Really fit.
OSRAM LUMILUX®

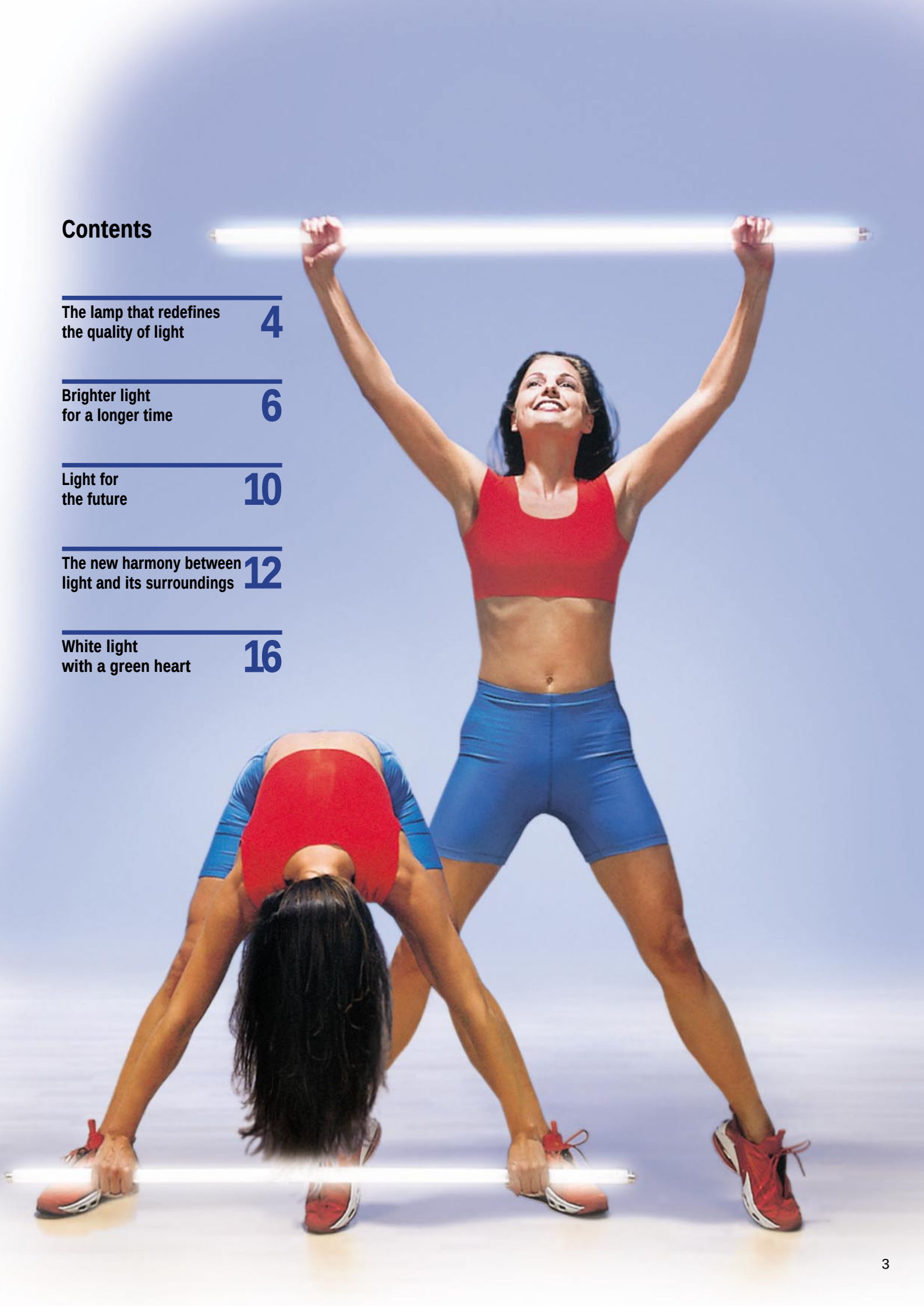
SEE THE WORLD IN A NEW LIGHT

OSRAM

LUMILUX® from OSRAM. The fitness regime for your lighting.

Linear fluorescent lamps are among the most widely used light sources in the world because they require little energy to produce a great deal of light. The immense variety of modern luminaires provides a universal basis for the use of fluorescent lamps in the commercial, industrial and private sectors. Different light colours and different colour-rendering levels are available for a whole variety of lighting applications.
First introduced in the late thirties, linear fluorescent lamps have been developing further ever since. The slimmer LUMILUX® 26 mm versions with a new triphosphor coating were introduced by OSRAM in the early eighties and soon superseded the lamps with standard coating on account of their more efficient light and better quality.
The latest generation of fluorescent lamps, the new LUMILUX®, was presented by OSRAM at the beginning of the year 2002 with a range of light sources which are not only more economical and more reliable, but also ecologically more acceptable.

Contents



The lamp that redefines the quality of light

Technical advantages of OSRAM LUMILUX®

Lower depreciation of luminous flux

The fluorescent coating is subject to natural ageing during the life of a lamp, with the result that the luminous flux decreases. This disadvantage has been minimised by the special phosphor used in the new OSRAM LUMILUX®, which also guarantees that 90% of the original luminous flux is maintained even after 12,000 or more hours of operation.

What is the purpose of the phosphor coating?

Fluorescent lamps emit light by transforming the (invisible) ultraviolet radiation generated by discharge between the electrodes into visible light via the fluorescent (phosphor) coating inside the glass tube. The efficiency and service life of a luminaire are increased by using a triphosphor coating instead of the standard coating. The composition of the coating also determines the colour temperature and thus the colour of the light emitted by the lamp.

High luminosity

The special triphosphor materials used in the new LUMILUX® lamps guarantee a high luminous flux with a high luminous efficacy of up to 96 lm/W.

Photometric parameters

Wattage (W) *describes the power consumption required by a lamp in order to produce light.*
Luminous flux (lm) *describes the amount of light emitted by a light source.*
Luminous efficacy (lm/W) *defines the amount of light emitted by a light source in relation to the required power consumption. The higher the luminous efficacy of a light source, the more economically it can be used.*

Large selection of light colours and optimum colour rendering

The new LUMILUX® is available in every light colour for all the various requirements to be met by a modern lighting system in commercial and industrial use: the right light colour for every lighting application – with colour-rendering level 1 B (excellent: R_a 80–89).

Colour temperature, light colour and colour-rendering level

The colour temperature in Kelvin (K) describes the colour of the light emitted by a light source. Light with a colour temperature close to that of incandescent lamps ($T_C < 3500$ K) is considered "warm"; it is neutral ($3500\,K \leq T_C < 5000$ K) or cold when close to the temperature of natural daylight ($T_C \geq 5000$ K).
The quality of the colour rendering describes the ability of a light source to reproduce the colours of the illuminated objects as closely as possible to those obtained in daylight. It is only marginally dependent on the colour temperature: a light source can easily have a high colour temperature and poor colour rendering or vice versa.

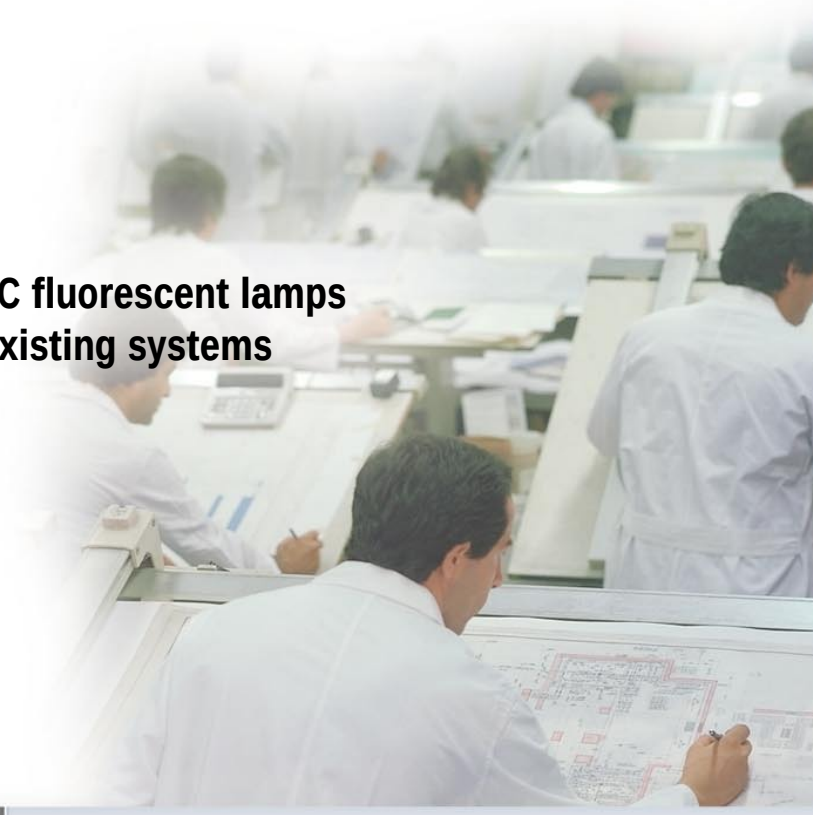
More environmentally friendly than ever before

Mercury is essential for ensuring the functionability and luminaire efficiency of the lamps. The new LUMILUX® contain no more than is necessary to guarantee reliable operation even when used in outdoor applications at subzero temperatures.
All the materials used for the LUMILUX®, from the glass to the phosphor coating and packaging, can be recycled and reused. In addition, the high luminous efficacy and long service life as compared with standard lamps ensure that fewer lamps are required and extend the intervals between servicing. In other words, lower power consumption to generate more light, fewer lamps to produce the same brightness and 100% recyclability.
Quite simply, innovative fluorescent lamps have a new name: LUMILUX®.

Did you know that…

…discharge lamps provide more than 80% of the artificial light needed in Europe? Linear fluorescent lamps are the most commonly used lamps of this type. Discharge lamps consume little more than 30% of the total energy required for lighting. The power generated by our power plants would have to be increased fivefold if filament lamps were once again to be used exclusively.

Brighter light for a longer time



The advantages of replacing BASIC fluorescent lamps with OSRAM LUMILUX® lamps in existing systems

The LUMILUX® fluorescent lamps can be used to modernize existing systems with BASIC fluorescent lamps without necessitating any technical changes whatsoever and considerably improve the performance of these systems at the same time.

Improved economical operation

Use of the new LUMILUX® lamps instead of BASIC fluorescent lamps tangibly increases the luminous efficacy obtained with the same installed power.

BASIC fluorescent lamps, light colour 25, 4000 K – conventional control gear (CCG)

Wattage (W)	18	36	58
Luminous flux (lm)	1100	2600	4100
Luminous efficasy (lm/W)	61	72	71

OSRAM LUMILUX®, light colour 840, 4000 K – conventional control gear (CCG)

Wattage (W)	18	36	58
Luminous flux (lm)	1350	3350	5200
Luminous efficasy (lm/W)	71	93	90
Increase in luminous efficacy compared with BASIC	**+23%**	**+30%**	**+27%**

An example of maximum efficiency

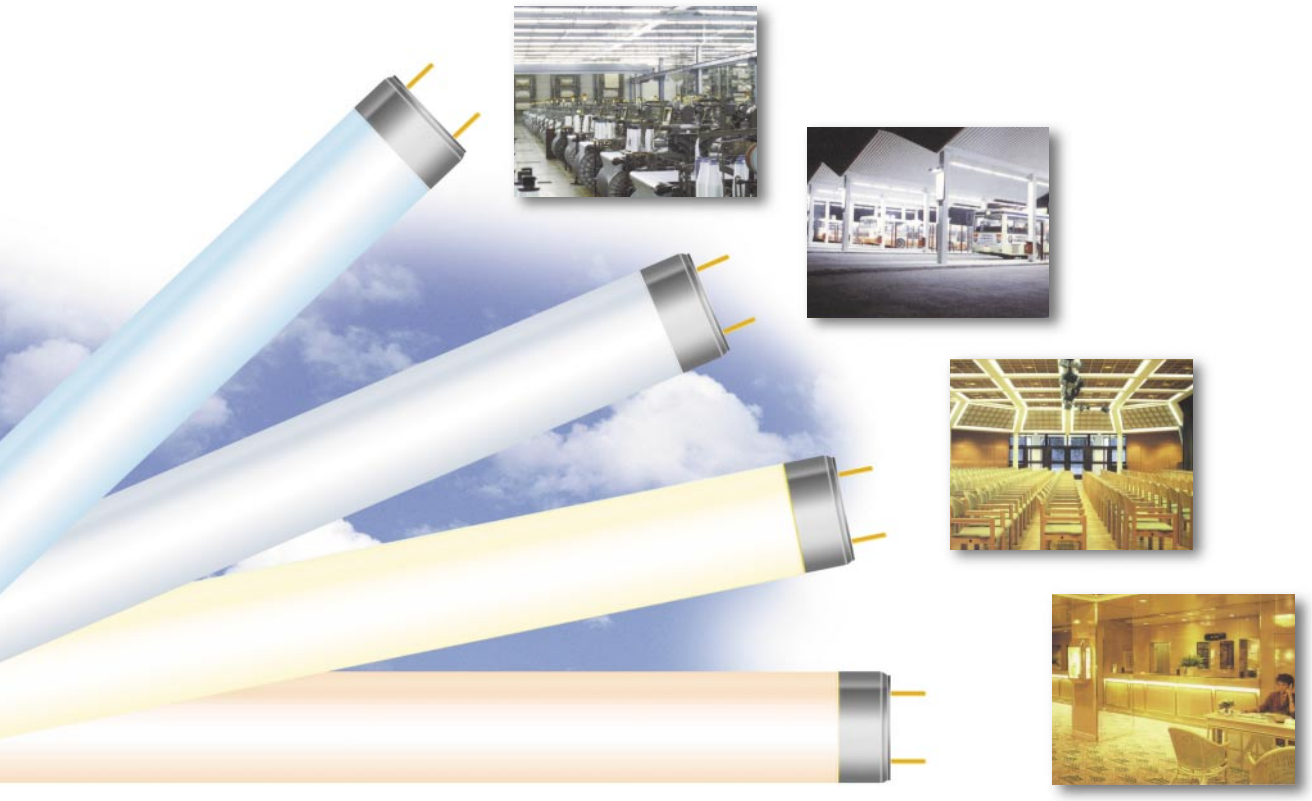
How many linear fluorescent lamps rated at 36 W are required to illuminate an area of 100 m² with a lighting intensity of 400 Lx?
Answer: 40 pcs. when using BASIC fluorescent lamps, but only 30 pcs. of the new LUMILUX®!

Longer service life

The decline in the luminous flux of the LUMILUX® is tangibly lower than in conventional fluorescent lamps. After 12,000 hours of operation or more, the remaining flux is still equal to 90% of the original value, as compared with only approx. 70% in a standard fluorescent lamp.

Use of the LUMILUX® lamps guarantees:

- a constant average lighting intensity very close to the nominal lighting intensity of the system and in conformity with the relevant standards. That is a major advantage and also improves general safety. Just imagine the risks associated with a roughly 30% drop in the lighting level when working with such machinery as lathes, milling and drilling machines;
- **longer intervals and less maintenance to maintain the average lighting intensity at the required level.**



Large selection of light colours

The range of OSRAM LUMILUX® lamps includes the ideal light colour for every application, as the variety of light colours available is larger and more comprehensive than in the case of BASIC fluorescent lamps. OSRAM LUMILUX® are available in:

6000 K Daylight

4000 K Cool White

3000 K Warm White

2700 K INTERNA®
a light colour very close to that of incandescent lamps

Better colour rendering

Thanks to the special triphosphor coating of the LUMILUX®, the colour rendering is improved from a level of 2A to 3 – good – for conventional fluorescent lamps to 1B – excellent. In other words, the colour rendering of illuminated objects is improved significantly. This is a matter of great importance for instance in the textile industry, the graphics sector, at exhibitions, in sales and showrooms, and in private homes.

Safe, reliable, convenient: the DEOS® safety starter

You now know how LUMILUX® lamps can help to improve the safety and lighting comfort of conventional lighting systems. But that is not all: the DEOS® safety starter from OSRAM offers a number of major advantages compared with conventional starters:

- Reliable automatic disconnection of defective or burnt-out fluorescent lamps, thus eliminating the annoyance of flickering light and unscheduled maintenance.
- Cut-off circuit to protect the starter and control gear.
- Reliable operation in systems with conventional control gear with low power loss.
- Four times the service life of a conventional starter.
- Simply press the red button and the system is immediately ready for reuse following an interruption.

REMEMBER:
Always press the red button after replacing a lamp so that the system is operational again.
The starter must be replaced after the fourth lamp.

Light for the future

How OSRAM LUMILUX® can be used to best effect in new lighting systems

The new LUMILUX® can be ideally combined with the QUICKTRONIC® electronic control gear from OSRAM to derive optimum benefit from a modern lighting system with linear fluorescent lamps.

The use of electronic control gear not only improves the performance of the fluorescent lamps, but also yields major advantages as regards convenience, cost-efficiency and operational reliability.

The advantages of intelligent electronic control gear

Comfortable light

- Flicker-free starting
- Automatic disconnection of flickering lamps at the end of their service life
- The luminous flux of the system can be dimmed from 100% to 1%

Well-being

- Constant flicker-free light without stroboscopic effects
- No annoying hum
- Compliance with all applicable regulations as regards harmonics, radio interference and immunity to interference

Cost-efficient operation

- 20% less dissipated power when compared with conventional control gear
- Up to 50% longer lamp life
- Lower maintenance costs as fewer replacement lamps are required and a starter is unnecessary
- Less heat generated on account of the lower dissipated power and therefore less of a burden for air-conditioning systems

What are the advantages of electronic operation for the lamps?

Safety

- Disconnection of the power supply to defective lamps
- Snubber circuit for transient voltage pulses and ongoing temporary over-voltages
- Greater protection against fire due to lower equipment temperatures; can be used in classes Ⓕ, ⒻⒻ, Ⓦ and ⓌⓌ for direct installation on normally inflammable surfaces (e.g. wood)
- Can be used in emergency lighting systems

Considerably longer lamp life

Electronic control gear optimises all parameters related to starting and operation of the lamp and help to **extend the lamp life from 13,000 hours with conventional control gear to 20,000 hours in systems with warm-start ECG. The luminous flux equals at least 85% of the rated luminous flux.**

This extends the intervals between maintenance and tangibly cuts the costs for lamps and labour.

The new harmony between light and its surroundings

The right light colour for every application

A range of lamps for state-of-the-art systems

The planning guidelines for lighting systems are currently set out in national standards, such as UNI 10380 in Italy and DIN 5035 in Germany. The purpose of these standards is to lay down binding regulations with regard to the execution, operation and inspection of systems producing artificial light in residential and commercial buildings. They are comprehensively applied when planning new systems and when fundamentally redesigning existing systems.

Choice of light colour

Choosing the right light colour is first and foremost a matter of personal taste, although it also depends on local customs, the mood and the manner in which a person perceives the light.
This table contains basic information for planning and tendering, so that you can choose the right light colour for every application.

Anwendung	LUMILUX® Daylight 860	LUMILUX® Cool White 840	LUMILUX® Warm White 830	LUMILUX INTERNA® 827
OFFICES				
Offices, corridors		●	●	
Conference rooms			●	●
INDUSTRY AND TRADE				
Electrical engineering		●		
Textile industry	●	●		
Graphics sector, laboratories	●	●	●	
Wood processing	●	●		
Storage rooms, hauliers		●		
SCHOOLS AND LECTURE HALLS				
Kindergartens		●	●	●
Libraries, reading rooms		●	●	●
SOCIAL AMENITIES				
Restaurants, inns, hotels				●
Theatres, concert halls, lobbies				●
PUBLIC AREAS				
Sports facilities		●		
Art galleries, museums	●	●		●
BUSINESS OUTLETS				
Food trade	●	●	●	●
Bakeries				●
Deep-freezers and freezer cabinets	●			
Cheese, fruit and vegetables				●
Fish				●
Textiles, leather	●			●
Furniture, carpets				●
Sports equipment, toys, stationery				●
Photographic supplies, clocks, jewellery	●		●	
Cosmetics, hairdressing				●
Flowers	●			●
Department stores, supermarkets		●	●	●
HOSPITALS				
Diagnosis and therapy	●			
Examination rooms, waiting rooms				●
RESIDENTIAL SECTOR				
Living rooms				●
Kitchens, bathrooms, basement areas		●		●

Cultural influences

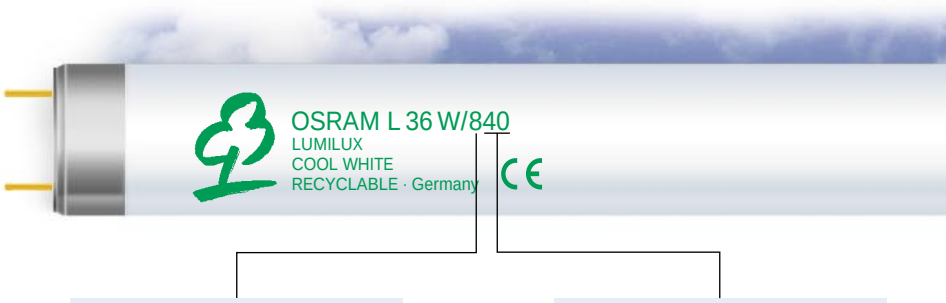
A warmer colour of light is preferred in northern countries, while cooler light is more frequently favoured in the south. This is essentially due to the fact that people who are regularly exposed to strong sunlight tend to prefer an artificial light that is perceived as being „cool“ and vice versa. Lamps emitting a warm light will almost certainly be preferred in homes furnished with a great deal of wood, while white furniture, marble and chromium look better in white light or a daylight colour. Warm light conveys a sense of rest and relaxation, while white light and daylight colours are associated with concentration and a positive working atmosphere.

Clear labelling

To distinguish between the various fluorescent lamps in terms of their light colour and colour rendering, OSRAM uses the standard international system:
All LUMILUX® fluorescent lamps are identified by a three-digit number. The first digit refers to the light colour, the second and the third to the colour-rendering level.

Example:

A LUMILUX® lamp with light colour **840** produces neutral (Cool White) light with a light colour of 4000 K and colour-rendering level 1B (R_a 80–89).



Colour rendering

Significance of the first digit:

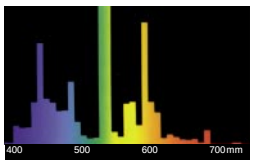
8 Colour-rendering level 1 B, (R_a 80–89)

Light colour

Significance of the second digit:

60 Light colour Daylight 6000 K
40 Light colour Cool White 4000 K
30 Light colour Warm White 3000 K
27 Light colour INTERNA® 2700 K

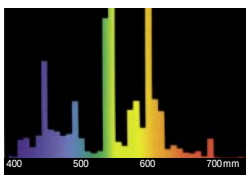
LUMILUX® Daylight Colour 860



Fluorescent lamps in colour 860 with 6000 K are ideal sources of light in all rooms requiring artificial light of daylight quality, rooms in which minor differences in colour shades must be clearly recognisable and in which the colours must be reproduced as naturally as possible.

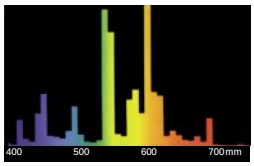
This is important, for example, in retail outlets selling garments, photographic supplies and optical equipment, jewellery or flowers, as well as in the textile industry, doctors' surgeries, printshops, newspaper offices and the graphics sector.

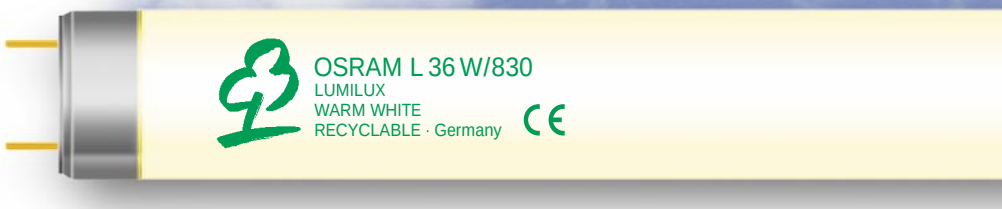
LUMILUX® Cool White Colour 840



With a colour temperature of 4000 K, the LUMILUX® the Cool White light is roughly half-way between the light colour resembling daylight and the light of incandescent lamps. It is therefore ideal for use at workplaces, particularly in industry, commerce and trade, in offices, at exhibitions and trade fairs, as well as sports events. The lamps can also be used for various purposes in the home, for instance in corridors, kitchens, bathrooms, basement areas and workshops and gyms.

LUMILUX® Warm White
Colour 830

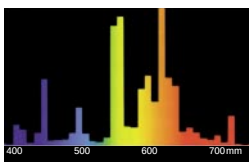




LUMILUX® Warm White is the ideal light colour whenever a bright, yet comfortable light is required. This light is perceived as being pleasantly "warm" on account of its colour temperature of 3000 K. It creates a pleasant atmosphere in which to feel comfortable.

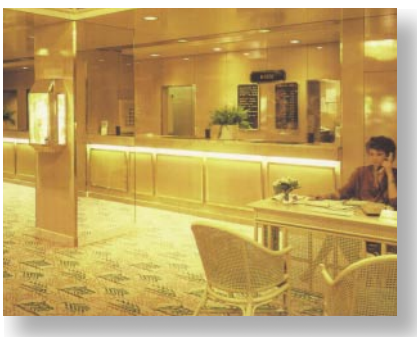
LUMILUX® Warm White lamps are used wherever a bright basic light and a positive mood are required, such as in salesrooms, exhibition rooms, trade fair halls, schools, lecture halls, kindergartens, offices and conference rooms.

LUMILUX INTERNA®
Colour 827



Of all the LUMILUX® lamps, the colour version LUMILUX INTERNA® comes closest to the warm light of an incandescent lamp. With a colour temperature of 2700 K, it gives its surroundings a feeling of homeliness and comfort. Wood, for instance, is highlighted particularly strongly by the light colour LUMILUX INTERNA®; this makes it ideal for use inside furniture and for indirect lighting.

All residential rooms, conference rooms, lecture halls, libraries, hospital rooms and waiting rooms are other major areas of use for this light colour. LUMILUX INTERNA® creates an extremely pleasant light in hotels, public halls, foyers, inns and restaurants, theatres and concert halls and creates a relaxing atmosphere in libraries, lecture halls and conference rooms.



White light with a green heart

LUMILUX® – more environmentally friendly than ever before

And there is now another good reason for choosing LUMILUX® – its optimum ecological compatibility, an important aspect today, in addition to the technical and economic advantages.

100% recyclability of the materials used

Over 20 years ago, OSRAM developed a system for reusing the materials recovered by recycling waste lamps. 93% of these materials are reused to produce new fluorescent lamps, while the remaining 7% are used for other products.

OSRAM comes full circle

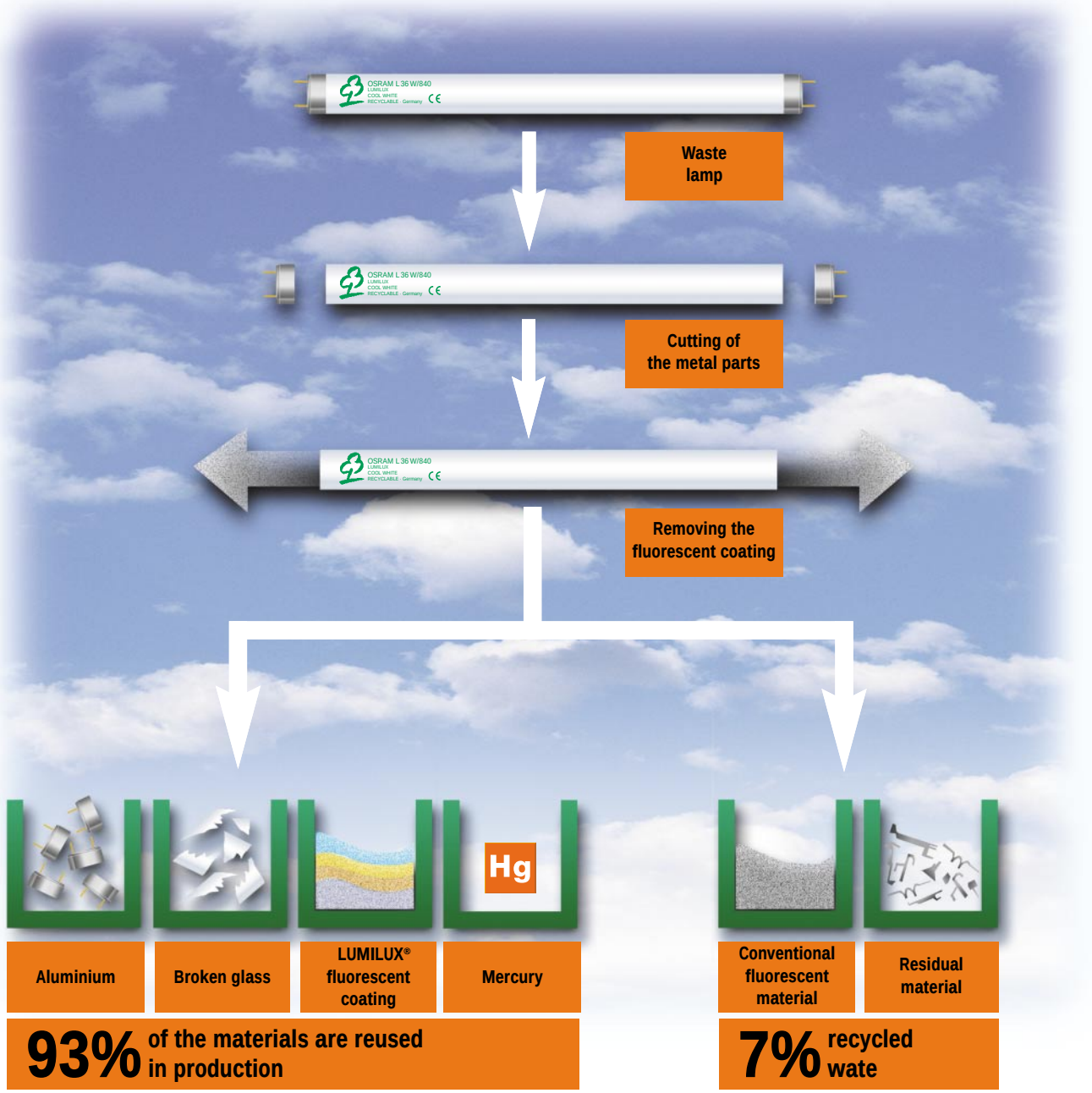
Together with other lamp manufacturers, OSRAM has begun to set up a network of firms to collect and process waste lamps in Europe. One such firm is the Society of Lamp Recyclers (AGLV) in Germany. Those intermediates which can be reused in production are sent to plants such as Augsburg where fluorescent lamps and compact fluorescent lamps are produced, one range being the LUMILUX®.

100% recyclability

OSRAM is the first lamp manufacturer to have developed an exclusive machine known as the “cut-and-separate machine” which selectively separates the various components contained in waste lamps and prepares these for reuse in the manufacture of new lamps.

93% of the components removed in this way can be reused to produce new fluorescent lamps.

The remaining 7% are recycled and processed into materials with a whole range of possible uses: for sand-blasting, as additives for the cement industry, or mixed with foamed glass for the manufacture of bricks, prefab elements, pipes and material for the building industry.



Lower mercury content

With fluorescent lamps being discharge lamps, the use of mercury in the filling gas is indispensable, for it is impossible to generate light without igniting the mercury. To this day, it is still not possible to completely eliminate the mercury content.

The required minimum

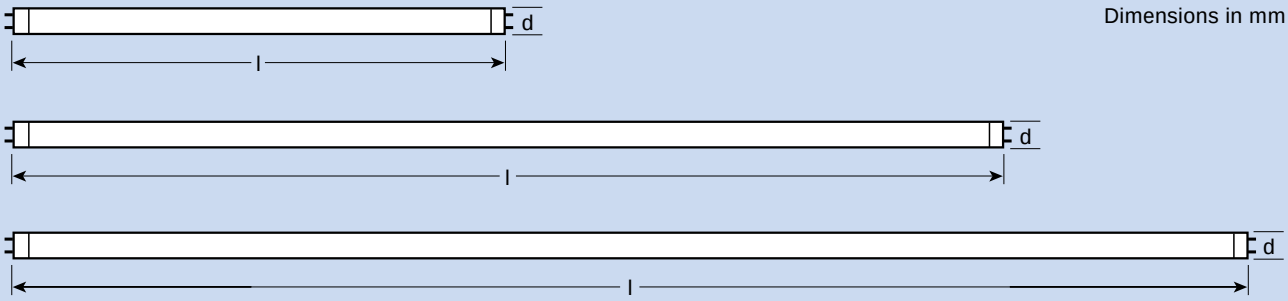
Every LUMILUX® contains no more than 4.5±0.5 mg mercury. This is the minimum required to guarantee trouble-free operation and the nominal lighting performance even when used in outdoor applications and at subzero temperatures!

Recyclable packaging materials

The lamp packagings also constitute a waste volume, the importance of which must not be underestimated for the environment. This is why OSRAM has used wholly (100%) recyclable packaging materials for many years. In addition to the individually packed versions, there are also simple industrial packagings which make it much easier for bulk customers to change lamps and reduce the volume of packaging waste by up to 45%.


GLOBAL CARE
Lower depreciation of the luminous flux
Higher luminous efficacy
Longer lamp life
Large selection of light colours and excellent colour rendering
Lower mercury content
100% recyclability
If you want a fluorescent lamp then ask for OSRAM LUMILUX®

Technical Data



Dimensions in mm

LUMILUX®	**18 W**	**18 W**	**18 W**	**18 W**
Colour temperature	860	840	830	827
Light colour	LUMILUX® Daylight	LUMILUX® Cool White	LUMILUX® Warm White	LUMILUX INTERNA®
Degree of colour rendering	1 B	1 B	1 B	1 B
Luminous flux	1300 lm	1350 lm	1350 lm	1350 lm
Diameter d	26 mm	26 mm	26 mm	26 mm
Length l	590 mm	590 mm	590 mm	590 mm

LUMILUX®	**36 W**	**36 W**	**36 W**	**36 W**
Colour temperature	860	840	830	827
Light colour	LUMILUX® Daylight	LUMILUX® Cool White	LUMILUX® Warm White	LUMILUX INTERNA®
Degree of colour rendering	1 B	1 B	1 B	1 B
Luminous flux	3250 lm	3350 lm	3350 lm	3350 lm
Diameter d	26 mm	26 mm	26 mm	26 mm
Length l	1200 mm	1200 mm	1200 mm	1200 mm

LUMILUX®	**58 W**	**58 W**	**58 W**	**58 W**
Colour temperature	860	840	830	827
Light colour	LUMILUX® Daylight	LUMILUX® Cool White	LUMILUX® Warm White	LUMILUX INTERNA®
Degree of colour rendering	1 B	1 B	1 B	1 B
Luminous flux	5000 lm	5200 lm	5200 lm	5200 lm
Diameter d	26 mm	26 mm	26 mm	26 mm
Length l	1500 mm	1500 mm	1500 mm	1500 mm

LUMILUX®		**30 W**	**30 W**	**30 W**
Colour temperature		840	830	827
Light colour		LUMILUX® Cool White	LUMILUX® Warm White	LUMILUX INTERNA®
Degree of colour rendering		1 B	1 B	1 B
Lichtstrom		2350 lm	2350 lm	2350 lm
Diameter d		26 mm	26 mm	26 mm
Length l		895 mm	895 mm	895 mm

LUMILUX®		**36 W-1**		**36 W-1**
Colour temperature		840		827
Light colour		LUMILUX® Cool White		LUMILUX INTERNA®
Degree of colour rendering		1 B		1 B
Luminous flux		3000 lm		3000 lm
Diameter d		26 mm		26 mm
Length l		970 mm		970 mm

LUMILUX®	**38 W**	**38 W**
Colour temperature	840	830
Light colour	LUMILUX® Cool White	LUMILUX® Warm White
Degree of colour rendering	1 B	1 B
Luminous flux	3000 lm	3000 lm
Diameter d	26 mm	26 mm
Length l	1047 mm	1047 mm

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