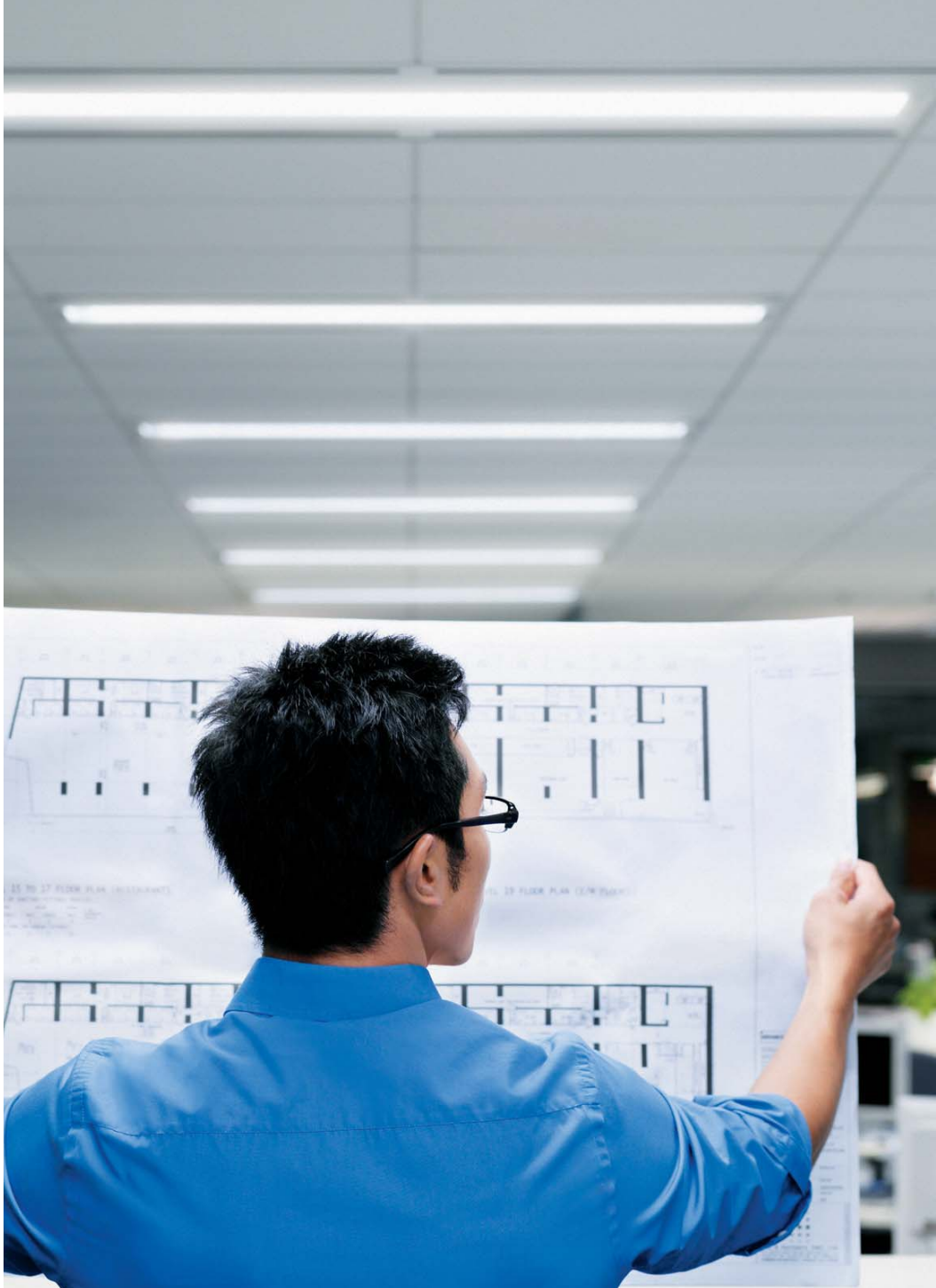


Fluorescent lamps



Fluorescent lamps are very economical with efficacies of up to 104 lm/W. In addition to this energy efficiency the wide range of different colors of light available provides a lot of flexibility in design. Furthermore they are easy to dim in combination with High Frequency Regulating ballasts, and can provide optimum personal control and comfort. A wide range of wattages and lengths, straight and circular options and other designs make this a very flexible lightsource. The range is extensive.



The smallest Fluorescent lamps (TL 4W – TL 13W) which come in both Standard and Super 80 colors, are particularly suited to places where space is limited such as Sign lighting, Showcases, Emergency/Security.

TL-D Fluorescent lamps (TL-D 15W – TL-D 70W)
Includes Standard, Super 80 Luxe colors and the 90 Graphica. Other types include the TL-D Food Pro and the TL-D Secura both for use in food preparation. These Fluorescent lamps can be used for almost every application, including Offices, Schools, Industry, Exterior lighting, Shops, Museums, Hotels and any other type of building or business.

TL-D Reflex Fluorescent lamps.
These are equipped with an internal reflector of 200 degrees for the direction of light without the use of an external reflector. These are used to upgrade existing general lighting installations, in battens, sign lighting, directional lighting and in special applications.

TL5 Fluorescent lamps (TL5 HE 14W – TL5 HE 35W
TL5 HO 24W – TL5 HO 80W – TL5 Circular)
With 16 mm diameter for more compact and efficient systems. These provide luminaire designers with much more freedom in the design of their products. TL5 lamps are ideally suited for recessed, surface mounted and suspended luminaires as well as uplighting in all general lighting applications: offices, shops, schools, hotels and industry.

TL5 HE (High efficiency) range for applications where energy savings is at a premium and the TL5 HO (High output) range for those applications where more light is required.

TL RS Fluorescent lamps
(TL 20W RS – TL 65W RS)
For operation without starter/rapid-start circuits. TL-RS fluorescent lamps have low-resistance electrodes to IEC 60081 (3.6 V nominal).

For starter operation in exterior lighting, with fittings that are less suitable for 26 mm fluorescent lamps due to their poor thermal insulation.

TL-X XL Fluorescent lamps (TL-X XL 20W – TL-X XL 65W)
With single-pin cap Fa6, for starterless operation. Particularly suitable for lamps protected against explosion and fire where increased safety is required.

TL-M RS Fluorescent lamps (TL-M 40W RS – TL-M 140W RS)
TL-M lamps are particularly suited for cold applications in cold rooms or exterior lighting down to -20 °C.
TL-M high power lamps (115/140W) are suited for those applications where high illumination levels are required.

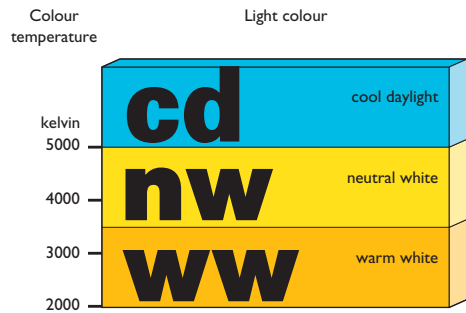


Fluorescent lamps

Light color, color rendering and the classification of the associated types of fluorescent lamps

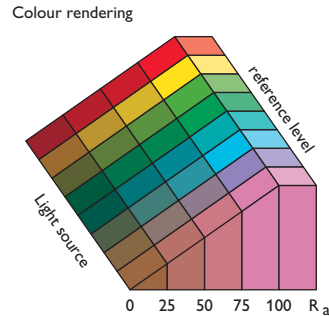
Light color or color temperature

The light color is the intrinsic color of the light warmth or coolness of the lamp emitted by a lamp. It is characterised by the color temperature (in kelvin). The color temperature of a lamp is the temperature at which a 'black body' (defined by physics theory) has the same color as the lamp concerned. For general interior lighting purposes DIN 5035 divides light into 3 color classes: warm white below 3300 K, neutral white 3300 to 5000 K, cool daylight above 5000 K.



Color rendering

The color rendering characteristic of a lamp describes how natural our surroundings appear in its light. The general color rendering index R_a is the expression of this. To determine the R_a , test colors are selected from our surroundings and exposed to the light of the lamp and to that of a standard test lamp of the same color temperature (black-body radiation to daylight). The smaller the difference from the individual test colors, the better the color rendering. The best value of R_a is 100 (average of 8 test colors).



Identical colours: $R_a = 100$
 Colour shift: $R_a < 100$

DIN 5035 Index R_a	Fluorescent lamps Light colors	According to IEC	
98 > 90	Graphica Pro 90 de Luxe	excellent	> 90
80...89	Super 80	good	80 <...< 90
70...79 60...69	Standard Standard 33 Cool White	moderate	< 80

Choosing the correct fluorescent lamps

Guidelines and minimum requirements regarding color rendering and light colors in a lighting system for a given application are to be found in DIN 5035 Part 2.

Detailed requirements can be individually determined by the following method.

A rating scale is used with

- 1 = less important
- 3 = important
- 5 = very important and applies the factor

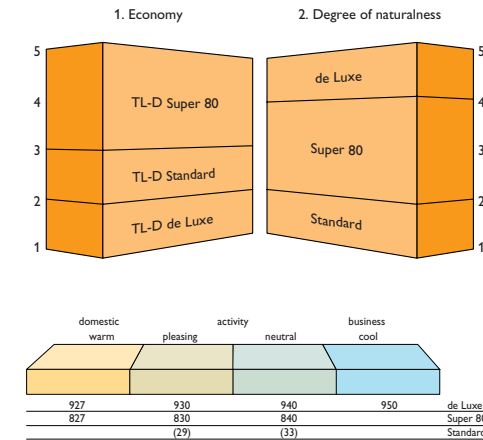
1. Economy = lighting efficiency
2. Degree of naturalness = color rendering of a lighting system

The following are then considered:

3. The atmosphere = light color according to the following criteria:

- a. domestic warm
- b. activity pleasing
- c. activity neutral
- d. business cool

With the aid of the three graphs the correct lamp can be chosen for the application concerned.

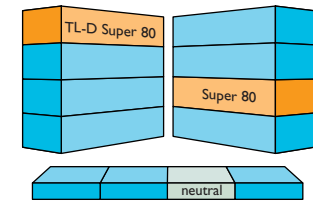


Example A

Illumination of a sports hall

1. Economics
The lighting costs are a real factor.
Rating: 4-5
2. Degree of naturalness
Good visibility is desired but color reproduction plays a minor part.
Rating: 2-3
3. Atmosphere
The atmosphere in a sports hall should be neutral.
For halls which are also intended for ball games the rating tends towards neutral, while gymnastics requires a warmer, more pleasant, light. Since this example assumes that the hall is also used for ballgames, the rating is Neutral.

The three ratings applied to the corresponding graphs give, from 1 and 2: TL-D Super 80 and from 3: light color 840

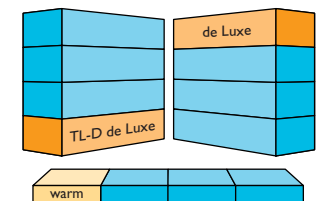


Example B

Illumination of a shop

1. Economics
The lighting costs, in view of the overall costs of such a boutique, are of little importance.
Rating: 1
2. Degree of naturalness
Good color discrimination is desirable; even the faintest color shades and variations must be visible.
Rating: 5
3. Atmosphere
The atmosphere is domestically elegant; filament lamps provide the accents while the fluorescent lamps are used for indirect lighting.
Rating: domestic/warm

The three ratings applied to the corresponding graphs give, from 1 and 2: TL-D de Luxe and from 3: light color 927



Fluorescent lamps

Areas of application

Correct light colors and correct reproduction of colors assist us in recognizing our surroundings. The color climate of an artificially-lit space is determined by the light color and the color rendering. Room furnishings of wood and fabrics in warm or pastel colors require warm light in the color 830 or 930. The more business-like the furnishings are, the cooler the light can be. Furniture using chrome glass and marble, or in black and white, are emphasized by the cool, brisk light colors 840 and 940.

Proper use of fluorescent lamps

■ Our recommendation □ also suitable

Colour impression	Warm					Neutral					Cool			
	Food 79	827	830	930	35	835	33	840	850	940	54	950	865	965
Philips light colours														
Sales areas														
Groceries			S					S	S					
Meat								S	S					
Textiles, leather			S					S						
Furniture, carpets														
Sports, games, stationery														
Photo, clocks and jewellery														
Cosmetics, hairdressing														
Flowers								R						
Industry, manual work														
Workshops								S	S					
Electro-, mechanical assembly								S						
Textile manufacture								S						
Printing, graphical trades														
Colour testing														
Paintshops														
Stores														
Plant growers								R						
Offices, schools														
Office areas														
Conference rooms														
Teaching areas														
Booksellers								S						
Others														
Dwellings														
Restaurants			S					S	S					
Museums								S	S					
Sport, multi purpose areas								S						
Hospital wards														
Treatment rooms														
Streets, roads														
Sign lighting								R						
Exterior lighting								R						

R=TL-D Reflex
S= TL-D Secura



TL5

MASTER TL5 High Efficiency Super 80



TL5

Product Description

- Low-pressure mercury discharge lamps with a tubular 16 mm envelope

Product Feature

- 40% thinner than TL-D lamps
- High lamp efficacies up to 104 lm/W
- Highly efficient 3-band fluorescent coating in combination with precoating
- Specifically designed for operation with electronic gear and well suited for dimming
- Maximum lumen output reached at approx. 35°C in free-burning position if an HF electronic ballast without additional electrode heating is used
- Can be ignited from -15° to +50°C
- Green end-plate indicates full recyclable lamp technology

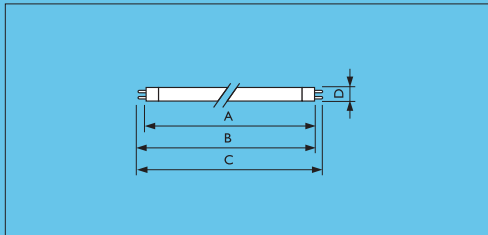
Product Benefit

- Allow system miniaturisation and maximum luminaire design freedom
- Lamp lengths enable easy fitting into ceiling module systems
- Offers higher efficiencies and energy savings compared with TL-D lamps
- Virtually constant lumen level with excellent lumen maintenance
- Good color rendering

Application

- Ideally suited for recessed, surface-mounted and suspended luminaires in applications like offices, shops, schools, public buildings and industry (low ceiling), wherever high-quality, energy-effective lighting is required

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
14W	549.0	556.1	563.2	17
21W	849.0	856.1	863.2	17
28W	1149.0	1156.1	1163.2	17
35W	1449.0	1456.1	1463.2	17

TL5

MASTER TL5 High Efficiency Super 80

Preferred selection

Product ID	Rated Lamp Wattage [W]	Cap Base	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
MASTER TL5 HE Super 80 14W/827 SLV	14	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 14W/827 UNP	14	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 14W/830 SLV	14	G5	3000	85	Warm White
MASTER TL5 HE Super 80 14W/830 UNP	14	G5	3000	85	Warm White
MASTER TL5 HE Super 80 14W/835 SLV	14	G5	3500	85	White
MASTER TL5 HE Super 80 14W/835 UNP	14	G5	3500	85	White
MASTER TL5 HE Super 80 14W/840 SLV	14	G5	4000	85	Cool White
MASTER TL5 HE Super 80 14W/840 UNP	14	G5	4000	85	Cool White
MASTER TL5 HE Super 80 14W/865 SLV	14	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 14W/865 UNP	14	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 21W/827 SLV	21	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 21W/827 UNP	21	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 21W/830 SLV	21	G5	3000	85	Warm White
MASTER TL5 HE Super 80 21W/830 UNP	21	G5	3000	85	Warm White
MASTER TL5 HE Super 80 21W/835 UNP	21	G5	3500	85	White
MASTER TL5 HE Super 80 21W/840 SLV	21	G5	4000	85	Cool White
MASTER TL5 HE Super 80 21W/840 UNP	21	G5	4000	85	Cool White
MASTER TL5 HE Super 80 21W/865 SLV	21	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 21W/865 UNP	21	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 28W/827 SLV	28	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 28W/827 UNP	28	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 28W/830 SLV	28	G5	3000	85	Warm White
MASTER TL5 HE Super 80 28W/830 UNP	28	G5	3000	85	Warm White
MASTER TL5 HE Super 80 28W/835 UNP	28	G5	3500	85	White
MASTER TL5 HE Super 80 28W/835 SLV	28	G5	3500	85	White
MASTER TL5 HE Super 80 28W/840 SLV	28	G5	4000	85	Cool White
MASTER TL5 HE Super 80 28W/840 UNP	28	G5	4000	85	Cool White
MASTER TL5 HE Super 80 28W/840 UNP	28	G5	4000	85	Cool White
MASTER TL5 HE Super 80 28W/865 SLV	28	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 28W/865 UNP	28	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 28W/865 UNP	28	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 35W/827 SLV	35	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 35W/827 UNP	35	G5	2700	85	Incandescent White
MASTER TL5 HE Super 80 35W/830 SLV	35	G5	3000	85	Warm White
MASTER TL5 HE Super 80 35W/830 UNP	35	G5	3000	85	Warm White
MASTER TL5 HE Super 80 35W/835 SLV	35	G5	3500	85	White
MASTER TL5 HE Super 80 35W/840 SLV	35	G5	4000	85	Cool White
MASTER TL5 HE Super 80 35W/840 UNP	35	G5	4000	85	Cool White
MASTER TL5 HE Super 80 35W/865 SLV	35	G5	6500	85	Cool Daylight
MASTER TL5 HE Super 80 35W/865 UNP	35	G5	6500	85	Cool Daylight

TL5

MASTER TL5 High Efficiency Super 80

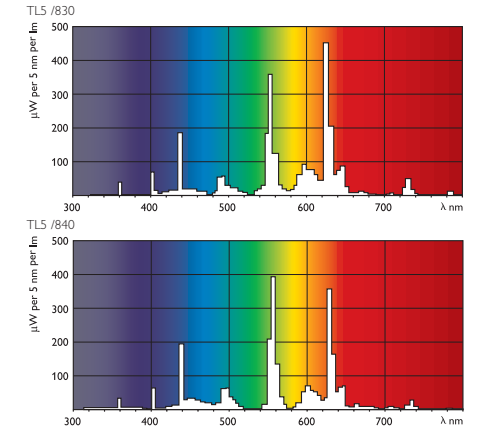
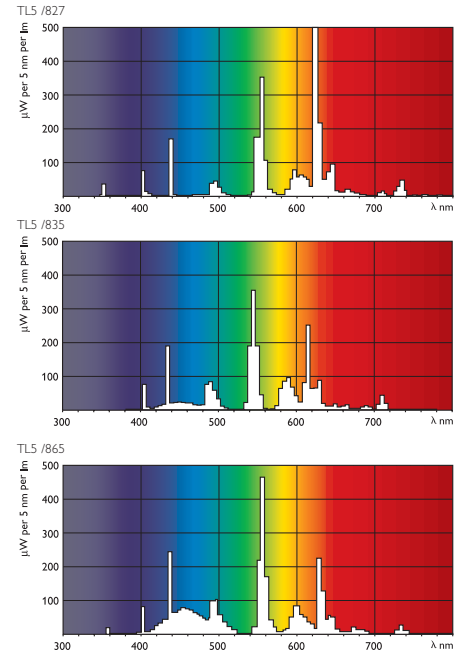
Preferred selection

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp [lm]	Life to 50% Failures Preheat EL [hrs]	Nett Product in Grams [g]	Comm Code
MASTER TL5 HE Super 80 14W/827 SLV	469	419	1350	24000	53.00	TL514W827HE
MASTER TL5 HE Super 80 14W/827 UNP	469	419	1350	24000	53.00	TL514W827HE
MASTER TL5 HE Super 80 14W/830 SLV	438	403	1350	24000	54.00	TL514W830HE
MASTER TL5 HE Super 80 14W/830 UNP	438	403	1350	24000	53.00	TL514W830HE
MASTER TL5 HE Super 80 14W/835 SLV	409	397	1350	24000	53.00	TL514W835HE
MASTER TL5 HE Super 80 14W/835 UNP	409	397	1350	24000	54.00	TL514W835HEBP
MASTER TL5 HE Super 80 14W/840 SLV	381	379	1350	24000	53.00	TL514W840HE
MASTER TL5 HE Super 80 14W/840 UNP	381	379	1350	24000	53.00	TL514W840HE
MASTER TL5 HE Super 80 14W/865 SLV	316	336	1250	24000	53.00	TL514W865HE
MASTER TL5 HE Super 80 14W/865 UNP	316	336	1250	24000	53.00	TL514W865HEBP
MASTER TL5 HE Super 80 21W/827 SLV	469	419	2100	24000	80.50	TL521W827HE
MASTER TL5 HE Super 80 21W/827 UNP	469	419	2100	24000	80.50	TL521W827HE
MASTER TL5 HE Super 80 21W/830 SLV	438	403	2100	24000	80.50	TL521W830HE
MASTER TL5 HE Super 80 21W/830 UNP	438	403	2100	24000	80.50	TL521W830HE
MASTER TL5 HE Super 80 21W/835 UNP	409	397	2100	24000	80.50	TL521W835HEBP
MASTER TL5 HE Super 80 21W/840 SLV	381	379	2100	24000	80.50	TL521W840HE
MASTER TL5 HE Super 80 21W/840 UNP	381	379	2100	24000	80.50	TL521W840HE
MASTER TL5 HE Super 80 21W/865 SLV	316	336	1950	24000	80.50	TL521W865HE
MASTER TL5 HE Super 80 21W/865 UNP	316	336	1950	24000	80.50	TL521W865HEBP
MASTER TL5 HE Super 80 28W/827 SLV	469	419	2900	24000	104.50	TL528W827HE
MASTER TL5 HE Super 80 28W/827 UNP	469	419	2900	24000	104.50	TL528W827HE
MASTER TL5 HE Super 80 28W/830 SLV	438	403	2900	24000	105.00	TL528W830HE
MASTER TL5 HE Super 80 28W/830 UNP	438	403	2900	24000	104.50	TL528W830HEBP
MASTER TL5 HE Super 80 28W/835 UNP	409	397	2900	24000	104.50	TL528W835HEBP
MASTER TL5 HE Super 80 28W/840 SLV	381	379	2900	24000	105.00	TL528W840HE
MASTER TL5 HE Super 80 28W/840 UNP	381	379	2900	24000	104.50	TL528W840HEBP
MASTER TL5 HE Super 80 28W/865 SLV	316	336	2700	24000	105.00	TL528W865HE
MASTER TL5 HE Super 80 28W/865 UNP	316	336	2700	24000	104.50	TL528W865HEBP
MASTER TL5 HE Super 80 35W/827 SLV	469	419	3650	24000	128.70	TL535W827HE
MASTER TL5 HE Super 80 35W/827 UNP	469	419	3650	24000	128.70	TL535W827HE
MASTER TL5 HE Super 80 35W/830 SLV	438	403	3650	24000	128.70	TL535W830HE
MASTER TL5 HE Super 80 35W/830 UNP	438	403	3650	24000	128.70	TL535W830HE
MASTER TL5 HE Super 80 35W/835 SLV	409	397	3650	24000	128.70	TL535W835HE
MASTER TL5 HE Super 80 35W/840 SLV	381	379	3650	24000	128.70	TL535W840HE
MASTER TL5 HE Super 80 35W/840 UNP	381	379	3650	24000	128.70	TL535W840HEBP
MASTER TL5 HE Super 80 35W/865 SLV	316	336	3400	24000	128.70	TL535W865HEBP
MASTER TL5 HE Super 80 35W/865 UNP	316	336	3400	24000	128.70	TL535W865HEBP

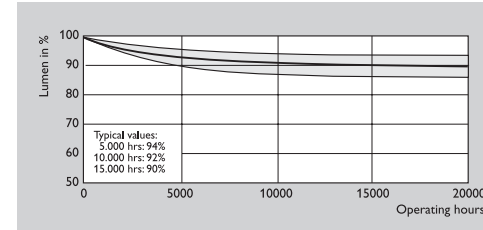
TL5

MASTER TL5 High Efficiency Super 80

Spectral power distribution



Lumen maintenance diagram



TL5

MASTER TL5 High Output Super 80



TL5

Product Description

- Low-pressure mercury discharge lamps with a tubular 16 mm envelope

Product Feature

- 40% thinner than TL-D lamps
- Designed for high lumen output and system miniaturization
- Highly efficient 3-band fluorescent coating in combination with precoating
- Specifically designed for operation with electronic gear and well suited for dimming
- Maximum lumen output reached at approx. 35°C in free-burning position if an HF electronic ballast without additional electrode heating is used
- Can be ignited from -15° to +50°C
- Green end-plate indicates full recyclable lamp technology

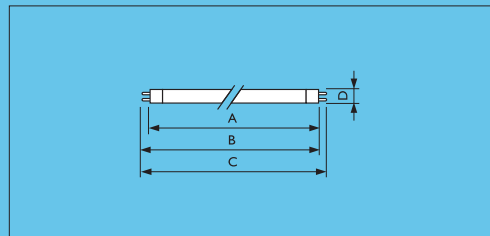
Product Benefit

- Allow system miniaturisation and maximum luminaire design freedom
- Lamp lengths enable easy fitting into ceiling module systems
- Optimised for installations which need high luminous flux
- Virtually constant lumen level with excellent lumen maintenance
- Good color rendering

Application

- The combination of a compact lamp and high lumen package of the MASTER TL5 HO offers exciting opportunities for architectural lighting and customised solutions
- Offers economic solutions with high-ceiling lighting in shops, industry and department stores
- The high luminous flux gives optimal results in aesthetic pendants and furniture-mounted luminaires in offices, workshops, restaurants and reception areas

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
24W	549.0	556.1	563.2	17
39W	849.0	856.1	863.2	17
49W	1449.0	1456.1	1463.2	17
54W	1149.0	1156.1	1163.2	17
80W	1449.0	1456.1	1463.2	17

TL5

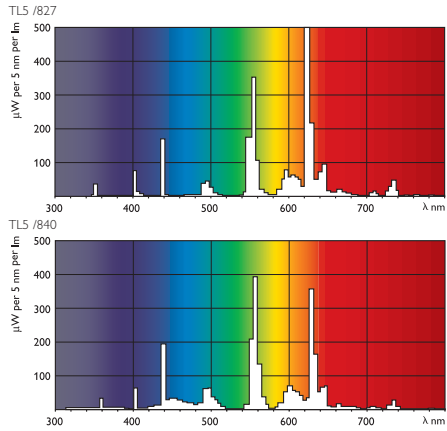
MASTER TL5 High Output Super 80

Preferred selection

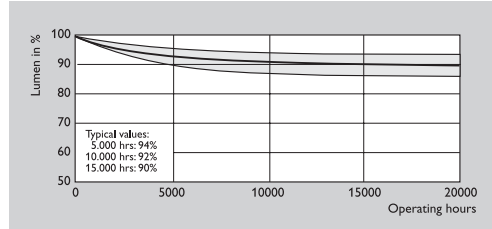
Product ID	Rated Lamp Wattage [W]	Cap Base	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
MASTER TL5 HO Super 80 24W/827 SLV	24	G5	2700	85	Incandescent White
MASTER TL5 HO Super 80 24W/830 SLV	24	G5	3000	85	Warm White
MASTER TL5 HO Super 80 24W/840 SLV	24	G5	4000	85	Cool White
MASTER TL5 HO Super 80 24W/840 UNP	24	G5	4000	85	Cool White
MASTER TL5 HO Super 80 24W/865 SLV	24	G5	6500	85	Cool Daylight
MASTER TL5 HO Super 80 24W/865 UNP	24	G5	6500	85	Cool Daylight
MASTER TL5 HO Super 80 39W/827 SLV	39	G5	2700	85	Incandescent White
MASTER TL5 HO Super 80 39W/830 SLV	39	G5	3000	85	Warm White
MASTER TL5 HO Super 80 39W/830 UNP	39	G5	3000	85	Warm White
MASTER TL5 HO Super 80 39W/840 SLV	39	G5	4000	85	Cool White
MASTER TL5 HO Super 80 39W/865 SLV	39	G5	6500	85	Cool Daylight
MASTER TL5 HO Super 80 49W/827 SLV	49	G5	2700	85	Incandescent White
MASTER TL5 HO Super 80 49W/830 SLV	49	G5	3000	85	Warm White
MASTER TL5 HO Super 80 49W/840 SLV	49	G5	4000	85	Cool White
MASTER TL5 HO Super 80 49W/840 UNP	49	G5	4000	85	Cool White
MASTER TL5 HO Super 80 49W/865 SLV	49	G5	6500	85	Cool Daylight
MASTER TL5 HO Super 80 54W/830 SLV	54	G5	3000	85	Warm White
MASTER TL5 HO Super 80 54W/830 UNP	54	G5	3000	85	Warm White
MASTER TL5 HO Super 80 54W/840 SLV	54	G5	4000	85	Cool White
MASTER TL5 HO Super 80 54W/840 UNP	54	G5	4000	85	Cool White
MASTER TL5 HO Super 80 54W/865 SLV	54	G5	6500	85	Cool Daylight
MASTER TL5 HO Super 80 54W/865 UNP	54	G5	6500	85	Cool Daylight
MASTER TL5 HO Super 80 80W/830 SLV	80	G5	3000	85	Warm White
MASTER TL5 HO Super 80 80W/840 SLV	80	G5	4000	85	Cool White
MASTER TL5 HO Super 80 80W/840 UNP	80	G5	4000	85	Cool White
MASTER TL5 HO Super 80 80W/865 SLV	80	G5	6500	85	Cool Daylight

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp [lm]	Life to 50% Failures Preheat EL [hrs]	Nett Product in Grams [gr]	Comm Code
MASTER TL5 HO Super 80 24W/827 SLV	469	419	2000	24000	53.00	TL524W827HO
MASTER TL5 HO Super 80 24W/830 SLV	438	403	2000	24000	53.00	TL524W830HO
MASTER TL5 HO Super 80 24W/840 SLV	381	379	2000	24000	53.00	TL524W840HO
MASTER TL5 HO Super 80 24W/840 UNP	381	379	2000	24000	53.00	TL524W840HOBP
MASTER TL5 HO Super 80 24W/865 SLV	316	336	1900	24000	53.00	TL524W865HO
MASTER TL5 HO Super 80 24W/865 UNP	316	336	1900	24000	53.00	TL524W865HOBP
MASTER TL5 HO Super 80 39W/827 SLV	469	419	3500	24000	80.50	TL539W827HO
MASTER TL5 HO Super 80 39W/830 SLV	438	403	3500	24000	80.50	TL539W830HO
MASTER TL5 HO Super 80 39W/830 UNP	438	403	3500	24000	80.50	TL539W830HO
MASTER TL5 HO Super 80 39W/840 SLV	381	379	3500	24000	80.50	TL539W840HO
MASTER TL5 HO Super 80 39W/865 SLV	316	336	3300	24000	80.50	TL539W865HO
MASTER TL5 HO Super 80 49W/827 SLV	469	419	4900	24000	128.70	TL549W827HO
MASTER TL5 HO Super 80 49W/830 SLV	438	403	4900	24000	128.70	TL549W830HO
MASTER TL5 HO Super 80 49W/840 SLV	381	379	4900	24000	128.70	TL549W840HO
MASTER TL5 HO Super 80 49W/840 UNP	381	379	4900	24000	128.70	TL549W840HOBP
MASTER TL5 HO Super 80 49W/865 SLV	316	336	4650	24000	128.70	TL549W865HO
MASTER TL5 HO Super 80 54W/830 SLV	438	403	5000	24000	104.50	TL554W830HO
MASTER TL5 HO Super 80 54W/830 UNP	438	403	5000	24000	104.50	TL554W830HOBP
MASTER TL5 HO Super 80 54W/840 SLV	381	379	5000	24000	104.50	TL554W840HO
MASTER TL5 HO Super 80 54W/840 UNP	381	379	5000	24000	104.50	TL554W840HOBP
MASTER TL5 HO Super 80 54W/865 SLV	316	336	4750	24000	104.50	TL554W865HO
MASTER TL5 HO Super 80 54W/865 UNP	316	336	4750	24000	104.50	TL554W865HOBP
MASTER TL5 HO Super 80 80W/830 SLV	438	403	7000	24000	132.00	TL580W830HO
MASTER TL5 HO Super 80 80W/840 SLV	381	379	7000	24000	132.00	TL580W840HO
MASTER TL5 HO Super 80 80W/840 UNP	381	379	7000	24000	132.00	TL580W840HOBP
MASTER TL5 HO Super 80 80W/865 SLV	316	336	6650	24000	132.00	TL580W865HO

Spectral power distribution



Lumen maintenance diagram



TL5

Product Description

- Philips TL5 Essential Super80 are the new fluorescent lamps which provides Home Users and Professional End-users the aesthetic miniaturized lighting solution with high reliability at low prices

Product Feature

- With diameter of 16mm only;
- "Cold Chamber" technology;
- Applied with electronic ballast for TL5 only;
- Work at temperature from 5°C to 50°C.

Product Benefit

- 40% less tube dimension than T8 fluorescent lamps, reducing luminaire, stock and transportation cost;
- Slim 16 mm tube allows more compact and flexible luminaire design;
- Max lumen output at 35°C ambient temperature, more suitable to actual lighting situation;
- With CRI more than 80, building comfortable working and living ambiances;
- Providing high reliable and high quality lighting solution at low cost;
- Create atmospheres from warm white to cool daylight.

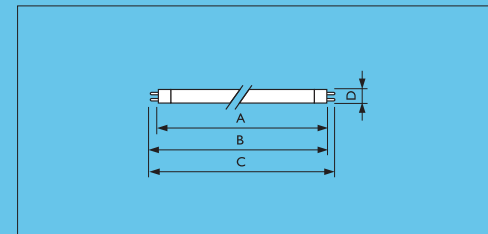
Application

- Suitable for use at locations where need compact, high efficient, energy saving lighting. Including offices, shops, supermarkets, schools, hospitals and industrial lighting.

System

- Work with electronic ballast for TL5 fluorescent lamps only. Philips electronic ballast is preferred.

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
14W	549.0	556.1	563.2	17
21W	849.0	856.1	863.2	17
28W	1149.0	1156.1	1163.2	17

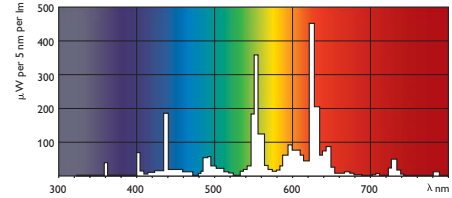
Preferred selection

Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Current EL [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL5 ESS 14W/865 SLV	14	G5	0.170	6500	80	Cool Daylight
TL5 ESS 21W/865 SLV	21	G5	0.170	6500	80	Cool Daylight
TL5 ESS 28W/830 SLV	28	G5	0.170	3000	80	Warm White
TL5 ESS 28W/840 SLV	28	G5	0.170	4000	80	Cool White
TL5 ESS 28W/865 SLV	28	G5	0.170	6500	80	Cool Daylight

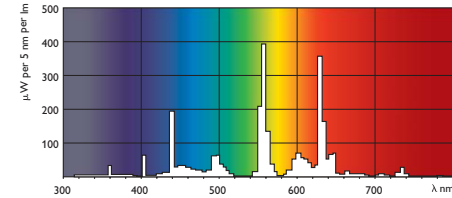
Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EL [lm]	Lumen Maintenance 2000h [%]	Lumen Maintenance 5000h [%]	Life to 50% Failures Preheat EL [hrs]	Comm Code
TL5 ESS 14W/865 SLV	316	336	1160	90	85	10000	TL5ESS14W865
TL5 ESS 21W/865 SLV	313	336	1800	90	85	10000	TL5ESS21W865
TL5 ESS 28W/830 SLV	438	403	2670	90	85	10000	TL5ESS28W830
TL5 ESS 28W/840 SLV	381	379	2670	90	85	10000	TL5ESS28W840
TL5 ESS 28W/865 SLV	316	336	2480	90	85	10000	TL5ESS28W865

Spectral power distribution

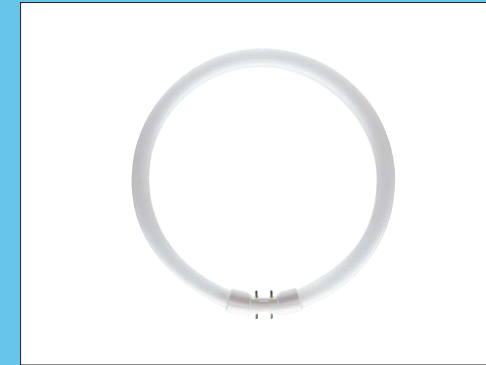
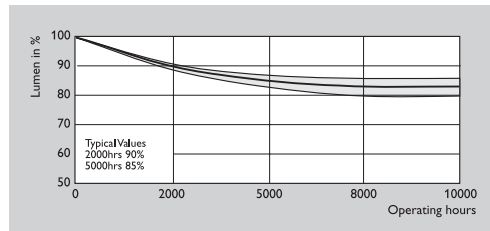
TL5 /830



TL5 /840



Lumen maintenance diagram



TL5-C

Product Description

- 16 mm tube diameter circular fluorescent lamps with a choice of diameters ranging from 230 to 380 mm

Product Feature

- Highly efficient 3-band fluorescent coating in combination with precoating
- Specifically designed for operation with electronic gear and well suited for dimming
- Can be ignited from -15° to +50°C

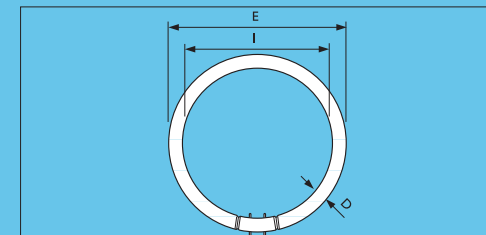
Product Benefit

- Slim 16 mm tube allows creation of extremely flat luminaires
- Extra design freedom through rotational symmetry allows creation of products which are omnidirectional in both light distribution and design
- High lamp efficacy
- Good color rendering

Application

- Brings the benefits of TL5 lighting to an even wider range of attractive applications
- Suitable for a wide range of professional and semi-professional applications
- Ideal for use in shops, offices and public areas with non-traditional layouts

Dimensions in mm



Product ID	Diameter	Outer	Inner
	D max.	E max.	I max.
22W	18	230	197
40W	18	305	272
55W	18	305	272
60W	18	305	346

TL5

MASTER TL5 Circular

Preferred selection

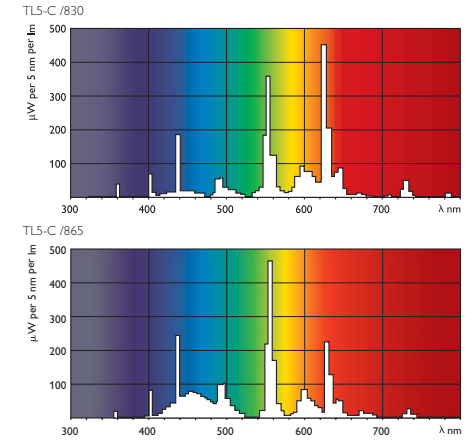
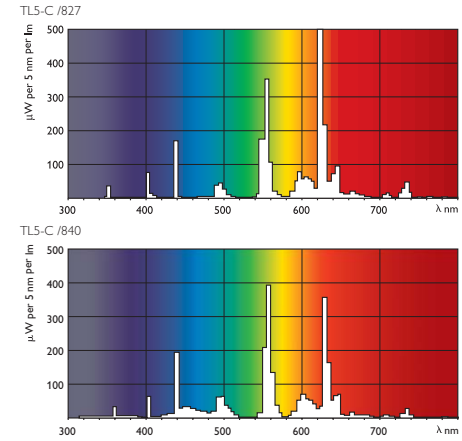
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EL [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL5 Circular Super 80 Pro 22W/827 1CT	22	2GX13	75	0.300	2700	85	Incandescent White
TL5 Circular Super 80 Pro 22W/830 1CT	22	2GX13	75	0.300	3000	85	Warm White
TL5 Circular Super 80 Pro 22W/840 1CT	22	2GX13	75	0.300	4000	85	Cool White
TL5 Circular Super 80 Pro 22W/865 1CT	22	2GX13	75	0.3	6500	79	Cool Daylight
TL5 Circular Super 80 Pro 40W/827 1CT	40	2GX13	126	0.320	2700	85	Incandescent White
TL5 Circular Super 80 Pro 40W/830 1CT	40	2GX13	126	0.320	3000	85	Warm White
TL5 Circular Super 80 Pro 40W/840 1CT	40	2GX13	126	0.320	4000	85	Cool White
TL5 Circular Super 80 Pro 40W/865 1CT	40	2GX13	126	0.32	6500	79	Cool Daylight
TL5 Circular Super 80 Pro 55W/830 1CT	55	2GX13	101	0.550	3000	85	Warm White
TL5 Circular Super 80 Pro 55W/840 1CT	55	2GX13	101	0.550	4000	85	Cool White
TL5 Circular Super 80 Pro 55W/865 1CT	55	2GX13	101	0.55	6500	79	Cool Daylight
TL5 Circular Super 80 Pro 60W/830 1CT	60	2GX13	129	0.470	3000	85	Warm White
TL5 Circular Super 80 Pro 60W/840 1CT	60	2GX13	129	0.470	4000	85	Cool White
TL5 Circular Super 80 Pro 60W/865 1CT	60	2GX13	129	0.470	6500	79	Daylight

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EL [lm]	Life to 50% Failures Preheat EL [hrs]	Nett Product in Grams [gr]	Comm Code
TL5 Circular Super 80 Pro 22W/827 1CT	463	420	1800	12000	74	TL5C22W827
TL5 Circular Super 80 Pro 22W/830 1CT	440	403	1800	12000	74	TL5C22W830
TL5 Circular Super 80 Pro 22W/840 1CT	380	380	1800	12000	74	TL5C22W840
TL5 Circular Super 80 Pro 22W/865 1CT	313	337	1740	10000	74	TL5C22W865
TL5 Circular Super 80 Pro 40W/827 1CT	463	420	3300	12000	110	TL5C40W827
TL5 Circular Super 80 Pro 40W/830 1CT	440	403	3300	12000	110	TL5C40W830
TL5 Circular Super 80 Pro 40W/840 1CT	380	380	3300	12000	110	TL5C40W840
TL5 Circular Super 80 Pro 40W/865 1CT	313	337	3100	12000	110	TL5C40W865
TL5 Circular Super 80 Pro 55W/830 1CT	440	403	4200	12000	110	TL5C55W830
TL5 Circular Super 80 Pro 55W/840 1CT	380	380	4200	12000	110	TL5C55W840
TL5 Circular Super 80 Pro 55W/865 1CT	313	337	4000	12000	110	TL5C55W865
TL5 Circular Super 80 Pro 60W/830 1CT	440	403	5000	12000	145	TL5C60W830
TL5 Circular Super 80 Pro 60W/840 1CT	380	380	5000	12000	145	TL5C60W840
TL5 Circular Super 80 Pro 60W/865 1CT	313	337	4800	12000	145	TL5C60W865

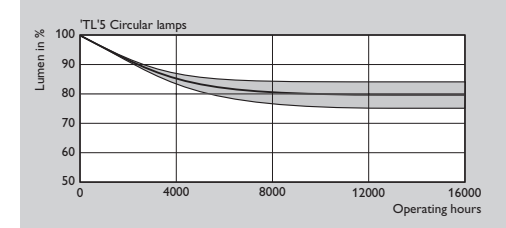
TL5

MASTER TL5 Circular

Spectral power distribution



Lumen maintenance diagram



TL-D

TL-D Lifemax Super 80

TL-D

TL-D Lifemax Super 80



TL-D G13 T8

Product Description

- Low-pressure mercury discharge lamps with a tubular 26 mm envelope

Product Feature

- Highly efficient 3-band fluorescent coating in combination with New Generation precoating technology
- High initial lumen output
- Available in varying color designations
- Low mercury dose (3 mg)
- MASTER TL-D lamps are fully recyclable
- End-cap has green bottom plate to identify lamp as recyclable and sustainable product

Product Benefit

- Special fluorescent coating gives good color rendering
- Relatively high efficacy, both initially and during lamp lifetime, with high lumen maintenance
- Create atmospheres from warm white to cool daylight

Application

- Suitable for use in a wide range of luminaires for TL-D fluorescent lamps for 'human' applications such as schools, offices, shops, factory halls etc.

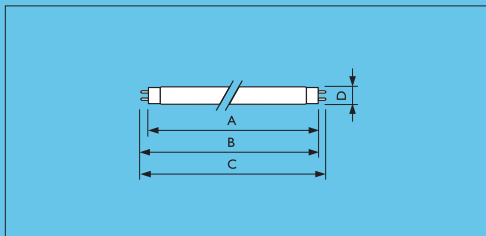
System

- Can be used with conventional or HF electronic gear
- Higher efficacy is achieved with HF electronic gear

Preferred selection

Product ID	Rated Lamp Wattage [W]	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Cap Base	Color Temperature [K]	Color Designation	Color Rendering Index [Ra]
TL-D 18W/827 SLV	18	59	0.36	G13	2700	Incandescent White	82
TL-D 18W/827 UNP	18	59	0.36	G13	2700	Incandescent White	82
TL-D 18W/830 SLV	18	59	0.36	G13	3000	Warm White	83
TL-D 18W/830 UNP	18	59	0.36	G13	3000	Warm White	83
TL-D 18W/840 SLV	18	59	0.36	G13	4000	Cool White	82
TL-D 18W/840 UNP	18	59	0.36	G13	4000	Cool White	82
TL-D 18W/850 SLV	18	59	0.36	G13	5000	Daylight	80
TL-D 18W/865 3SL	18	59	0.36	G13	6500	Cool Daylight	80
TL-D 18W/865 SLV	18	59	0.36	G13	6500	Cool Daylight	80
TL-D 18W/865 UNP	18	59	0.36	G13	6500	Cool Daylight	80
TL-D 30W/827 SLV	30	98	0.36	G13	2700	Incandescent White	82
TL-D 30W/830 SLV	30	98	0.36	G13	3000	Warm White	83
TL-D 30W/840 SLV	30	98	0.36	G13	4000	Cool White	82
TL-D 30W/865 SLV	30	98	0.36	G13	6500	Cool Daylight	80
TL-D 36W/827 SLV	36	103	0.36	G13	2700	Incandescent White	82
TL-D 36W/827 UNP	36	103	0.36	G13	2700	Incandescent White	82
TL-D 36W/830 SLV	36	103	0.36	G13	3000	Warm White	83
TL-D 36W/830 UNP	36	103	0.36	G13	3000	Warm White	83
TL-D 36W/840 SLV	36	103	0.36	G13	4000	Cool White	82
TL-D 36W/840 UNP	36	103	0.36	G13	4000	Cool White	82
TL-D 36W/850 SLV	36	103	0.36	G13	5000	Daylight	80
TL-D 36W/865 3SL	36	103	0.36	G13	6500	Cool Daylight	80
TL-D 36W/865 SLV	36	103	0.36	G13	6500	Cool Daylight	80
TL-D 36W/865 UNP	36	103	0.36	G13	6500	Cool Daylight	80
TL-D 58W/830 SLV	58	111	0.67	G13	3000	Warm White	83
TL-D 58W/840 SLV	58	111	0.67	G13	4000	Cool White	85
TL-D 58W/865 SLV	58	111	0.67	G13	6500	Cool Daylight	80

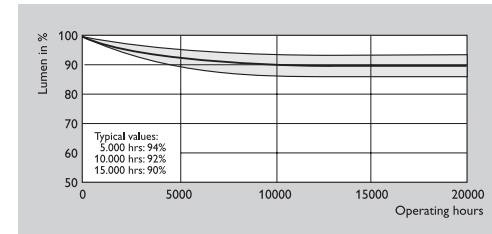
Dimensions in mm



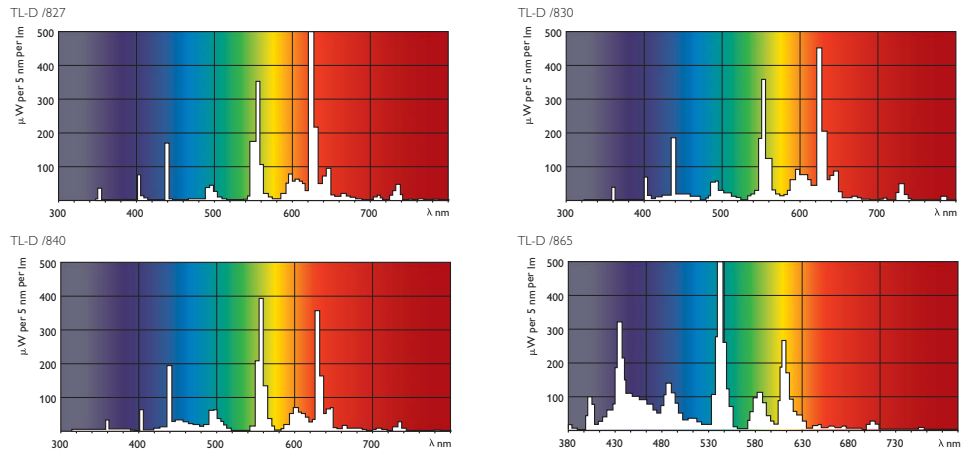
Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
18W	549.0	556.1	604	28
30W	849.0	856.1	908.8	28
36W	1149.0	1156.1	1213.6	28
58W	1149.0	1156.1	1514.2	28

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Life to 50% Failures EM [hrs]	Luminous Flux Lamp EM/CuFe [lm]	Nett Product in Grams [gr]	Comm Code
TL-D 18W/827 SLV	468	417	13000	1350	82.9	TLD18W827
TL-D 18W/827 UNP	468	417	13000	1350	82.9	TLD18W827BP
TL-D 18W/830 SLV	439	404	13000	1350	82.9	TLD18W830
TL-D 18W/830 UNP	439	404	13000	1350	82.9	TLD18W830BP
TL-D 18W/840 SLV	382	380	13000	1350	82.9	TLD18W840
TL-D 18W/840 UNP	382	380	13000	1350	82.9	TLD18W840BP
TL-D 18W/850 SLV	349	361	13000	1310	82.9	TLD18W850
TL-D 18W/865 3SL	318	337	13000	1275	82.9	TLD18W865PK3
TL-D 18W/865 SLV	318	337	13000	1275	82.9	TLD18W865
TL-D 18W/865 UNP	318	337	13000	1275	82.9	TLD18W865BP
TL-D 30W/827 SLV	463	420	13000	2400	132.7	TLD30W827
TL-D 30W/830 SLV	441	407	13000	2400	132.7	TLD30W830
TL-D 30W/840 SLV	384	383	13000	2400	132.7	TLD30W840
TL-D 30W/865 SLV	319	338	13000	2300	132.7	TLD30W865
TL-D 36W/827 SLV	466	417	15000	3250	127.7	TLD36W827
TL-D 36W/827 UNP	466	417	15000	3250	127.7	TLD36W827BP
TL-D 36W/830 SLV	438	403	15000	3250	127.7	TLD36W830
TL-D 36W/830 UNP	438	403	15000	3250	127.7	TLD36W830BP
TL-D 36W/840 SLV	381	379	15000	3250	127.7	TLD36W840
TL-D 36W/840 UNP	381	379	15000	3250	127.7	TLD36W840BP
TL-D 36W/850 SLV	346	359	15000	3170	127.7	TLD36W850
TL-D 36W/865 3SL	316	336	15000	3070	127.7	TLD36W865PK3
TL-D 36W/865 SLV	316	336	15000	3070	127.7	TLD36W865
TL-D 36W/865 UNP	316	336	15000	3070	127.7	TLD36W865BP
TL-D 58W/830 SLV	435	404	15000	5150	232.1	TLD58W830
TL-D 58W/840 SLV	380	381	15000	5200	232.1	TLD58W840
TL-D 58W/865 SLV	317	339	15000	4800	232.1	TLD58W865

Lumen maintenance diagram



Spectral power distribution



TL-D



TL-D G13

TL-D Lifemax Click-2-Save

Product Description

- Low-pressure mercury discharge lamps with a tubular 26 mm envelope

Product Feature

- 115 cm tubular lamp attached with adaptor become total length as TL-D 36 watt
- Provide 6 watt energy saving.
- Highly efficient 3-band fluorescent coating in combination with New Generation pre-coating technology
- Available in cool white and cool daylight
- Low mercury dose (3 mg)
- MASTER TL-D lamps are fully recyclable
- Green cap to identify lamp as recyclable and sustainable product

Product Benefit

- Energy saving 6 watt with the same light output level compared with standard color
- Special fluorescent coating gives good color rendering
- Relatively high efficacy, both initially and during lamp lifetime, with high lumen maintenance
- Create atmospheres as cool white and cool daylight

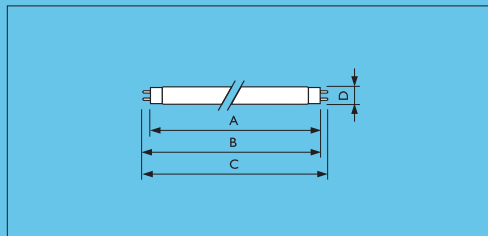
Application

- Suitable for use in a wide range of luminaires for TL-D fluorescent lamps for 'human' applications such as schools, offices, shops, factory halls etc.

System

- Must be attached with the Click-2-Save adaptor.
- Must be used with Electromagnetic conventional ballast.

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
30W	1149.4	1153.7	1163.2	27.1

TL-D

TL-D Lifemax Click-2-Save

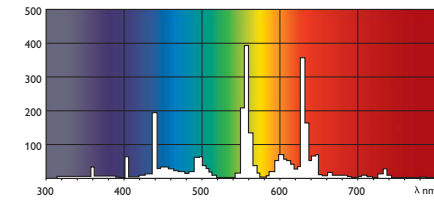
Preferred selection

Product ID	Rated Lamp Wattage [W]	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Cap Base	Color Temperature [K]	Color Designation	Color Rendering Index [Ra]
TL-D 30W/840 ES SLV	30	105	0.35	G13	4000	Cool White	80
TL-D 30W/840 ES UNP	30	105	0.35	G13	4000	Cool White	80
TL-D 30W/865 ES SLV	30	98	0.36	G13	6500	Cool Daylight	80
TL-D 30W/865 ES UNP	30	98	0.36	G13	6500	Cool Daylight	80

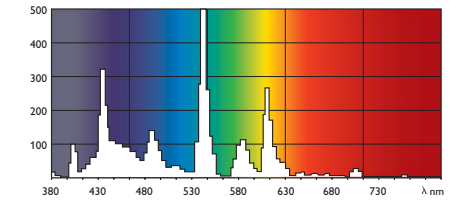
Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Lumen Maintenance 2000h [%]	Lumen Maintenance 5000h [%]	Nett Product in Grams [g]	Comm Code
TL-D 30W/840 ES SLV	380	380	2750	96	94	0.23	TLD30W840ES
TL-D 30W/840 ES UNP	380	380	2750	96	94	0.16	-
TL-D 30W/865 ES SLV	313	337	2600	96	94	0.16	TLD30W865ESLAMP
TL-D 30W/865 ES UNP	313	337	2600	96	94	0.16	-

Spectral power distribution

TL-D /840



TL-D /865



TL-D

MASTER TL-D Super 80 HF



TL-D

Product Description

- Low-pressure mercury discharge lamps with a tubular 26 mm envelope and argon gas filling

Product Feature

- Highly efficient 3-band fluorescent coating in combination with New Generation pre-coating technology
- High initial lumen output
- Available in varying color designations
- Low mercury dose (3 mg)
- MASTER TL-D lamps are fully recyclable
- End-cap has green bottom plate to identify lamp as recyclable and sustainable product

Product Benefit

- Relatively high efficacy, both initially and during lamp lifetime, with high lumen maintenance
- Good color rendering
- Creates atmospheres from warm white to cool daylight

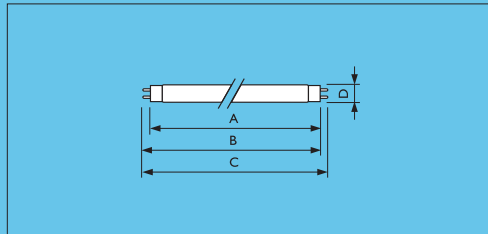
Application

- Suitable for use in a wide range of luminaires for TL-D fluorescent lamps for 'human' applications such as schools, offices, shops, factory halls etc.

System

- Special HF electronic gear must be used

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
16W	589.8	596.9	604	28
32W	1199.4	1206.5	1213.6	28
50W	1500.0	1507.1	1514.2	28

TL-D

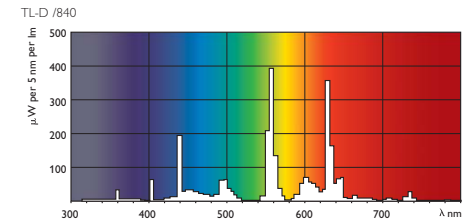
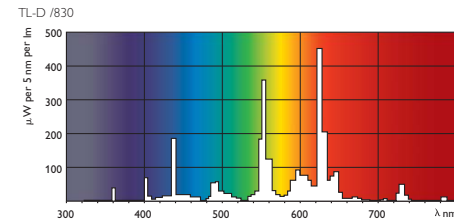
MASTER TL-D Super 80 HF

Preferred selection

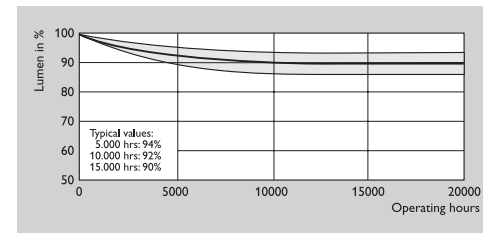
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EL [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
MASTER TL-D Super 80 HF 16W/830 SLV	16	G13	64	0.26	3000	85	Warm White
MASTER TL-D Super 80 HF 16W/840 SLV	16	G13	64	0.26	4000	85	Cool White
MASTER TL-D Super 80 HF 32W/830 SLV	32	G13	128	0.26	3000	85	Warm White
MASTER TL-D Super 80 HF 32W/840 SLV	32	G13	128	0.26	4000	85	Cool White
MASTER TL-D Super 80 HF 50W/830 SLV	50	G13	142	0.36	3000	85	Warm White
MASTER TL-D Super 80 HF 50W/840 SLV	50	G13	142	0.36	4000	85	Cool White

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Life to 50% Failures Preheat EL [hrs]	Luminous Flux Lamp EL [lm]	Nett Product in Grams [gr]	Comm Code
MASTER TL-D Super 80 HF 16W/830 SLV	442	405	20000	1400	68.90	TLD16W830HF
MASTER TL-D Super 80 HF 16W/840 SLV	384	381	20000	1400	68.90	TLD16W840HF
MASTER TL-D Super 80 HF 32W/830 SLV	442	405	20000	3200	137.50	TLD32W830HF
MASTER TL-D Super 80 HF 32W/840 SLV	384	381	20000	3200	137.50	TLD32W840HF
MASTER TL-D Super 80 HF 50W/830 SLV	440	406	20000	5000	186.00	TLD50W830HF
MASTER TL-D Super 80 HF 50W/840 SLV	384	383	20000	5000	186.00	TLD50W840HF

Spectral power distribution



Lumen maintenance diagram

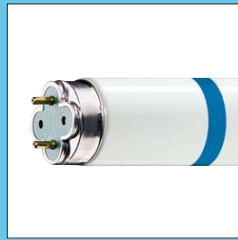


TL-D

MASTER TL-D Super 80 Xtreme

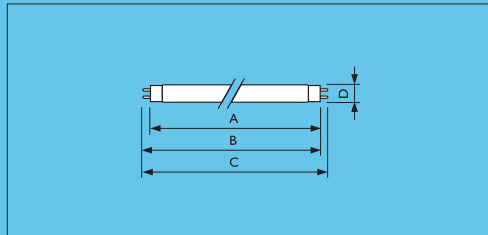


TL-D LL



TL-D LL Secura

Dimensions in mm



Product Description

- Low-pressure mercury discharge lamp with a tubular 26mm envelope

Product Feature

- Significant reduction of early failures based upon a new technology (patent pending)
- Extreme long and reliable lifetime
- Highly efficient 3-band fluorescent coating in combination with New Generation precoating technology
- Low mercury dose for a long-life lamp (5 mg)
- Fully recyclable lamp technology
- End-cap has an x-shaped green bottom plate to distinguish lamp from other
- fluorescent lamps

Product Benefit

- Longer lifetime and less early failures lead to less hassle and lower maintenance costs and facilitate the change from spot to group replacement
- Less waste and disposal cost at end-of-life
- Special fluorescent coating gives good color rendering

Application

- Suitable for use in applications where maintenance costs (high ceilings, difficult to reach) and disruptive costs are high (stopping of production process, closure of tunnels), or where lamp failure is not acceptable for e.g. safety reasons: tunnels, process, food and petrochemical industries

System

- Can be used with either conventional or HF electronic gear
- Higher efficacy and longer life is achieved with HF electronic gear

Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
18W	589.8	596.9	604	28
36W	1199.4	1206.5	1213.6	28
58W	1500.0	1507.1	1514.2	28

TL-D

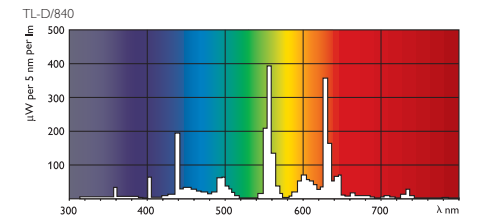
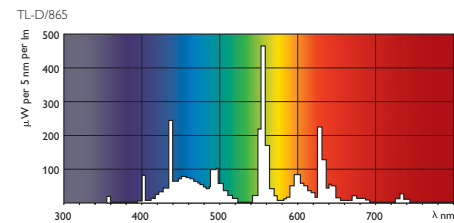
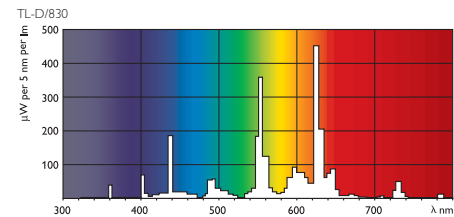
MASTER TL-D Super 80 Xtreme

Preferred selection

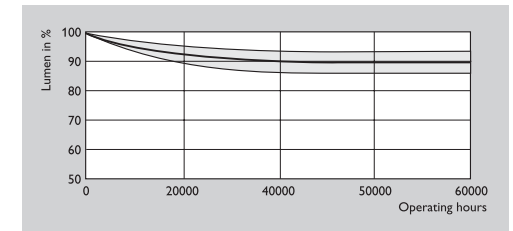
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation	Chromaticity Coordinate X
MASTER TL-D Xtreme Super 80 18W/830 SLV	18	G13	0.370	3000	85	Warm White	440
MASTER TL-D Xtreme Super 80 18W/840 SLV	18	G13	0.370	4000	85	Cool White	383
MASTER TL-D Xtreme Super 80 18W/865 SLV	18	G13	0.370	6500	85	Cool Daylight	316
MASTER TL-D Xtreme Super 80 36W/830 SLV	36	G13	0.430	3000	85	Warm White	440
MASTER TL-D Xtreme Secura Super 80 36W/830 SLV	36	G13	0.430	3000	85	Warm White	440
MASTER TL-D Xtreme Super 80 36W/840 SLV	36	G13	0.430	4000	85	Cool White	383
MASTER TL-D Xtreme Secura Super 80 36W/840 SLV	36	G13	0.430	4000	85	Cool White	383
MASTER TL-D Xtreme Super 80 58W/830 SLV	58	G13	0.665	3000	85	Warm White	436
MASTER TL-D Xtreme Super 80 58W/840 SLV	58	G13	0.665	4000	85	Cool White	381

Product ID	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Life to 50% Failures Preheat EL [hrs]	Life to 10% Failures Preheat EL [hrs]	Nett Product in Grams [gr]	Comm Code
MASTER TL-D Xtreme Super 80 18W/830 SLV	405	1350	47000	79000	66000	68.90	TLD18W830XTREME
MASTER TL-D Xtreme Super 80 18W/840 SLV	381	1350	47000	79000	66000	68.90	TLD18W840XTREME
MASTER TL-D Xtreme Super 80 18W/865 SLV	336	1250	47000	79000	66000	68.90	TLD18W865XTREME
MASTER TL-D Xtreme Super 80 36W/830 SLV	403	3250	47000	79000	66000	138.40	TLD36W830XTREME
MASTER TL-D Xtreme Secura Super 80 36W/830 SLV	403	3250	47000	79000	66000	249.90	TLD36W830XTREMESEC
MASTER TL-D Xtreme Super 80 36W/840 SLV	379	3250	47000	79000	66000	138.40	TLD36W840XTREME
MASTER TL-D Xtreme Secura Super 80 36W/840 SLV	379	3250	47000	79000	66000	249.90	TLD36W840XTREMESEC
MASTER TL-D Xtreme Super 80 58W/830 SLV	404	5150	47000	79000	66000	172.60	TLD58W830XTREME
MASTER TL-D Xtreme Super 80 58W/840 SLV	381	5150	47000	79000	66000	172.60	TLD58W840XTREME

Spectral power distribution



Lumen maintenance diagram



TL-D

MASTER TL-D Xtra Super 80



TL-D Xtra

Product Description

- Low-pressure mercury discharge lamp with a tubular 26mm envelope

Product Features

- Significant reduction of early failures based upon a new technology (patent pending)
- Extra long and reliable lifetime
- Highly efficient 3-band fluorescent coating in combination with New Generation pre-coating technology
- Low mercury dose for a long-life lamp (5 mg)
- Fully recyclable lamp technology
- End-cap has an x-shaped green bottom plate to distinguish the lamp from other fluorescent lamps

Product Benefits

- Longer lifetime and less early failures lead to less hassle and lower maintenance costs and facilitate the change from spot to group replacement
- Less waste and disposal cost at end-of-life
- Special fluorescent coating gives good color rendering

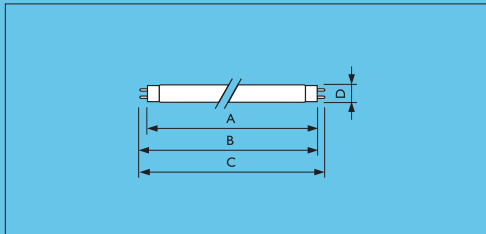
Application

- Suitable for use in applications where maintenance costs are high (high ceilings, difficult to reach): department stores, supermarkets, warehouses, production halls and public areas like car parks and railway stations

System

- Can be used with either conventional or HF electronic gear
- Higher efficacy and longer life is achieved with HF electronic gear

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
18W	589.8	596.9	604	28
36W	1199.4	1206.5	1213.6	28
58W	1500.0	1507.1	1514.2	28

TL-D

MASTER TL-D Xtra Super 80

Preferred selection

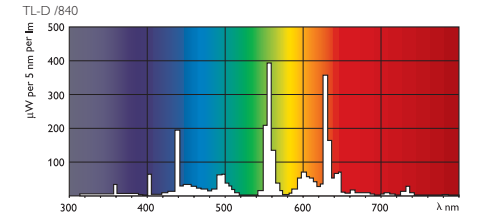
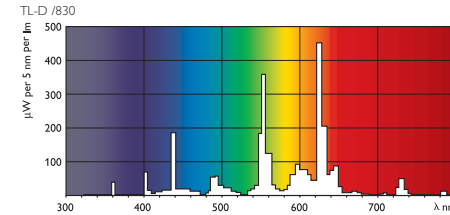
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation	Chromaticity Coordinate X
MASTERTL-D Xtra Super 80 18W/830 SLV	18	G13	0.370	3000	83	Warm White	438
MASTERTL-D Xtra Super 80 18W/840 SLV	18	G13	0.370	4000	82	Cool White	381
MASTERTL-D Xtra Super 80 36W/830 SLV	36	G13	0.440	3000	83	Warm White	441
MASTERTL-D Xtra Super 80 36W/840 SLV	36	G13	0.440	4000	82	Cool White	384
MASTERTL-D Xtra Super 80 58W/830 SLV	58	G13	0.665	3000	83	Warm White	437
MASTERTL-D Xtra Super 80 58W/840 SLV	58	G13	0.665	4000	82	Cool White	382

SLV: Sleeve packaging
UNP: Unpacked

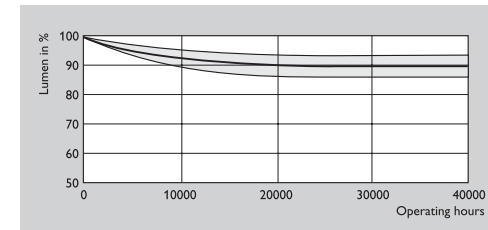
Product ID	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Life to 50% Failures Preheat EL [hrs]	Nett Product in Grams [gr]	Comm Code
MASTERTL-D Xtra Super 80 18W/830 SLV	403	1330	28000	55000	71.0	TLD18W830XTRA
MASTERTL-D Xtra Super 80 18W/840 SLV	379	1330	28000	55000	71.0	TLD18W840XTRA
MASTERTL-D Xtra Super 80 36W/830 SLV	406	3250	28000	55000	137.5	TLD36W830XTRA
MASTERTL-D Xtra Super 80 36W/840 SLV	382	3250	28000	55000	137.5	TLD36W840XTRA
MASTERTL-D Xtra Super 80 58W/830 SLV	406	5150	28000	55000	186.0	TLD58W830XTRA
MASTERTL-D Xtra Super 80 58W/840 SLV	383	5150	28000	55000	186.0	TLD58W840XTRA

SLV: Sleeve packaging
UNP: Unpacked

Spectral power distribution



Lumen maintenance diagram



TL-D

TL-D Lifemax Standard Colors

TL-D

TL-D Lifemax Standard Colors



TL-D G13

Product Description

- Low-pressure mercury discharge lamps with a tubular 26 mm envelope

Product Feature

- Standard colors with moderate color rendering
- Available in various color designations

Product Benefit

- Create atmospheres from warm white to cool daylight

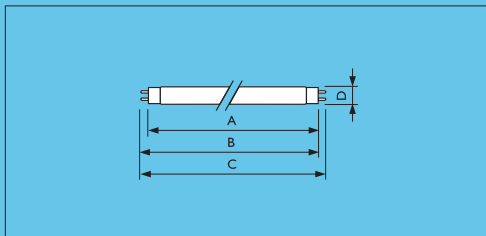
Application

- Suitable for use in a wide range of luminaires for TL-D fluorescent lamps, used in applications where color rendering is not an important factor

Preferred selection

Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL-D 10W/33-640 SLV	10	G13	44.5	0.230	4100	60	Cool White
TL-D 10W/33-640 SLV	10	G13	44.5	0.230	4100	60	Cool White
TL-D 10W/54-765 SLV	10	G13	44.5	0.230	6200	75	Cool Daylight
TL-D 14W/33-640 SLV	14	G13	45	0.380	4100	63	Cool White
TL-D 14W/54-765 SLV	14	G13	45	0.380	6200	72	Cool Daylight
TL-D 15W/33-640 SLV	15	G13	51	0.34	4100	63	Cool White
TL-D 15W/54-765 SLV	15	G13	51	0.34	6200	72	Cool Daylight
TL-D 15W/54-765 SLV	15	G13	51	0.34	6200	72	Cool Daylight
TL-D 18W/29-530 SLV	18	G13	59	0.360	2900	51	Warm White
TL-D 18W/35-535 SLV	18	G13	59	0.360	3500	55	White
TL-D 18W/54-765 9SL	18	G13	59	0.360	6200	72	Cool Daylight
TL-D 18W/54-765 SLV	18	G13	59	0.360	6200	72	Cool Daylight
TL-D 18W/54-765 SLV	18	G13	59	0.360	6200	72	Cool Daylight
TL-D 18W/54-765 SLV	18	G13	59	0.360	6200	72	Cool Daylight
TL-D 18W/54-765 SLV	18	G13	59	0.360	6200	72	Cool Daylight
TL-D 30W/29-530 SLV	30	G13	98	0.360	2900	51	Warm White
TL-D 30W/33-640 SLV	30	G13	98	0.360	4100	63	Cool White
TL-D 30W/35-535 SLV	30	G13	98	0.360	3500	55	White
TL-D 30W/54-765 SLV	30	G13	98	0.360	6200	72	Cool Daylight
TL-D 36W/29-530 SLV	36	G13	103	0.440	2900	51	Warm White
TL-D 36W/33-640 SLV	36	G13	103	0.440	4100	63	Cool White
TL-D 36W/33-640 UNP	36	G13	103	0.440	4100	63	Cool White
TL-D 36W/54-765 9SL	36	G13	103	0.440	6200	72	Cool Daylight
TL-D 36W/54-765 SLV	36	G13	103	0.440	6200	72	Cool Daylight
TL-D 36W/54-765 SLV	36	G13	103	0.440	6200	72	Cool Daylight
TL-D 36W/54-765 SLV	36	G13	103	0.440	6200	72	Cool Daylight
TL-D 36W/54-765 SLV	36	G13	103	0.440	6200	72	Cool Daylight
TL-D 36W/54-765 UNP	36	G13	103	0.440	6200	72	Cool Daylight
TL-D 58W/29-530 SLV	58	G13	111	0.670	2900	51	Warm White
TL-D 58W/33-640 SLV	58	G13	111	0.670	4100	63	Cool White
TL-D 58W/35-535 SLV	58	G13	111	0.670	3500	55	White
TL-D 58W/54-765 SLV	58	G13	111	0.670	6200	72	Cool Daylight
TL-D 58W/54-765 SLV	58	G13	111	0.670	6200	72	Cool Daylight

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
10W	331.5	338.6	345.7	28
14W	361.2	368.3	375.4	28
15W	437.4	444.5	451.6	28
18W	589.8	596.9	604	28
30W	894.6	901.7	908.8	28
36W	1199.4	1206.5	1213.6	28
58W	1500.0	1507.1	1514.2	28

TL-D

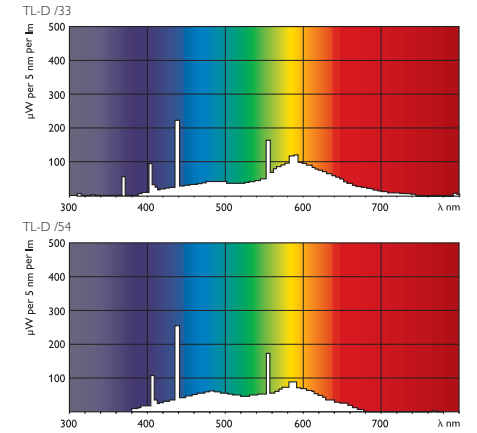
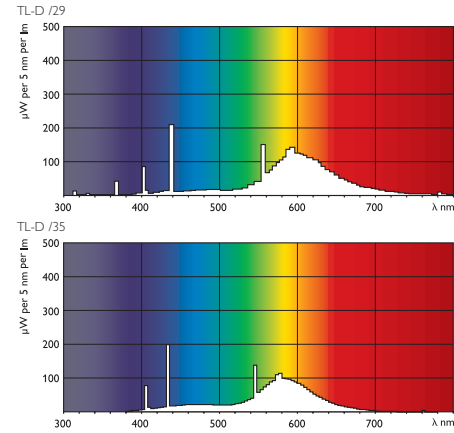
TL-D Lifemax Standard Colors

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Nett Product in Grams [g]	Comm Code
TL-D 10W/33-640 SLV	377	381	500	5000	60	TLD10W33
TL-D 10W/33-640 SLV	377	381	500	5000	60	TLD10W33
TL-D 10W/54-765 SLV	313	337	430	5000	60	TLD10W54
TL-D 14W/33-640 SLV	377	381	750	13000	66	TLD14W33
TL-D 14W/54-765 SLV	317	342	660	13000	66	TLD14W54
TL-D 15W/33-640 SLV	377	381	960	13000	76	TLD15W33
TL-D 15W/54-765 SLV	313	337	830	13000	76	TLD15W54
TL-D 15W/54-765 SLV	313	337	830	13000	76	TLD15W54
TL-D 18W/29-530 SLV	440	403	1250	13000	82.9	TLD18W29
TL-D 18W/35-535 SLV	409	394	1150	13000	82.9	TLD18W35
TL-D 18W/54-765 9SL	313	337	1050	13000	82.9	TLD18W54PK9
TL-D 18W/54-765 SLV	313	337	1050	13000	82.9	TLD18W54
TL-D 18W/54-765 SLV	313	337	1050	13000	82.9	TLD18W54OEM
TL-D 18W/54-765 SLV	313	337	1050	13000	82.9	TLD18W54
TL-D 18W/54-765 SLV	313	337	1050	13000	82.9	TLD18W54PK6
TL-D 30W/29-530 SLV	440	403	2175	13000	132.7	TLD30W29
TL-D 30W/33-640 SLV	377	381	2100	13000	132.7	TLD30W33
TL-D 30W/35-535 SLV	409	394	2300	13000	132.7	TLD30W35
TL-D 30W/54-765 SLV	313	337	1825	13000	132.7	TLD30W54
TL-D 36W/29-530 SLV	440	403	2975	13000	127.7	TLD36W29
TL-D 36W/33-640 SLV	377	381	2850	13000	127.7	TLD36W33
TL-D 36W/33-640 UNP	377	381	2850	13000	127.7	TLD36W33BP
TL-D 36W/54-765 9SL	313	337	2500	13000	127.7	TLD36W54PK9
TL-D 36W/54-765 SLV	313	337	2500	13000	127.7	TLD36W54
TL-D 36W/54-765 SLV	313	337	2500	13000	127.7	TLD36W54
TL-D 36W/54-765 SLV	313	337	2500	13000	127.7	TLD36W54OEM
TL-D 36W/54-765 SLV	313	337	2500	13000	127.7	TLD36W54PK6
TL-D 36W/54-765 UNP	313	337	2500	13000	127.7	TLD36W54BP
TL-D 58W/29-530 SLV	433	403	4700	13000	232.1	TLD58W29
TL-D 58W/33-640 SLV	372	381	4600	13000	232.1	TLD58W33
TL-D 58W/35-535 SLV	403	394	4600	13000	232.1	TLD58W35
TL-D 58W/54-765 SLV	315	341	4000	13000	232.1	TLD58W54
TL-D 58W/54-765 SLV	315	341	4000	13000	232.1	TLD58W54

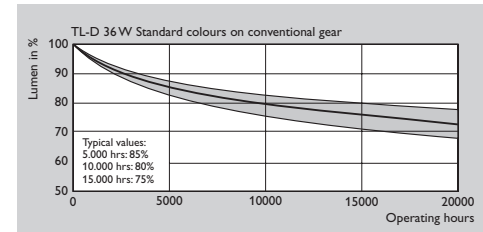
TL-D

TL-D Lifemax Standard Colors

Spectral power distribution



Lumen maintenance diagram





TL-E G10q

Product Description

- Low-pressure mercury discharge lamps with a circular 29 mm tube

Product Feature

- Available in varying color designations

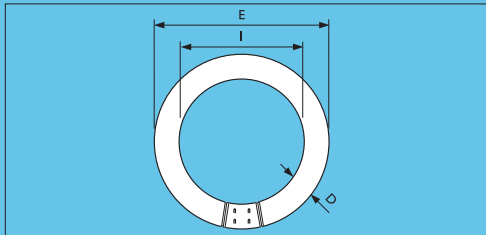
Product Benefit

- /80 colors have good color rendering and high efficacy compared with standard colors
- Symmetrical, omnidirectional light distribution
- Create atmospheres from warm white to cool daylight

Application

- Suitable for use in a wide range of luminaires for various purposes, including decorative luminaires
- Ideal for 'human' applications such as schools, offices, shops and homes

Dimensions in mm



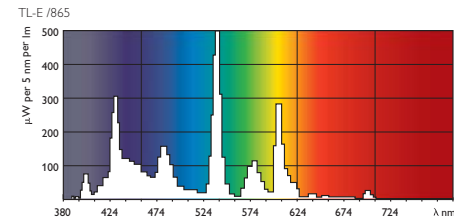
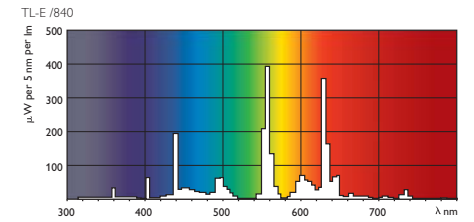
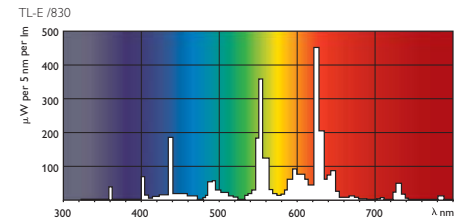
Product ID	Diameter	Outer	Inner
	D max.	E max.	I max.
22W	30.9	215.9	157.2
32W	30.9	304.8	246.1
40W	30.9	406.4	347.7

Preferred selection

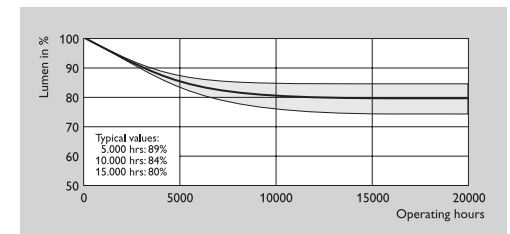
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL-E 22W/840 1CT	22	G10q	62	0.400	4000	85	Cool White
TL-E 22W/840 UNP	22	G10q	62	0.400	4000	85	Cool White
TL-E 22W/865 1CT	22	G10q	62	0.400	6500	85	Cool Daylight
TL-E 22W/865 UNP	22	G10q	62	0.400	6500	85	Cool Daylight
TL-E 32W/830 1CT	32	G10q	81	0.450	3000	85	Warm White
TL-E 32W/840 UNP	32	G10q	81	0.450	4000	85	Cool White
TL-E 32W/850 1CT	32	G10q	81	0.450	5000	82	Daylight
TL-E 32W/865 1CT	32	G10q	81	0.450	6500	85	Cool Daylight
TL-E 32W/865 UNP	32	G10q	81	0.450	6500	85	Cool Daylight
TL-E 40W/840 UNP	40	G10q	110	0.420	4000	85	Cool White
TL-E 40W/865 1CT	40	G10q	110	0.420	6500	85	Cool Daylight
TL-E 40W/865 UNP	40	G10q	110	0.420	6500	85	Cool Daylight

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Nett Product in Grams [gr]	Comm Code
TL-E 22W/840 1CT	381	379	1285	9000	150	TLE22W840
TL-E 22W/840 UNP	381	379	1285	9000	150	TLE22W840BP
TL-E 22W/865 1CT	316	336	1250	9000	150	TLE22W865
TL-E 22W/865 UNP	316	336	1250	9000	150	TLE22W865BP
TL-E 32W/830 1CT	438	403	2300	9000	262	TLE32W830
TL-E 32W/840 UNP	381	379	2300	9000	262	TLE32W840BP
TL-E 32W/850 1CT	346	359	2350	9000	262	TLE32W850
TL-E 32W/865 1CT	316	336	2310	9000	262	TLE32W865
TL-E 32W/865 UNP	316	336	2310	9000	262	TLE32W865BP
TL-E 40W/840 UNP	381	379	3200	9000	400	TLE40W840BP
TL-E 40W/865 1CT	316	336	3070	9000	400	TLE40W865
TL-E 40W/865 UNP	316	336	3070	9000	400	TLE40W865BP

Spectral power distribution



Lumen maintenance diagram



TL

TL-E Lifemax Standard Colors



TL-E G10q

Product Description

- Low-pressure mercury discharge lamps with a circular 29 mm tube

Product Feature

- Available in varying color designations
- Symmetrical, omni-directional light distribution

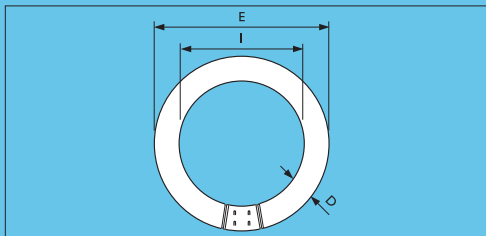
Product Benefit

- Standard colors with moderate color rendering (R a 50 - 70)
- Create atmospheres from warm white to cool daylight

Application

- Suitable for use in a wide range of luminaires for various purposes, including many decorative luminaires
- Ideal for 'human' applications such as schools, offices, shops, theatres etc. where color rendering is not an important factor

Dimensions in mm



Product ID	Diameter	Outer	Inner
	D max.	E max.	I max.
22W	30.9	215.9	157.2
32W	30.9	304.8	246.1
40W	30.9	406.4	347.7

TL

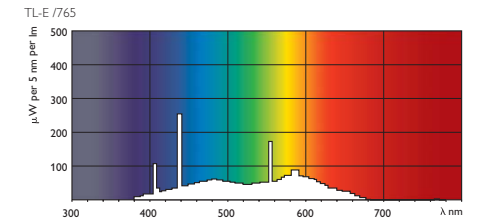
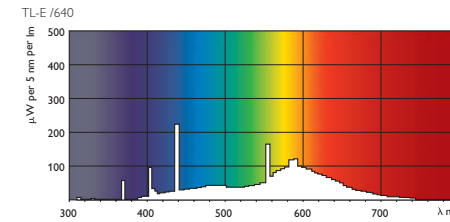
TL-E Lifemax Standard Colors

Preferred selection

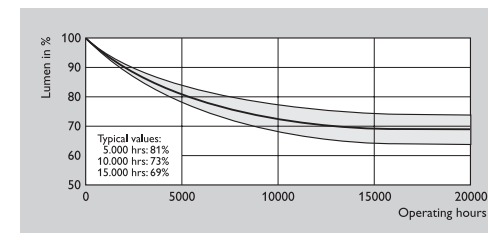
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL-E 22W/33-640 1CT	22	G10q	62	0.400	4100	63	Cool White
TL-E 22W/33-640 UNP	22	G10q	62	0.400	4100	63	Cool White
TL-E 22W/54-765 1CT	22	G10q	62	0.400	6200	72	Cool Daylight
TL-E 22W/54-765 UNP	22	G10q	62	0.400	6200	72	Cool Daylight
TL-E 32W/33-640 1CT	32	G10q	81	0.450	4100	63	Cool White
TL-E 32W/33-640 UNP	32	G10q	81	0.450	4100	63	Cool White
TL-E 32W/54-765 1CT	32	G10q	81	0.450	6200	72	Cool Daylight
TL-E 32W/54-765 2CT	32	G10q	81	0.450	6200	72	Cool Daylight
TL-E 32W/54-765 UNP	32	G10q	81	0.450	6200	72	Cool Daylight
TL-E 40W/33-640 1CT	40	G10q	110	0.420	4100	63	Cool White
TL-E 40W/33-640 UNP	40	G10q	110	0.420	4100	63	Cool White
TL-E 40W/54-765 1CT	40	G10q	110	0.420	6200	72	Cool Daylight
TL-E 40W/54-765 UNP	40	G10q	110	0.420	6200	72	Cool Daylight

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Nett Product in Grams [gr]	Comm Code
TL-E 22W/33-640 1CT	377	381	1250	9000	150	TLE22W33
TL-E 22W/33-640 UNP	377	381	1250	9000	150	TLE22W33BP
TL-E 22W/54-765 1CT	313	337	1050	9000	150	TLE22W54
TL-E 22W/54-765 UNP	313	337	1050	9000	150	TLE22W54BP
TL-E 32W/33-640 1CT	377	381	2050	9000	262	TLE32W33
TL-E 32W/33-640 UNP	377	381	2050	9000	262	TLE32W33BP
TL-E 32W/54-765 1CT	313	337	1750	9000	262	TLE32W54
TL-E 32W/54-765 2CT	313	337	1750	9000	262	TLE32W54PK2
TL-E 32W/54-765 UNP	313	337	1750	9000	262	TLE32W54BP
TL-E 40W/33-640 1CT	377	381	2900	9000	400	TLE40W33
TL-E 40W/33-640 UNP	377	381	2900	9000	400	TLE40W33BP
TL-E 40W/54-765 1CT	313	337	2500	9000	400	TLE40W54
TL-E 40W/54-765 UNP	313	337	2500	9000	400	TLE40W54BP

Spectral power distribution



Lumen maintenance diagram



TL

TL Standard Colors Rapid Start



TL G13

Product Description

- Low-pressure mercury discharge lamps with a tubular 38 mm envelope

Product Feature

- RS (Rapid Start) lamps with an external silicon coating
- Standard colors with moderate color rendering
- Available in varying color designations

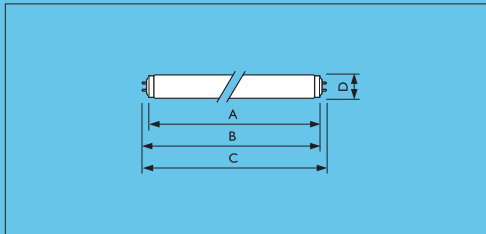
Product Benefit

- Creating atmospheres from warm white to cool daylight
- Fast, well defined ignition at low temperatures

Application

- Mostly used in applications where color rendering is not an important factor

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
20W	589.8	596.9	604	40.5
40W	1199.4	1206.5	1213.6	40.5
65W	1500.0	1507.1	1514.2	40.5

TL

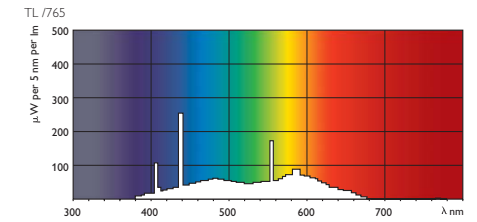
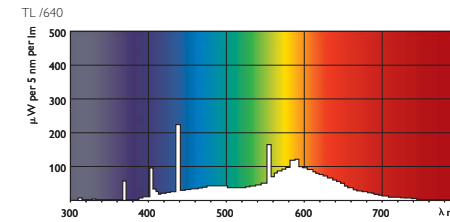
TL Standard Colors Rapid Start

Preferred selection

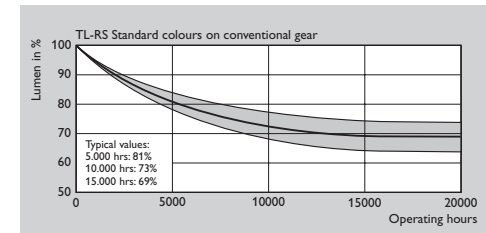
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Rendering Index [Ra]	Color Designation
TL-RS 20W/33-640 SLV	20	G13	59	0.370	63	Cool White
TL-RS 20W/54-765 SLV	20	G13	59	0.370	72	Cool Daylight
TL-RS 40W/33-640 SLV	40	G13	101	0.430	63	Cool White
TL-RS 40W/54-765 SLV	40	G13	101	0.430	72	Cool Daylight
TL-RS 65W/33-640 SLV	65	G13	110	0.670	63	Cool White
TL-RS 65W/54-765 SLV	65	G13	110	0.670	72	Cool Daylight

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Nett Product in Grams [gr]	Comm Code
TL-RS 20W/33-640 SLV	377	381	1100	13000	118.00	TL20W33RS
TL-RS 20W/54-765 SLV	313	337	1000	13000	118.00	TL20W54RS
TL-RS 40W/33-640 SLV	377	381	2850	13000	222.00	TL40W33RS
TL-RS 40W/54-765 SLV	313	337	2500	13000	222.00	TL40W54RS
TL-RS 65W/33-640 SLV	377	381	4650	13000	274.00	TL65W33RS
TL-RS 65W/54-765 SLV	313	337	4100	13000	274.00	TL65W54RS

Spectral power distribution



Lumen maintenance diagram





TL-M G13

Product Description

- Low-pressure mercury discharge lamps with a tubular 38 mm envelope

Product Feature

- RS (Rapid Start) lamps with an external silicon coating
- External ignition strip connected via a high-ohmic resistor to one of the electrodes
- Available in standard colors and varying color designations

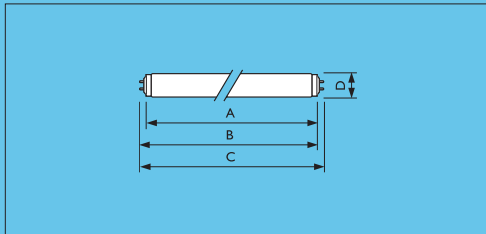
Product Benefit

- Well defined ignition for fast, easy ignition at low temperatures

Application

- Standard colors are mostly used in applications where color rendering is not an important factor

Dimensions in mm



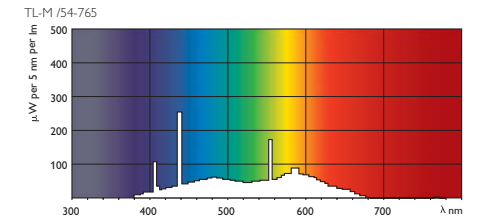
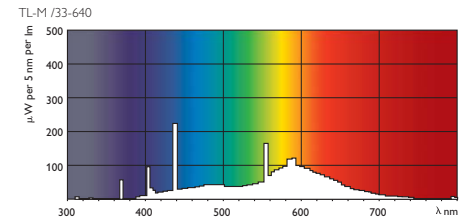
Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
20W	589,8	596,9	604	40,5
40W	1199,4	1206,5	1213,6	40,5
115W	1199,4	1206,5	1213,6	40,5
140W	1500,0	1507,1	1514,2	40,5

Preferred selection

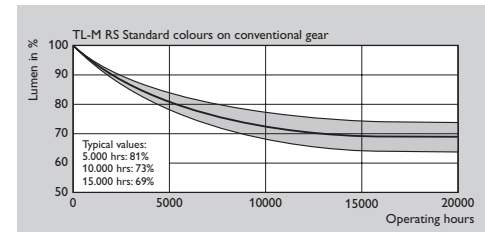
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL-M RS 20W/33-640 SLV	20	G13	57	0,37	4100	63	Cool White
TL-M RS 20W/54-765 SLV	20	G13	57	0,37	6200	72	Cool Daylight
TL-M RS 40W/33-640 SLV	40	G13	101	0,43	4100	63	Cool White
TL-M RS 40W/54-765 SLV	40	G13	101	0,43	6200	72	Cool Daylight
TL-M RS 115W/33-640 SLV	115	G13	92	1,50	4100	63	Cool White
TL-M RS 140W/33-640 SLV	140	G13	114	1,46	4100	63	Cool White

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Nett Product in Grams [gr]	Comm Code
TL-M RS 20W/33-640 SLV	377	381	1200	13000	118,00	TLM20W33RS
TL-M RS 20W/54-765 SLV	313	337	1000	13000	118,00	TLM20W54RS
TL-M RS 40W/33-640 SLV	377	381	2850	13000	222,00	TLM40W33RS
TL-M RS 40W/54-765 SLV	313	337	2500	13000	222,00	TLM40W54RS
TL-M RS 115W/33-640 SLV	377	381	6850	13000	222,00	TLM115W33RS
TL-M RS 140W/33-640 SLV	377	381	8350	13000	274,00	TLM140W33RS

Spectral power distribution



Lumen maintenance diagram



TL

TL-M Rapid Start Super 80 Pro



TL-M RS

Product Description

- Low-pressure mercury discharge lamps with a tubular 38 mm envelope

Product Feature

- RS (Rapid Start) lamps with an external silicon coating
- External ignition strip connected via a high-ohmic resistor to one of the electrodes
- Available in /80 colors and varying color designations

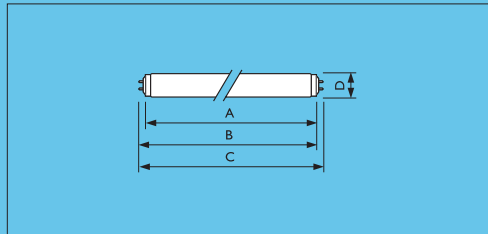
Product Benefit

- Well defined ignition for fast, easy ignition at low temperatures
- /80 colors have good color rendering and high efficacy compared with standard colors
- Create atmospheres from warm white to cool daylight

Application

- /80 colors are especially used in applications where people are often present

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
20W	589.8	596.9	604	40.5
40W	1199.4	1206.5	1213.6	40.5
65W	1500.0	1507.1	1514.2	40.5

TL

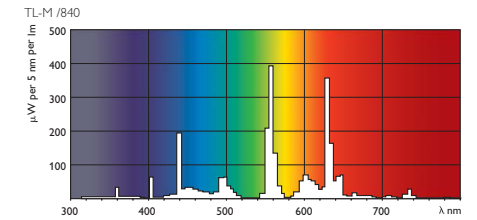
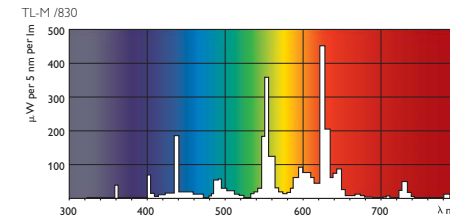
TL-M Rapid Start Super 80 Pro

Preferred selection

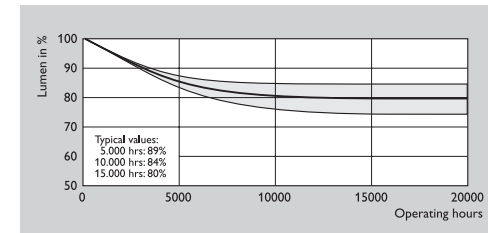
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL-M RS Super 80 Pro 20W/830 SLV	20	G13	57	0.37	3000	85	Warm White
TL-M RS Super 80 Pro 20W/840 SLV	20	G13	57	0.37	4000	85	Cool White
TL-M RS Super 80 Pro 40W/830 SLV	40	G13	103	0.43	3000	85	Warm White
TL-M RS Super 80 Pro 40W/840 SLV	40	G13	103	0.43	4000	85	Cool White
TL-M RS Super 80 Pro 65W/830 SLV	65	G13	110	0.67	3000	85	Warm White
TL-M RS Super 80 Pro 65W/840 SLV	65	G13	110	0.67	4000	85	Cool White

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures EM [hrs]	Nett Product in Grams [gr]	Comm Code
TL-M RS Super 80 Pro 20W/830 SLV	438	403	1250	13000	118	TLM20W830RS
TL-M RS Super 80 Pro 20W/840 SLV	381	379	1250	13000	118	TLM20W840RS
TL-M RS Super 80 Pro 40W/830 SLV	438	403	3100	13000	222	TLM40W830RS
TL-M RS Super 80 Pro 40W/840 SLV	381	379	3100	13000	222	TLM40W840RS
TL-M RS Super 80 Pro 65W/830 SLV	438	403	5100	13000	274	TLM65W830RS
TL-M RS Super 80 Pro 65W/840 SLV	381	379	5100	13000	274	TLM65W840RS

Spectral power distribution



Lumen maintenance diagram



TL Miniature

TL Mini Super 80 Pro



TL

Product Description

- Low-pressure mercury discharge lamps with a tubular 16 mm envelope

Product Feature

- 16 mm diameter tubes with highly efficient 3-band fluorescent coating

Product Benefits

- Good color rendering
- High efficacy, both initially and during lamp lifetime, with high lumen maintenance compared with standard lamps
- Small lamp dimensions enables system miniaturization

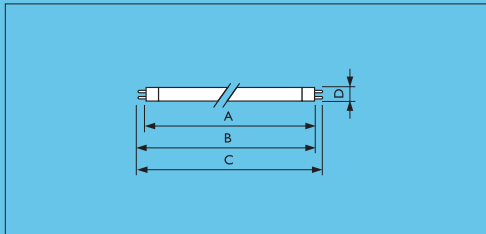
Application

- Ideal for applications where space is limited and requiring better color rendering and efficacy than standard colors:
- hall and staircase lighting in apartment buildings
- built into furniture, mirror and cupboard lighting
- emergency lighting

System

- Possibility for operation on low-voltage DC supply

Dimensions in mm



Product ID	Overall length			Diameter
	A	B	C	D
8W	max. 288.3	max. 295.4	max. 302.5	16
13W	516.9	524.0	302.5	16

TL Miniature

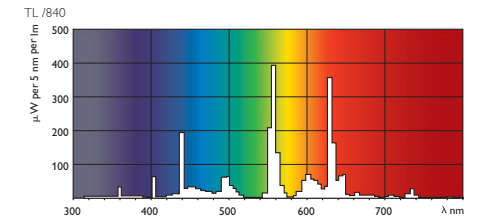
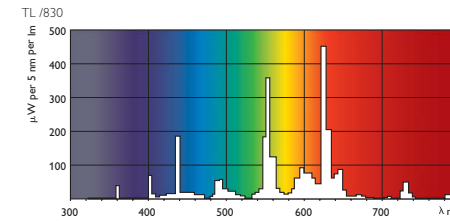
TL Mini Super 80 Pro

Preferred selection

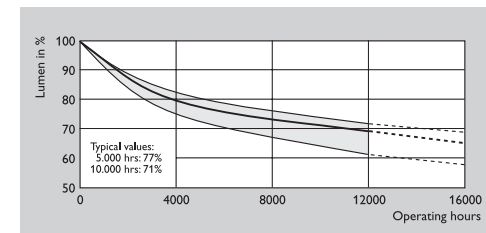
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL Mini Super 80 Pro 8W/830 FAM	8	G5	56	0.15	3000	85	Warm White
TL Mini Super 80 Pro 8W/840 FAM	8	G5	56	0.15	4000	85	Cool White
TL Mini Super 80 Pro 13W/830 FAM	13	G5	90	0.17	3000	85	Warm White
TL Mini Super 80 Pro 13W/840 FAM	13	G5	90	0.17	4000	85	Cool White

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures Preheat EL [hrs]	Nett Product in Grams [gr]	Comm Code
TL Mini Super 80 Pro 8W/830 FAM	440	403	470	10000	27.00	TL8W830
TL Mini Super 80 Pro 8W/840 FAM	381	379	470	10000	27.00	TL8W840
TL Mini Super 80 Pro 13W/830 FAM	438	403	1000	10000	45.00	TL13W830
TL Mini Super 80 Pro 13W/840 FAM	438	403	1000	10000	45.00	TL13W840

Spectral power distribution



Lumen maintenance diagrams



TL Miniature



TL

Product Description

- Low-pressure mercury discharge lamps with a tubular 16 mm envelope

Product Feature

- 16 mm diameter tubes with moderate color rendering

Product Benefit

- Creates atmospheres from warm white to cool daylight

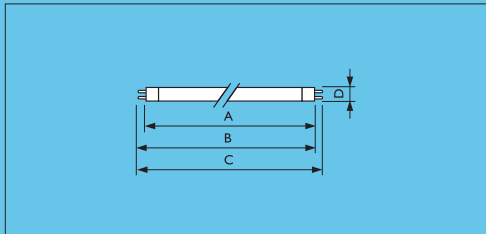
Application

- Ideal for applications where space is limited and color rendering is not important
- Orientation lighting
- Emergency lighting

System

- Possibility for operation on low-voltage DC supply

Dimensions in mm



Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
4W	135.9	143.0	150.1	16
6W	212.1	219.2	226.3	16
13W	516.9	524.0	531.1	16

TL Mini Standard Colors

TL Miniature

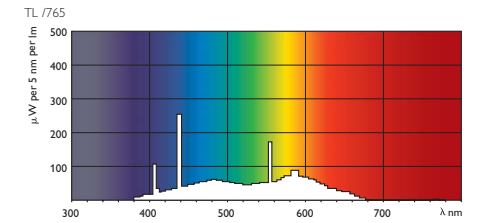
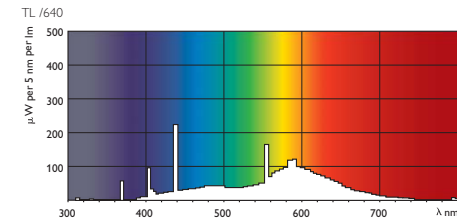
TL Mini Standard Colors

Preferred selection

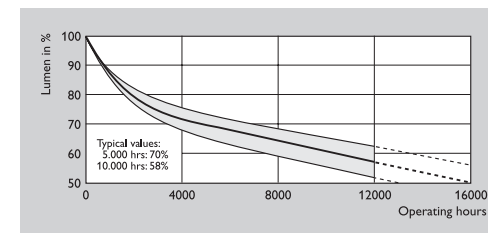
Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation
TL Mini 4W/33-640 1PP	4	G5	29	0.170	4100	60	Cool White
TL Mini 6W/33-640 FAM	6	G5	42	0.160	4100	60	Cool White
TL Mini 6W/54-765 FAM	6	G5	42	0.160	6200	75	Cool Daylight
TL Mini 13W/33-640 FAM	13	G5	90	0.170	4100	60	Cool White

Product ID	Chromaticity Coordinate X	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Life to 50% Failures Preheat EL [hrs]	Nett Product in Grams [gr]	Comm Code
TL Mini 4W/33-640 1PP	377	381	140	5000	16	TL4W33PP
TL Mini 6W/33-640 FAM	377	381	260	10000	22	TL6W33
TL Mini 6W/54-765 FAM	313	337	230	10000	22	TL6W54
TL Mini 13W/33-640 FAM	377	381	930	8000	45	TL13W33

Spectral power distribution



Lumen maintenance diagram

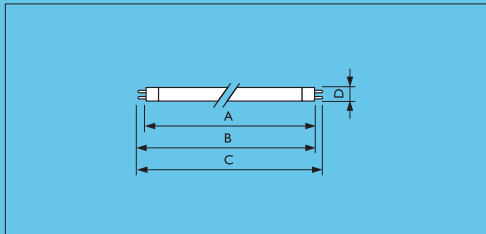


TL Miniature



TL

Dimensions in mm



TL Mini Aperture Super 80

Product Description

- Low-pressure mercury discharge lamps with a tubular 16 mm envelope

Product Benefit

- Very high luminance at the aperture (4 or 5 times higher than the luminance of normal /80 series equivalents)
- Allow the design of slim, energy-efficient and evenly illuminated edge-lit signs
- Good color rendering
- Relatively high efficacy both initially and during lamp lifetime, with high lumen maintenance

Application

- High aperture luminance makes these lamps ideally suited for use in edge-lit signs

Product ID	Overall length			Diameter
	A max.	B max.	C max.	D max.
8V	288.3	295.4	302.5	16

TL Miniature

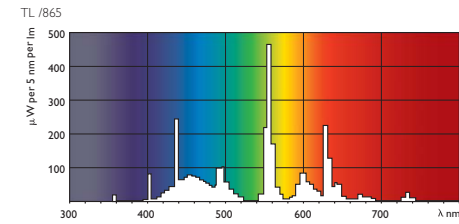
TL Mini Aperture Super 80

Preferred selection

Product ID	Rated Lamp Wattage [W]	Cap Base	Lamp Voltage [V]	Lamp Current EM/CuFe [A]	Color Temperature [K]	Color Rendering Index [Ra]	Color Designation	Chromaticity Coordinate X
TL Mini Aperture Super 80 8W/865 FA50 FAM	8	G5	56	0.15	6500	80	Cool Daylight	316
TL Mini Aperture Super 80 8W/865 FA50P FAM	8	G5	56	0.15	6500	80	Cool Daylight	316

Product ID	Chromaticity Coordinate Y	Luminous Flux Lamp EM/CuFe [lm]	Lumen Maintenance 2000h [%]	Lumen Maintenance 5000h [%]	Life to 50% Failures EM [hrs]	Nett Product in Grams [gr]	Comm Code
TL Mini Aperture Super 80 8W/865 FA50 FAM	336	380	80	77	10000	25.30	TL8W865FA50
TL Mini Aperture Super 80 8W/865 FA50P FAM	336	380	80	77	10000	25.30	TL8W865FA50

Spectral power distribution



Starters

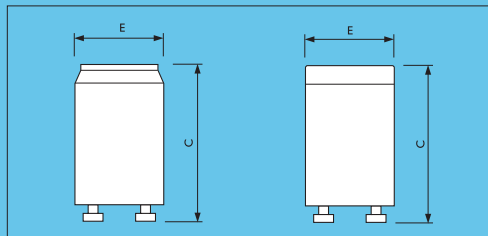


S10 Starter in white canister



S2 Starter in white canister

Dimensions in mm



Starters

Product Description

- Premium-quality glow switches range for igniting conventional electromagnetic fluorescent lamps
- 2-pin ignitor in plastic (flame-retardant polycarbonate) canister with radio-interference suppression capacitor
- S2 starters for ignition of low-voltage fluorescent TL lamps and series/single application in high voltage for lower wattages (4 - 22W)
- S10 starters for ignition of high voltage fluorescent TL lamps for wide range of wattages (4 - 65W)

Product Features

Green Starters

- Premium reliability with less than 100 early failures per million products (<100 ppm)
- Premium reliability with 10000 switches guaranteed
- No hazardous radioactive isotopes used for activating the glow switch
- Lead-free and compliant with European RoHS legislation (Reduction of Hazardous Substances)
- Secure, safe and fast ignition on both inductive (L) and capacitive (LC) lighting systems acc. to IEC 60155
- Controlled preheating of the lamp filaments and sufficient pulse voltage for longer lamp life (>25% compared with cheap starters)
- Canister shape designed for a better grip while installing and replacing the starter
- Green insulation plate to identify these lead-free and radioactive-free environment-friendly starters
- Different green printing for visual distinction between S2 and S10 (S2 = light green / S10 = dark green)

Performance Starters

- Premium reliability with less than 100 early failures per million products (<100 ppm)
- Premium reliability with 12000 switches guaranteed
- Secure, safe and fast ignition on both inductive (L) and capacitive (LC) lighting systems acc. to IEC 60155
- Controlled preheating of the lamp filaments and sufficient pulse voltage for longer lamp life (>25% compared with cheap starters)
- Canister shape designed for a better grip while installing and replacing the starter
- Blue insulation plate to identify these lead-free and radioactive-free environment-friendly starters
- Special printing for visual distinction between S2 and S10

SIS10

- Reliable automatic disconnection of defective or end-of-life fluorescent lamps
- Cut-off circuit to protect the starter and overheating of the control gear
- Button with 3x restart function
- Premium reliability with 10000 safe switches
- Radioactive-free (patented) and lead-free (RoHS-compliant)
- 2-pin igniter in plastic (flame-retardant polycarbonate) canister with radio-interference suppression capacitor

Product ID	Overall length	
	C max.	E max.
1	40.3	21.5
2	40.3	21.5

Starters



S2 Starter in blue transparent canister



S10 Starter in blue transparent canister



Starter S2E BL

Product Benefits

- Premium quality ensures trouble-free operation
- Low maintenance costs through extremely low early replacement levels
- Secure, safe and fast lamp ignition according to IEC 155 international standard
- Flame-retardant components for additional safety
- The world's only starters with no radioactive material inside the glow switch while maintaining high quality performance; patented technology avoids hazardous substances in the manufacturing and recycling phases
- Redesigned canister top for easy installation; either with a screwdriver or through improved grip

Preferred selection

Product ID		Net Weight Per Piece (g)	Dimension No.	Photo Letter	System Description	Ambient Temperature min. (°C)
Green Starters	S2 4-22W SER 220-240V WH	7.00	1	A	Single+Series	-15
	S10 4-65W SIN 220-240V WH	7.00	1	B	Single	-20
Performance Starters	S2 4-22W SER 220-240V WH	7.00	1	C	Single+Series	-15
	S10 4-22W SER 220-240V WH	7.00	1	D	Single	-20
Safety and Comfort Starters	SIS10 30-65W SIN 220-240V WH	6.00	2	E	Single	-20

Product ID	Ambient Temperature max. [°C]	Capacitor	Peak Voltage min. [V]	Peak Voltage max. [V]	Non Reclosure Voltage min. [V]
Green Starters	S2 4-22W SER 220-240V WH	Yes	800	1350	70
	S10 4-65W SIN 220-240V WH	Yes	900	1350	140
Performance Starters	S2 4-22W SER 220-240V WH	Yes	800	1350	70
	S10 4-22W SER 220-240V WH	Yes	900	1350	140
Safety and Comfort Starters	SIS10 30-65W SIN 220-240V WH	Yes	900	-	140

Note: Pls contact local Philips sales representative for packing unit details

Starters

Application

- Used in conventional electromagnetic fluorescent lamp systems
- S2 starters for LV applications and low-wattage HV applications (4 - 22W), both single and in series
- S10 starters for HV applications (4 - 65W) in single application
- S2 starters recommended for 18W HV single application
- Starter replacement recommended together with fluorescent lamp replacement
- For 220/240V~, 13W, single-application, the Philips S10 starter needs to be used.