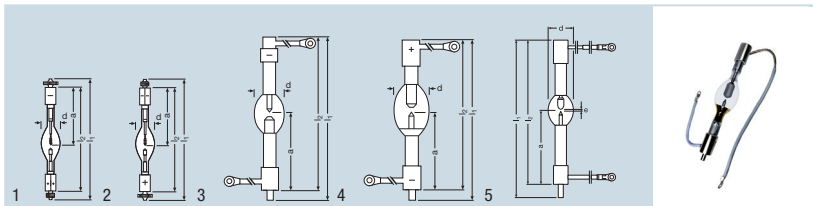


Product reference	Product number								
HBO 1003W/PIL	4050300 461380	DC	700	27.1	25.8	1500	Forced ⁶⁾	vertical ⁷⁾	
HBO 1500W/PIL	4050300 461465	DC	1500	23	65	1500	Forced ⁶⁾	vertical ⁷⁾	
HBO 2100W/PIL	4050300 800431	DC	2100	24	78	1500	Forced ⁶⁾	vertical ⁷⁾	
HBO 2500W/PIL	4050300 947396	DC	2500	28	90	1500	Forced ⁶⁾	vertical ⁸⁾	
HBO 3500W/PIL	4008321 355843	DC	3400	23	148	1500	Forced ⁶⁾	vertical ⁸⁾	
Product reference									
HBO 1003W/PIL	29	195	167.5	85 ¹⁾	3.0	SFcX14-6/25 ²⁾	SFc15-6/25 ⁵⁾	8	1
HBO 1500W/PIL	46	240	240	118 ¹⁾	4.0	SFc30-6/25 ³⁾	SFc27-10/35	6	2
HBO 2100W/PIL	52	242	240	118 ¹⁾	4.5	Sk33s/42 ⁴⁾	SFc27-12/35	6	2
HBO 2500W/PIL	62	312.5	312	149 ¹⁾	6.7	SFa30-6/50 ⁴⁾	SFc30-6.5/50	1	3
HBO 3500W/PIL	77	357	322	154 ¹⁾	4.5	SFaX40-6/50 ⁴⁾	SFc32.5-6.7/50	4	4
¹⁾ Distance from end of base to tip of anode or cathode (cold) ²⁾ with cooling fins ³⁾ cooling fins and cable connection (M 8) ⁴⁾ with cooling fins and cable connection (M 10) ⁵⁾ with thread (M 6) ⁶⁾ maximum permissible base temperature: 200 °C ⁷⁾ Anode underneath ⁸⁾ Anode on top									

Safety

Because of their high luminance, UV radiation and high internal pressure HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.



Product reference	Product number	AC/DC	W	V	A	t[h]		
HBO 1000W/CEL ¹⁾	4050300 412627	DC	750	47	16	2500	Convection	vertical ¹¹⁾
HBO 1002W/CEL ²⁾	4050300 412634	DC	750	47	16	2500	Convection	vertical ¹¹⁾
HBO 1500W/CEL	4050300 624037	DC	1500	23	65	2250	Forced ¹⁰⁾	vertical ¹¹⁾
HBO 1500W/CIEL	4050300 538204	DC	1500	23	65	2250	Forced ¹⁰⁾	vertical ¹¹⁾
HBO 2001W/CIEL	4050300 972121	DC	2000	26	77	2250	Forced ¹⁰⁾	vertical ¹²⁾
HBO 2001W/CIELX	4008321 122735	DC	2000	24	82	2250	Forced ¹⁰⁾	vertical ¹²⁾
HBO 2001W/CIL	4050300 947235	DC	2000	26	77	1500	Forced ¹⁰⁾	vertical ¹²⁾
HBO 2700W/CIL ³⁾	4050300 896588	DC	2700	26	104	1500	Forced ¹⁰⁾	vertical ¹²⁾
Product reference								
HBO 1000W/CEL ¹⁾	28	175	157	78.5 ⁴⁾	3.0	SXFc15-6/20 ⁵⁾	SFa15-6/20 ⁶⁾	1
HBO 1002W/CEL ²⁾	28	175	157	78.5 ⁴⁾	3.0	SFc15-6/25 ⁶⁾	SFa15-6/20 ⁵⁾	1
HBO 1500W/CIEL	52	262	242	122 ⁴⁾	4.0	SFc27-10/35 ⁷⁾	SFa27-20/22 ⁸⁾	6
HBO 1500W/CIEL	52	262	242	122 ⁴⁾	4.0	SFa27-10/35 ⁷⁾	SFa27-20/22 ⁸⁾	1
HBO 2001W/CIEL	62	329	309	148.75 ⁴⁾	4.5	SF33.5/50 ⁸⁾	SFa33.5-10/50 ⁹⁾	4
HBO 2001W/CIELX	62	329	309	148.75 ⁴⁾	4.5	SF33.5/50 ⁸⁾	SFa33.5-10/50 ⁹⁾	4
HBO 2001W/CIL	62	329	309	148.75 ⁴⁾	4.5	SF33.5/50 ⁸⁾	SFa33.5-10/50 ⁹⁾	4
HBO 2700W/CIL ³⁾	62	332	307	149.1 ⁴⁾	4.8	SF33.5/50 ⁸⁾	SFa33.5-14/50 ⁹⁾	1

¹⁾ Lamp suitable for pulsed operation between 700 W and 1000 W

Maximum permissible power is 750 W for constant power operation

²⁾ Also available as HBO 1002W/CL with 1500 h life. (Obtainable in Europe, Singapore and Japan only through Canon) (4050300324005)

Lamp suitable for pulsed operation between 700 W and 1000 W. Max. permissible power is 750 W for constant power operation

³⁾ The lamp contains overpressure even in cold status - additional safety regulations, supplied with the lamps, have to be fulfilled. Please read Technical bulletin DO-SEM TB 004 carefully.

⁴⁾ Distance from end of base to tip of anode or cathode (cold)

⁵⁾ hexagon base with M 6 threaded pin

⁶⁾ with thread (M 6)

⁷⁾ with cable connection (M 10)

⁸⁾ with cable connection (M 8)

⁹⁾ with cable connection (M 6)

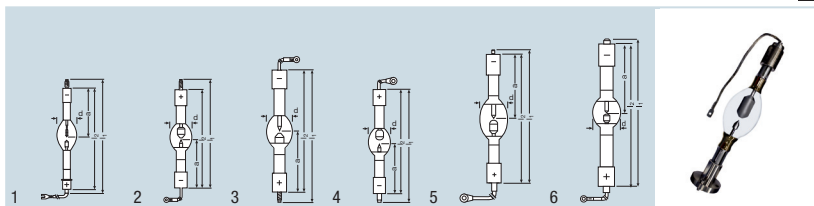
¹⁰⁾ maximum permissible base temperature: 200 °C

¹¹⁾ Anode underneath

¹²⁾ Anode on top

Safety

Because of their high luminance, UV radiation and high internal pressure HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.



Product reference	Product number	AC/DC	W	V	A	t [h]		
HBO 1002W/NIL	4050300461403	DC	750	25.8	27.1	1500	Forced ⁷⁾	vertical ⁸⁾
HBO 2000W/NIL	4050300490212	DC	1750	26	67	1500	Forced ⁷⁾	vertical ⁹⁾
HBO 2001W/NIEL	4050300538211	DC	1750	26	67	2250	Forced ⁷⁾	vertical ⁸⁾
HBO 2001W/NIL ¹⁾	4050300461489	DC	1750	26	67	1500	Forced ⁷⁾	vertical ⁸⁾
HBO 2002W/NIL	4050300772714	DC	1750	26	67	1500	Forced ⁷⁾	vertical ⁹⁾
HBO 2011W/NIL	4050300652641	DC	2000	25	80	1500	Forced ⁷⁾	vertical ⁹⁾
HBO 2011W/NILH ²⁾	4050300991665	DC	2000	25	83	1500	Forced ⁷⁾	vertical ⁹⁾
HBO 2501W/NIL	4050300628288	DC	2500	23	109	1500	Forced ⁷⁾	vertical ⁸⁾
HBO 2510W/NIL	4050300628400	DC	2500	23	109	1500	Forced ⁷⁾	vertical ⁹⁾

Product reference									
HBO 1002W/NIL	29	187	168	78.5 ³⁾	3.0	SFAx14-5/21 ⁴⁾	SFCx15-6/25 ⁵⁾	8	1
HBO 2000W/NIL	55	251	219	112 ³⁾	4.5	SFC27-12/35	SFC27-7/35 ⁵⁾	1	2
HBO 2001W/NIEL	55	251	231	122 ³⁾	4.5	SFC27-10/35	SFC27-7/35 ⁵⁾	1	3
HBO 2001W/NIL ¹⁾	52	251	231	112 ³⁾	4.5	SFC27-10/35	SFC27-7/35 ⁵⁾	6	3
HBO 2002W/NIL	999.0	232	234	107.75 ³⁾	4.5	SFC27-7/35 ⁵⁾	SFC27-10x1.25/35	1	4
HBO 2011W/NIL	55.0	235	234	107.75 ³⁾	4.5	SFC27-7/35 ⁵⁾	SFC27-12x1.5/35	6	4
HBO 2011W/NILH ²⁾	55.0	234	234	107.75 ³⁾	4.5	SFC27-7/35 ⁵⁾	SFC27-12x1.5/35	6	4
HBO 2501W/NIL	70	357	327	157.75 ³⁾	4.5	SFA33.5-12/50 ⁵⁾	SFC33.5-14/50	4	5
HBO 2510W/NIL	70.0	357	327	157.75 ³⁾	4.5	SFA33.5-12/50 ⁵⁾	SFYc33.5-14/50	4	6

¹⁾ Also available as Super Longlife version HBO 2001 NIEL with 2250 h life (4050300538211)

²⁾ The lamp contains overpressure even in cold status - additional safety regulations, supplied with the lamps, have to be fulfilled. Please read Technical bulletin DO-SEM TB 004 carefully.

³⁾ Distance from end of base to tip of anode or cathode (cold)

⁴⁾ sleeve base with cable connection (M 5)

⁵⁾ with cable connection (M 8)

⁶⁾ with thread (M 6)

⁷⁾ maximum permissible base temperature: 200 °C

⁸⁾ Anode underneath

⁹⁾ Anode on top

Safety

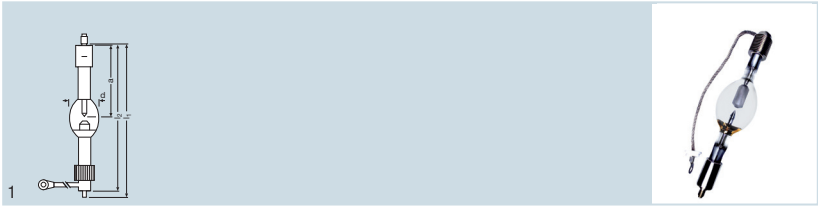
Because of their high luminance, UV radiation and high internal pressure HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.

Literature

Further technical information on HBO® lamps and information for manufacturers of operating equipment can be found in the following publications, obtainable on request from OSRAM:

- "Specifications for power supply units for dc operated HBO® mercury short-arc lamps"
- "Specifications for power supply units for ac operated HBO® mercury short-arc lamps"
- "Specifications for igniters for HBO® mercury short-arc lamps"
- "Availability of power supply units and igniters"

Microlithography lamps for Canon LCD systems



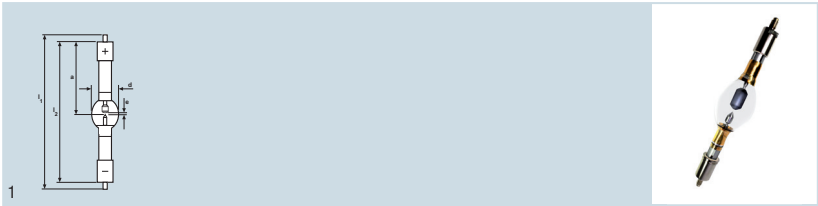
Product reference	Product number	W	V	A	t[h]		
HBO 8000W/C	4008321 352323	8000	81	99	1000	Forced ²⁾	vertical ³⁾
HBO 8000W/CHL	4008321 280282	8000	81	99	1500	Forced ²⁾	vertical ³⁾
Product reference	d [mm]	l1 max. [mm]	l2 max. [mm]				
HBO 8000W/C	100	434	385.5	8.0	SFaX40-13/50 ¹⁾	SFa40-12/45	1
HBO 8000W/CHL	106	434	385.5	8.5	SFaX40-13/50 ¹⁾	SFa40-12/45	1

¹⁾ with cable connection (M 10)
²⁾ maximum permissible base temperature: 200 °C
³⁾ Anode on top

Safety

Because of their high luminance, UV radiation and high internal pressure HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.

Microlithography lamps for Nikon LCD system



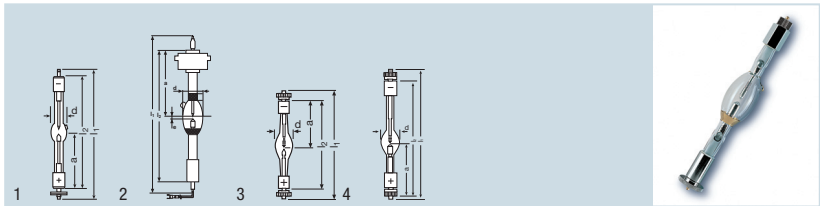
Product reference	Product number	W	V	A	t[h]		
HBO 4300W/NHL	4008321 281159	4300	54	80	1500	Forced ¹⁾	vertical ²⁾
HBO 4300W/NHL	4008321 281142	4300	54	80	1500	Forced ¹⁾	vertical ²⁾
Product reference	d [mm]	l1 max. [mm]	l2 max. [mm]				
HBO 4300W/NHL	80	389	337	5.0	SFYc33.5-14/50	SFc33.5-12/50	4
HBO 4300W/NHL	80	389	337	5.0	SFYc33.5-14/50	SFc33.5-12/50	1

¹⁾ maximum permissible base temperature: 200 °C
²⁾ Anode on top

Safety

Because of their high luminance, UV radiation and high internal pressure HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.

Other microlithography lamps up to 1000W



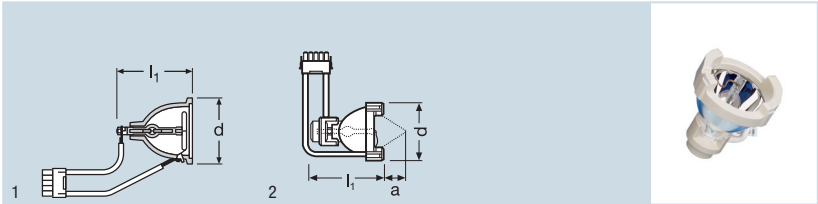
Product reference	Product number								
HBO 250W/BY	4050300 803432	DC	250	40	6.25	2000	Convection ⁵⁾	vertical ⁷⁾	
HBO 250W/LS	4008321 336668	DC	250	39	6.4	2500	Convection ⁶⁾	vertical ⁷⁾	
HBO 350W ¹⁾	4050300 351599	DC	350	67.5	5.3	600	Convection ⁵⁾	vertical ⁷⁾	
HBO 350W/S	4050300 258041	DC	350	68	5,5	600	Convection ⁵⁾	vertical ⁷⁾	
HBO 1000W/D	4050300 288857	DC	1000	37.7	26.5	1000	Convection	vertical ⁷⁾	
Product reference	 d [mm]	 I1 max. [mm]	 I2 max. [mm]	 LCL a [mm]					 No.
HBO 250W/BY	20	152	125	62 ²⁾	2.0	SFc13-5	SFc13-5	1	1
HBO 250W/LS	20	147	127	62 ²⁾	2.0	SFa13-5/20	special	1	2
HBO 350W ¹⁾	20	128	102	45 ²⁾	2.9	SFcY10-4 ³⁾	SFcY10-4 ³⁾	1	3
HBO 350W/S	20	127	103	52 ²⁾	3.0	SFcY10-4 ³⁾	SFcY10-4 ³⁾	1	3
HBO 1000W/D	40	240	208	89.5 ²⁾	3.0	SFc15-6/25 ⁴⁾	SFc15-6/25 ⁴⁾	1	4

1) Lamps suitable for pulse operation between 250W and 500W.
Maximum permissible power is 350W for constant power operation
Duty cycle 12h ON/30 min OFF
2) Distance from end of base to tip of anode or cathode (cold)
3) with 8-32 UNC-3 B thread
4) with thread (M 6)
5) cooling fins on cathode base
6) maximum permissible base temperature: 230°C
7) Anode underneath

Safety

Because of their high luminance, UV radiation and high internal pressure HBO® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.

HXP® long-life mercury short-arc lamps



Product reference	Product number	AC/DC	W	V	A	lm	t [h]
HXP R 120W/17C	4050300786476	AC	120	70...95 ¹⁾	1.5	4500 ²⁾	2000
HXP R 120W/45C VIS	4050300882772	AC	120	60...90 ¹⁾	1.6	2800 ³⁾	2000
HXP R 120W/45C UV	4050300666525	AC	120	60...90 ¹⁾	1.6	not relevant	2000
HXP R 200W/45M	4008321180070	AC	200	60...96 ¹⁾	3.1	4600 ³⁾	2000
HXP R 206W/45M	4008321331472	AC	200	48...82 ¹⁾	4.3	4000 ³⁾	1000

Product reference							
HXP R 120W/17C	Forced	p20	77	17.3	56 *52	50	1
HXP R 120W/45C VIS	Forced	p20	77	45.0	max. 67	2	2
HXP R 120W/45C UV	Forced	p20	77	45.0	max. 67	2	2
HXP R 200W/45M	Forced	p20	77	45.0	max. 67	2	2
HXP R 206W/45M	Forced	p20	77	45.0	max. 67	2	2

¹⁾ Initial voltage range
²⁾ Typical; measured with 5.0 mm * 3.8 mm rectangular aperture in working distance a from reflector
³⁾ Typical; measured with 5.0 mm diameter round aperture in working distance a from reflector

HXP® lamps are short arc lamps in which the discharge arc burns in an atmosphere of mercury vapor at very high pressure (no overpressure in the cold state). They make use of the halogen cycle and are designed exclusively for AC operation with series PT-VIP electronic control gear specially developed by OSRAM for this purpose.

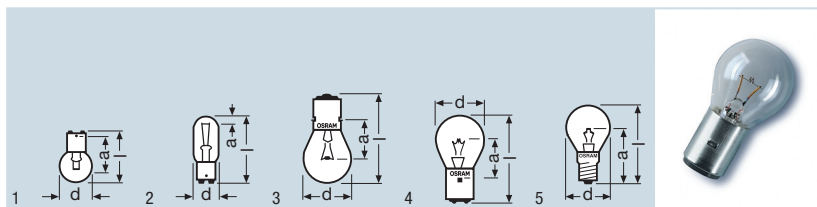
The most important properties and benefits

- Very high luminous efficacy
- Mercury spectrum with a high proportion of the continuum spectrum thanks to high operating pressure
- Color temperature of approx. 9,500 K
- Elliptical reflector for efficient focusing of the light
- Reflector with interference layers for selective reflection and suppression of IR
- Long life
- AC operation with square-wave current

Safety

Because of their high luminance, UV radiation and high internal pressure in the hot state HXP® lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Mercury is released if the lamp breaks. Special safety precautions must be taken. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.

Lamps without halogen, low voltage



Product reference	Product number	W	V		t [h]
8013	4050300 206356	10	6	BA15d/21	200
8014	4050300 206370	10	6	BA15s	600
8017	4050300 017327	15	6	B15d	1000
8018 ¹⁾	4050300 206417	15	6	B15d	100
8022	4050300 206677	50	12	BA20d/30	50
8024	4050300 013817	40	12	BA20d/30	500
8100	4050300 342122		6	E14	600

Product reference						
8013	h105	25	30	46	100	1
8014	s105	25	27	46	100	1
8017	any	19	7	54	100	2
8018 ¹⁾	h30	19	5	52	100	2
8022	h15	35	39.5	69	100	3
8024	s135	35	30	67	100	4
8100	s105	35	45	65	100	5

1) Flat-core filament, filament area perpendicular to the lamp axis

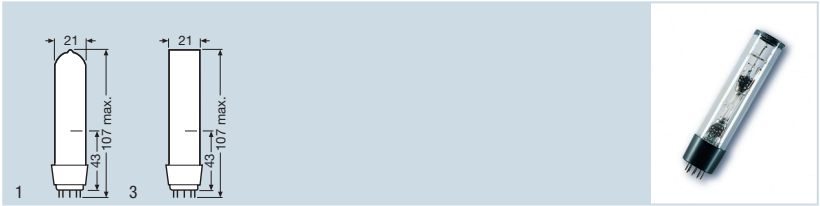
¹⁾ Flat-core filament, filament area perpendicular to the lamp axis

These low-voltage lamps are characterized by their exact filament geometry. The glass bulb has high optical quality.

Application

- As replacements in old luminaires used in technical and scientific applications
- As film projector lamps

Spectral lamps



Product reference	Product number			
Cd/10	4050300210353	AC	Cadmium	15
Cs/10	4050300213842	AC	Caesium	10
He/10	4050300212258	AC	Helium	60
K/10	4050300212197	AC	Potassium	10
Na/10	4008321417800	AC	Sodium	15
Ne/10	4050300212210	AC	Neon	30
Hg 100	4050300231310	AC/DC	Mercury	45
HgCd/10	4050300211459	AC	Mercury/cadmium	30
Rb/10	4050300213866	AC	Rubidium	10
Tl/10	4050300211435	AC	Thallium	15
Zn/10	4050300212234	AC	Zinc	15

Product reference					
Cd/10	1	PIC09	15	1	1
Cs/10	1	PIC09	10	1	1
He/10	1	PIC09	55	1	1
K/10	1	PIC09	10	1	1
Na/10	1	PIC09	15	1	1
Ne/10	1	PIC09	30	1	1
Hg 100	1	PIC09	22	1	2
HgCd/10	1	PIC09	25	1	1
Rb/10	1	PIC09	10	1	1
Tl/10	1	PIC09	15	1	1
Zn/10	1	PIC09	15	1	1

Spectral lamps are discharge lamp that emit the line spectrums of inert gases and metal vapors with high luminance or radiant intensity. They are used wherever a line spectrum or monochromatic radiation is required.

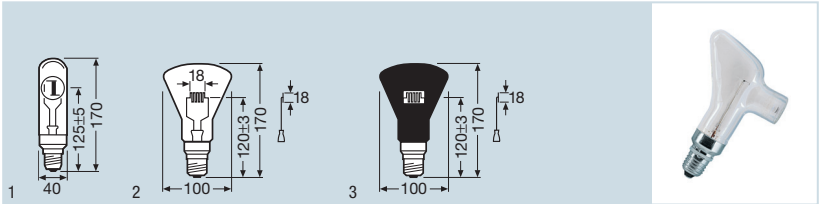
Application

Optics, photophysics, spectroscopy, chemical engineering and medicine

Safety

Spectral lamps may only be operated in enclosed lamp casings specially constructed for the purpose. Materials harmful to the environment may be released if lamps of certain types break. Special safety precautions must be taken. Burning position preferably vertical, base down. More information is available on request or can be found in the leaflet included with the lamp or in the operating instructions.

Lamps for scientific purposes



Product reference	Product number	V	A		K
WI 17/G	4050300209104	9 ³⁾	16	E27	- ⁵⁾
WI 40/G	4050300206783	30 ³⁾	6	E27	2856 ⁵⁾
WI 41/G	4050300206806	30 ³⁾	6	E27	2856 ⁵⁾
Product reference					
WI 17/G	2600 K	s ¹⁾	250 -1650 nm ⁴⁾	1	1
WI 40/G		s + h ²⁾		1	2
WI 41/G		s + h ²⁾		1	3

1) s = standing (base down)
2) s = standing (base down); h = hanging (base up)
3) Maximum Values
4) Only in addition to measuring the black body temperature or the colour temperature
5) The color temperature of 2856 K corresponds to light type A (DIN 5035).

Lamps for scientific purposes

Lamps for scientific purposes are used mainly as comparison standards and calibration lamps for variables and measurements in photometry, colorimetry and photophysics. They are gas-filled incandescent lamps which are suitable for calibrating the following variables: luminous intensity, luminous flux, black body temperature, color temperature and spectral radiant intensity distribution.

Parameters

Test certificates can be provided for some of the relevant parameters. Details can be found on the internet at www.osram.com.

Safety

Information on safety and handling is available on request or can be found in the leaflet included with the lamp or in the operating instructions.