

PART L2A BUILDING REGULATIONS SUMMARY

The intention of these Approved Documents is to introduce measures which will focus the design in relation to energy conservation. In all cases the building will have a PREDICTED rate of carbon emission and a TARGET rate. The predicted must not exceed the target. The design team will have to use a standard modelling device to ratify the performance of the building.

The effect on lighting is summarized below.

Part L1A: NEW DWELLINGS – Normal domestic environments (not nursing homes, student accommodation and such like).

Part L1B: EXISTING DWELLINGS – Extensions, rewiring. Effectively counts as a NEW DWELLING.

Part L2A: NEW BUILDINGS (other than dwellings)

This covers general lighting efficacy targets in office, industrial and storage areas in all building types. (Offices encompass all desk based tasks including school classrooms, seminar and conference rooms).

Target Initial Efficacy (TIE): 45 luminaire-lumens/circuit-watt **minimum** over whole area.

50 ll/cw are targeted in other areas and 15 ll/cw for display lighting.*

Calculation (assuming no controls)

For each luminaire:
$$\text{Efficacy (E)} = \frac{\text{LL} \times \text{LOR}}{\text{CW}}$$

LL	lamp lumens @ 100 hours
LOR	luminaire light output ratio
CW	luminaire circuit power
N	number of luminaires

For whole area:
$$\text{TIE} = \frac{(N \times \text{LL} \times \text{LOR})_1 + (N \times \text{LL} \times \text{LOR})_2 + (N \times \text{LL} \times \text{LOR})_3}{\text{Total Circuit Watts}}$$

Another way of considering the calculation is to compare the LOR of an individual luminaire to the LOR which would be needed to achieve the proscribed minimum efficacy (see typical tables below). Provided the luminaire has an LOR greater than that tabulated for the lamp configuration, then the scheme would comply.

For each luminaire:
$$\text{Light Output Ratio LOR} = \frac{\text{E} \times \text{CW}}{\text{LL}}$$

*Figures correct at time of going to press. Please contact us for further clarification.

Examples of LOR that meet TIE criteria of 45, 50 & 55 ll/cw with HF gear

(All information is based on Philips Lighting published data)

TL5 lamps

Lamp	Lumens	Lamping/Circuit Power				LOR to achieve 45 ll/cw				LOR to achieve 50 ll/cw				LOR to achieve 55 ll/cw			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
14W	1200	18	30	47	62	68%	56%	59%	58%	76%	62%	66%	64%	83%	68%	72%	71%
21W	1900	25	46			59%	54%			66%	60%			72%	66%		
24W	1750	28	49			72%	63%			80%	70%			88%	77%		
28W	2600	33	61			57%	53%			63%	59%			70%	65%		
35W	3300	40	76			54%	52%			60%	58%			66%	64%		
39W	3100	45	86			65%	62%			72%	69%			79%	76%		
49W	4300	56	109			59%	57%			66%	63%			72%	70%		
54W	4450	61	120			62%	61%			69%	68%			76%	75%		
80W	6150	88	172			64%	63%			71%	70%			78%	77%		

TL-D Triphosphor lamps

Lamp	Lumens	Lamping/Circuit Power				LOR to achieve 45 ll/cw				LOR to achieve 50 ll/cw				LOR to achieve 55 ll/cw			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
18W	1350	19	37	54	70	63%	62%	60%	58%	70%	69%	67%	64%	77%	76%	73%	71%
36W	3350	37	70			50%	47%			56%	52%			61%	57%		
58W	5200	56	107			48%	46%			53%	51%			59%	56%		
70W	6200	68	129			49%	47%			54%	52%			60%	57%		

TC-L lamps

Lamp	Lumens	Lamping/Circuit Power				LOR to achieve 45 ll/cw				LOR to achieve 50 ll/cw				LOR to achieve 55 ll/cw			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
18W	1200	19	37			71%	69%			79%	77%			87%	85%		
24W	1800	25	52			63%	65%			69%	72%			76%	79%		
36W	2900	37	70			57%	54%			64%	60%			70%	66%		
40W	3500	44	84			57%	54%			63%	60%			69%	66%		
55W	4800	58	113			54%	53%			60%	59%			66%	65%		

TC-D/TC-T lamps

Lamp	Lumens	Lamping/Circuit Power				LOR to achieve 45 ll/cw				LOR to achieve 50 ll/cw				LOR to achieve 55 ll/cw			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
18W	1200	18	38			68%	71%			75%	79%			83%	87%		
26W	1800	26	54			65%	68%			72%	75%			79%	83%		
32W	2400	35	70			66%	66%			73%	73%			80%	80%		
42W	3200	46	92			65%	65%			72%	72%			79%	79%		
57W	4830	62				58%				64%				70%			