

21.7.4 Room surface maintenance factor (RSMF)

Changes in room surface reflectance caused by dirt deposition will cause changes in the illuminance produced by the lighting installation. The magnitude of these changes is governed by the extent of dirt deposition and the importance of inter-reflection to the illuminance produced. Inter-reflection is closely related to the distribution of light from the luminaire and the room index. For luminaires that have a strongly downward distribution, i.e. direct luminaires, inter-reflection has little effect on the illuminance produced on the horizontal working plane. Conversely, indirect lighting is completely dependent on inter-reflections. As for room index, the smaller is the room index, the greater is the contribution of inter-reflected light.

Tables 21.7 to 21.9 show the typical changes in the illuminance from an installation that occur with time due to dirt deposition on the room surfaces, for clean, normal and dirty conditions, in small, medium or large rooms, lit by direct, direct/indirect and indirect luminaires. Clean environments are found in such locations as clean rooms, computer centres, electronic assembly areas and hospitals. Normal environments are found in offices, shops, schools, laboratories, restaurants, warehouses and so on. Dirty environments are common in steelworks, chemical works, foundries, woodwork areas and similar locations.

Table 21.7 Room surface maintenance factor (RSMF) for direct, direct/indirect and indirect luminaires in rooms of different room indices, for a range of cleaning intervals, in clean environments

Room index	Luminaire type	Interval between cleaning (years)					
		0.5	1.0	1.5	2.0	2.5	3.0
0.7	Direct	0.97	0.97	0.96	0.95	0.94	0.94
0.7	Direct/indirect	0.94	0.90	0.89	0.87	0.85	0.84
0.7	Indirect	0.90	0.85	0.83	0.81	0.77	0.75
2.5 to 5	Direct	0.98	0.98	0.97	0.96	0.96	0.96
2.5 to 5	Direct/indirect	0.95	0.92	0.90	0.89	0.87	0.86
2.5 to 5	Indirect	0.92	0.88	0.86	0.84	0.81	0.78

Table 21.8 Room surface maintenance factor (RSMF) for direct, direct/indirect and indirect luminaires in rooms of different room indices, for a range of cleaning intervals, in normal environments

Room index	Luminaire type	Interval between cleaning (years)					
		0.5	1.0	1.5	2.0	2.5	3.0
0.7	Direct	0.96	0.94	0.94	0.93	0.92	0.92
0.7	Direct/indirect	0.88	0.86	0.83	0.82	0.80	0.79
0.7	Indirect	0.84	0.78	0.75	0.73	0.70	0.68
2.5 to 5	Direct	0.97	0.96	0.96	0.95	0.95	0.95
2.5 to 5	Direct/indirect	0.90	0.88	0.86	0.85	0.84	0.82
2.5 to 5	Indirect	0.87	0.82	0.79	0.77	0.74	0.72