 12
Shoe Shops	6 - 10
Shopping Centers	6 - 10
Shops, machine	5
Shops, paint	15 - 20
Shops, woodworking	5
Substation, electric	5 - 10
Supermarkets	4 - 10
Swimming pools	20 - 30
Town Halls	4 - 10
Taverns	20 - 30
Theaters	8 - 15
Transformer rooms	10 - 30
Turbine rooms, electric	5 - 10
Warehouses	2
Waiting rooms, public	4
Warehouses	6 - 30

Note that in many cases local regulations and codes will govern the ventilation requirements.

The fresh air supply to a room can be calculated as

$$q = n V \quad (1)$$

where

$$q = \text{fresh air supply (ft}^3/\text{h, m}^3/\text{h)}$$

$$n = \text{air change rate (h}^{-1}\text{)}$$

$$V = \text{volume of room (ft}^3, \text{m}^3\text{)}$$

## Example - Fresh Air Supply to a Public Library

The fresh air supply to a public library with volume  $1000 \text{ m}^3$  can be calculated as

$$Q = (4 \text{ h}^{-1}) (1000 \text{ m}^3)$$

$$= \underline{4000} \text{ m}^3/\text{h}$$

## Air Volume Calculator

*No. of Changes per Hour ( $h^{-1}$ )*

*Room Volume ( $m^3, ft^3$ )*

## Air Change Out Frequency in minutes

Air Change Out Frequency in minutes can be calculated as

$$n_m = 60 / n \quad (2)$$

where

$n_m$  = Air Change Out Frequency (minutes)