

distribution of light from the luminaire, and the room index ( $K$ ). 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. Most luminaires lie somewhere between these extremes, so most lighting installations are dependent to some extent on inter-reflection.

Table 3.7 shows 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, semi-direct and indirect luminaires. From this table it is possible to select a room surface maintenance factor appropriate to the circumstances. The areas in which clean, normal and dirty environments are found are given in Table 3.5.

**Table 3.7** Typical changes in the illuminance from an installation that occur with time due to dirt deposition on the room surfaces

Time between cleaning (years)		0.5			1.0			1.5		
Room size ( $K$ )	Luminaire distribution	C	N	D	C	N	D	C	N	D
Small ( $K = 0.7$ )	Direct	0.97	0.96	0.95	0.97	0.94	0.93	0.96	0.94	0.92
	Direct/indirect	0.94	0.88	0.84	0.90	0.86	0.82	0.89	0.83	0.80
	Indirect	0.90	0.84	0.80	0.85	0.78	0.73	0.83	0.75	0.69
Medium-large ( $K = 2.5-5.0$ )	Direct	0.98	0.97	0.96	0.98	0.96	0.95	0.97	0.96	0.95
	Direct/indirect	0.95	0.90	0.86	0.92	0.88	0.85	0.90	0.86	0.83
	Indirect	0.92	0.87	0.83	0.88	0.82	0.77	0.86	0.79	0.74
Time between cleaning (years)		2.0			2.5			3.0		
Room size ( $K$ )	Luminaire distribution	C	N	D	C	N	D	C	N	D
Small ( $K = 0.7$ )	Direct	0.95	0.93	0.90	0.94	0.92	0.89	0.94	0.92	0.88
	Direct/indirect	0.87	0.82	0.78	0.85	0.80	0.75	0.84	0.79	0.74
	Indirect	0.81	0.73	0.66	0.77	0.70	0.62	0.75	0.68	0.59
Medium-large ( $K = 2.5-5.0$ )	Direct	0.96	0.95	0.94	0.96	0.95	0.94	0.96	0.95	0.94
	Direct/indirect	0.89	0.85	0.81	0.87	0.84	0.79	0.86	0.82	0.78
	Indirect	0.84	0.77	0.70	0.81	0.74	0.67	0.78	0.72	0.64

### 3.8.3 Average illuminance (lumen method)

The value of design maintained illuminance for an activity or interior is found by referring to sections 2.5, Lighting schedule, and 2.3.2, Illuminance. When this is to be achieved by designing a general lighting installation, the number of luminaires required to achieve the average illuminance can be calculated by means of utilisation factors.