

Table 3.5 Summary of lamp characteristics

Lamp name	Output range (lm)	Power range (W)	Efficacy (lm/W)	Control gear	Colour temp (K)	Colour rendering (Ra)	Run-up time	Dimming	Life (h) (1)	Comments
Incandescent										
GLS	5-12,000	1-1000	8-14	No	2500-2700	100	Instant	Easy to 0%	1,000	Large variety of shapes and sizes of lamp
TH	40-50,000	4-2000	15-25	No (2)	2700-3200	100 (3)	Instant	Easy to 0%	1,500-5,000	
Fluorescent										
T12 (4)	1000-10,500	25-140	50-80	Yes	3000-6500	50-90	30 sec	Limited to 25%	8,000-12,000	There are some higher power lamps available for special applications such as cold stores
T8	650-6200	13-70	50-96	Yes	2700-17000	50-98	30 sec	Easy to 2%	8,000-17,000 (5)	
T5	120-8850	6-120	20-93 (6)	Yes	2700-17000	82-95	30 sec	Easy to 2%	8,000-19,000 (5)	
Compact (CFL)										
CFLni (Non integral control gear)	250-9000	8-120	30-70	Yes	2700-6500	85-90	15-90 sec	Some types to 5%	Up to 15,000 (5)	
CFLi (Integral control gear)	100-1500	5-30	20-50	No	2700	> 80	60 sec	Some types to 20%	5,000-15,000	
High pressure mercury										
MBF/HPL	2000-58,500	60-1040	33-57	Yes	3200-3900	40-50	4 min	No	8,000-10,000	
Metal halide lamps										
Quartz tube	5,200-200,000	85-2050	60-98	Yes	3000-6000	60-90	1-8 min	No	2,000 - 7000	
Ceramic Tube	1,600-26,000	20-250	65-97	Yes	3000-4400	78-93	2 min	Limited (7)	6,000-10,000	The lamp range is increasing rapidly

Table 3.5 Summary of lamp characteristics cont..

Lamp name	Output range (lm)	Power range (W)	Efficacy (lm/W)	Control gear	Colour temp (K)	Colour rendering (Ra)	Run-up time	Dimming	Life (h) (1)	Comments
Low pressure sodium										
SOX SOX-E	1,800-32,000	26-200	70-180	Yes	N/A	N/A	10-20 min	No	15,000-20,000	Good lumen maintenance, but power consumption goes up through life
High pressure sodium										
Std SON	4,300-130,000	85-1040	53-142	Yes	1,900-2,100	19-25	3-7 min	Limited to 25%	10,000-20,000	
Delux SON	12,500-37,000	165-430	75-86	Yes	2,150	65	5 min	Limited to 25%	10,000-14,000	
White SON	1,800-5,000	45-115	40-44	Yes	2,500	83	2 min	No	6,000-9,000	
Induction										
	2,600-12,000	55-165	47-80	Yes	2,550-4,000	80	1 min	No	60,000+	
LEDs (8)										
	20-220	1-5	30-100	Yes	2,685-6500	40-85	Instant	Easy to 0%	15,000-60,000 (9)	The range of LEDs is increasing rapidly

1 Economic lamp life may be limited by lumen depreciation.

2 A lot of TH types are designed to run on low voltages and thus need a transformer or other device to supply the necessary voltage.

3 Some lamps with dichroic reflectors have part of the red end of the spectrum missing and thus do not have a colour rendering index of 100, information from lamp makers on this topic is hard to find.

4 T12 lamps are not generally used in new installations as T5 and T8 types are more efficient.

5 Lamps also available with exceedingly long lamp lives of e.g. 30,000 hours and 60,000 hours.

6 Most T5 lamps are optimised to give maximum light output at 35°C. The figures in this table are based upon their output at 25°C. As in most luminaires the lamp runs close to 35°C then the apparent light output ratio (LOR) of the luminaire appears to be higher than normal.

7 Most manufacturers are working on dimming control gear for this sort of lamp, but most products released onto the market so far have had major problems.

8 The LEDs can be integrated within the LED lamp, LED module or LED luminaire. The values represent the values of the LED alone of current technology Jan 09 and two points should be noted:

- thermal, driver and optical losses (potentially 50%), will reduce these lumen output and efficiency values, when built into a luminaire.

- the lumen output and efficiency development curves are much steeper than existing other lamp technologies.

9 For lamp life both electrical failures and lumen maintenance should be considered to measurement standards e.g. B10/L70 (10% electrical failures and 70% lumen depreciation at lamp life).