

## Air Change rate in typical rooms and buildings

Building / Room	Air Change Rate - $n$ - (1/h)
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

Building / Room	Air Change Rate - <i>n</i> - (1/h)
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, with fumes or moisture	10 - 15
Fire Stations	4 - 10
Foundries	15 - 20
Galvanizing plants	20 - 30

Building / Room	Air Change Rate - $n$ - (1/h)
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

Building / Room	Air Change Rate - <i>n</i> - (1/h)
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

Building / Room	Air Change Rate - <i>n</i> - (1/h)
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

## Recommended Supply Air to some typical Rooms

Type of Building and Room		Air Shifts - n - (1/h)	Supply Air flow (l/s per m <sup>2</sup> floor area)	Supply Air Flow (l/s)
Animals	Sheep			3 per animal
	Horses			40 per animal
	Hens			3 per animal
	Cows			100 per animal
	Chickens			2 per animal
	Pigs, sow			60 per animal
	Piglet			15 per animal
Apartments				15 per person
Assembly halls		5 - 10		10 - 15 per person
Auditoriums				10 - 15 per person
Bakeries	Production		8	
	Pastry room		6	
Banks	Service		2 - 3	
	Archive		1	
	Staff		2 - 3	

Type of Building and Room		Air Shifts - n - (1/h)	Supply Air flow (l/s per m <sup>2</sup> floor area)	Supply Air Flow (l/s)
Baths		5 - 8		15
Barber Shops				10 - 15 per person
Bars				15 - 20 per person
Beauty Shops				10 - 15 per person
Bowling Alleys				10 - 15 per person
Cafeterias			4	10 - 15 per person
Cinemas/Theaters		5 - 10		7 - 10 per person
Chemist's shops	Sterile room		15	
	Laboratory		15	
	Packing room		4	
	Store		1	
Churches			2	10 per person
Clubhouses				15 - 20 per person
Cocktail Lounges				15 - 20 per person
Computer Rooms				10 - 15 per person
Court Houses				10 - 15 per person
Dance halls				15 - 20 per person

Type of Building and Room		Air Shifts - n - (1/h)	Supply Air flow (l/s per m <sup>2</sup> floor area)	Supply Air Flow (l/s)
Dental Clinics, Offices				10 - 15 per person
Department Stores (cfm/Sq.Ft)			0.3	
Dining Halls				10 - 15 per person
Drug Shop				10 - 15 per person
Engine rooms		4		
Exhibition halls			10 - 20	
Fire Stations				10 - 15 per person
Garages		5 - 6	> 1	
Hospitals	General			15 per person
	Therapy		9	
	Operating theater		14	
	Autopsy		9	
Hotels	Reception			15 - 20 per person
	Room		3	
Industries	Factory			10 - 20 per person
	Carpenter work shop		2 - 5	



Type of Building and Room		Air Shifts - n - (1/h)	Supply Air flow (l/s per m <sup>2</sup> floor area)	Supply Air Flow (l/s)
	Car repair shop		4	
	Car repair shop, exhaust outlet			60 - 80 per car
	Mechanical work shop		3 - 4	
	Welding		12 - 15	
	Assembly		4 - 5	
Jails				10 - 15 per person
Jewelry Shop				10 - 15 per person
Libraries				10 - 15 per person
Lift Shaft (Lift Car)			8 - 10	
Lunch Rooms, Luncheonettes				10 - 15 per person
Municipal Buildings				10 - 15 per person
Museums				10 - 15 per person
Smithies			6 - 7	
Kitchens	Small	20 - 40		
	Large	10 - 20		
	< 7 m <sup>2</sup>			15
	> 7 m <sup>2</sup>			20
	Industrial in general		25 - 30	

Type of Building and Room		Air Shifts - n - (1/h)	Supply Air flow (l/s per m <sup>2</sup> floor area)	Supply Air Flow (l/s)
	Gas ovens			550/m <sup>2</sup> outside wall
	Electric ovens			300/m <sup>2</sup> outside wall
	Grill table			400/m <sup>2</sup> outside wall
	Frying pan			300
	Boiling pan 100 l			100
	Boiling pan 200 l			200
	Coffee machine			60
	Refrigerated cabinet		7 - 10	
	Cooling and freezer room		0.3 - 0.5	
	Store		2 - 4	
Laundries		10 - 15		
Lavatories		5 - 10		10
Night Clubs				15 - 25 per person
Malls				10 - 15 per person
Motels				15 - 20 per person
Offices	Module	3 - 8		10 - 20 per person
	Landscape			10 - 20 per person
	Conference room			15 - 30 per person
	Lecture room			10 - 20 per person
	Dining hall			15 - 25 per person
	Staff, changing clothes		8 - 12	
	Dining room		8 - 10	
	Resting room			15 per person
Police Stations				10 - 15 per person
Post Offices				10 - 15 per person
Precision Manufacturing				10 - 15 per person
Restaurants		5 - 10	10	10 - 15 per person
Retail Stores (cfm/Sq.Ft)			0.3	
Schools	Classroom		4 - 5	10 - 15 per person
Shops				10 - 15 per person
Shopping Centers				10 - 15 per person
Sports halls			3 - 4	

Type of Building and Room		Air Shifts - n - (1/h)	Supply Air flow (l/s per m <sup>2</sup> floor area)	Supply Air Flow (l/s)
Supermarkets				10 per person
Swimming pools		5 - 10		
Taverns				10 - 15 per person
Town Halls				10 - 15 per person