



**NEW  
RANGE**

# Simply superior. Simply OSRAM LED.

OSRAM LED lamps for the best light. Now and in the future.

# Welcome to the future.



**LED – for OSRAM, the lighting specialist, these three letters spell the future of light. This is because high-quality OSRAM LED products are not only unbeatable in terms of their efficiency and durability, they are also incredibly versatile.**

For general illumination, OSRAM LED lamps with their outstanding light are already being used as simple direct replacements for incandescent lamps up to 75 W. And as far as atmospheric lighting is concerned, the many colored and color-changing LED lamps in the OSRAM range give designers enormous creative freedom. The innovative LED range is rounded off with special lamps for residential properties and the entertainment industry.

**So you see, the future of light has already begun – welcome to this exciting world.**



## A real innovation.

OSRAM LED lamps are not just modern and stylish, they have such outstanding properties that they offer a whole series of practical benefits. In terms of durability, quality of light, economy and environmental impact, LED lamps from OSRAM are truly pioneering – and, more than almost any other technology, rightly deserve the title of innovation.

### The new **quality** standard:

- No UV or near infrared radiation
- Low thermal output
- Instant 100 % light
- 100,000 switching cycles and more
- White light with good color rendering
- Warm white light similar to that from an incandescent lamp
- Impact and vibration-proof
- Available in many different designs and with different bases for simple direct replacement

### The new **environ- mental** protection standard:

- Up to 90 % lower CO<sub>2</sub> emissions compared with similar conventional incandescent and halogen lamps
- Outstanding eco balance thanks to low energy requirements in production and low energy consumption in operation
- Mercury-free
- Less waste and low consumption of resources thanks to extremely long life

### The new **efficiency** standard:

- Up to 90 % energy savings compared with similar conventional incandescent lamps
- Life of up to 45,000 hours\*
- Direct replacement so no need to change the system
- Reduced air-conditioning costs thanks to extremely low thermal output

\* Switching cycle 165 min on, 15 min off



## Guaranteed better: **OSRAM LEDs.**

Our engineering know-how, our insistence on using only top-quality components and our strict quality assurance procedures have all paid off. This is why OSRAM can give a 4-year guarantee on selected PARATHOM® LED lamps and a full 5-year guarantee on PARATHOM® PRO LED lamps. The guarantees come into force on the date of purchase and apply only to lamps that are operated in accordance with OSRAM specifications.

Under the guarantee Osram will, free of charge, replace or provide a credit note for lamps that have demonstrably failed because of a material or manufacturing defect in the guarantee period.

For the terms and conditions of the guarantee go to [www.osram.com/guarantee](http://www.osram.com/guarantee)



# Progress that pays for itself.

LED lamps are highly complex and are at the cutting edge of technology. It's no wonder then that they cost more to buy than conventional light sources. But for use throughout the home and especially in commercial premises LED technology will pay for itself in only a short time – thanks to the incredibly low energy consumption and extremely long life of LEDs. The economics of LED lamps is a powerful sales argument – see for yourself!



## Instead of 30 × 60W light bulbs: one OSRAM PARATHOM® CLASSIC A 60 340° Advanced.

Impressive figures. Over its average life of 30,000 hours one OSRAM PARATHOM® CLASSIC A 60 340° Advanced rated at 12W will replace 30 conventional light bulbs.

	60 W light bulb		PARATHOM® CLASSIC A 60 Advanced	
Number of lamps	1 pcs.		1 pcs.	
Lamp wattage	60 W		12 W	
Average life	1000 hours		30,000 hours	
Lamp costs per item	1.50 EUR		44.64 EUR	
Relamping costs per light source (Based on 0.05 hours at EUR 40/hour)	2.00 EUR		2.00 EUR	
Connected load	0.06 kW		0.012 kW	

	60 W light bulb	PARATHOM® CLASSIC A 60 Adv.	60 W light bulb	PARATHOM® CLASSIC A 60 Adv.
<b>Hours burned per day</b>	12 hours/day		24 hours/day	
<b>Hours burned per year</b>	4 380 hours		8 760 hours	
Number of lamps required in that time	5	1	9	1
Lamp replacement and relamping costs	17.50 EUR	46.64 EUR	31.50 EUR	46.64 EUR
Electricity consumption after 1 year	262.8 kWh	52.56 kWh	525.6 kWh	105.12 kWh
Electricity costs after 1 year	49.93 EUR	9.99 EUR	99.86 EUR	19.97 EUR
<b>Total costs after 1 year</b>	<b>67.43 EUR</b>	<b>56.63 EUR</b>	<b>131.34 EUR</b>	<b>66.61 EUR</b>
CO <sub>2</sub> emissions after 1 year	131.4 kg CO <sub>2</sub>	26.3 kg CO <sub>2</sub>	262.8 kg CO <sub>2</sub>	52.56 kg CO <sub>2</sub>
<b>Savings in electricity costs per year:</b>	<b>10.80 EUR</b>		<b>64.73 EUR</b>	
<b>CO<sub>2</sub> savings per year:</b>	<b>105.1 kg CO<sub>2</sub></b>		<b>210.24 kg CO<sub>2</sub></b>	



25 × 50W halogen reflector lamps



OSRAM PARATHOM® PRO PAR16 50 Advanced

## Instead of 25 × 50W halogen reflector lamps: one OSRAM PARATHOM® PRO PAR16 50 Advanced.

Impressive figures. Over its average life of 25,000 hours one OSRAM PARATHOM® PRO PAR16 50 Advanced rated at 9.5W will replace 25 standard 50W halogen reflector lamps.

	50 W halogen reflector lamp		PARATHOM® PRO PAR16 50 Advanced	
Number of lamps	1 pcs.		1 pcs.	
Lamp wattage	50 W		9.5 W	
Average life	1000 hours		25,000 hours	
Lamp costs per item	7.71 EUR		37.50 EUR	
Relamping costs per light source (Based on 0.05 hours at EUR 40/hour)	2.00 EUR		2.00 EUR	
Connected load	0.05 kW		0.0095 kW	
	50 W halogen reflector lamp	PARATHOM® PRO PAR16 50 Adv.	50 W halogen reflector lamp	PARATHOM® PRO PAR16 50 Adv.
<b>Hours burned per day</b>	<b>12 hours/day</b>		<b>24 hours/day</b>	
<b>Hours burned per year</b>	<b>4 380 hours</b>		<b>8 760 hours</b>	
Number of lamps required in that time	5	1	9	1
Lamp replacement and relamping costs	48.55 EUR	48.50 EUR	87.39 EUR	48.50 EUR
Electricity consumption after 1 year	219 kWh	41.61 kWh	438 kWh	83.22 kWh
Electricity costs after 1 year	41.61 EUR	7.91 EUR	83.22 EUR	15.81 EUR
<b>Total costs after 1 year</b>	<b>90.16 EUR</b>	<b>47.41 EUR</b>	<b>170.61 EUR</b>	<b>55.31 EUR</b>
<b>CO<sub>2</sub> emissions after 1 year</b>	<b>109.5 kg CO<sub>2</sub></b>	<b>20.81 kg CO<sub>2</sub></b>	<b>219 kg CO<sub>2</sub></b>	<b>41.61 kg CO<sub>2</sub></b>
<b>Savings in electricity costs per year:</b>	<b>42.75 EUR</b>		<b>115.30 EUR</b>	
<b>CO<sub>2</sub> savings per year:</b>	<b>88.69 kg CO<sub>2</sub></b>		<b>177.39 kg CO<sub>2</sub></b>	

Basis: electricity price EUR 0.19/kWh, energy mix 0.5 kg CO<sub>2</sub>/kWh, lamp costs = RRP (European average)

# For professional demands.

OSRAM is setting new standards in the LED sector with the high-quality PARATHOM® PRO. The specifications of these high-tech lamps are truly impressive: outstanding efficiency of 65 lm/W, a life of up to 45,000 hours, a maximum color deviation from lamp to lamp of only 100 K and good color rendering of R<sub>a</sub> 80–90. What's more, the lamps can be dimmed and come in a wide range of versions with many different types of base. OSRAM PARATHOM® PRO can therefore meet even the highest demands in virtually any professional application.



## 1/2/3

### OSRAM PARATHOM® PRO PAR16 – 35/50/75

- Average life of up to 40,000 hours<sup>1</sup>
- High luminous efficacy
- Shape corresponds to that of a standard halogen reflector lamp with a diameter of 50 mm
- Very narrow color consistency
- Dimmable<sup>2</sup>
- Also available in a new even warmer light color (2700 K)
- Replacement options:
  - 35 W halogen lamp – PAR16 35 Advanced
  - 50 W halogen lamp – PAR16 50 Advanced
  - 75 W halogen lamp – PAR16 75 Advanced

ENERGY  
SAVINGS  
OF AT LEAST  
**80%**

# OSRAM PARATHOM® PRO.



## 4/5

### OSRAM PARATHOM® PRO MR16 – 20 Advanced

- Average life of up to 30,000 hours<sup>1</sup>
- High luminous efficacy
- Shape corresponds to that of a standard halogen reflector lamp with a diameter of 50 mm
- Very narrow color consistency
- Dimmable<sup>2</sup>
- MR16 20 Advanced: simple replacement thanks to the same dimensions as halogen MR16 lamps
- Ideal as a replacement in existing low-voltage halogen reflector luminaires
- Also available in a new even warmer light color (2700 K)
- **Replacement options:**  
20W halogen lamp – MR16 20 Advanced

## 6/7/8

### OSRAM PARATHOM® PRO MR16 – 35/50 Advanced

- Average life of up to 40,000 hours<sup>1</sup>
- High luminous efficacy
- Shape corresponds to that of a standard halogen reflector lamp with a diameter of 50 mm
- Very narrow color consistency
- Dimmable<sup>2</sup>
- MR16 35 Advanced: simple replacement thanks to the same dimensions as halogen MR16 lamps
- Ideal as a replacement in existing low-voltage halogen reflector luminaires
- Also available in a new even warmer light color (2700 K)
- **Replacement options:**  
35W halogen lamp – MR16 35 Advanced  
50W halogen lamp – MR16 50 Advanced

## 9

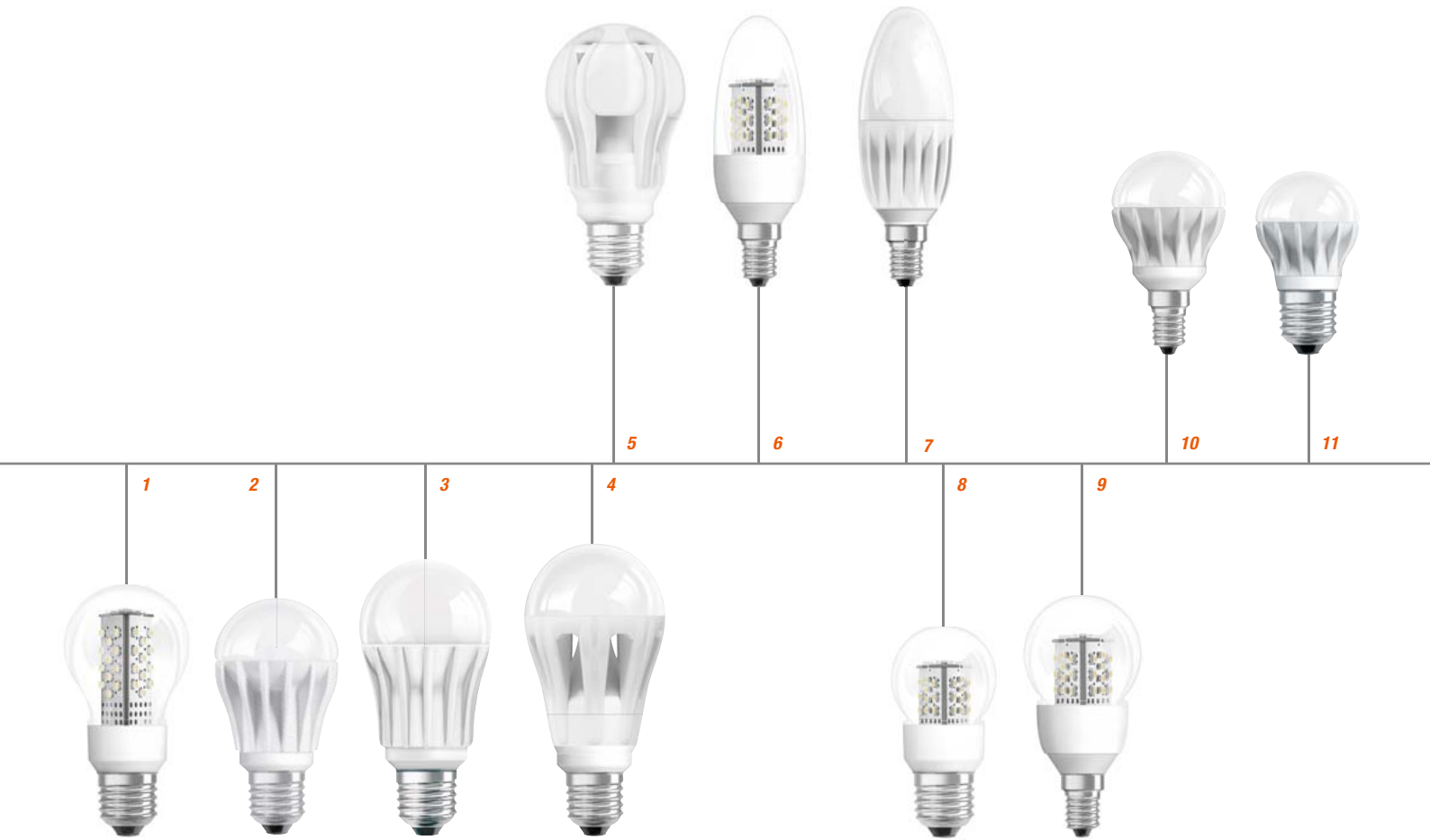
### OSRAM PARATHOM® PRO LEDspot 111 50 Advanced

- Average life of up to 45,000 hours<sup>1</sup>
- Good color rendering
- High luminous efficacy
- Simple direct replacement for 50W AR111 halogen reflector lamps in size and compatibility
- **Replacement options:**  
50W AR111 halogen lamp – PRO LEDspot 111 50 Advanced

<sup>1</sup> Switching cycle 165 min on, 15 min off

<sup>2</sup> For more information on conformity in dimming operations go to [www.osram.com/dim](http://www.osram.com/dim)

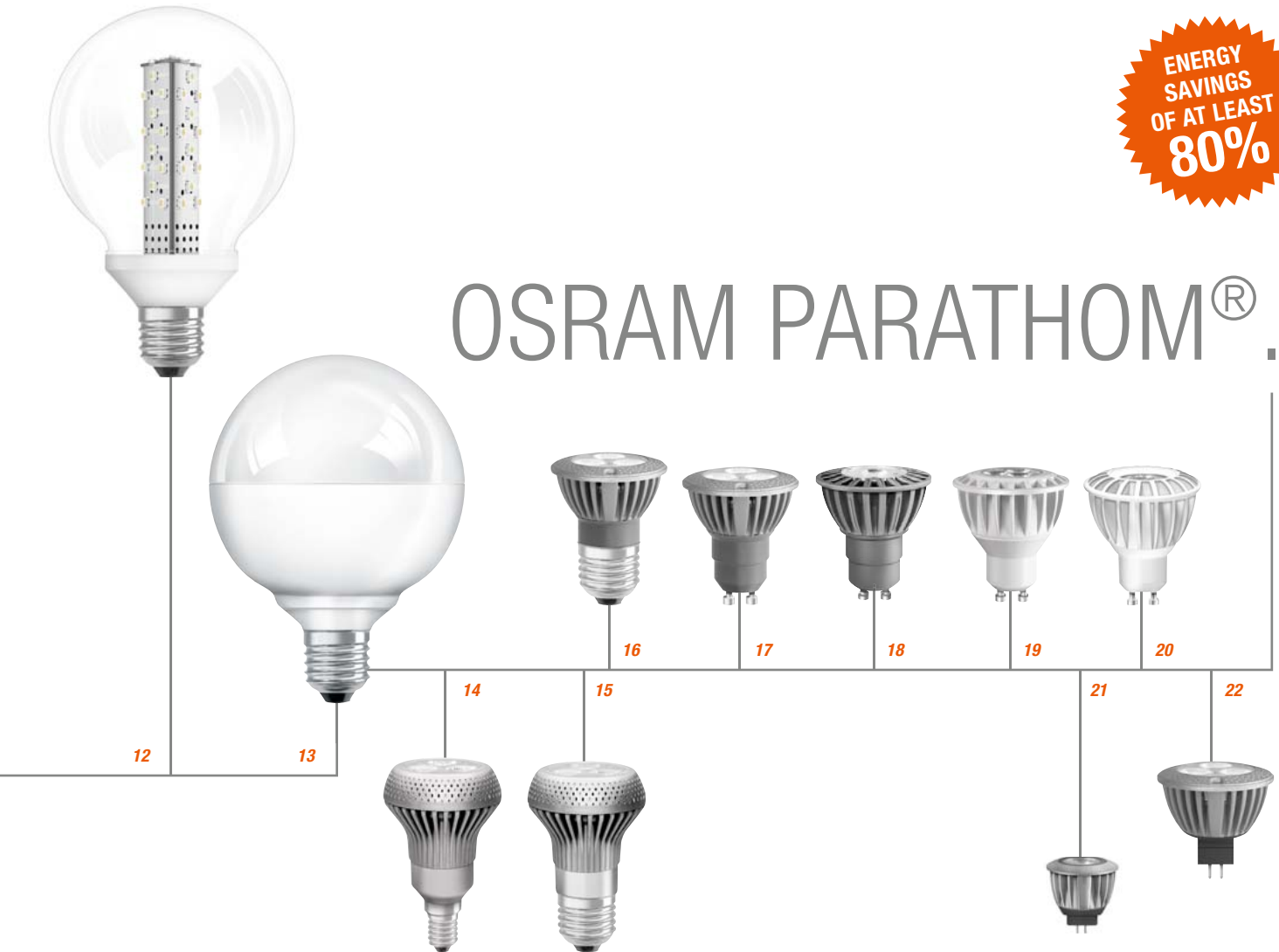
# For standard applications.



PARATHOM® lamps from OSRAM are impressive for their outstanding price/performance ratio. As efficient as OSRAM PARATHOM® PRO lamps, they have a long life of up to 35,000 hours, a maximum color deviation of 200 K and an  $R_a$  value of around 80. PARATHOM® lamps are also available with many different types of screw and plug-in bases, some even capable of being dimmed. PARATHOM® LED lamps from OSRAM are therefore the clever alternative for many standard illumination tasks.

ENERGY  
SAVINGS  
OF AT LEAST  
**80%**

# OSRAM PARATHOM®



## 1/2/3/4

### OSRAM PARATHOM® CLASSIC A – 15/25/40/50/60

- Average life of up to 25,000 hours<sup>1</sup>
- CLASSIC A 15: Suitable for indoors and outdoors
- CLASSIC A 40/50/60 Advanced: Dimmable<sup>2</sup>
- Replacement options:
  - 15 W incandescent lamp – CLASSIC A 15
  - 25 W incandescent lamp – CLASSIC A 25
  - 40 W incandescent lamp – CLASSIC A 40 Advanced
  - 50 W incandescent lamp – CLASSIC A 50 Advanced
  - 60 W incandescent lamp – CLASSIC A 60 Advanced

## 5

### OSRAM PARATHOM® CLASSIC A 340° – 60/75

- Average life of up to 30,000 hours<sup>1</sup>
- Large beam angle (340°), like conventional incandescent lamps
- Dimmable<sup>2</sup>
- Replacement options:
  - 60 W incandescent lamp – CLASSIC A 60 340° Advanced
  - 75 W incandescent lamp – CLASSIC A 75 340° Advanced

## 6/7

### OSRAM PARATHOM® CLASSIC B – 15/25

- Average life of up to 25,000 hours<sup>1</sup>
- CLASSIC B 15: for indoor and outdoor applications
- Replacement options:
  - 15 W incandescent lamp – CLASSIC B 15
  - 25 W incandescent lamp – CLASSIC B 25

## 8/9/10/11

### OSRAM PARATHOM® CLASSIC P – 15/25

- Average life of up to 25,000 hours<sup>1</sup>
- CLASSIC P 15: suitable for indoors and outdoors
- Replacement options:
  - 15 W incandescent lamp – CLASSIC P 15
  - 25 W incandescent lamp – CLASSIC P 25 (Daylight)

## 12/13

### OSRAM PARATHOM® GLOBE – 15/40

- Average life of up to 25,000 hours<sup>1</sup>
- GLOBE 15: suitable for indoors and outdoors
- Replacement options:
  - 15 W incandescent lamp – GLOBE 15
  - 40 W incandescent lamp – GLOBE 40

## 14/15

### OSRAM PARATHOM® R50 – 25/40

- Average life of up to 25,000 hours<sup>1</sup>
- Simple direct replacement thanks to the same dimensions as a standard R50 incandescent spotlight
- Replacement options:
  - 25 W Spot incandescent lamp – R50 25
  - 40 W Spot incandescent lamp – R50 40

## 16/17/18/19/20

### OSRAM PARATHOM® PAR16 – 20/35

- Average life of up to 35,000 hours<sup>1</sup>
- Beam angle of 35°
- Version with GU10 base ideal for direct replacement in existing halogen luminaires
- PAR16 35 Advanced: dimmable<sup>2</sup>
- Replacement options:
  - 20 W halogen lamp – PAR16 20
  - 35 W halogen lamp – PAR16 35

## 21

### OSRAM PARATHOM® MR11 20

- Average life of up to 25,000 hours<sup>1</sup>
- Low-voltage operation on CCG and ECG<sup>3</sup>
- Ideal as a replacement in existing low-voltage halogen reflector luminaires
- Replacement options:
  - 20 W halogen lamp – MR11 20

## 22

### OSRAM PARATHOM® MR16 20

- Average life of up to 25,000 hours<sup>1</sup>
- Low-voltage operation on CCG and ECG<sup>3</sup>
- Ideal as a replacement in existing low-voltage halogen reflector luminaires
- Replacement options:
  - 20 W halogen lamp – MR16 20

<sup>1</sup> Switching cycle 165 min on, 15 min off

<sup>2</sup> For more information on conformity in dimming operations go to [www.osram.com/dim](http://www.osram.com/dim)

<sup>3</sup> For more information see page 19.

# For special tasks.

# OSRAM PARATHOM® SPECIAL.



Thanks to the many benefits of LED technology, LED lamps are perfect for special lighting tasks. OSRAM now offers three special economical LED lamps for professional applications in the form of the T26, the OSRAM DULED® and the new PIN G4.

**1**  
**OSRAM PARATHOM® SPECIAL T26**

- Ideal for use in refrigerators and sewing machines
- Average lamp life of up to 10,000 hours<sup>1</sup>
- Suitable for indoors and outdoors
- Robust and extremely small
- Daylight color suitable for use in refrigerators

**2**  
**OSRAM PARATHOM® SPECIAL PIN G4**

- Ideal for "starlight ceilings"
- Average lamp life of up to 15,000 hours<sup>1</sup>
- For use in open luminaires
- Replaces decorative halogen light sources with G4 bases<sup>2</sup>

**3/4**  
**OSRAM LEDinestra®**

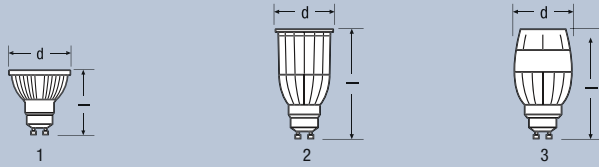
- Average life of up to 12,000 hours<sup>1</sup>
- Ideal direct replacement for conventional (incandescent) tube lamps

**5/6**  
**OSRAM DULED® Stick and Twist versions**

- 2in1: compact fluorescent lamp for general illumination and LED as a night light, orientation light or background light
- Average life of up to 6,000 hours<sup>1</sup>

<sup>1</sup> Switching cycle 165 min on, 15 min off

<sup>2</sup> The dimensions are very different from those of halogen lamps.



Product reference

Product number (EAN)

W<sup>1</sup>

lm<sup>1</sup>

cd<sup>1</sup>

K

R<sub>a</sub>

l [mm]

d [mm]

No.

**OSRAM PARATHOM® PRO PAR16**

**GU10 – 220–240 V – 25° – Box**

<b>NEW</b>	PRO PAR16 35 25° Advanced	4008321973375	6.5	200	600	2700	90	✓	57	50	10	1
<b>NEW</b>	PRO PAR16 35 25° Advanced	4008321973399	6.5	220	650	3000	90	✓	57	50	10	1
<b>NEW</b>	PRO PAR16 35 25° Advanced	4008321973412	6.5	270	750	4000	80	✓	57	50	10	1
<b>NEW</b>	PRO PAR16 50 25° Advanced	4008321973436	9.5	315	950	2700	90	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 50 25° Advanced	4008321973450	9.5	350	1050	3000	90	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 50 25° Advanced	4008321973474	9.5	435	1300	4000	80	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 75 25° Advanced	4008321972873	10.5	450	1350	2700	80	✓	86	50	10	2
<b>NEW</b>	PRO PAR16 75 25° Advanced	4008321972897	10.5	500	1500	3000	80	✓	86	50	10	2
<b>NEW</b>	PRO PAR16 75 25° Advanced	4008321972910	10.5	620	1900	6500	70	✓	86	50	10	2

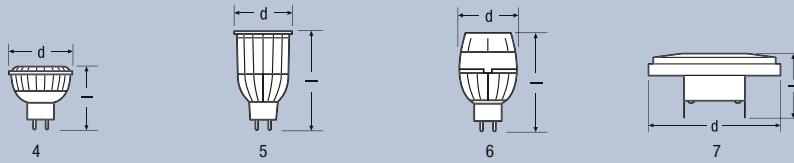
**GU10 – 220–240 V – 35° – Box**

	PRO PAR16 35 Advanced Front	4008321963963	7.5	220	600	3000	80	✓	85	50	10	3
	PRO PAR16 35 Advanced Front	4008321964045	7.5	270	850	6500	70	✓	85	50	10	3
	PRO PAR16 35 Advanced Rear	4008321980144	7.5	220	600	3000	80	✓	85	50	10	2
	PRO PAR16 35 Advanced Rear	4008321980168	7.5	270	850	6500	70	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 35 35° Advanced	4008321972255	6.5	200	500	2700	90	✓	57	50	10	1
<b>NEW</b>	PRO PAR16 35 35° Advanced	4008321972279	6.5	220	600	3000	90	✓	57	50	10	1
<b>NEW</b>	PRO PAR16 35 35° Advanced	4008321972293	6.5	270	650	4000	80	✓	57	50	10	1
	PRO PAR16 50 Advanced Front	4008321964120	9.5	350	950	3000	80	✓	85	50	10	3
	PRO PAR16 50 Advanced Front	4008321964205	9.5	450	1200	6500	70	✓	85	50	10	3
	PRO PAR16 50 Advanced Rear	4008321972040	9	315	800	2700	80	✓	85	50	10	2
	PRO PAR16 50 Advanced Rear	4008321980182	9.5	350	950	3000	80	✓	85	50	10	2
	PRO PAR16 50 Advanced Rear	4008321980205	9.5	450	1200	6500	70	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 50 35° Advanced	4008321972736	9.5	315	800	2700	90	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 50 35° Advanced	4008321980182	9.5	350	950	3000	90	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 50 35° Advanced	4008321980205	9.5	435	1100	4000	80	✓	85	50	10	2
<b>NEW</b>	PRO PAR16 75 35° Advanced	4008321972330	10.5	450	1100	2700	80	✓	86	50	10	2
<b>NEW</b>	PRO PAR16 75 35° Advanced	4008321972354	10.5	500	1200	3000	80	✓	86	50	10	2
<b>NEW</b>	PRO PAR16 75 35° Advanced	4008321972378	10.5	620	1500	6500	70	✓	86	50	10	2

<sup>1</sup> All the technical parameters apply to the entire lamp. In view of the complex manufacturing process for light emitting diodes, the typical values given above for the technical LED parameters are merely statistical values that do not necessarily correspond to the actual technical parameters of an individual product; individual products may vary from the typical values.

<sup>2</sup> For more information on conformity in dimming operations go to [www.osram.com/dim](http://www.osram.com/dim)

# TECHNICAL DATA – OSRAM PARATHOM® PRO



**Product reference**

**Product number (EAN)**

**W<sup>1</sup>**

**lm<sup>1</sup>**

**cd<sup>1</sup>**

**K**

**R<sub>a</sub>**

**2**

**l  
[mm]**

**d [mm]**

**3**

**No.**

## OSRAM PARATHOM® PRO MR16

### GU5.3 – 12 V – 24° – Box

<b>NEW</b>	PRO MR16 20 24° Advanced	4008321973252	5.5	200	600	2700	90	✓	46	50	10	4
<b>NEW</b>	PRO MR16 20 24° Advanced	4008321973276	5.5	220	650	3000	90	✓	46	50	10	4
<b>NEW</b>	PRO MR16 20 24° Advanced	4008321973290	5.5	270	750	4000	80	✓	46	50	10	4
<b>NEW</b>	PRO MR16 35 24° Advanced	4008321973313	7	315	900	2700	80	✓	51	50	10	4
<b>NEW</b>	PRO MR16 35 24° Advanced	4008321973337	7	350	1050	3000	80	✓	51	50	10	4
<b>NEW</b>	PRO MR16 35 24° Advanced	4008321973351	7	450	1200	4000	80	✓	51	50	10	4
<b>NEW</b>	PRO MR16 50 24° Advanced	4008321972934	11	450	1350	2700	80	✓	78	50	10	5
<b>NEW</b>	PRO MR16 50 24° Advanced	4008321972958	11	500	1500	3000	80	✓	78	50	10	5
<b>NEW</b>	PRO MR16 50 24° Advanced	4008321972972	11	620	1900	6500	70	✓	78	50	10	5

### GU5.3 – 12 V – 36° – Box

	PRO MR16 20 36° Advanced	4008321975478	5.5	190	500	2800	80	✓	49	50	10	4
	PRO MR16 20 36° Advanced	4008321963802	5.5	200	500	3000	80	✓	49	50	10	4
	PRO MR16 20 36° Advanced	4008321963840	5.5	250	600	6500	70	✓	49	50	10	4
<b>NEW</b>	PRO MR16 20 36° Advanced	4008321972217	5.5	200	500	2700	90	✓	46	50	10	4
<b>NEW</b>	PRO MR16 20 36° Advanced	4008321972095	5.5	220	600	3000	90	✓	46	50	10	4
<b>NEW</b>	PRO MR16 20 36° Advanced	4008321972118	5.5	270	650	4000	80	✓	46	50	10	4
	PRO MR16 35 36° Advanced Front	4008321963888	10	350	950	3000	80	✓	77	50	10	6
	PRO MR16 35 36° Advanced Front	4008321963925	10	450	1200	6500	70	✓	77	50	10	6
	PRO MR16 35 36° Advanced Rear	4008321972002	10	315	800	2700	80	✓	77	50	10	5
	PRO MR16 35 36° Advanced Rear	4008321980106	10	350	950	3000	80	✓	77	50	10	5
	PRO MR16 35 36° Advanced Rear	4008321980120	10	450	1200	6500	70	✓	77	50	10	5
<b>NEW</b>	PRO MR16 35 36° Advanced	4008321972231	7	315	800	2700	80	✓	51	50	10	4
<b>NEW</b>	PRO MR16 35 36° Advanced	4008321972132	7	350	950	3000	80	✓	51	50	10	4
<b>NEW</b>	PRO MR16 35 36° Advanced	4008321972156	7	450	1100	4000	80	✓	51	50	10	4
<b>NEW</b>	PRO MR16 50 36° Advanced	4008321972316	11	450	1100	2700	80	✓	78	50	10	5
<b>NEW</b>	PRO MR16 50 36° Advanced	4008321972170	11	500	1200	3000	80	✓	78	50	10	5
<b>NEW</b>	PRO MR16 50 36° Advanced	4008321972194	11	620	1500	6500	70	✓	78	50	10	5

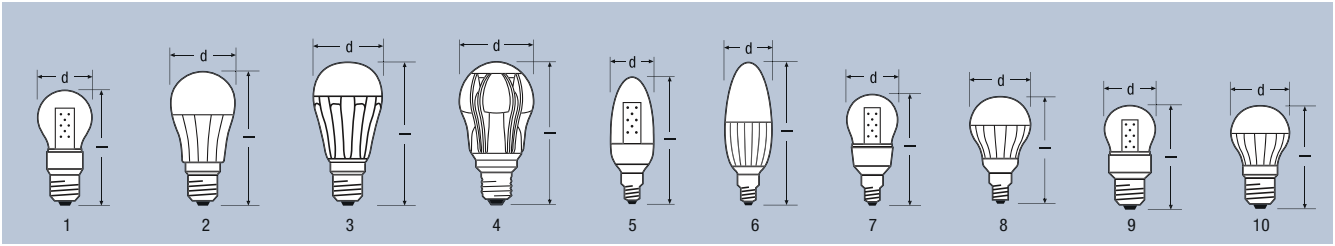
## OSRAM PARATHOM® PRO LEDspot 111 50 24° Advanced

### G53 – 12 V – 24° – Box

<b>NEW</b>	PRO LEDspot 111 50 Advanced	4008321972392	12	500	3600	2700	85	✓	58.5	111	6	7
<b>NEW</b>	PRO LEDspot 111 50 Advanced	4008321972415	12	550	4000	3000	85	✓	58.5	111	6	7

<sup>1</sup> All the technical parameters apply to the entire lamp. In view of the complex manufacturing process for light emitting diodes, the typical values given above for the technical LED parameters are merely statistical values that do not necessarily correspond to the actual technical parameters of an individual product; individual products may vary from the typical values.

<sup>2</sup> For more information on conformity in dimming operations go to [www.osram.com/dim](http://www.osram.com/dim)



Product reference

Product number (EAN)

W<sup>1</sup>

lm<sup>1</sup>

cd<sup>1</sup>

K

R<sub>a</sub>

l [mm]

d [mm]

No.

**OSRAM PARATHOM® CLASSIC A**

**E27 – 100–240 V – Box**

CL A 15 (clear)	4008321974655	3	136	-	3000	70	-	109	55	10	1
CL A 15 (clear)	4008321974617	3	136	-	5500	70	-	109	55	10	1
CL A 25 (frosted)	4008321965080	6	290	-	3000	80	-	102.5	55	10	2

**E27 – 220–240 V – Box**

<b>NEW</b> CL A 40 Advanced (frosted)	4008321960610	8.5	470	-	2700	80	✓	113	55	10	2
CL A 50 Advanced (frosted) <sup>3</sup>	4008321965165	12	650	-	2700	80	✓	126	62	10	3
CL A 60 Advanced (frosted) <sup>4</sup>	4008321960658	13	810	-	2700	90	✓	126	62	10	3

**OSRAM PARATHOM® CLASSIC A 340° Advanced**

**E27 – 220–240 V – 340° – Box**

<b>NEW</b> CL A 60 340° Advanced (frosted)	4008321973498	12	810	-	2700	80	✓	116	62	10	4
<b>NEW</b> CL A 75 340° Advanced (frosted)	4008321973511	14	1055	-	2700	80	✓	116	62	10	4

**OSRAM PARATHOM® CLASSIC B**

**E14 – 100–240 V – Box**

CL B 15 (clear)	4008321974815	2.5	136	-	3000	70	-	104	35	10	5
CL B 15 (clear)	4008321974778	2.5	136	-	5500	70	-	104	35	10	5

**E14 – 220–240 V – Box**

<b>NEW</b> CL B 25 (frosted)	4008321984128	4.5	250	-	2700	90	-	117	40	10	6
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**OSRAM PARATHOM® CLASSIC P**

**E14 – 100–240 V – Box**

CL P 15 (clear)	4008321974853	2.5	136	-	3000	70	-	95	45	10	7
CL P 25 (frosted)	4008321965288	4.2	250	-	6500	70	-	78	45	10	8
CL P 25 (frosted)	4008321965325	4.2	200	-	3000	80	-	78	45	10	8

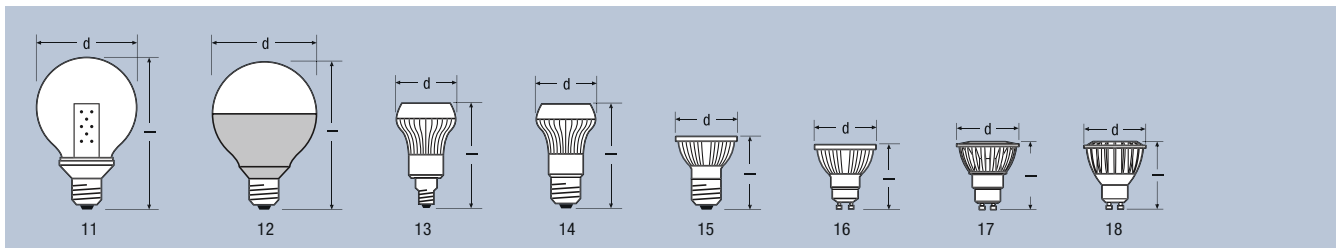
**E27 – 100–240 V – Box**



CL P 15 (clear)	4008321974693	2.5	136	-	5500	70	-	90	45	10	9
CL P 15 (clear)	4008321974730	2.5	136	-	3000	70	-	90	45	10	9
CL P 25 (frosted)	4008321965202	4.2	250	-	6500	70	-	78	45	10	10
CL P 25 (frosted)	4008321965240	4.2	200	-	3000	80	-	78	45	10	10

<sup>3</sup> Change of product name, formerly PARATHOM® CLASSIC A 60 Advanced

<sup>4</sup> Change of product name, formerly PARATHOM® PRO CLASSIC A 80 Advanced

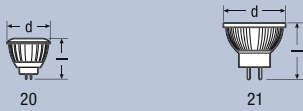
## TECHNICAL DATA – OSRAM PARATHOM®





Product reference	Product number (EAN)	W <sup>1</sup>	lm <sup>1</sup>	cd <sup>1</sup>	K	R <sub>a</sub>	 <sup>2</sup>	l [mm]	d [mm]		No.
<b>OSRAM PARATHOM® GLOBE</b>											
<b>E27 – 100–240 V – Box</b>											
CL G 15 (clear)	4008321974556	3	136	-	3000	70	-	142	95	10	11
<b>E27 – 220–240 V – Box</b>											
CL G 40 (frosted)	4008321965387	10.5	470	-	3000	80	-	130	95	6	12
<b>OSRAM PARATHOM® R50</b>											
<b>E14 – 220–240 V – 30° – Box</b>											
R50 25 30°	4008321965448	3	100	250	3000	80	-	85	50	10	13
R50 25 30°	4008321965400	3	140	350	6500	70	-	85	50	10	13
R50 40 30°	4008321965608	6	170	500	3000	80	-	85	50	10	14
R50 40 30°	4008321965561	6	240	590	6500	70	-	85	50	10	14
<b>E27 – 220–240 V – 30° – Box</b>											
R50 25 30°	4008321965523	3	100	250	3000	80	-	83	50	10	13
R50 25 30°	4008321965486	3	140	350	6500	70	-	83	50	10	13
R50 40 30°	4008321965684	6	170	500	3000	80	-	83	50	10	14
R50 40 30°	4008321965646	6	240	590	6500	70	-	83	50	10	14
<b>OSRAM PARATHOM® PAR16</b>											
<b>E27 – 220–240 V – 35° – Box</b>											
PAR16 20 35°	4008321965769	4.5	170	450	3000	80	-	68	50	10	15
PAR16 20 35°	4008321965721	4.5	230	600	6500	70	-	68	50	10	15
<b>GU10 – 220–240 V – 35° – Box</b>											
PAR16 20 35°	4008321965844	4.5	170	450	3000	70	-	64	50	10	16
PAR16 20 35°	4008321965806	4.5	230	600	6500	80	-	64	50	10	16
<b>NEW</b> PAR16 20 35°	4008321973108	5	170	450	2800	80	-	57	50	10	17
<b>NEW</b> PAR16 20 35°	4008321980502	5	170	450	3000	80	-	57	50	10	17
<b>NEW</b> PAR16 20 35°	4008321973634	5	230	600	4000	80	-	57	50	10	17
PAR16 35 35°	4008321979506	5	200	600	3000	80	-	57	50	10	18
<b>NEW</b> PAR16 35 35°	4008321973061	5	200	600	2800	80	-	57	50	10	17
<b>NEW</b> PAR16 35 35°	4008321980489	5	230	950	3000	80	-	57	50	10	17
<b>NEW</b> PAR16 35 35° Advanced	4008321975379	5.5	200	600	3000	80	✓	57	50	10	18

<sup>1</sup> All the technical parameters apply to the entire lamp. In view of the complex manufacturing process for light emitting diodes, the typical values given above for the technical LED parameters are merely statistical values that do not necessarily correspond to the actual technical parameters of an individual product; individual products may vary from the typical values.

<sup>2</sup> For more information on conformity in dimming operations go to [www.osram.com/dim](http://www.osram.com/dim)



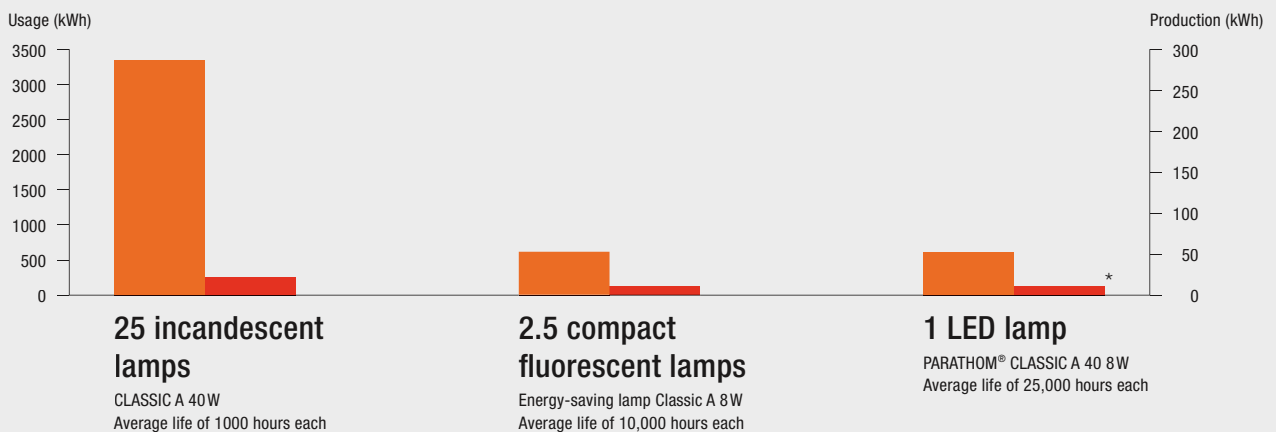
Product reference	Product number (EAN)	W <sup>1</sup>	lm <sup>1</sup>	cd <sup>1</sup>	K	Ra	 <sup>2</sup>	l [mm]	d [mm]		No.
<b>OSRAM PARATHOM® MR11</b>											
GU4 – 12 V – 24° – Box											
MR11 20 24°	4008321975553	3	120	700	3000	80	-	40	35	10	20
<b>OSRAM PARATHOM® MR16</b>											
GU5.3 – 12 V – 36° – Box											
MR16 20 36°	4008321521927	4.5	185	450	3000	80	-	48	50	6	21

## Pioneering also in their eco credentials.

In terms of their overall energy balance, LED lamps are on a par with energy-saving lamps and far superior to conventional incandescent lamps. This is indicated by a recent study<sup>1</sup> produced by OSRAM together with experts from Siemens Corporate Technology. The study demonstrated that only 2 % of the total energy relating to an LED lamp is consumed during manufacture, the rest during operation. Thanks to their energy efficiency, which is set to improve still further, LED lamps from OSRAM are already the best choice and will only consolidate this position in future. For more information go to [www.osram.com/ledlamps](http://www.osram.com/ledlamps)

<sup>1</sup> For the detailed study go to [www.osram-os.com/life-cycle-assessment](http://www.osram-os.com/life-cycle-assessment)

## Primary energy in kWh over a period of 25,000 hours.

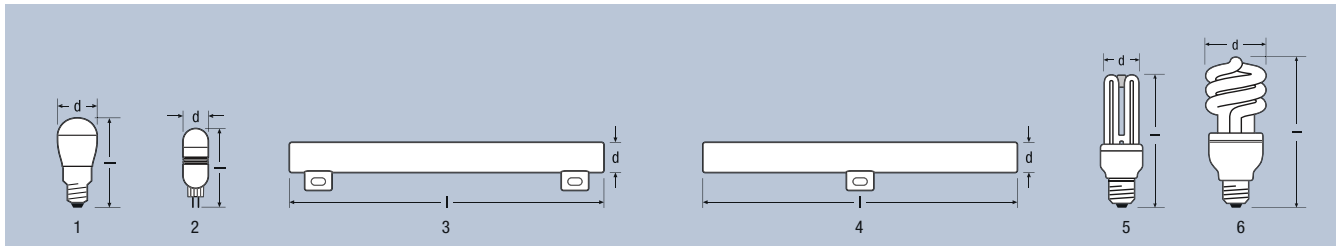




\* Less than 2% of the energy is attributable to production.

Usage

Production (shown 10 times greater)

## TECHNICAL DATA – OSRAM PARATHOM® SPECIAL



Product reference	Product number (EAN)	W <sup>1</sup>	lm <sup>1</sup>	cd <sup>1</sup>	K	R <sub>a</sub>	 <sup>2</sup>	l [mm]	d [mm]		No.
<b>OSRAM PARATHOM® SPECIAL T26</b>											
<b>E14 – 220–240 V – Box</b>											
SPECIAL T26 15	4008321965004	0.8	65	-	6500	65	-	61	26	20	1
<b>OSRAM PARATHOM® SPECIAL PIN G4</b>											
<b>G4 – 12 V – Box</b>											
<b>NEW</b> PIN G4	4008321977281	1.5	75	-	3000	75	-	56	18	20	2
<b>OSRAM LEDinestra®</b>											
<b>S14s – 220–240 V – Box</b>											
<b>NEW</b> LEDinestra™ 6W S14s	4008321975317	6	250	-	2700	88	-	300	30	5	3
<b>S14d – 220–240 V – Box</b>											
<b>NEW</b> LEDinestra™ 6W S14d	4008321975331	6	250	-	2700	88	-	300	30	5	4
<b>OSRAM DULED®, Stick/Twist shape</b>											
<b>E27 – 220–240 V – Stick shape – Box</b>											
DULED 8W/827 E27	4008321202314	8	400/3	-	2700	80	-	117	42	10	5
DULED 12W/827 E27	4008321222350	12	620/3	-	2700	80	-	131	42	10	5
<b>E27 – 220–240 V – Twist shape – Box</b>											
DULED 15W/827 E27	4008321929372	15	830/3	-	2700	80	-	124	52	10	6
DULED 21W/827 E27	4008321929396	21	1230/3	-	2700	80	-	141	60	10	6

<sup>1</sup> All the technical parameters apply to the entire lamp. In view of the complex manufacturing process for light emitting diodes, the typical values given above for the technical LED parameters are merely statistical values that do not necessarily correspond to the actual technical parameters of an individual product; individual products may vary from the typical values.

<sup>2</sup> For more information on conformity in dimming operations go to [www.osram.com/dim](http://www.osram.com/dim)

# For simple direct replacement.

PARATHOM® and PARATHOM® PRO low-voltage lamps are suitable for operating on OSRAM HALOTRONIC® and OSRAM OPTOTRONIC® ECGs. PARATHOM® and PARATHOM® PRO low-voltage lamps can therefore be used as simple direct replacements for conventional halogen lamps in existing installations.



HALOTRONIC MOUSE® 105



HALOTRONIC MOUSE® 70

PARATHOM® PRO/ PARATHOM®	Conventional ct gear 12 V AC	Electronic control gear 12 V AC OSRAM HALOTRONIC®	LED control gear OSRAM OPTOTRONIC®
MR11	●	●	●
MR16	●	●	●
LEDspot 111	●	●	●
SPECIAL PIN G4	●	●	●

The table is a summary and does not therefore apply to each individual product.

For detailed information on the various products go to

[www.osram.com/low-voltage-ledlamps](http://www.osram.com/low-voltage-ledlamps)

HALOTRONIC MOUSE® was developed for halogen lamps so its power factor may change if PARATHOM® LED lamps are used.

For information and details on conformity in dimming operations go to  
[www.osram.com/dim](http://www.osram.com/dim)

# Know-how:

## A brief LED glossary.

LED technology is complex. Knowledge of some of the basic concepts will go a long way to helping you understand the principles involved so we have prepared the following glossary for you.

### Average lamp life

is an average of the lives of individual lamps operated under standard conditions (50 % failure = average life). LED lamps have extremely long lives. However their light output diminishes over time. OSRAM defines the lifetime of its LED lamps as the operating time in which the LED lamps produce more than 70 % of their initial light output. In doing so, OSRAM is already following the recommendations of the International Electrotechnical Commission (IEC) which is currently working on an international standard based on this threshold value.

→ Fig. 3

### Beam angle

indicates how broadly the light is emitted forwards from the lamp and is defined as the angle between two lines that extend from the LED lamp and intersect the points where luminous intensity is 50 % of its maximum value.

→ Fig. 1

### Binning

In the production of modern high-output LEDs manufacturing tolerances are unavoidable even with the smallest fluctuations in the parameters. The semiconductors are therefore sorted and classified after production according to their color values and efficiencies. All the LEDs that have similar values are placed in the same bin. The narrower the tolerances the greater the quality of systems that consist of more than one LED.

### Candela

(Latin for tallow candle) is the photometric SI base unit for luminous intensity and is the luminous flux emitted by a light source in a particular direction (the luminous flux  $\text{lm}$  emitted in a particular direction in a solid angle  $\text{sr}$ ). The symbol is  $\text{cd}$ .

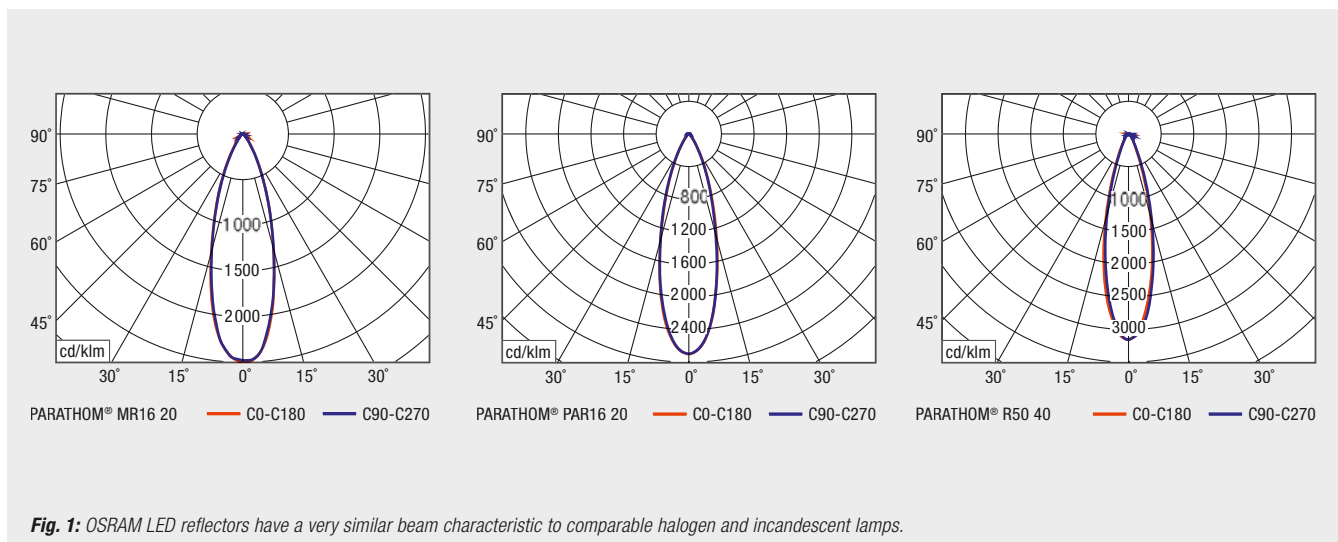
### Color spectrum & definition of color temperature

The color spectrum is that part of the electromagnetic spectrum that can be perceived by the human eye without any technical aids (approx. 380 to 750 nm). The color temperature is a measure of the color impression of a light source measured in kelvin (K). For LED lamps the color temperature typically ranges from 2700K to 6500K.

→ Fig. 2

### CRI (Color Rendering Index)

indicates the quality of color rendering of artificial light sources. The symbol used is  $R_a$ . The maximum value is 100, which means no falsification of colors by the light source. Incandescent lamps can achieve this value. LED lamps have a typical value of  $R_a$  80, but can achieve  $R_a$  90 and more.



## Dimmability

The OSRAM range includes dimmable LEDs. Most of the conventional dimmers available on the market (leading-edge/trailing-edge phase dimmers) have been designed for incandescent lamps and are therefore rated for high minimum loads (W) than LED lamps offer. There may therefore be some restrictions in terms of functionality. For more information on conformity in dimming operations go to [www.osram.de/dim](http://www.osram.de/dim)

## Heat sink

is the enclosure that serves to remove/radiate the heat from the LED lamp. Materials with good thermal conductivity are used here to transfer the heat generated inside the lamp to the surrounding air.

## Infrared radiation

(near IR radiation) comprises electromagnetic waves in the spectral range between visible light and long-wave terahertz radiation. High doses of near infrared radiation in particular with a wavelength of 780 to 3000 nm penetrates deep into and under human skin and can lead to health problems. OSRAM LED lamps do not emit any near IR radiation.

## LED

(Light Emitting Diode) is an electronic semiconductor component. If current flows through the diode it emits light with a wavelength that depends on the semiconductor material.

## Lens

A lens is an optical component with two refractive surfaces, at least one of which is either convex or concave. In LED lamps the function of a lens is to focus or disperse the light and therefore define the beam angle.

## Lumen

(Latin for light or torch) is the photometric unit of luminous flux. Luminous flux is a measure of the entire visible radiation emitted by a radiation source.

## Recycling

OSRAM LED lamps are extremely durable and do not contain any mercury. However because they contain electronic components they must be disposed of as waste electrical and electronic equipment at the end of their life.

## Resistance to switching transients

LED lamps cannot be switched on and off indefinitely. OSRAM LED lamps can tolerate 100,000 switching cycles and more.

## TCO (Total Cost of Ownership)

TCO includes all the costs over the entire life of a lamp or for a particular operating time. It covers procurement costs, relamping costs and operating costs (power). LED lamps now pay for themselves through their long life and low power consumption.

→ Fig. 4

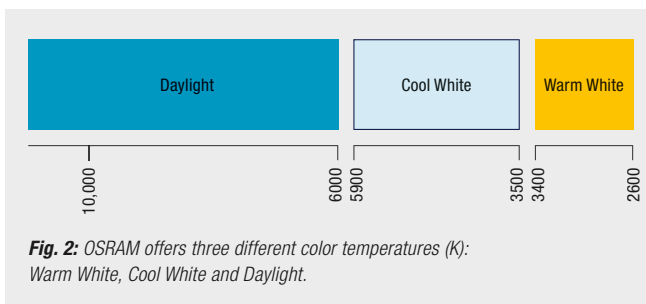


Fig. 2: OSRAM offers three different color temperatures (K): Warm White, Cool White and Daylight.

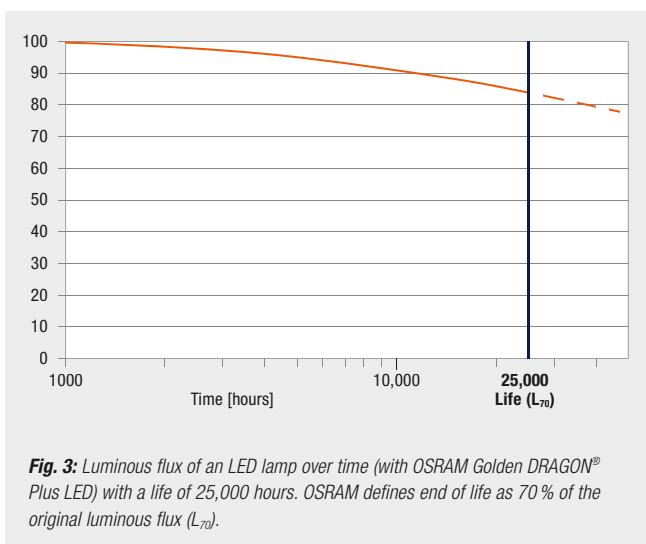


Fig. 3: Luminous flux of an LED lamp over time (with OSRAM Golden DRAGON® Plus LED) with a life of 25,000 hours. OSRAM defines end of life as 70% of the original luminous flux (L<sub>70</sub>).

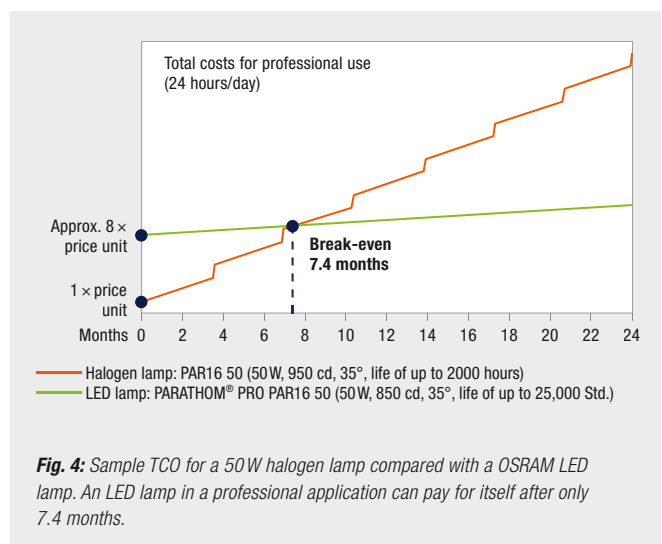
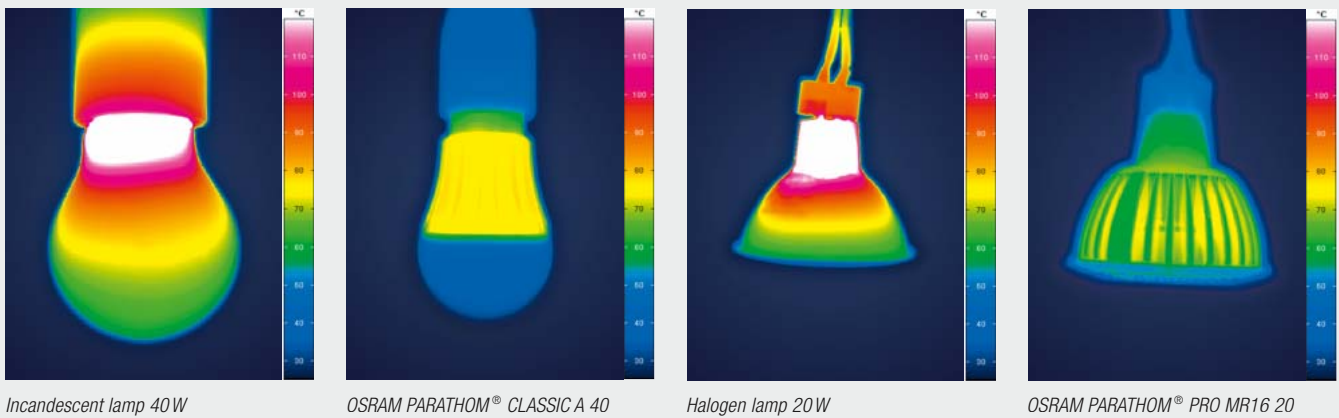


Fig. 4: Sample TCO for a 50W halogen lamp compared with a OSRAM LED lamp. An LED lamp in a professional application can pay for itself after only 7.4 months.

## LED KNOW-HOW



**Fig. 5:** These thermographic images show that LED lamps emit very little heat.

### Thermal output

In contrast to conventional light sources, LEDs convert a high proportion of electrical power into visible light. However even with modern LED lamps a large proportion of the energy consumed is emitted in (unwanted) heat. Nevertheless, there is enormous potential in LED technology for reducing this still further (see also Heat Sink).

→ Fig. 5

### Transformers

Low-voltage lamps need an external transformer. A distinction is made between conventional (magnetic) control gear (CCG) and electronic control gear (ECG). Further information can be found in the technical data sheets for each product.

### UV radiation

is electromagnetic radiation that is invisible to the naked eye and may cause health problems. OSRAM LED lamps do not emit any UV radiation.

### Watt

is the SI unit of power and was used for incandescent lamps as an indication of their light output. Since modern energy-saving lamps and LED lamps consume far less power to achieve the same brightness, however, the wattage is no longer as meaningful.

The lumen value is now used instead. For LED lamps that replace incandescent lamps the EU Directive for non-directional light (ErP 244/2009) requires a certain minimum luminous flux so that comparisons can be made with incandescent lamp wattages. See table:  
→ Fig. 6

Incandescent lamp wattage in W	Typical luminous flux of an OSRAM incandescent lamp in lumen	Required luminous flux of LED lamps as per ErP 244/2009 in lumen
15	90	136
25	220	249
40	415	470
60	710	806
75	935	1055
100	1340	1521
150	2160	2452
200	3040	3452

**Fig. 6:** The light values required by the EU that are needed to refer to comparable incandescent lamps are higher than those of the incandescent lamp to be replaced. Lumens are therefore more and more important as a means of comparing lamps and their light output.



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