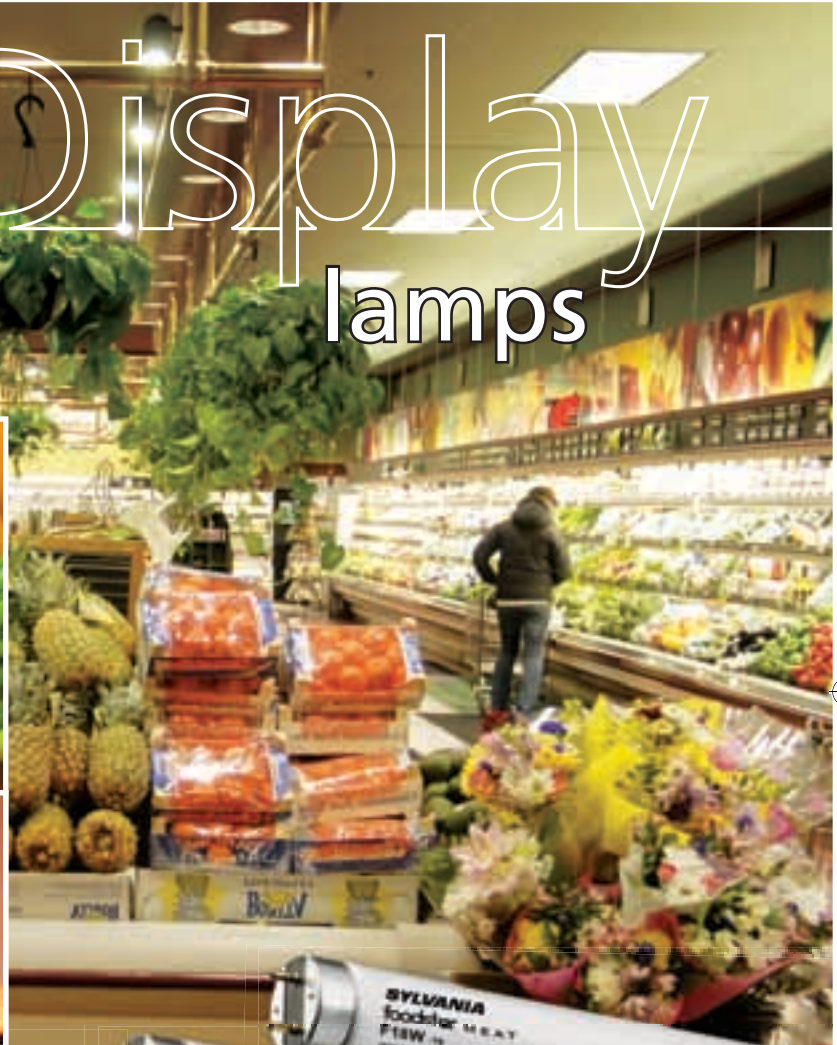


SYLVANIA

Food Display lamps



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foodstar



Food **display** lamps

Effective lighting design requires an understanding of the essential characteristics of the objects being illuminated – and how they respond to light. Never is this more relevant than in the lighting of food in supermarkets, butchers and bakeries, where the main objective is to make the produce appear appetising and appealing.

All light sources for food should have good colour rendering qualities, to bring out the colour nuances of different foodstuffs, but colour temperature can also have a crucial effect on appearance.

To be most attractive meat and charcuterie need a more reddish light accent but always displayed in balanced and harmonized colour. Most fruit and vegetables look good under medium-cool light sources. Fish looks best under quite cold lighting, while bread look its best when lit with warmer yellowish lamps



MEAT

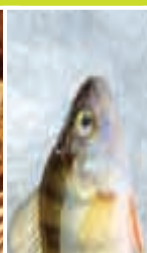
Page 5-6

BREAD

Page 7-8

FRESH

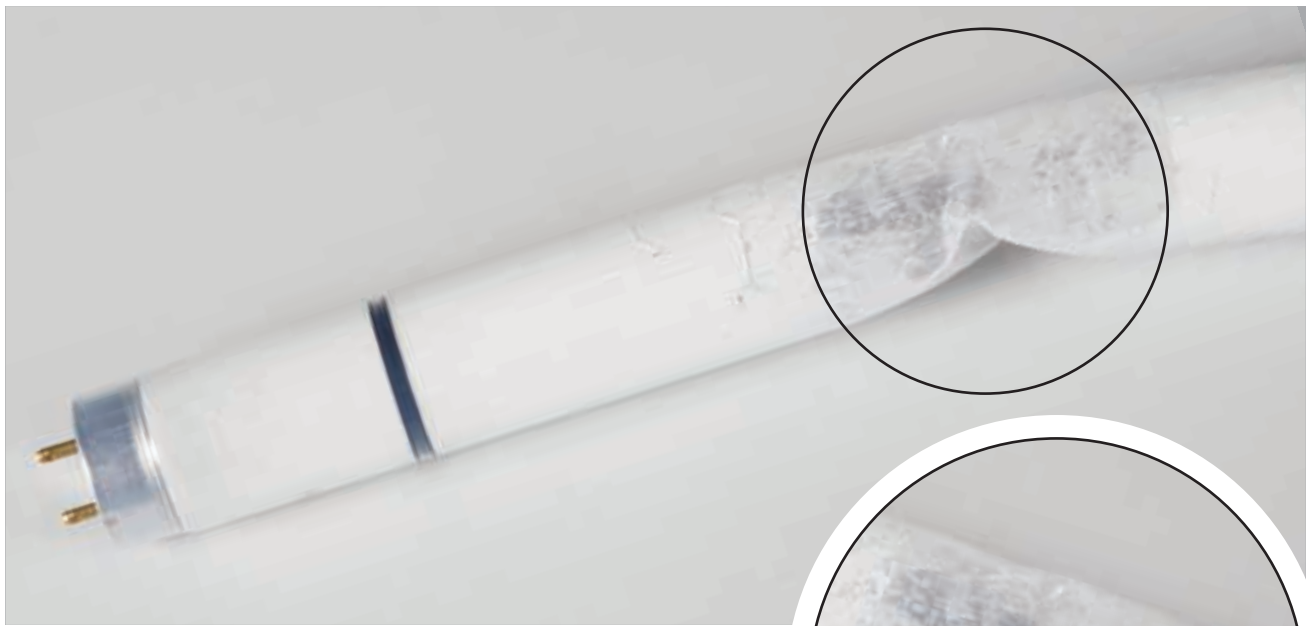
Page 9-10



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foodstar Food Lamps - Toughcoat™



What are Toughcoat™ lamps?

Toughcoat™ lamps are shatter resistant lamps ensuring excellent fragment retention in the event of breakage. The tubes are coated with Teflon FEP (fluorinated ethylene propylene). FEP is a tough material which will not become brittle as it ages.

Why use Toughcoat™ lamps?


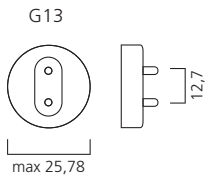
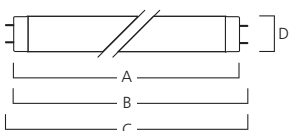




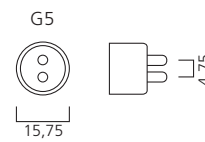
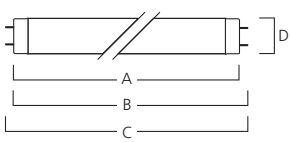


For many companies, especially those operating in the food area (also restaurants), the risk of glass and mercury contamination is real. Toughcoat lamps pay dividends in avoiding injury and contamination in case a lamp should be broken. Within the EU, Health and Safety regulations carry heavy penalties for avoidable injury of employees, making these lamps an especially sound investment, to meet the HACCP guidelines.

High quality features

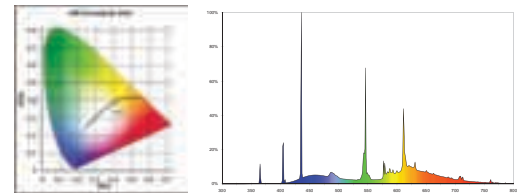
- Excellent fragment retention in the event of breakage
- The protective FEP coating meets the IEC60068-2-75 Pendulum Hammer test (5 Joule) and the 4m drop test, demonstrating excellent glass retention in the event of accidental lamp breakage.
- No discolouration or yellowing of shatter resistant coating during the entire lamp life (> 10,000 hrs).
- The FEP material does not degrade during life. Versions employing PET coatings become brittle, and may not contain fragments.
- The coating withstands up to 200°C in both open and enclosed IP65 fittings. The melting temperature is 260°C.
- Meets all necessary regulations for resistance to heat and fire, and does not support combustion when exposed to naked flame or excessive heat. It passes the 850°C Glow Wire Test
- Satisfies the requirements of the International Food Standard (IFS 2004)
- FDA approved, in compliance with 21CFR177.1550 Regulatory Compliance Status.
- Satisfies the requirements of the BRC (British Retail Consortium) leading supermarkets global standard. In paragraph 3.2.2.6.2 it states "All bulbs and strip lights, including those on electric fly killer units, where they constitute a risk to products, shall be protected by shatterproof plastic diffusers, sleeve covers or with a shatterproof protective coating".



foodstar Meat - Fluorescent

|  | <p>G13</p>   <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>T8</td> <td>max</td> <td>min</td> <td>max</td> <td>max</td> <td>nom</td> </tr> <tr> <td>18W</td> <td>589.8</td> <td>594.5</td> <td>596.9</td> <td>604.0</td> <td>26</td> </tr> <tr> <td>30W</td> <td>894.6</td> <td>899.3</td> <td>901.7</td> <td>908.8</td> <td>26</td> </tr> <tr> <td>36W</td> <td>1199.4</td> <td>1204.1</td> <td>1206.5</td> <td>1213.6</td> <td>26</td> </tr> <tr> <td>36W 1M</td> <td>970.0</td> <td>974.1</td> <td>977.1</td> <td>984.2</td> <td>26</td> </tr> <tr> <td>58W</td> <td>1500.0</td> <td>1504.7</td> <td>1507.1</td> <td>1514.2</td> <td>26</td> </tr> <tr> <td>70W</td> <td>1763.8</td> <td>1768.5</td> <td>1770.9</td> <td>1778.0</td> <td>26</td> </tr> </tbody> </table> | | A | B | B | C | D | T8 | max | min | max | max | nom | 18W | 589.8 | 594.5 | 596.9 | 604.0 | 26 | 30W | 894.6 | 899.3 | 901.7 | 908.8 | 26 | 36W | 1199.4 | 1204.1 | 1206.5 | 1213.6 | 26 | 36W 1M | 970.0 | 974.1 | 977.1 | 984.2 | 26 | 58W | 1500.0 | 1504.7 | 1507.1 | 1514.2 | 26 | 70W | 1763.8 | 1768.5 | 1770.9 | 1778.0 | 26 |  |
|--|--|------------|------------|------------|------------|---|---|-----------|------------|------------|------------|------------|------------|-----|-------|-------|-------|-------|----|-----|-------|-------|-------|-------|----|-----|--------|--------|--------|--------|----|--------|-------|--------|--------|--------|----|-----|--------|--------|--------|--------|----|-----|--------|--------|--------|--------|----|--|
| | A | B | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T8 | max | min | max | max | nom | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18W | 589.8 | 594.5 | 596.9 | 604.0 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30W | 894.6 | 899.3 | 901.7 | 908.8 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36W | 1199.4 | 1204.1 | 1206.5 | 1213.6 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36W 1M | 970.0 | 974.1 | 977.1 | 984.2 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58W | 1500.0 | 1504.7 | 1507.1 | 1514.2 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70W | 1763.8 | 1768.5 | 1770.9 | 1778.0 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|   <p>universal</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>G5</p>   <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>T5</td> <td>max</td> <td>min</td> <td>max</td> <td>max</td> <td>nom</td> </tr> <tr> <td>14W</td> <td>549</td> <td>553.7</td> <td>556.1</td> <td>563.2</td> <td>16</td> </tr> <tr> <td>21W</td> <td>849</td> <td>853.7</td> <td>856.1</td> <td>863.2</td> <td>16</td> </tr> <tr> <td>28W</td> <td>1149</td> <td>1153.7</td> <td>1156.1</td> <td>1163.2</td> <td>16</td> </tr> <tr> <td>35W</td> <td>1449</td> <td>1453.7</td> <td>1456.1</td> <td>1463.2</td> <td>16</td> </tr> </tbody> </table> | | A | B | B | C | D | T5 | max | min | max | max | nom | 14W | 549 | 553.7 | 556.1 | 563.2 | 16 | 21W | 849 | 853.7 | 856.1 | 863.2 | 16 | 28W | 1149 | 1153.7 | 1156.1 | 1163.2 | 16 | 35W | 1449 | 1453.7 | 1456.1 | 1463.2 | 16 | | | | | | | | | | | | | |
| | A | B | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T5 | max | min | max | max | nom | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14W | 549 | 553.7 | 556.1 | 563.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21W | 849 | 853.7 | 856.1 | 863.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28W | 1149 | 1153.7 | 1156.1 | 1163.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35W | 1449 | 1453.7 | 1456.1 | 1463.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|   <p>universal</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- Features a specially tailored spectrum that complements the natural colours of meats.
- Illuminates meat and charcuterie in their optimum colours for an irresistible presentation.
- The truthful colour rendering does not disturb the natural colours of the products
- Manufactured in compliance with the DIN 10504 standard
- Available in Toughcoat-version (shatter proof). The protective FEP coating meets the IEC600682-75 pendulum hammer test (5 Joule) and 4m drop test demonstrating excellent glass retention in the event of accidental lamp breakage.



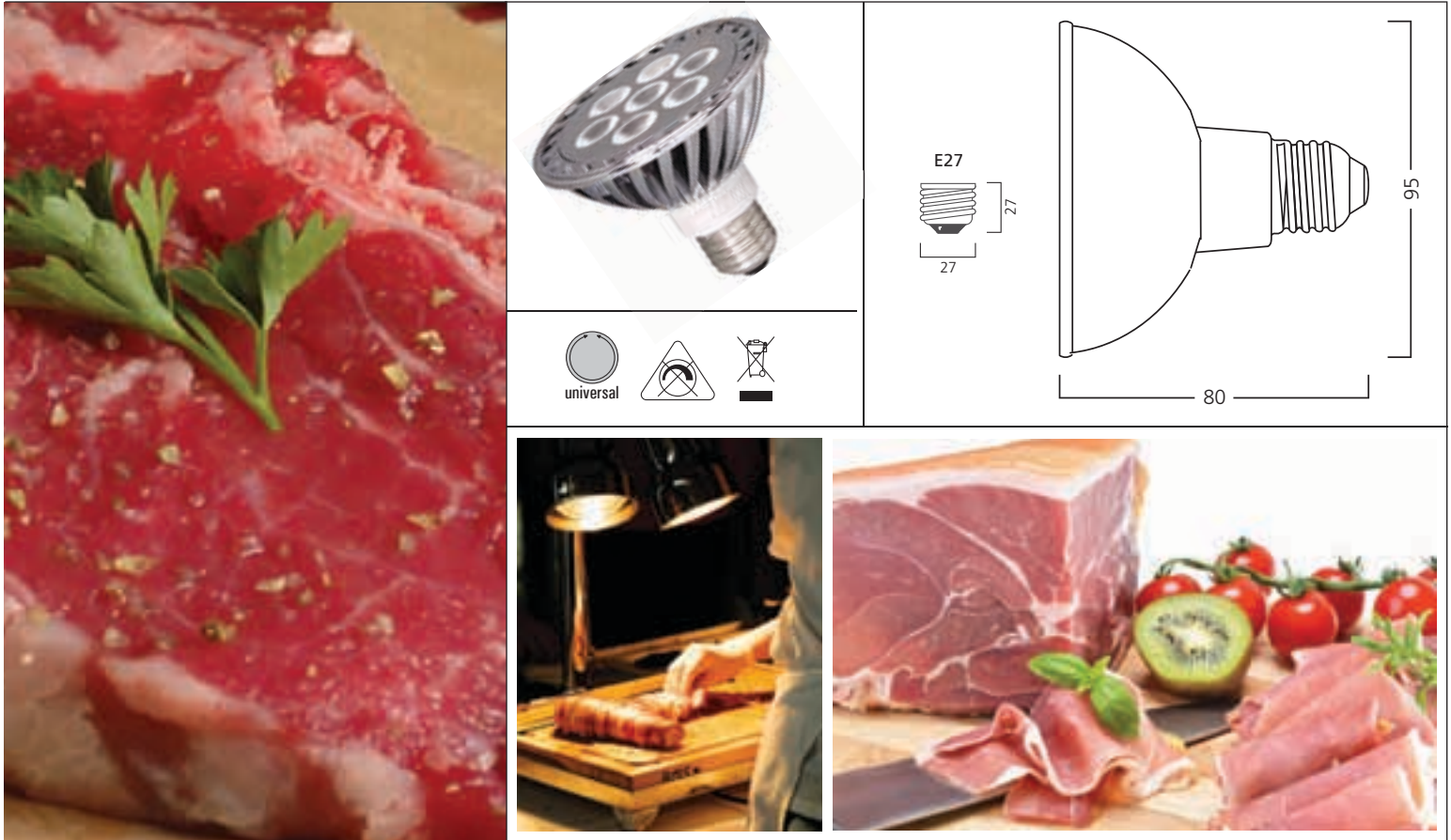
foodstar Meat - Fluorescent

| Code | Description | Watt W | Volt V | Current A | Length mm | CRI | Cap | Colour Temp K | Luminous Flux lm | Packing Qty. |
|---------|------------------------------|--------|--------|-----------|-----------|-----|-----|---------------|------------------|--------------|
| 0001854 | FHE 14W T5 176 FoodStar Meat | 14 | 86 | 0.165 | 549 | 2A | G5 | 3000 | 650 | 25 |
| 0001819 | FHE 21W T5 176 FoodStar Meat | 21 | 126 | 0.165 | 849 | 2A | G5 | 3000 | 1050 | 25 |
| 0001820 | FHE 28W T5 176 FoodStar Meat | 28 | 166 | 0.170 | 1149 | 2A | G5 | 3000 | 1500 | 25 |
| 0001821 | FHE 35W T5 176 FoodStar Meat | 35 | 205 | 0.175 | 1449 | 2A | G5 | 3000 | 1850 | 25 |
| 0001855 | F18W T8 176 FoodStar Meat | 18 | 57 | 0.370 | 590 | 2A | G13 | 3000 | 700 | 25 |
| 0001856 | F30W T8 176 FoodStar Meat | 30 | 96 | 0.365 | 895 | 2A | G13 | 3000 | 1250 | 25 |
| 0001816 | F36W T8 176 FoodStar Meat | 36 | 103 | 0.430 | 1200 | 2A | G13 | 3000 | 1800 | 25 |
| 0001817 | F36W T8 1M 176 FoodStar Meat | 36 | 80 | 0.560 | 970 | 2A | G13 | 3000 | 1600 | 25 |
| 0001818 | F58W T8 176 FoodStar Meat | 58 | 110 | 0.670 | 1500 | 2A | G13 | 3000 | 2850 | 25 |
| 0001857 | F70W T8 176 FoodStar Meat | 70 | 128 | 0.700 | 1764 | 2A | G13 | 3000 | 3250 | 25 |

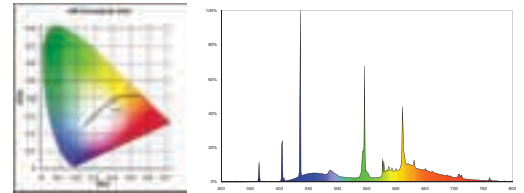
foodstar Meat - Fluorescent Toughcoat™

| Code | Description | Watt W | Volt V | Current A | Length mm | CRI | Cap | Colour Temp K | Luminous Flux lm | Packing Qty. |
|---------|---------------------------------|--------|--------|-----------|-----------|-----|-----|---------------|------------------|--------------|
| 0001787 | FHE 14W T5 176 FoodStar Meat TC | 14 | 86 | 0.165 | 549 | 2A | G5 | 3000 | 650 | 25 |
| 0001788 | FHE 21W T5 176 FoodStar Meat TC | 21 | 126 | 0.165 | 849 | 2A | G5 | 3000 | 1050 | 25 |
| 0001789 | FHE 28W T5 176 FoodStar Meat TC | 28 | 166 | 0.170 | 1149 | 2A | G5 | 3000 | 1500 | 25 |
| 0001790 | FHE 35W T5 176 FoodStar Meat TC | 35 | 205 | 0.175 | 1449 | 2A | G5 | 3000 | 1850 | 25 |
| 0001791 | F18W T8 176 FoodStar Meat TC | 18 | 57 | 0.370 | 590 | 2A | G13 | 3000 | 700 | 25 |
| 0001792 | F30W T8 176 FoodStar Meat TC | 30 | 96 | 0.365 | 895 | 2A | G13 | 3000 | 1250 | 25 |
| 0001793 | F36W T8 176 FoodStar Meat TC | 36 | 103 | 0.430 | 1200 | 2A | G13 | 3000 | 1800 | 25 |
| 0001794 | F36W T8 1M 176 FoodStar Meat TC | 36 | 80 | 0.560 | 970 | 2A | G13 | 3000 | 1600 | 25 |
| 0001795 | F58W T8 176 FoodStar Meat TC | 58 | 110 | 0.670 | 1500 | 2A | G13 | 3000 | 2850 | 25 |
| 0001796 | F70W T8 176 FoodStar Meat TC | 70 | 128 | 0.700 | 1764 | 2A | G13 | 3000 | 3250 | 25 |

foodstar Meat - RefLED



- Full retrofit LED for standard halogen lamps
- High energy saving: Compared to special colour halogen lamps
- Very long life: 15000hrs
- Features a specially tailored spectrum that complements the natural colours of meats
- Illuminates meat and charcuterie in their optimum colours for irresistible presentation
- The truthful colour rendering does not disturb the natural colours of the products
- Integrated electrical isolating transformer for highest safety, even in humid conditions


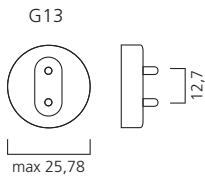
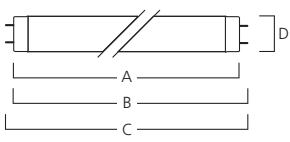



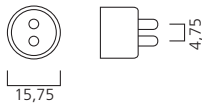
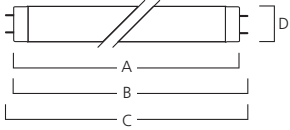



foodstar Meat - RefLED

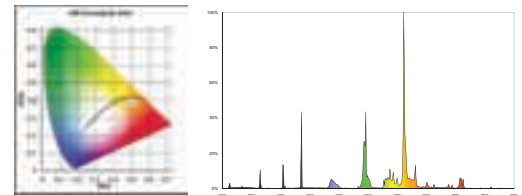
| Code | Description | Watt W | Volt V | Beam Angle | Cap | CRI | Colour Temp K | Luminous Flux lm | Average Rated Life | Packing Qty. |
|---------|--|--------|--------|------------|-----|-----|---------------|------------------|--------------------|--------------|
| 0001774 | Hi-Spot 95 RefLED 9W 24° Foodstar Meat | 9 | 230 | 24° | E27 | 87 | 3600 | 1900 | 15000 | 10 |



foodstar Bread - Fluorescent

|  | <p>G13</p>   |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|--------|--------|-----|---|---|---|----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|----|-----|-------|--------|--------|--------|----|-----|--------|--------|--------|--------|----|-----|--------|--------|--------|--------|
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| | A | B | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T8 | max | min | max | max | nom | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18W | 589.8 | 594.5 | 596.9 | 604.0 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30W | 894.6 | 899.3 | 901.7 | 908.8 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36W | 1199.4 | 1204.1 | 1206.5 | 1213.6 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58W | 1500.0 | 1504.7 | 1507.1 | 1514.2 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>G5</p>   | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>universal </p> | <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>B</th> <th>C</th> <th>D</th> </tr> <tr> <th>T5</th> <th>max</th> <th>min</th> <th>max</th> <th>max</th> <th>nom</th> </tr> </thead> <tbody> <tr> <td>21W</td> <td>849</td> <td>853.7</td> <td>856.1</td> <td>863.2</td> <td>16</td> </tr> <tr> <td>28W</td> <td>1149</td> <td>1153.7</td> <td>1156.1</td> <td>1163.2</td> <td>16</td> </tr> <tr> <td>35W</td> <td>1449</td> <td>1453.7</td> <td>1456.1</td> <td>1463.2</td> <td>16</td> </tr> </tbody> </table> | | | A | B | B | C | D | T5 | max | min | max | max | nom | 21W | 849 | 853.7 | 856.1 | 863.2 | 16 | 28W | 1149 | 1153.7 | 1156.1 | 1163.2 | 16 | 35W | 1449 | 1453.7 | 1456.1 | 1463.2 | 16 | | | | | |
| | A | B | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T5 | max | min | max | max | nom | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21W | 849 | 853.7 | 856.1 | 863.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28W | 1149 | 1153.7 | 1156.1 | 1163.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35W | 1449 | 1453.7 | 1456.1 | 1463.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- FoodStar bread lamps have a radiation concentrated in the yellowish part of the spectrum
- Truthful colour rendering does not disturb the natural colours of the products
- Reduced warm up of the goods illuminated
- Available in Toughcoat-version (shatter proof). The protective FEP coating meets the IEC600682-75 pendulum hammer test (5 Joule) and 4m drop test demonstrating excellent glass retention in the event of accidental lamp breakage.



foodstar Bread - Fluorescent

| Code | Description | Watt W | Volt V | Current A | Length mm | CRI | Cap | Colour Temp K | Luminous Flux lm | Packing Qty. |
|---------|---------------------------|--------|--------|-----------|-----------|-----|-----|---------------|------------------|--------------|
| 0001858 | FHE 21W T5 FoodStar Bread | 21 | 126 | 0.165 | 849 | 2A | G5 | 2300 | 1650 | 25 |
| 0001859 | FHE 28W T5 FoodStar Bread | 28 | 166 | 0.170 | 1149 | 2A | G5 | 2300 | 2250 | 25 |
| 0001860 | FHE 35W T5 FoodStar Bread | 35 | 205 | 0.175 | 1449 | 2A | G5 | 2300 | 2850 | 25 |
| 0001861 | F18W T8 FoodStar Bread | 18 | 57 | 0.370 | 590 | 2A | G13 | 2300 | 1100 | 25 |
| 0001862 | F30W T8 FoodStar Bread | 30 | 96 | 0.365 | 895 | 2A | G13 | 2300 | 2100 | 25 |
| 0001863 | F36W T8 FoodStar Bread | 36 | 103 | 0.430 | 1200 | 2A | G13 | 2300 | 3000 | 25 |
| 0001864 | F58W T8 FoodStar Bread | 58 | 110 | 0.670 | 1500 | 2A | G13 | 2300 | 4500 | 25 |

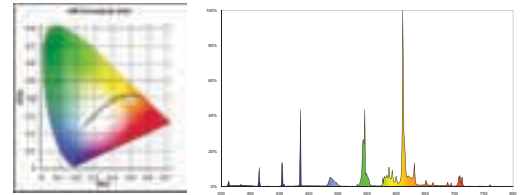
foodstar Bread - Fluorescent Toughcoat™

| Code | Description | Watt W | Volt V | Current A | Length mm | CRI | Cap | Colour Temp K | Luminous Flux lm | Packing Qty. |
|---------|------------------------------|--------|--------|-----------|-----------|-----|-----|---------------|------------------|--------------|
| 0001797 | FHE 21W T5 FoodStar Bread TC | 21 | 126 | 0.165 | 849 | 2A | G5 | 2300 | 1650 | 25 |
| 0001798 | FHE 28W T5 FoodStar Bread TC | 28 | 166 | 0.170 | 1149 | 2A | G5 | 2300 | 2250 | 25 |
| 0001799 | FHE 35W T5 FoodStar Bread TC | 35 | 205 | 0.175 | 1449 | 2A | G5 | 2300 | 2850 | 25 |
| 0001800 | F18W T8 FoodStar Bread TC | 18 | 57 | 0.370 | 590 | 2A | G13 | 2300 | 1100 | 25 |
| 0001801 | F30W T8 FoodStar Bread TC | 30 | 96 | 0.365 | 895 | 2A | G13 | 2300 | 2100 | 25 |
| 0001802 | F36W T8 FoodStar Bread TC | 36 | 103 | 0.430 | 1200 | 2A | G13 | 2300 | 3000 | 25 |
| 0001803 | F58W T8 FoodStar Bread TC | 58 | 110 | 0.670 | 1500 | 2A | G13 | 2300 | 4500 | 25 |

foodstar Bread - RefLED



- Full retrofit LED for standard halogen lamps
- High energy saving: Compared to white sodium and filtered metal halide lamps
- Very long average life: 15000hrs
- Features a specially tailored spectrum that complements the natural colours of bread and patisserie. Illuminates them in their optimum colours for irresistible presentation
- The truthful colour rendering does not disturb the natural colours of the products
- Integrated electrical isolating transformer for highest safety, even in humid conditions


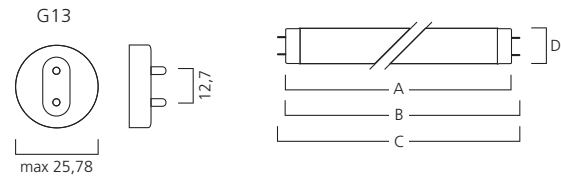
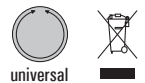

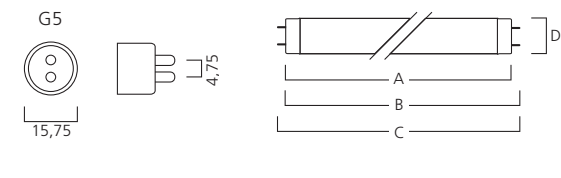
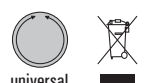


foodstar Bread - RefLED

| Code | Description | Watt W | Volt V | Beam Angle | Cap | CRI | Colour Temp K | Luminous Flux lm | Average Rated Life | Packing Qty. |
|---------|---|--------|--------|------------|-----|-----|---------------|------------------|--------------------|--------------|
| 0001777 | Hi-Spot 95 RefLED 9W 24° Foodstar Bread | 9 | 230 | 24° | E27 | 75 | 2200 | 1450 | 15000 | 10 |

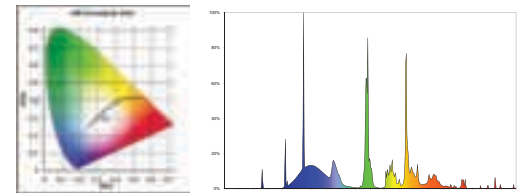


foodstar Fresh - Fluorescent

|  | <p>G13</p>  <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>B</th> <th>C</th> <th>D</th> </tr> <tr> <th>T8</th> <th>max</th> <th>min</th> <th>max</th> <th>max</th> <th>nom</th> </tr> </thead> <tbody> <tr> <td>36W</td> <td>1199.4</td> <td>1204.1</td> <td>1206.5</td> <td>1213.6</td> <td>26</td> </tr> <tr> <td>58W</td> <td>1500.0</td> <td>1504.7</td> <td>1507.1</td> <td>1514.2</td> <td>26</td> </tr> </tbody> </table> | | A | B | B | C | D | T8 | max | min | max | max | nom | 36W | 1199.4 | 1204.1 | 1206.5 | 1213.6 | 26 | 58W | 1500.0 | 1504.7 | 1507.1 | 1514.2 | 26 | | | | | | |
|---|--|--------|--------|--------|-----|---|---|----|-----|-----|-----|-----|-----|-----|--------|--------|--------|--------|----|-----|--------|--------|--------|--------|----|-----|------|--------|--------|--------|----|
| | A | B | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T8 | max | min | max | max | nom | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36W | 1199.4 | 1204.1 | 1206.5 | 1213.6 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58W | 1500.0 | 1504.7 | 1507.1 | 1514.2 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>universal</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>G5</p>  <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>B</th> <th>C</th> <th>D</th> </tr> <tr> <th>T5</th> <th>max</th> <th>min</th> <th>max</th> <th>max</th> <th>nom</th> </tr> </thead> <tbody> <tr> <td>21W</td> <td>849</td> <td>853.7</td> <td>856.1</td> <td>863.2</td> <td>16</td> </tr> <tr> <td>28W</td> <td>1149</td> <td>1153.7</td> <td>1156.1</td> <td>1163.2</td> <td>16</td> </tr> <tr> <td>35W</td> <td>1449</td> <td>1453.7</td> <td>1456.1</td> <td>1463.2</td> <td>16</td> </tr> </tbody> </table> | | A | B | B | C | D | T5 | max | min | max | max | nom | 21W | 849 | 853.7 | 856.1 | 863.2 | 16 | 28W | 1149 | 1153.7 | 1156.1 | 1163.2 | 16 | 35W | 1449 | 1453.7 | 1456.1 | 1463.2 | 16 |
| | A | B | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T5 | max | min | max | max | nom | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21W | 849 | 853.7 | 856.1 | 863.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28W | 1149 | 1153.7 | 1156.1 | 1163.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35W | 1449 | 1453.7 | 1456.1 | 1463.2 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>universal</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



- Fruit and vegetables should reflect freshness. They need a higher colour temperature and cooler light and the display of fish needs it even more.
- Truthful colour rendering does not disturb the natural colours of the products
- Reduced warm up of the goods illuminated
- Available in Toughcoat-version (shatter proof). The protective FEP coating meets the IEC600682-75 pendulum hammer test (5 Joule) and 4m drop test demonstrating excellent glass retention in the event of accidental lamp breakage.



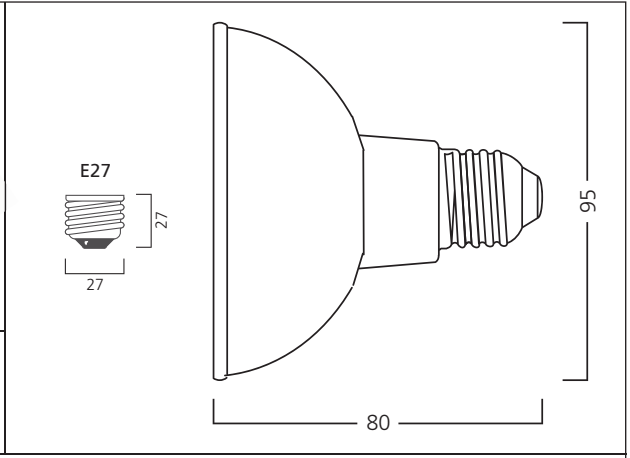
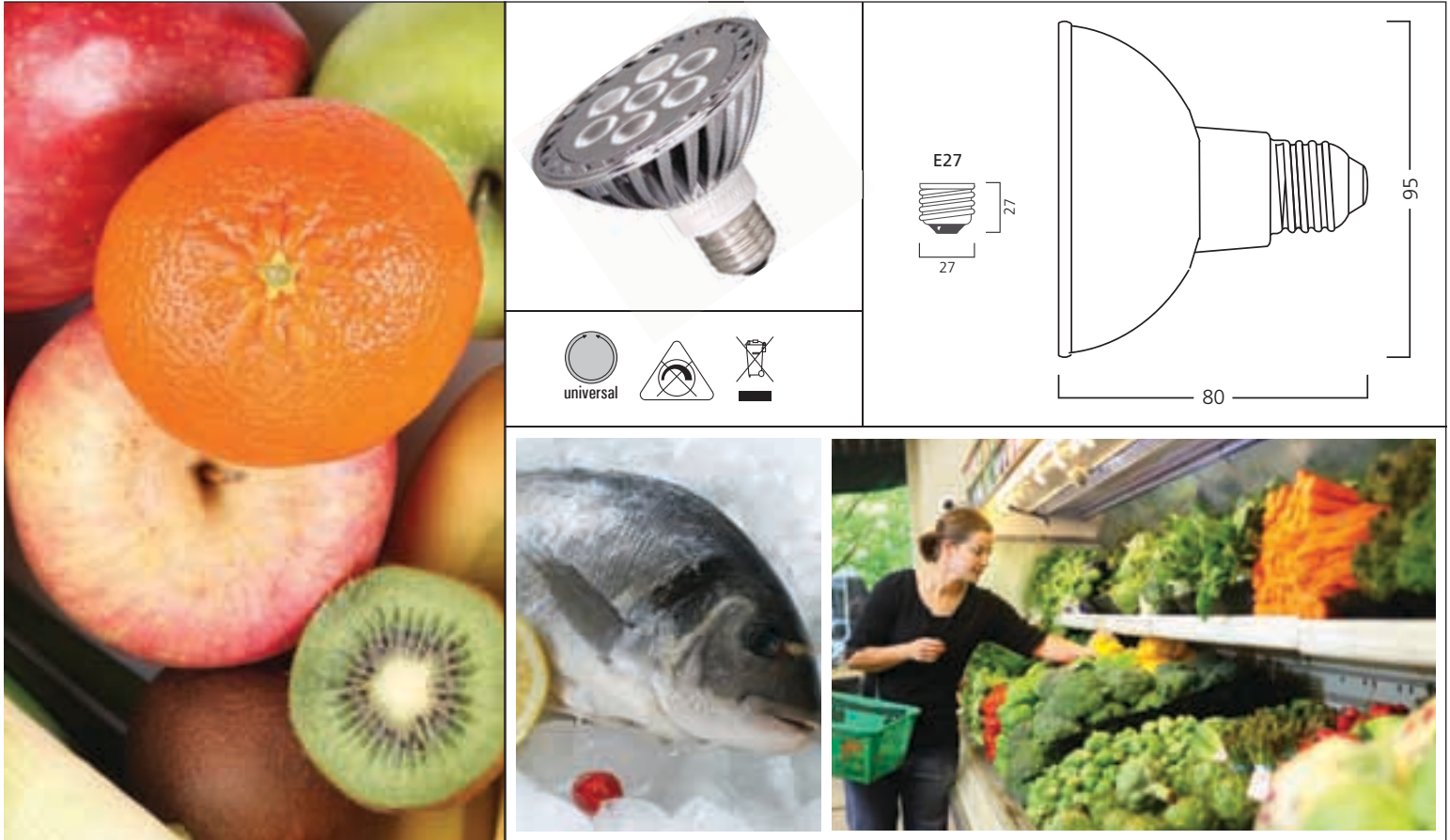
foodstar Fresh - Fluorescent

| Code | Description | Watt W | Volt V | Current A | Length mm | CRI | Cap | Colour Temp K | Luminous Flux lm | Packing Qty. |
|---------|---------------------------|--------|--------|-----------|-----------|-----|-----|---------------|------------------|--------------|
| 0001865 | FHE 21W T5 FoodStar Fresh | 21 | 126 | 0.165 | 849 | 2A | G5 | 6400 | 1250 | 25 |
| 0001866 | FHE 28W T5 FoodStar Fresh | 28 | 166 | 0.170 | 1149 | 2A | G5 | 6400 | 1700 | 25 |
| 0001867 | FHE 35W T5 FoodStar Fresh | 35 | 205 | 0.175 | 1449 | 2A | G5 | 6400 | 2150 | 25 |
| 0001868 | F36W T8 FoodStar Fresh | 36 | 103 | 0.430 | 1200 | 2A | G13 | 6400 | 2350 | 25 |
| 0001869 | F58W T8 FoodStar Fresh | 58 | 110 | 0.670 | 1500 | 2A | G13 | 6400 | 3500 | 25 |

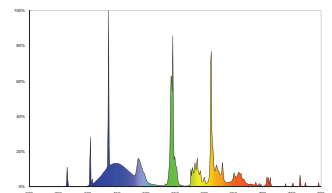
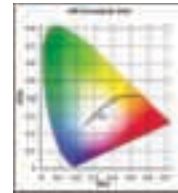
foodstar Fresh - Fluorescent Toughcoat™

| Code | Description | Watt W | Volt V | Current A | Length mm | CRI | Cap | Colour Temp K | Luminous Flux lm | Packing Qty. |
|---------|------------------------------|--------|--------|-----------|-----------|-----|-----|---------------|------------------|--------------|
| 0001804 | FHE 21W T5 FoodStar Fresh TC | 21 | 126 | 0.165 | 849 | 2A | G5 | 6400 | 1250 | 25 |
| 0001805 | FHE 28W T5 FoodStar Fresh TC | 28 | 166 | 0.170 | 1149 | 2A | G5 | 6400 | 1700 | 25 |
| 0001806 | FHE 35W T5 FoodStar Fresh TC | 35 | 205 | 0.175 | 1449 | 2A | G5 | 6400 | 2150 | 25 |
| 0001807 | F36W T8 FoodStar Fresh TC | 36 | 103 | 0.430 | 1200 | 2A | G13 | 6400 | 2350 | 25 |
| 0001808 | F58W T8 FoodStar Fresh TC | 58 | 110 | 0.670 | 1500 | 2A | G13 | 6400 | 3500 | 25 |

foodstar Fresh - RefLED



- Full retrofit LED for standard halogen lamps
- High energy saving
- Very long average life: 15000hrs
- Features a specially tailored spectrum that complements the natural colours of fruit, vegetables and fish. Illuminates them in their optimum colours for irresistible presentation
- The truthful colour rendering does not disturb the natural colours of the products
- Integrated electrical isolating transformer for highest safety, even in humid conditions



foodstar Fresh - RefLED

| Code | Description | Watt W | Volt V | Beam Angle | Cap | CRI | Colour Temp K | Luminous Flux lm | Average Rated Life | Packing Qty. |
|---------|---|--------|--------|------------|-----|-----|---------------|------------------|--------------------|--------------|
| 0001780 | Hi-Spot 95 RefLED 9W 24° Foodstar Fresh | 9 | 230 | 24° | E27 | 87 | 6100 | 2260 | 15000 | 15 |



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SYLVANIA

SYLVANIA

Germicidal lamps



SYLVANIA

MICRO-ORGANISMS

INTRODUCTION

Sylvania covers the full spectrum of Germicidal UV-C lamps, from the smallest compacts to the longest T5 and the most powerful high pressure types. Their primary application is the disinfection and sterilisation of water, air and surfaces. Germicidal lamps remain unparalleled in their efficiency for the destruction of bacteria, viruses, mould spores and other micro-organisms.

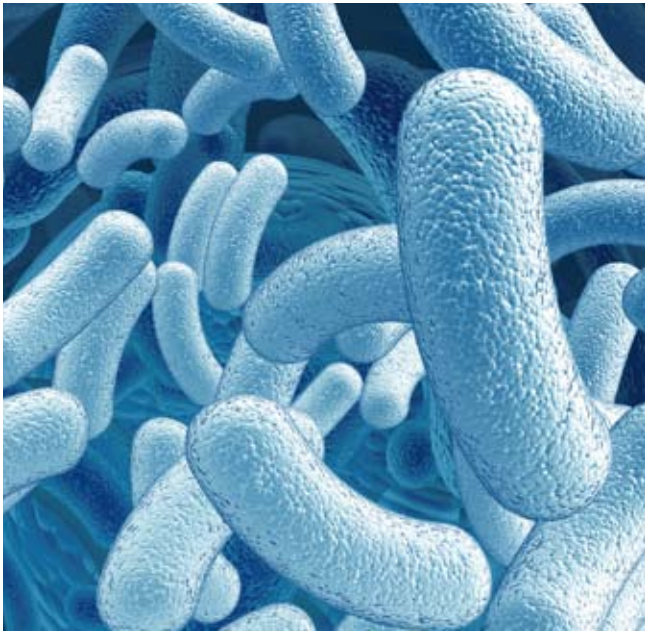
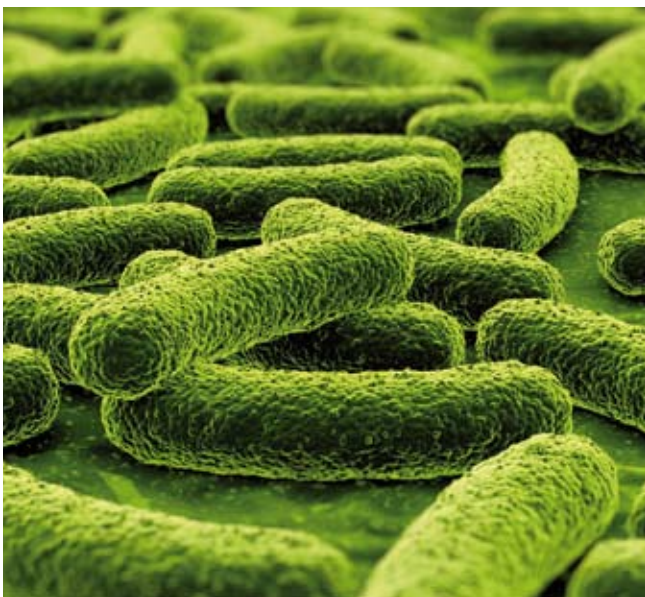


Illustration of the bacillus microorganisms



Example of bacteria

MICRO-ORGANISMS

Micro-organisms are classified separately from plants and animals because of their tiny dimensions. While some are essential for life, i.e. in the human digestive system, others can lead to serious diseases and man faces a constant battle against their multiplication. Traditional techniques such as pasteurisation or the use of preservatives only lead to a reduction in the total quantity of micro-organisms. Alternative methods involving moist or dry heating, filtration and use of chemical agents can also have some effect, but irradiation by Germicidal lamps is considered by far the most effective. The short wavelength UV-C rays destroy their DNA, thereby preventing cells from dividing and effectively killing them. There are three distinct kinds of micro-organisms:

Bacteria / bacterial spores: May be single-cell or multi-cellular organisms, which multiply extremely rapidly. Found in air, water, soil, plants/animals and particularly rotting organic matter. Although high temperatures and dryness can temporarily prevent their multiplication, bacteria will return to life once normal conditions are resumed.

Moulds / Yeasts: A broad variety of multi-cellular organisms (moulds) or single-cells (yeasts) which exist almost everywhere. Most moulds are saprophytic (feeds on dead organic matter) and are responsible for enormous food spoilage. Some are parasitic (survives on a living host). Yeasts multiply by sprouting and are widely used in the production of bread and alcoholic beverages.

Viruses: Extremely small parasitic organisms which do not multiply themselves, but survive by taking over a host cell. Responsible for some of the most widespread human diseases such as influenza, the common cold, measles, chicken pox, mumps and warts, and have devastating effects in the animal kingdom such as foot-and-mouth disease, avian/swine flu etc. Plants can also be attacked by viruses.

THE GERMICIDAL ACTION OF UV-C RADIATION

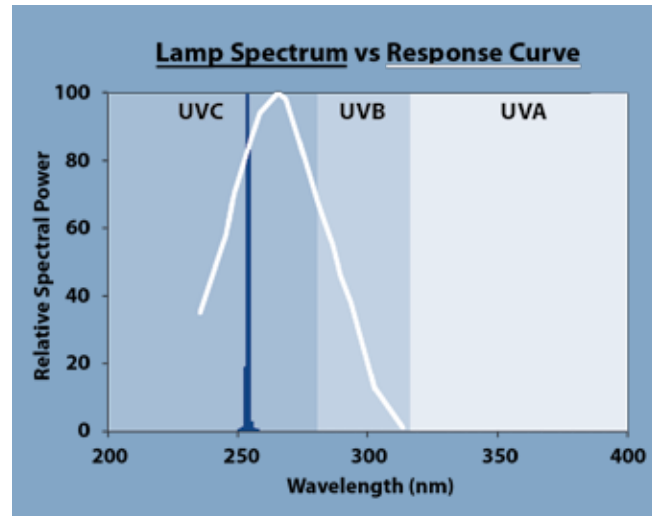
The Germicidal Action Spectrum diagram reveals that the optimal wavelength for the destruction of DNA is 265nm. An electrical discharge through mercury vapour produces intense radiation very near to this peak, at 253.7nm, where the Germicidal efficiency is about 85% of the theoretical maximum. UV-C mercury lamps are thus extremely effective in killing micro-organisms.

Low Pressure lamps are the most efficient and are manufactured in the form of linear or compact fluorescent lamps, but without any fluorescent coating and a special UV-C transmitting glass tube. Peak performance is attained when the bulb temperature is around 40°C, which corresponds to an ambient temperature of 25°C. Lower or higher temperatures will both result in falling UV-C levels. In case the lamp is exposed to an air flow which may have a cooling effect, it is desirable to use HO (High Output) types which are loaded at higher wattage than normal, to maintain optimal bulb temperatures even in colder environments.

High Pressure lamps are slightly less efficient but have the advantage of producing extremely intense radiation over a small area. For instance, typical high pressure lamps are loaded above 100 Watts per centimetre of discharge length whereas low pressure versions achieve less than 1 W/cm.

The total UV-C output of a lamp is specified in Watts (W) and the irradiation density is expressed in W/m². A certain dose level is needed to kill each kind of micro-organism, this dose being a function of time (seconds) and power (Watts). For instance, a low UV power over a long period of time can have the same effect as a higher power for a shorter duration. The unit of energy is the Joule (J), which is equivalent to Watts per Second. 100J could be delivered by 1W for 100 seconds, or 100W for 1 second, or even 20W for 5 seconds, etc.

Dose levels needed to kill a particular micro-organism are expressed in Joules per square metre (J/m²). Some are tougher than others and require more UV-C to kill them. The table on Page 6-7 indicates the dose level needed to destroy 90% of the population.



DIRECTIONS FOR USE

- The radiation from these lamps is very harmful to eyes and skin. Always protect your eyes and skin against radiation.
- Germicidal lamps must only be used in appropriate equipment and applications.
- When using UV-C emitting lamps, the official reference guides and the current industrial safety guideline must be followed.
- Maximum Permissible Exposure Time (MPET) can be established for a given range of wavelengths.
For example: 1 minute/day at a distance of 30cm.
- Germicidal lamps emit UV-C radiation and must not be used for general lighting purposes.



AIR PURIFICATION

Air is easy to purify because it is quite transparent to UV-C, allowing it to penetrate and kill floating bacteria which are responsible for many airborne infections. Direct irradiation methods can be based on ceiling mounted lamps which are energised whilst the room is unoccupied, upward radiation mounted safely above eye height, or concealed downward radiation to sterilise floors. Alternatively, Germicidal lamps may be mounted within air ducts of the ventilation system which has an advantage that high UV doses can be given, because the lamps are out of view. Portable stand-alone units which draw in air, purify it and then expel back into the room are becoming increasingly popular.

GERMICIDAL LAMPS APPLICATION TABLE

| | T5 Short | T8 linear | T5 Long | Lynx-S | Lynx-L |
|----------------------------|----------|-----------|---------|--------|--------|
| Air | | | | | |
| Upper air | | • | • | • | • |
| Airconditioning | | • | • | • | • |
| Cooling coils | | • | • | | • |
| Dish dryer | | • | | | |
| Water | | | | | |
| Municipal drinking water | | | • | • | |
| Municipal waste water | | | • | | |
| Residential drinking water | • | | | | • |
| Ultra pure water | | | • | | |
| Process water | | | • | | |
| Swimming pools & Spas | | | • | | |
| Agricultural recycling | | | • | | • |
| Ponds | • | • | | • | • |
| Aquaria | • | | | • | |
| Surfaces | | | | | |
| Food processing | | | • | | |
| Packaging | | | • | | |



WATER/LIQUID PURIFICATION

Liquids are more challenging to purify because they tend to absorb some of the UV-C themselves. To design suitable equipment the absorption coefficient needs to be known, as well as the flow rate and dose. Some examples of absorption coefficient for various liquids are given in the table.

Drinking Water: Germicidal sterilisation is increasingly being used in municipal water installations to circumvent the ecological impact of chlorine, and because filters cannot catch all micro-organisms. It is also employed in smaller scale residential installations, and in many water cooler-dispensers.

Swimming Pools: The use of a UV-C purification unit can realise significant cost savings, by reducing the use of chlorine by up to 50%.

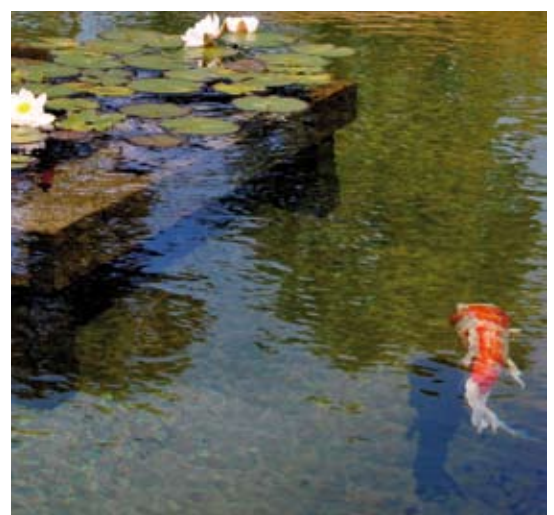
Ponds & Aquaria: A closed-loop system which circulates the water over a germicidal lamp a few times per day not only reduces parasites, but substantially reduces the build-up of algae.

SURFACE PURIFICATION

Requires high intensities, so lamps should be mounted as close as possible to the surface for disinfection. A high uniformity of irradiance is essential, ensured by a professional optical system for distribution of the radiation, so that no areas are left untreated.

Examples of absorption coefficients

| Liquid | Absorption Coefficient |
|-----------------|------------------------|
| Drinking Water | 0,02-0,1 |
| Distilled Water | 0,007-0,01 |
| Clear Sirup | 2-5 |
| Beer | 10-20 |
| White wine | 10 |
| Red wine | 30 |
| Milk | 300 |



RADIATION DOSES FOR INACTIVATING VARIOUS MICRO-ORGANISMS

The following values relate to an inactivation of 90% at a wavelength of 254 nm, where UV radiation is particularly effective against bacteria. The radiation dose H is defined as UV power x time/irradiated area (**Ws/m²**). Values in bold are mean values for the respective families of microbes. Values in brackets show the range of values found in the literature. Additionally, individual examples of the microbe families are listed.

| | | | |
|--|-----|---|-----|
| Bacteria | | Legionella longbeachae 1 | 12 |
| Bacillus (vegetative) 32 (13-58) | | Legionella longbeachae 2 | 10 |
| Bac. anthracis | 45 | Legionella oakridgensis | 22 |
| Bac. Megatherium | 13 | Legionella micdadei | 18 |
| Bac. paratyphosus | 32 | Legionella jordanis | 11 |
| Bac. subtilis | 58 | Legionella wadsworthii | 4 |
| Bacillus (spore) 118 (11-365) | | Legionella pneumophila | 25 |
| Bac. Megatherium | 27 | Legionella bozemanii | 20 |
| Bac. subtilis | 120 | Leptospira 20 (8-28) | |
| Bac. anthracis | 45 | Leptospira biflexa | 23 |
| Bac. Subtilis (ATCC6633) | 365 | Leptospira illini | 8 |
| Bacillus subtilis | 11 | Leptospira interrogans | 28 |
| Bac. subt. spore ATCC6633 | 152 | Micrococcus 80 (61-100) | |
| Campylobacter jejuni 29 | | Micrococcus candidus | 61 |
| Clostridium tetani 130 | | Microc. Sphaeroides | 100 |
| Coryneb. diptheria 34 | | Neisseria catarrhalis 44 | |
| Citrob. freundii (ATCC8090) 42 | | Pseudomonas aerug. 35 (15-55) | |
| Enterob. Cloaca (ATCC13047) 64 | | Pseudomonas aeruginosa | 55 |
| Escherichia coli : 45 (7-58) | | Salmonella 43 (21-80) | |
| Escherichia coli | 30 | Salm. Typhimurium | 80 |
| Escherichia coli (in air) | 7 | Salm. Enteritidis | 40 |
| Escherichia coli (in water) | 54 | Salmonella typhi | 21 |
| Escherichia coli ATCC 11229 | 25 | Serratia marcescens 32 (7-85) | |
| Escherichia coli ATCC 25922 | 30 | Shigella paradysenteriae 17 | |
| Escherichia coli K 12 AB 1157 | 58 | Staph 44 (18-110) | |
| Escherichia coli B/ r ATCC12407 | 53 | Staph. albus | 18 |
| Klebsi. Pneumon. ATCC4352 42 | | Staph. aureus | 26 |
| Legionella 15 (4-26) | | Staph. epidermis | 110 |
| Legionella dumoffi | 24 | Streptococcus 36 (18-65) | |
| Legionella gromanii | 26 | Strep. haemolyticus | 22 |
| Legionella micdadei | 15 | Strep. lactis | 62 |
| | | Strep. viridans | 20 |

| | |
|-----------------------------|----|
| Strep. faecalis (ATCC29212) | 65 |
| Strep. faecalis | 55 |
| Strep. pyogenes | 22 |
| Strep. salivarius | 20 |
| Strep. albus | 18 |

Vibrio 24 (8-39)

Yersinia enterocolitica 15

DNA-Viruses

Parvovirus 35 (30-40)

| | |
|------------------|----|
| Bov. Parvovirus | 40 |
| Kilham rat virus | 30 |

HCC (Dog hepat. Adenov) 265

Herpes virus 57 (15-165)

| | |
|------------------------|-----|
| Pseudorabies virus | 70 |
| Herpes simplex MP str. | 67 |
| Herpes simplex MP str. | 15 |
| Herpes simplex, type 1 | 165 |

Vaccinia 18

RNA-Viruses

Picornavirus 72 (36-186)

| | |
|-----------------------|-----|
| Poliovirus | 110 |
| Poliov type 1 Mahoney | 67 |
| Poliov | 133 |
| Poliov type 1 | 36 |
| Poliov Mahoney | 45 |
| ECBO | 80 |
| Coxsackiev | 186 |

Reovirus 102 (18-163)

| | |
|------------------------|-----|
| Reovirus type 1 | 48 |
| Reov type 1 (Lang str) | 163 |
| Rotav | 159 |
| Rotav SA11 | 65 |

Paramyxovirus 35 (15-55)

| | |
|-------------------|----|
| Sindbis virus | 55 |
| Newcastle Disease | 15 |

Orthomyxovirus 35

| | |
|-----------|----|
| Influenza | 35 |
|-----------|----|

HIV (Lentiv) 1438 (600-2400)

| | |
|--------------------|------|
| HIV (HTLVIII) | 600 |
| HIV (Sup T1) | 1450 |
| HIV (H9) | 2400 |
| HIV (PHA-stim.PBL) | 1300 |

Phages

Bacteriophages 152 (65-310)

| | |
|---------------------------|-----|
| Bac. subt. phage SP02C 12 | 150 |
| Bac. subt. phage SPP1 | 195 |
| Bac. subt. phage diam. 29 | 70 |
| Bacteriophage F specific | 292 |
| Coliphage f2 | 310 |
| Staph. Phage A994 | 65 |

Yeasts 59 (23-100)

| | |
|---|--------|
| Oospora lactis | 50 |
| Saccharomyces cerevisiae (baking yeast, brewing yeast) | 33-100 |
| Saccharomyces ellipsoideus | 60 |
| Saccharomyces sp. | 80 |
| Torula sphaerica (in milk and cream) | 23 |

Fungi 713 (130-3000)

| | |
|-------------------------------------|------|
| Aspergillus glaucus | 440 |
| Aspergillus flavus | 600 |
| Aspergillus niger | 1320 |
| Aspergillus niger (pasta) | 1500 |
| Aspergillus amstelodami (meat) | 700 |
| Candida parapsilosis | 220 |
| Cladospor. Herbarum (cold stores) | 500 |
| Mucor racemosus | 170 |
| Mucor mucedo (meat, bread, fat) | 600 |
| Oospora lactis | 50 |
| Penicillium chrysogenum (fruit) | 500 |
| Penicillium roquefortii | 130 |
| Penicillium expansum | 130 |
| Penicillium digitatum | 440 |
| Rhizopus nigricans | 1100 |
| Rhizopus nigricans (cheese) | 1100 |
| Scopulariopsis brevicaulis (cheese) | 800 |

Protoza 600-1000

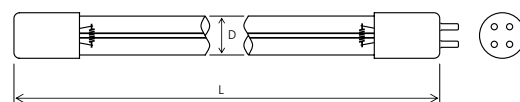
Algae 3000-6000

Green algae, blue algae, diatoms

GERMICIDAL LINEAR



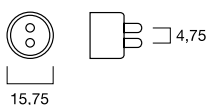
FOUR PIN (FIG. N° 3)



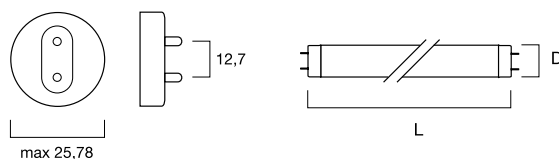
FEATURES

- These lamps consist of a tubular glass envelope and emit more than 85% of their energy in the UV-C ultraviolet radiation with a peak at 253.7nm for germicidal action
- Shape, electrical characteristics and lighting circuits are similar to general fluorescent lamps
- The majority of germicidal lamps operate most efficiently in still air at an ambient temperature of 25°
- All lamps are Ozone free
- A protective coating on the inside of the lamp limits the depreciation of the UV-C output

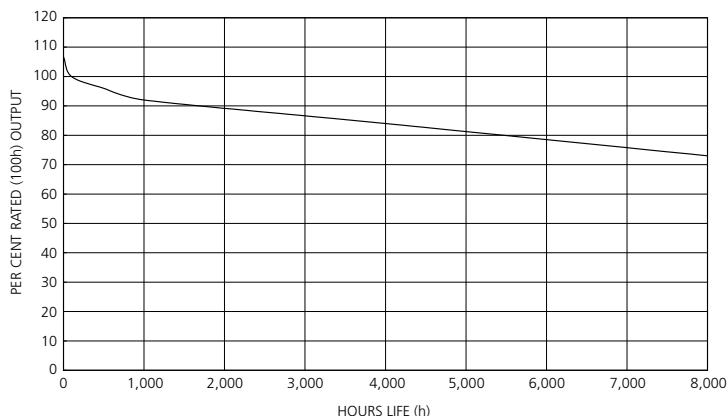
G5 (FIG. N° 1)



G13 (FIG. N° 2)



ULTRAVIOLET RADIATION AS RELATED TO THE LIFE
G30W-T8



APPLICATIONS

- Residential drinking water units
- Stand alone air purifiers
- Wall mounted air purification units
- Ponds & Aquaria

| Ordering Code | Item description | Watt (W) | Voltage (V) | Current (A) | UV-C output W at 25°C | UV $\mu\text{W}/\text{cm}^2$ at 1m | Cap | Cap Figure N° | L (mm) | D (mm) | Life (hrs) | Packing Quantity |
|---------------|------------------|----------|-------------|-------------|-----------------------|------------------------------------|----------|---------------|--------|--------|------------|------------------|
| 0002328 | G4W T5 | 4 | 30 | 0,162 | 0,8 | 8,3 | G5 | 1 | 136 | 16 | 6000 | 50 |
| 0002216 | G6W T5 | 6 | 44 | 0,147 | 1,7 | 17,7 | G5 | 1 | 212 | 16 | 6000 | 50 |
| 0000501 | G8W T5 | 8 | 56 | 0,170 | 2,5 | 26 | G5 | 1 | 288 | 16 | 6000 | 24 |
| 0000507 | G11W T5 HO | 11 | 37 | 0,330 | 2,2 | 23 | G5 | 1 | 212 | 16 | 8000 | 50 |
| 0000508 | G16W T5 HO | 16 | 50 | 0,350 | 3,2 | 33 | G5 | 1 | 288 | 16 | 8000 | 50 |
| 0025016 | G11W T5 HO 4-pin | 11 | 37 | 0,330 | 2,2 | 23 | Four Pin | 3 | 227,5 | 16 | 8000 | 45 |
| 0025017 | G16W T5 HO 4-pin | 16 | 50 | 0,400 | 3,9 | 33 | Four Pin | 3 | 319,5 | 16 | 8000 | 45 |
| 0002482 | G10W T8 | 10 | 46 | 0,230 | 2,7 | 28,1 | G13 | 2 | 330 | 26 | 6000 | 20 |
| 0000502 | G15W T8 | 15 | 55 | 0,300 | 4.9 | 50,5 | G13 | 2 | 437 | 26 | 8000 | 24 |
| 9000526 | G25W T8 | 25 | 46 | 0,600 | 6.9 | 71,8 | G13 | 2 | 437 | 26 | 8000 | 24 |
| 0000503 | G30W T8 | 30 | 99 | 0,365 | 13.4 | 135 | G13 | 2 | 894 | 26 | 8000 | 24 |
| 0000504 | G36W T8 | 36 | 103 | 0,430 | 15.5 | 156 | G13 | 2 | 1199 | 26 | 8000 | 12 |
| 0002208 | G55W T8 | 55 | 83 | 0,770 | 18 | 194 | G13 | 2 | 894 | 26 | 8000 | 24 |
| 0002217 | G58W T8 | 58 | 100 | 0,670 | 20 | 202 | G13 | 2 | 1500 | 26 | 5000 | 12 |
| 9002500 | G20W T10 | 20 | 58 | 0,360 | 7,5 | 76 | G13 | 2 | 590 | 34 | 8000 | 10 |
| 9002327 | G40W T10 | 40 | 106 | 0,420 | 19,8 | 200 | G13 | 2 | 1199 | 34 | 8000 | 10 |

GERMICIDAL COMPACT



FIG. N° 1

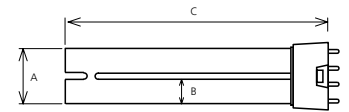
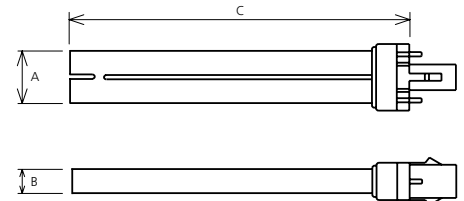


FIG. N° 2

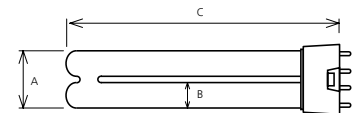


FEATURES

- These lamps have all the benefits of linear germicidal lamps, but have also a very compact design. This allows for compact fixture design. As they are single ended, replacement is very easy
- The HO (High Output) lamps are most efficient in air purification installations, as they are wind chill corrected
- Shape, electrical characteristics and lighting circuits are similar to general lighting compact fluorescent lamps
- The majority of germicidal lamps operate most efficiently in still air at an ambient temperature of 25°
- All lamps are Ozone free
- A protective coating on the inside of the lamp limits the depreciation of the UV-C output



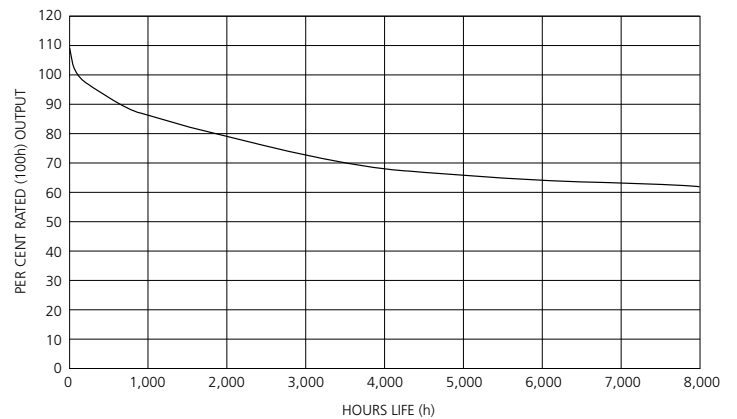
FIG. N° 3



APPLICATIONS

- Residential drinking water
- Pond water
- Induct air treatment units
- Stand alone air purifiers

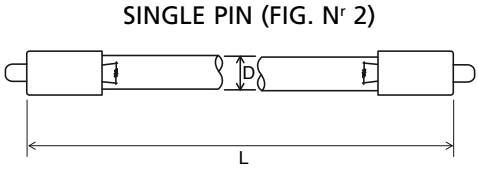
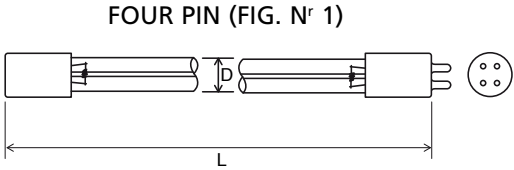
ULTRAVIOLET RADIATION AS RELATED TO THE LIFE
G11 LYNX-S



| Ordering Code | Item description | Watt (W) | Voltage (V) | Current (A) | UV-C output W at 25°C | UV $\mu\text{W}/\text{cm}^2$ at 1m | Cap | Figure N° | L (mm) | D (mm) | Life (hrs) | Packing Quantity |
|---------------|-------------------|----------|-------------|-------------|-----------------------|------------------------------------|------|-----------|--------|--------|------------|------------------|
| 0025046 | G5W Lynx-S | 5 | 35 | 0,180 | 1,5 | 16,4 | G23 | 2 | 85 | 28 | 8000 | 50 |
| 0025050 | G9W Lynx-S | 9 | 59 | 0,170 | 2,4 | 32,9 | G23 | 2 | 145 | 28 | 8000 | 50 |
| 0025012 | G9W Lynx-SE 4-pin | 9 | 59 | 0,170 | 2,4 | 32,9 | 2G7 | 3 | 145 | 28 | 8000 | 50 |
| 0025051 | G11W Lynx-S | 11 | 89 | 0,160 | 3,0 | 41,1 | G23 | 2 | 215 | 28 | 8000 | 50 |
| 0025047 | G13W Lynx-S | 13 | 59 | 0,285 | 3,6 | 49,3 | GX23 | 2 | 170 | 28 | 8000 | 50 |
| 0025049 | G18W Lynx-L | 18 | 58 | 0.375 | 5.5 | 75,0 | 2G11 | 1 | 225 | 40 | 8000 | 25 |
| 0025048 | G36W Lynx-L | 36 | 106 | 0.435 | 12.0 | 164,5 | 2G11 | 1 | 415 | 40 | 8000 | 25 |
| 0025045 | G55W Lynx-L | 55 | 103 | 0.540 | 17.0 | 233,0 | 2G11 | 1 | 533 | 40 | 8000 | 25 |
| 0025013 | G35W Lynx-L HO* | 35 | 55 | 0,850 | 11,0 | 105,0 | 2G11 | 1 | 225 | 40 | 9000 | 25 |
| 0025014 | G65W Lynx-L HO* | 65 | 82 | 0,800 | 19,0 | 166,0 | 2G11 | 1 | 415 | 40 | 9000 | 25 |
| 0025015 | G90W Lynx-L HO* | 90 | 115 | 0,800 | 27,0 | 250,0 | 2G11 | 1 | 533 | 40 | 9000 | 25 |

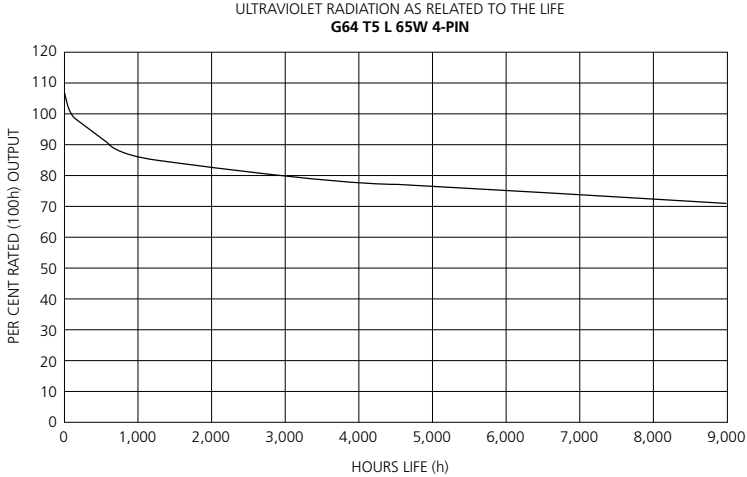
* When used with electronic ballast 25KHz HF

GERMICIDAL LINEAR T5 LONG



FEATURES

- These lamps have a smaller diameter than the conventional, linear T8 lamps
- Lamps consist of a tubular glass envelope and emit more than 85% of their energy in the UV-C ultraviolet radiation with a peak at 253.7nm for germicidal action
- They exist in single pin or with four pins at one end for easy handling
- The majority of germicidal lamps operate most efficiently in still air at an ambient temperature of 25°
- In air purification installations the HO (High Output) versions are most efficient , as they are wind chill corrected
- All lamps are Ozone free
- A protective coating on the inside of the lamp limits the depreciation of the UV-C output



APPLICATIONS

- Municipal water treatment systems
- Swimming pool applications
- Residential drinking water systems
- Air treatment units

| Ordering Code | Item description | Watt (W) | Voltage (V) | Current (A) | UV-C output W at 25°C | UV $\mu\text{W}/\text{cm}^2$ at 1m | Cap | Figure N° | L (mm) | D (mm) | Life (hrs) | Packing Quantity |
|---------------|---------------------------|----------|-------------|-------------|-----------------------|------------------------------------|------------|-----------|--------|--------|------------|------------------|
| 0025005 | G36 T5 L 40W 4-Pin * | 39 | 115 | 0,425 | 12 | 125 | Four pin | 1 | 845 | 16 | 9000 | 10 |
| 0025006 | G64 T5 L 65W 4-Pin * | 65 | 250 | 0,425 | 25 | 260 | Four pin | 1 | 1556 | 16 | 9000 | 24 |
| 0025009 | G36 T5 L 40W Single Pin * | 39 | 115 | 0,425 | 12 | 125 | Single Pin | 2 | 845 | 16 | 9000 | 10 |
| 0025010 | G64 T5 L 65W Single Pin* | 65 | 250 | 0,425 | 25 | 260 | Single Pin | 2 | 1556 | 16 | 9000 | 24 |

* When used with conventional magnetic ballast 50 Hz

GERMICIDAL HIGH PRESSURE VHO



FIG. N° 1

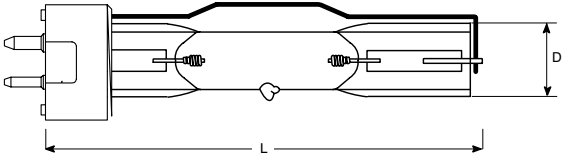
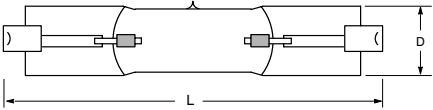


FIG. N° 2



FEATURES

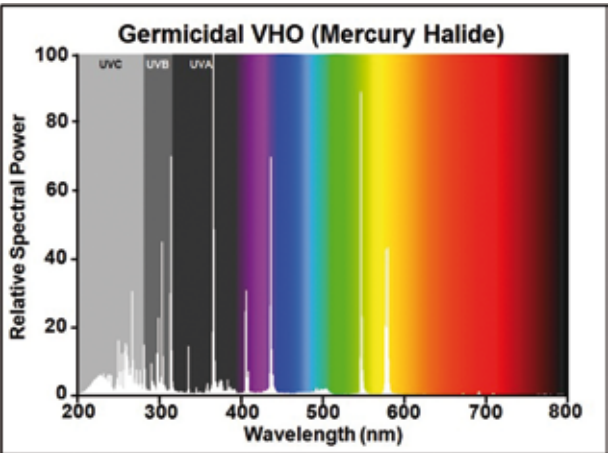
- Germicidal VHO – lamps consist of a double ended quartz discharge tube filled with mercury.
- Power concentration is 120 Watts per cm of arc length (low pressure tubes are < 1W per cm).
- Extremely high UV-C concentration levels are possible.
- Lamps have a self cleaning halogen feature which results in improved UV-C maintenance.
- Forced air ventilation is required to remove the ozone produced with VHO lamps

APPLICATIONS

- Used in a wide range of photochemical processes
- Label printing
- Disinfection of municipal waste water
- Curing of lacquers, paints and inks
- In combination with black glass filters for fluorescence excitation
- Artificial material aging
- Exposure of diazo film material and print masters

DIRECTIONS FOR USE

- The radiation from these lamps is very harmful to eyes and skin. Always protect your eyes and skin against radiation
- The lamps may only be operated in enclosed systems.
- Cannot be used for general lighting purposes
- Max. permissible bulb temperature is 950°C
- Max. permissible pinch temperature is 350°C



| Ordering Code | Item description | Watt (W) | Voltage (V) | Current (A) | UV-A $\mu\text{W}/\text{cm}^2$ at 1m | UV-B $\mu\text{W}/\text{cm}^2$ at 1m | UV-C $\mu\text{W}/\text{cm}^2$ | Cap | Figure N° | L (mm) | D (mm) | Life at > 50% UV-output (hrs) | Packing Quantity |
|---------------|------------------|----------|-------------|-------------|--------------------------------------|--------------------------------------|--------------------------------|-------|-----------|--------|--------|-------------------------------|------------------|
| 0024206 | G4/120 SE VHO | 400 | 125 | 3,5 | 300 | 250 | 400 | GY9.5 | 1 | 103 | 14 | 2000 | 10 |
| 0024207 | G4/120 DE VHO | 400 | 125 | 3,5 | 300 | 250 | 400 | R7s | 2 | 104 | 14 | 2000 | 10 |

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SYLVANIA

Infra Red lamps

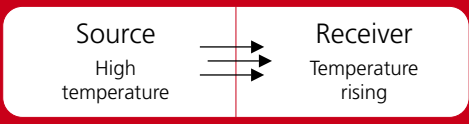


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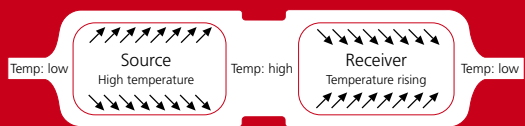
INTRODUCTION

Thermal energy can be produced by various different technologies, such as the combustion of fuels, electrical methods, frictional energy, chemical reactions etc. Once the heat has been generated it is generally desired to transfer this energy to an object whose temperature is to be increased. This can be accomplished by one of three different mechanisms:

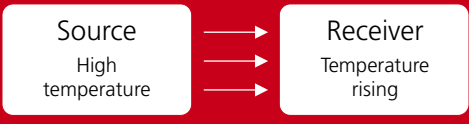
1 Conduction: Direct contact is established between the heat source and a cooler object, and thermal energy is transferred across the boundary.



2 Convection: This is a mechanism of heat transfer through a fluid (i.e. gases, air, liquids), and it involves the heating of the fluid which then flows away and transfers its heat to another object.



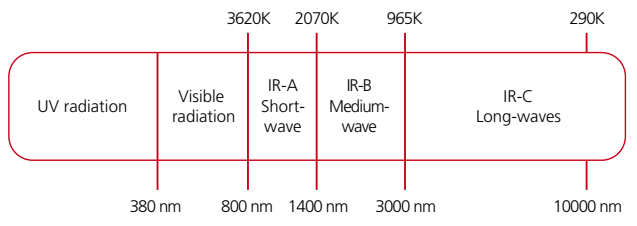
3 Radiation: This is a contactless method of heat transfer in which thermal energy is transmitted in the form of electromagnetic radiation. A high temperature object radiates heat through a medium which is transparent to this radiation (i.e. air), and objects which absorb the radiation will be heated.



The infra-red domain can be divided into three distinct ranges according to wavelength, specified in fractions of a metre.

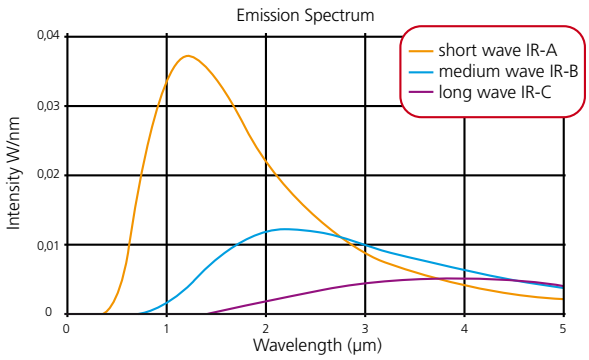
$$1\text{m} = 1,000\text{mm} = 1,000,000\mu\text{m} = 1,000,000,000\text{nm}.$$

- **Short wave IR-A: (780-1400nm):** This is produced by infra red lamps operated at a high colour temperature of around 2200K, which results in the generation of short wavelength radiation. The radiant efficiency is very high at around 92%. The heat source is a coiled tungsten wire sealed into a quartz tube, typically also filled with halogen gases. When energised it provides instantaneous heat, and typical IR lamps radiate most of their energy in this region.
- **Medium wave IR-B (1400-3000nm):** By reducing the temperature of the heat source, the radiation is shifted to longer wavelengths. At a typical colour temperature of around 1300K the radiant efficiency decreases to 60%, but this is countered by the fact that certain materials are better at absorbing IR-B than IR-A radiation. A quartz emitter is typically used.
- **Long wave IR-C (3000 -10000nm):** At still lower temperatures, the heat source is only capable of producing low energy long-wavelength radiation. The source is a coil of resistance wire whose temperature is so low that it does not have to be sealed into a lamp to prevent its oxidation. Often the resistance wire is moulded into a ceramic panel. The radiant efficiency is about 40%, and long wave IR sources are characterised by their slow response times of several minutes.



The radiant energy produced by infra red halogen lamps has several advantages over other methods of generating heat, which transmit their energy by convection and conduction:

- Instant heat in milliseconds
- Dimmable: output can be adapted
- Heat can be focused and directed where it is needed
- Clean technology, no pollution or emissions
- Compact, compared to sources from combustion
- On/off switching does not affect lamp life, so that presence detection can be used



RUBY RED HALOGEN LAMPS



FEATURES

- Tubular envelope made from ruby red quartz (Ruby Slim)
- Secondary outer envelope made from red quartz (Ruby Jacket)
- Transmits virtually all infrared while blocking most visible light
- Instant on-off capability



Fig. 1

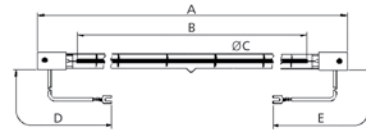


Fig. 2

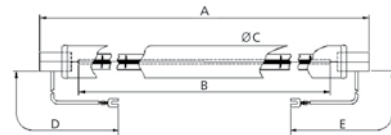
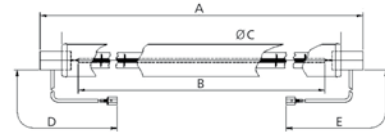


Fig. 3



APPLICATIONS

- Space heating of large rooms
- Outdoor heating of communal areas
- Energy efficient alternative to patio heaters

| Ordering Code | Item description | W | V | Cap | Total Lamp Length A (mm) | Heating Length B (mm) | Diameter C (mm) | Finish |
|---------------|-------------------------|------|-----|------|-----------------------------|--------------------------|--------------------|---------------|
| 0033016 | IR 1000W Ruby SK15 235V | 1000 | 235 | Sk15 | 353 | 280 | 10,5 | Ruby Slim |
| 0033017 | IR 1200W Ruby SK15 235V | 1200 | 235 | Sk15 | 353 | 280 | 10,5 | Ruby Slim |
| 0033018 | IR 1500W Ruby SK15 235V | 1500 | 235 | Sk15 | 346 | 270 | 20 | Ruby Jacketed |
| 0033019 | IR 2000W Ruby SK15 235V | 2000 | 235 | Sk15 | 346 | 270 | 20 | Ruby Jacketed |

| Ordering Code | Item description | Burning position | Average Lamp Life in h | Colour Temp. (K) | Cable X1 D (mm) | Cable X2 E (mm) | Cable Connection | Fig. N° | Packing Quantity |
|---------------|-------------------------|------------------|---------------------------|---------------------|--------------------|--------------------|------------------|---------|------------------|
| 0033016 | IR 1000W Ruby SK15 235V | Universal | 5000 | 2450 | 230 | 230 | Fork | 1 | 10 |
| 0033017 | IR 1200W Ruby SK15 235V | Universal | 5000 | 2450 | 230 | 230 | Fork | 1 | 10 |
| 0033018 | IR 1500W Ruby SK15 235V | Horizontal | 5000 | 2350 | 230 | 230 | Fork | 2 | 10 |
| 0033019 | IR 2000W Ruby SK15 235V | Horizontal | 5000 | 2350 | 340 | 340 | Tab | 3 | 10 |

CLEAR QUARTZ HALOGEN LAMPS

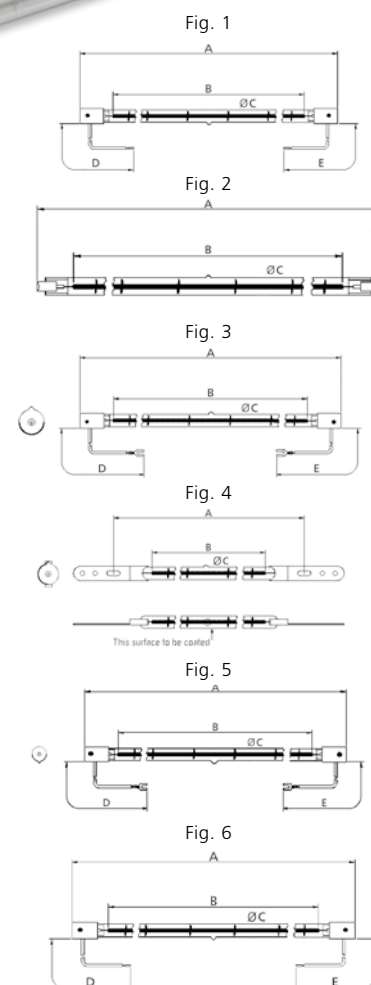


FEATURES

- Tubular envelope made from transparent clear quartz
- Transmits the full spectrum of visible and infrared radiation
- Clear lamps are the most efficient for transmitting infrared energy
- Instant on-off capability

APPLICATIONS

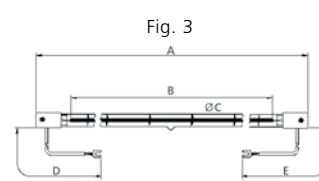
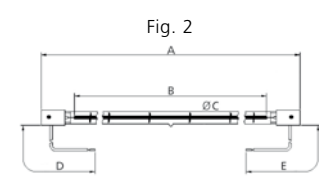
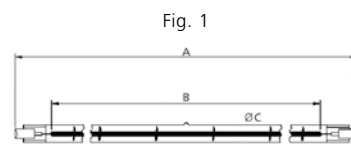
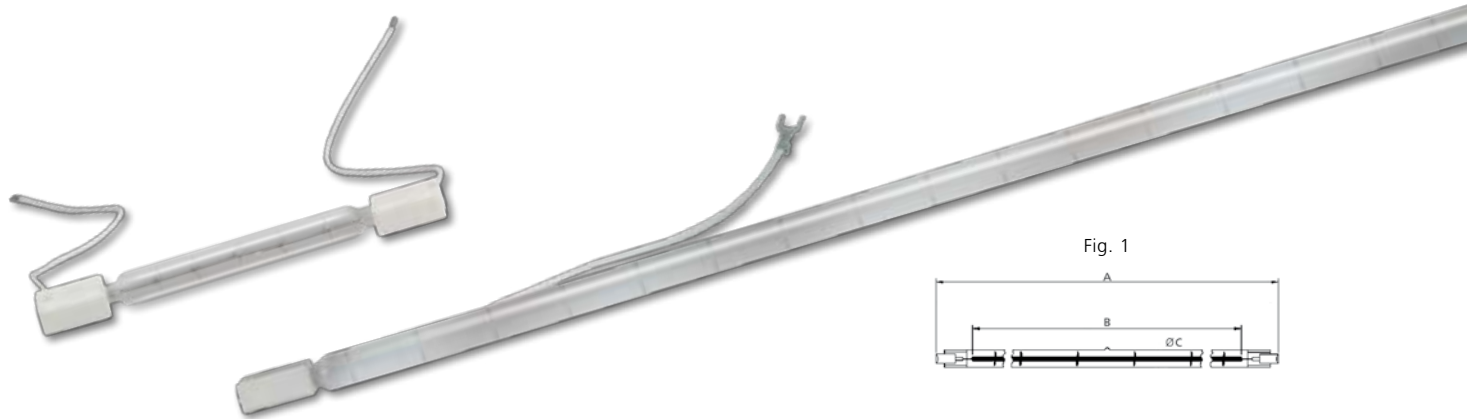
- The glare from the visible light component restricts these to industrial applications, eg
- Drying of paints in tunnels and automotive body shops
- Heating of plastics for PET bottle blowing
- High speed drying in paper production mills
- Drying of lacquers and printing inks
- Baking and curing of powder coatings
- Thermal sterilisation



| Ordering Code | Item description | W | V | Cap | Total Lamp Length A (mm) | Heating Length B (mm) | Diameter C (mm) | Finish |
|---------------|-------------------------|------|-----|---------------|-----------------------------|--------------------------|--------------------|-----------|
| 0033020 | IR 300W CL SK15 230V | 300 | 230 | SK15 | 120 | 60 | 10,5 | Clear |
| 0033021 | IR 300W CL R7s 230V | 300 | 230 | R7s | 117,6 | 60 | 10,5 | Clear |
| 0033022 | IR 500W CL R SK15 240V | 500 | 240 | SK15 | 216 | 176 | 10,5 | Reflector |
| 0033023 | IR 1000W CL R X 240V | 1000 | 240 | Metal strap X | 370 | 270 | 10,5 | Reflector |
| 0033024 | IR 1000W CL SK15 235V | 1000 | 235 | SK15 | 353 | 280 | 10,5 | Clear |
| 0033025 | IR 1000W CL R SK15 235V | 1000 | 235 | SK15 | 353 | 280 | 10,5 | Reflector |
| 0033026 | IR 1200W CL R SK15 235V | 1200 | 235 | SK15 | 222 | 157 | 10,5 | Reflector |
| 0033027 | IR 2000W CL R SK15 235V | 2000 | 235 | SK15 | 353 | 270 | 10,5 | Reflector |

| Ordering Code | Item description | Burning position | Average Lamp Life in h | Colour Temp. (K) | Cable X1 D (mm) | Cable X2 E (mm) | Cable Connection | Fig. N° | Packing Quantity |
|---------------|-------------------------|------------------|---------------------------|---------------------|--------------------|--------------------|------------------|---------|------------------|
| 0033020 | IR 300W CL SK15 230V | Horizontal | 2000 | 2550 | 140 | 140 | Splice | 6 | 50 |
| 0033021 | IR 300W CL R7s 230V | Horizontal | 5000 | 2550 | NA | NA | NA | 2 | 100 |
| 0033022 | IR 500W CL R SK15 240V | Horizontal | 5000 | 2450 | 230 | 230 | Fork | 3 | 10 |
| 0033023 | IR 1000W CL R X 240V | Universal | 5000 | 2450 | NA | NA | NA | 4 | 10 |
| 0033024 | IR 1000W CL SK15 235V | Universal | 5000 | 2400 | 230 | 230 | Fork | 1 | 10 |
| 0033025 | IR 1000W CL R SK15 235V | Universal | 5000 | 2400 | 230 | 230 | Fork | 3 | 10 |
| 0033026 | IR 1200W CL R SK15 235V | Universal | 5000 | 2600 | 140 | 140 | Fork | 5 | 10 |
| 0033027 | IR 2000W CL R SK15 235V | Horizontal | 5000 | 2700 | 230 | 230 | Fork | 3 | 10 |

INFRA RED CABIN HALOGEN LAMPS



FEATURES

- Tubular envelope made from translucent (satin) or clear quartz
- Emits both visible light and infra red radiation
- Rapid on-off capability
- No pre heating of the cabin needed



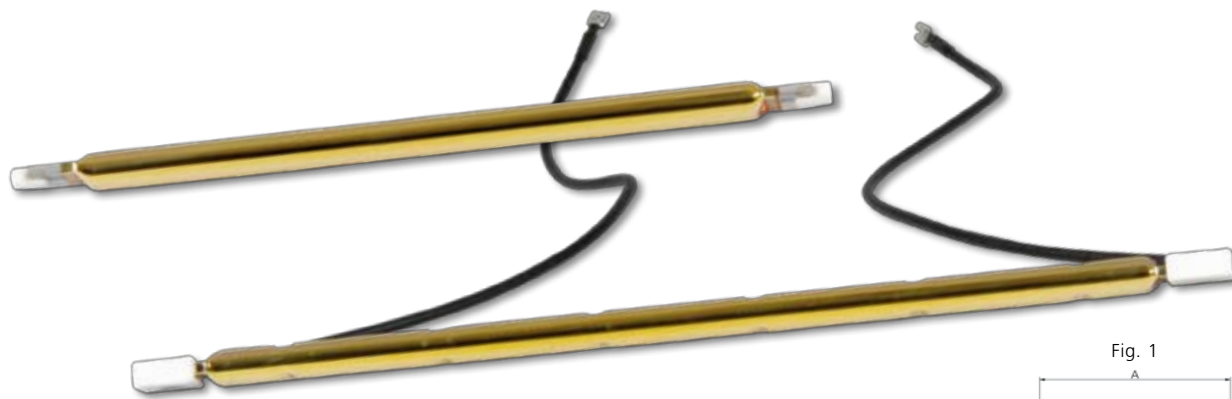
APPLICATIONS

- Personal care in infra-red cabins
- Optimised spectrum to penetrate deeper into the skin for more efficient heat dissipation
- Creates a softer and more pleasant heating sensation than regular lamps

| Ordering Code | Item description | W | V | Cap | Total Lamp Length A (mm) | Heating Length B (mm) | Diameter C (mm) | Finish |
|---------------|----------------------------|------|-----|------|-----------------------------|--------------------------|--------------------|-------------|
| 0033028 | IR 350W CL R7s 235V | 350 | 235 | R7s | 185,7 | 115 | 10 | Clear |
| 0033029 | IR 500W TL SK15 235V 700mm | 500 | 235 | SK15 | 787,5 | 700 | 11 | Translucent |
| 0033030 | IR 500W TL SK15 235V 550mm | 500 | 235 | SK15 | 628,5 | 550 | 11 | Translucent |
| 0033031 | IR 750W CL SK15 235V | 750 | 235 | SK15 | 787,5 | 700 | 11 | Clear |
| 0033032 | IR 750W TL SK15 235V | 750 | 235 | SK15 | 787,5 | 700 | 11 | Translucent |
| 0033033 | IR 750W CL SK15 235V | 750 | 235 | SK15 | 787,5 | 700 | 11 | Clear |
| 0033034 | IR 1300W CL SK15 235V | 1300 | 235 | SK15 | 787,5 | 700 | 11 | Clear |

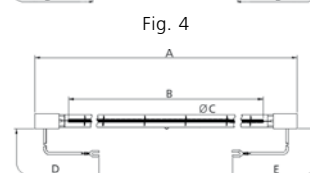
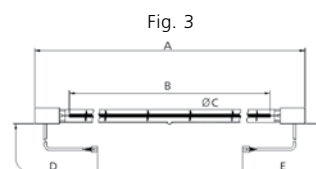
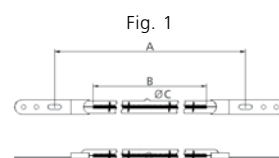
| Ordering Code | Item description | Burning position | Average Lamp Life in h | Colour Temp. (K) | Cable X1 D (mm) | Cable X2 E (mm) | Cable Connection | Fig. N° | Packing Quantity |
|---------------|----------------------------|------------------|---------------------------|---------------------|--------------------|--------------------|------------------|---------|------------------|
| 0033028 | IR 350W CL R7s 235V | Universal | 5000 | 1750 | NA | NA | NA | 1 | 80 |
| 0033029 | IR 500W TL SK15 235V 700mm | Universal | 5000 | 1750 | 1200 | 230 | Splice | 2 | 20 |
| 0033030 | IR 500W TL SK15 235V 550mm | Universal | 5000 | 1750 | 1200 | 230 | Splice | 2 | 20 |
| 0033031 | IR 750W CL SK15 235V | Universal | 5000 | 2000 | 1200 | 230 | Splice | 2 | 20 |
| 0033032 | IR 750W TL SK15 235V | Universal | 5000 | 1750 | 1200 | 230 | Splice | 2 | 20 |
| 0033033 | IR 750W CL SK15 235V | Universal | 5000 | 1750 | 1200 | 230 | Splice | 2 | 20 |
| 0033034 | IR 1300W CL SK15 235V | Universal | 5000 | 2000 | 230 | 230 | Fork | 3 | 20 |

GOLD FILTER HALOGEN LAMPS



FEATURES

- Tubular quartz envelope with gold dichroic coating
- Blocks more light than Ruby quartz types, for lower glare
- Advanced vacuum-sputtered coating won't crack or peel
- Coating extends right over the tip-off area – no light leaks



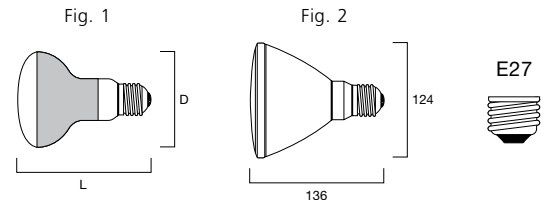
APPLICATIONS

- Gradually replacing ruby quartz types where reduced glare is desirable
- Creates comfort zones in the outdoor cold, ideal for patios, restaurants and cafés
- Efficient spaceheating in large buildings e.g. churches, halls, warehouses, garages, stadiums, exhibition halls etc
- Glare free de-icing of pedestrian walkways

| Ordering Code | Item description | W | V | Cap | Total Lamp Length A (mm) | Heating Length B (mm) | Diameter C (mm) | Finish |
|---------------|-------------------------|------|-----|---------------|-----------------------------|--------------------------|--------------------|-------------|
| 0033035 | IR 1000W Gold X 240V | 1000 | 240 | Metal strap X | 370 | 280 | 12,5 | Gold plated |
| 0033036 | IR 1300W Gold R7S 240V | 1300 | 240 | R7s | 254 | 180 | 12,5 | Gold plated |
| 0033037 | IR 1500W Gold SK15 240V | 1500 | 240 | SK15 | 353 | 280 | 12 | Gold plated |
| 0033038 | IR 1500W Gold SK15 120V | 1500 | 120 | SK15 | 353 | 280 | 12 | Gold plated |
| 0033039 | IR 2000W Gold SK15 240V | 2000 | 240 | SK15 | 353 | 280 | 12 | Gold plated |

| Ordering Code | Item description | Burning position | Average Lamp Life in h | Colour Temp. (K) | Cable X1 D (mm) | Cable X2 E (mm) | Cable Connection | Fig. N° | Packing Quantity |
|---------------|-------------------------|------------------|---------------------------|---------------------|--------------------|--------------------|------------------|---------|------------------|
| 0033035 | IR 1000W Gold X 240V | Universal | 5000 | na | na | na | na | 1 | 10 |
| 0033036 | IR 1300W Gold R7S 240V | Universal | 1000 | na | na | na | na | 2 | 100 |
| 0033037 | IR 1500W Gold SK15 240V | Horizontal | 5000 | na | 440 | 440 | Tab | 3 | 10 |
| 0033038 | IR 1500W Gold SK15 120V | Horizontal | 5000 | na | 300 | 300 | Fork | 4 | 10 |
| 0033039 | IR 2000W Gold SK15 240V | Horizontal | 5000 | na | 440 | 440 | Tab | 3 | 10 |

INFRA RED REFLECTOR INCANDESCENT LAMPS



FEATURES

- Integral reflector facilitates simple and economical installations
- Pre-focussed optics deliver intensely controlled radiation
- PAR38 lamps have a pressed hard glass bulb with precision-optical lens
- R125 and R95 lamps have a blown hard glass bulb for low cost applications
- E27 cap allows use in almost any suitable lampholder
- Instant heat after switch-on

APPLICATIONS

- Animal husbandry and other agricultural uses
- Food heating in the catering trade
- Wellness and medical applications for muscle relaxation
- Creates a pleasant warmth in bathroom drying areas
- Various industrial uses for drying, heating, vulcanizing, distilling, softening, melting, pasteurizing, polymerizing, evaporating, gelatinizing etc



| Ordering Code | Item description | W | V | Cap | Total Lamp Length (mm) | Diameter (mm) | Finish |
|---------------|------------------|-----|-----|-----|------------------------|---------------|--------|
| 0033004 | IR R95 100W | 100 | 230 | E27 | 130 | 95 | Ruby |
| 0033002 | IR R125 150W | 150 | 240 | E27 | 185 | 126 | Ruby |
| 0033010 | IR R125 175W | 175 | 240 | E27 | 185 | 126 | Ruby |
| 0033011 | IR R125 250W | 250 | 240 | E27 | 185 | 126 | Ruby |
| 0033012 | IR R125 300W | 300 | 240 | E27 | 185 | 126 | Ruby |
| 0033013 | IR R125 375W | 375 | 240 | E27 | 185 | 126 | Ruby |
| 0033014 | IR PAR38 150W | 150 | 240 | E27 | 135 | 122 | Ruby |
| 0033015 | IR PAR38 175W | 175 | 240 | E27 | 135 | 122 | Ruby |

| Ordering Code | Item description | Burning position | Average Lamp Life in h | Colour Temp. (K) | Fig. N° | Packing Quantity |
|---------------|------------------|------------------|------------------------|------------------|---------|------------------|
| 0033004 | IR R95 100W | Universal | 1000 | na | 1 | 20 |
| 0033002 | IR R125 150W | Universal | 1000 | na | 1 | 12 |
| 0033010 | IR R125 175W | Universal | 1000 | na | 1 | 12 |
| 0033011 | IR R125 250W | Universal | 1000 | na | 1 | 12 |
| 0033012 | IR R125 300W | Universal | 1000 | na | 1 | 12 |
| 0033013 | IR R125 375W | Universal | 1000 | na | 1 | 12 |
| 0033014 | IR PAR38 150W | Universal | 1000 | na | 2 | 12 |
| 0033015 | IR PAR38 175W | Universal | 1000 | na | 2 | 12 |

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SYLVANIA



OUR NEW LED ES50 GU10 350LM THE TRUE 50W HALOGEN REPLACEMENT IS HERE



The new **HI-SPOT RefLED ES50 GU10 350lm** LED lamp, a true LED retrofit replacement for the 50W Halogen GU10 and GZ10. The innovative design strikes a perfect balance between the heat sink size requirements and the space between the cooling fins to achieve clear air circulation and effective heat evacuation. The result is a smaller, lighter lamp, delivering 350 lumen output, setting a new benchmark for LEDs.

The **HI-SPOT RefLED ES50 GU10 350lm** will be available in 2700K Homelight, 3000K Warm white and 4000K Cool white colours with a beam angle of either 25° or 40°; the 25° delivers 1200 candela, and the 40° delivers 600 candela in the warm white colour temperatures.

Furthermore, the new **HI-SPOT RefLED ES50 GU10 350lm** LED lamp beats market standards by offering an exceptionally high power factor of 0.8; making it extremely efficient in converting input power (VA) into output.

SYLVANIA

OUR NEW LED ES50 GU10 350LM THE TRUE 50W HALOGEN REPLACEMENT IS HERE

FEATURES

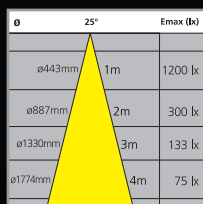
- 7.5W, the first true 50W Halogen retrofit
- - Up to 85% of energy savings
- As per IEC standard dimensions, its compact size means it can retrofit all GU10 and GZ10
- Beam angles of 25° and 40°
- Available in different colour temperatures: 2700K homelight, 3000K warm white and 4000K cool white
- Up to 51lm/w in cool white
- High light output: 350lm for warm white version (also 385lm for cool white version)
- Long life time, more than 25,000 hours
- High power factor of 0.8
- Not dimmable
- Made in Tienen Belgium, ensuring you of European craftsmanship



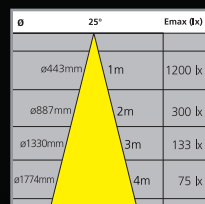
| Code | General description | Packaging | Voltage | Watt | Colour name | Colour | Colour in (Kelvin) | Base | Lumen | Lm/W | Candela | Beam | Life(h) | EAN code |
|----------------|------------------------------------|-----------|-----------|------|-------------|--------|--------------------|-------|-------|------|---------|------|---------|---------------|
| 0026746 | HI-SPOT RefLED ES50 7,5W 2700K 25° | Sleeve | 200-250 V | 7,5W | Homelight | 827 | 2700 | GU 10 | 350 | 47 | 1200 | 25° | 25,000 | 5410288267463 |
| 0026748 | HI-SPOT RefLED ES50 7,5W 2700K 40° | Sleeve | 200-250 V | 7,5W | Homelight | 827 | 2700 | GU 10 | 350 | 47 | 600 | 40° | 25,000 | 5410288267487 |
| 0026747 | HI-SPOT RefLED ES50 7,5W 3000K 25° | Sleeve | 200-250 V | 7,5W | warm white | 830 | 3000 | GU 10 | 350 | 47 | 1200 | 25° | 25,000 | 5410288267470 |
| 0026749 | HI-SPOT RefLED ES50 7,5W 3000K 40° | Sleeve | 200-250 V | 7,5W | warm white | 830 | 3000 | GU 10 | 350 | 47 | 600 | 40° | 25,000 | 5410288267494 |
| 0026770 | HI-SPOT RefLED ES50 7,5W 4000K 25° | Sleeve | 200-250 V | 7,5W | cool white | 840 | 4000 | GU 10 | 385 | 51 | 1320 | 25° | 25,000 | 5410288267708 |
| 0026771 | HI-SPOT RefLED ES50 7,5W 4000K 40° | Sleeve | 200-250 V | 7,5W | cool white | 840 | 4000 | GU 10 | 385 | 51 | 660 | 40° | 25,000 | 5410288267715 |
| 0026850 | HI-SPOT RefLED ES50 7,5W 2700K 40° | Blister | 200-250 V | 7,5W | Homelight | 827 | 2700 | GU 10 | 350 | 47 | 600 | 40° | 25,000 | 5410288268507 |

BEAM DISTRIBUTION

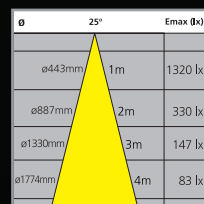
ES50 7.5W 827 25°



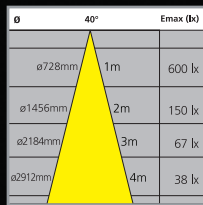
ES50 7.5W 830 25°



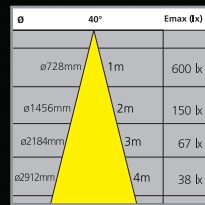
ES50 7.5W 840 25°



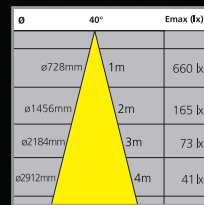
ES50 7.5W Gu10 827 40°



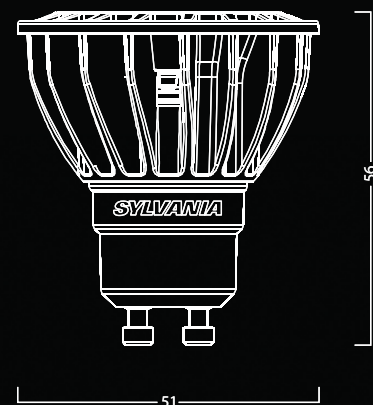
ES50 7.5W Gu10 830 40°



ES50 7.5W 840 40°

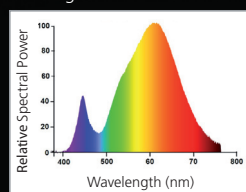


Dimensions (MM)

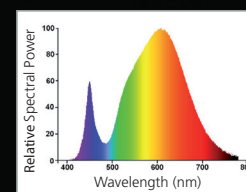


SPECTRAL DATA

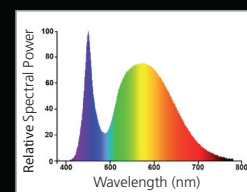
Homelight - 827



Warm white - 830



Cool white - 840



To discover for yourself how much your business can save on its energy bills, simply visit our online Savings Calculator at: www.havells-sylvania.com



LED Micro-Lynx 250lm

THE PERFECT CABINET LAMP



After inventing the first CFL Micro-Lynx lamp in 2000, Sylvania is back with the first **LED Micro-Lynx 250lm**. It benefits from a very compact design, making it the perfect lamp for cabinet lighting in kitchens or bedrooms as well as for use in shop lighting applications where space is reduced.

The lamp is available in 2700K Homelight, 3000K Warm white, 4000K Cool White and 6000K Daylight in either clear or satin finish.

What's more, **LED Micro-Lynx 250lm** perfectly retrofits relevant Lumiance luminaires such as the Insaver / Microsaver or the Silo.

LED Micro-Lynx 250lm

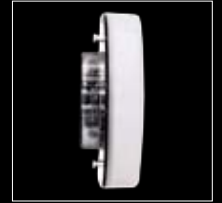
THE PERFECT CABINET LAMP

FEATURES

- High lumen output: 250lm (3000K)
- Comes in 2700K Homelight, 3000K Warm white, 4000K Cool White and 6000K Daylight
- Very long life: 15,000 hours
- Instant start
- Comes in clear or satin finish
- Compatible with Lumiance Insaver & Microsaver (Recessed, Semi-Recessed & Surface mounted).

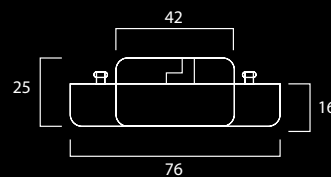


Micro-Lynx LED Satin (front view)



Micro-Lynx LED Satin (side view)

Dimensions (mm)



Micro-Lynx LED Clear (front view)



Micro-Lynx LED Clear (side view)

LED MICRO-LYNX 250ml

| Item number | General description | Voltage | Colour name | Colour | Colour in (Kelvin) | Watt | Base | Lumen | Lm/W | Life (h) | EAN code |
|-------------|-------------------------------|----------|-------------|--------|--------------------|------|------|-------|------|----------|---------------|
| 0026664 | Micro-Lynx LED 4W Clear 2700K | 220-240V | Homelight | 827 | 2700 | 4W | GX53 | 220 | 55 | 15,000 | 5410288266640 |
| 0026780 | Micro-Lynx LED 4W Clear 3000K | 220-240V | Warm white | 830 | 3000 | 4W | GX53 | 250 | 63 | 15,000 | 5410288267807 |
| 0026781 | Micro-Lynx LED 4W Clear 4000K | 220-240V | Cool white | 840 | 4000 | 4W | GX53 | 260 | 65 | 15,000 | 5410288267814 |
| 0026830 | Micro-Lynx LED 4W Clear 6000K | 220-240V | Daylight | 760 | 6000 | 4W | GX53 | 300 | 75 | 15,000 | 5410288268309 |
| 0026782 | Micro-Lynx LED 4W Satin 2700K | 220-240V | Homelight | 827 | 2700 | 4W | GX53 | 220 | 55 | 15,000 | 5410288267821 |
| 0026783 | Micro-Lynx LED 4W Satin 3000K | 220-240V | Warm white | 830 | 3000 | 4W | GX53 | 250 | 63 | 15,000 | 5410288267838 |
| 0026666 | Micro-Lynx LED 4W Satin 4000K | 220-240V | Cool white | 840 | 4000 | 4W | GX53 | 260 | 65 | 15,000 | 5410288266664 |
| 0026831 | Micro-Lynx LED 4W Satin 6000K | 220-240V | Daylight | 760 | 6000 | 4W | GX53 | 300 | 75 | 15,000 | 5410288268316 |





HI-SPOT® ES50 6,5 W 350 lm DIMMABLE



The new HI-SPOT ES50 6,5W 350 lm Dimmable LED lamp, a true LED retrofit replacement for the 50W Halogen dimmable lamps. Thanks to being 100% dimmable you will be able to set the perfect setting in any room. The design strikes a perfect balance between heat sink size and space between the cooling fins to achieve clear air circulation and effective heat evacuation. The result is a smaller, lighter lamp delivering a higher 350 lumen output, to offer

class-leading performance that sets a new benchmark for LEDs.

The Hi-Spot RefLED ES50 Dimmable is available in the same versions as its non-dimmable partner; 2700K Homelight, 3000K Warm white and 4000K Cool white colours with a beam angle of either 25° or 40°; the 25° delivers 1400 candela, and the 40° delivers 700 candela in the warm white colour temperatures.

HI-SPOT® ES50 6,5 W 350 lm DIMMABLE

FEATURES

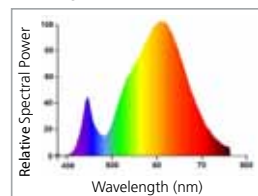
- 6,5W 350 lm=real 50W halogen retrofit
- Fully dimmable (on cutting edge dimmers)
- Long life time: 25.000 hours
- Most popular version: 3000K-40 degree (other versions available only on demand)



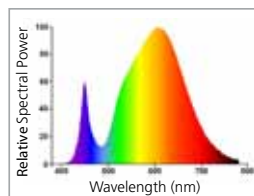
| CIM | General description | Voltage | Colour name | Colour | Colour in (Kelvin) | Watt (W) | Base | Lumen | Lm in 90° cone | Lm/W | Candela | Beam | Life(h) | Equivalence |
|---------|--|----------|-------------|--------|--------------------|----------|-------|-------|----------------|------|---------|------|---------|-------------|
| 0026772 | DIM REFLED 6,5W ES50 2700K 350 lm 25° SL | 220-240V | Homelight | 827 | 2700 | 6.5 | GU 10 | 350 | 300 | 54 | 1400 | 25° | 25,000 | 50 |
| 0026773 | DIM REFLED 6,5W ES50 3000K 350 lm 25° SL | 220-240V | warm white | 830 | 3000 | 6.5 | GU 10 | 350 | 300 | 54 | 1400 | 25° | 25,000 | 50 |
| 0026774 | DIM REFLED 6,5W ES50 4000K 350 lm 25° SL | 220-240V | cool white | 840 | 4000 | 6.5 | GU 10 | 350 | 300 | 54 | 1400 | 25° | 25,000 | 50 |
| 0026775 | DIM REFLED 6,5W ES50 2700K 350 lm 40° SL | 220-240V | Homelight | 827 | 2700 | 6.5 | GU 10 | 350 | 300 | 54 | 700 | 40° | 25,000 | 50 |
| 0026776 | DIM REFLED 6,5W ES50 3000K 350 lm 40° SL | 220-240V | warm white | 830 | 3000 | 6.5 | GU 10 | 350 | 300 | 54 | 700 | 40° | 25,000 | 50 |
| 0026777 | DIM REFLED 6,5W ES50 4000K 350 lm 40° SL | 220-240V | cool white | 840 | 4000 | 6.5 | GU 10 | 350 | 300 | 54 | 700 | 40° | 25,000 | 50 |

SPECTRAL DATA

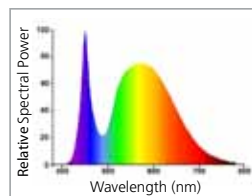
Homelight - 827



Warm white - 830

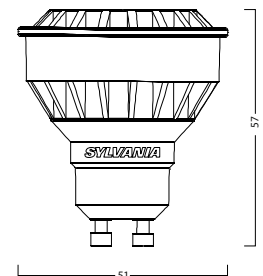


Cool white - 840



Dimensions (MM)

| Height | Width |
|--------|-------|
| 57 mm | 51mm |



To discover for yourself how much your business can save on its energy bills, simply visit our online Savings Calculator at: www.havells-sylvania.com



RefLED SA111

THE BRIGHT RETAIL DISPLAY LED LAMP



The new **RefLED SA111** is the only LED lamp on the market which has the same attractive design as the halogen equivalent. It has been designed with LED's at the back of the antiglare shield to keep the aesthetics for a perfect retrofit with existing luminaires, adding the savings LED technology offers.

Ideal for retail display and the hospitality

sectors, the **RefLED SA111** is particularly suited for use in supermarkets and convenience stores as the lamp does not emit UV or IR rays, so light-sensitive products, such as food, are protected.

It comes in 3000K Warm white in either 10°, 25° or 40° beam angles.

RefLED SA111

THE BRIGHT RETAIL DISPLAY LED LAMP

FEATURES

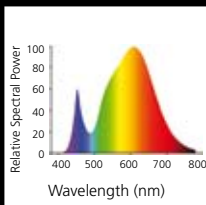
- Authentic SA 111 with aluminium patented spirals reflector design offering uniform light distribution
- Only LED retrofit lamp that has the same attractive design as the halogen, due to LED's being placed at the back of the antiglare shield.
- Very low glare.
- Long lifetime 25,000 hours
- Available in 3000K Warm white light (halogen-like)
- Comes in 10°, 25°, and 40° beam angles
- Short pay back period, high energy savings compared to halogen lamps
- Recommend using a Lumiance Lumidriver (Item code: 3036290)
- Can be used on Lumiance Expospot and Motto luminaires.



RefLED SA111

| Code | General Description | Watt | Voltage | Colour Name | Colour | Colour in (Kelvin) | Base | Lumen | Lm in 90° cone | Lm/W | Candela | Beam | Life (h) | Equivalence |
|---------|---------------------|------|---------|-------------|--------|--------------------|------|-------|----------------|------|---------|------|----------|-------------|
| 0026315 | ReFLED SA111 10° SL | 11 | 12V DC | Warm white | 830 | 3000K | G53 | 300lm | 270lm | 28 | 9,000 | 10 | 25,000 | 35 |
| 0026316 | ReFLED SA111 25° SL | 11 | 12V DC | Warm white | 830 | 3000K | G53 | 300lm | 270lm | 28 | 1,350 | 25 | 25,000 | 35 |
| 0026317 | ReFLED SA111 40° SL | 11 | 12V DC | Warm white | 830 | 3000K | G53 | 300lm | 270lm | 28 | 990 | 40 | 25,000 | 35 |

LED-Warm White 830



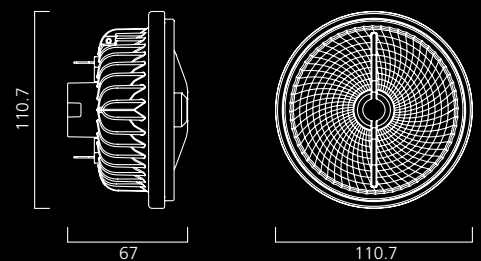
LED-Warm White 830



Lumiance Lumidriver
(Item code: 3036290)



Dimensions (mm)





ToLEDo GLS A60

THE SMART SPARKLE



The new LED **ToLEDo GLS A60** is available in 5W, 7.5W & 10.5W and offers up to 75% energy savings vs. incandescent. Plus, with 25,000 hours, they require very little maintenance.

The new LED **ToLEDo GLS A60** come in 2700K Homelight and offer a uniform light distribution (incandescent like).

What's more, they are available in both E27 and B22 caps, making them the perfect lamps for open luminaires.

ToLEDo GLS A60

THE SMART SPARKLE

Features

- Available in:
 - 5W delivering 250lm - 25W incandescent equivalent
 - 7.5W delivering 470lm - 40W incandescent equivalent
 - 10.5W delivering 806lm - 60W incandescent equivalent
- Available in B22 and E27 caps
- Satin finish
- 2700K Homelight
- Instant start
- Long lifetime 25,000 hours
- Short payback period
- Up to 75% energy savings compared to incandescent equivalent

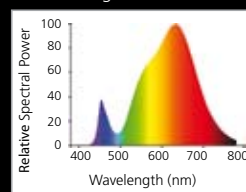


| Item number | General description | Voltage (V) | Colour name | Colour | Colour in (Kelvin) | Watt (W) | Base | Lumen | Lm/W | Life (hours) | Equivalence | EAN code |
|-------------|------------------------------|-------------|-------------|--------|--------------------|----------|------|-------|------|--------------|-------------|---------------|
| 0026512 | ToLEDo GLS 5W E27 Sleeve | 100-250 V | Homelight | 827 | 2700 | 5 | E27 | 250 | 50 | 25,000 | 25W | 5410288265124 |
| 0026513 | ToLEDo GLS 5W E27 Blister | 100-250 V | Homelight | 827 | 2700 | 5 | E27 | 250 | 50 | 25,000 | 25W | 5410288265131 |
| 0026717 | ToLEDo GLS 5W B22 Sleeve | 100-250 V | Homelight | 827 | 2700 | 5 | B22 | 250 | 50 | 25,000 | 25W | 5410288267173 |
| 0026718 | ToLEDo GLS 5W B22 Blister | 100-250 V | Homelight | 827 | 2700 | 5 | B22 | 250 | 50 | 25,000 | 25W | 5410288267180 |
| 0026680 | ToLEDo GLS 7,5W E27 Sleeve | 100-250 V | Homelight | 827 | 2700 | 7,5 | E27 | 470 | 63 | 25,000 | 40W | 5410288266800 |
| 0026681 | ToLEDo GLS 7,5W E27 Blister | 100-250 V | Homelight | 827 | 2700 | 7,5 | E27 | 470 | 63 | 25,000 | 40W | 5410288266817 |
| 0026719 | ToLEDo GLS 7,5W B22 Sleeve | 100-250 V | Homelight | 827 | 2700 | 7,5 | B22 | 470 | 63 | 25,000 | 40W | 5410288267197 |
| 0026720 | ToLEDo GLS 7,5W B22 Blister | 100-250 V | Homelight | 827 | 2700 | 7,5 | B22 | 470 | 63 | 25,000 | 40W | 5410288267203 |
| 0026737 | ToLEDo GLS 10.5W E27 Sleeve | 100-250 V | Homelight | 827 | 2700 | 10,5 | E27 | 806 | 77 | 25,000 | 60W | 5410288267371 |
| 0026739 | ToLEDo GLS 10.5W E27 Blister | 100-250 V | Homelight | 827 | 2700 | 10,5 | E27 | 806 | 77 | 25,000 | 60W | 5410288267395 |
| 0026740 | ToLEDo GLS 10.5W B22 Sleeve | 100-250 V | Homelight | 827 | 2700 | 10,5 | B22 | 806 | 77 | 25,000 | 60W | 5410288267401 |
| 0026741 | ToLEDo GLS 10.5W B22 Blister | 100-250 V | Homelight | 827 | 2700 | 10,5 | B22 | 806 | 77 | 25,000 | 60W | 5410288267418 |

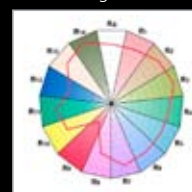


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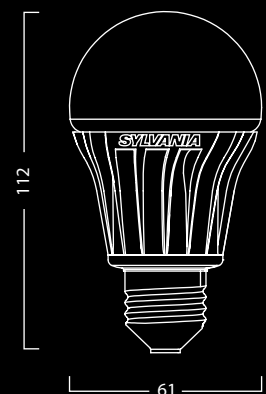
LED Homelight - 827



LED Homelight - 827



Dimensions (mm)





HI-SPOT® RefLED ES50 GU10 230lm

THE MADE IN TIENEN 35 W HALOGEN EQUIVALENT



The new **HI-SPOT RefLED ES50 GU10 230lm** LED lamp, a true LED retrofit replacement for the 35W Halogen GU10 and GZ10. The innovative design strikes a perfect balance between the heat sink size requirements and the space between the cooling fins to achieve clear air circulation and effective heat evacuation. The result is a smaller, lighter lamp, delivering 230 lumen output,

The **HI-SPOT RefLED ES50 GU10 230lm** available in 2700K Homelight, 3000K Warm white and 4000K Cool white colours with a beam angle of either 25° or 40°; the 25° delivers 900 candela, and the 40° delivers 400 candela in the warm white colour temperatures.

HI-SPOT® RefLED ES50 GU10 230lm THE MADE IN TIENEN 35 W HALOGEN EQUIVALENT

FEATURES

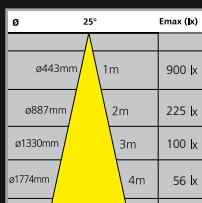
- Compact size = 100% Retrofit for existing fittings
- 4.5W, true 35W halogen retrofit
- As per IEC standard dimensions, its compact size means it can retrofit all GU10 and GZ10
- Beam angles of 25° and 40°
- Available in different colour temperatures: 2700K homelight, 3000K warm white and 4000K cool white
- 51lm/w
- High light output: 230lm
- Long life time, more than 25,000 hours
- High power factor of 0.7
- Made in Tienen Belgium, ensuring you of European craftsmanship



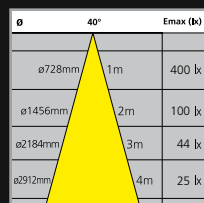
| Code | General description | Voltage | Colour name | Colour | Colour in (Kelvin) | Watt | Base | Lumen | Lm in 90° cone | Lm/W | Candela | Beam | Life(h) | Equivalence | Ean code |
|----------------|--------------------------------|-----------|-------------|--------|--------------------|------|-------|-------|----------------|------|---------|------|---------|-------------|---------------|
| 0026525 | RefLED ES50 230lm 2700K 40° SL | 220-240 V | Homelight | 827 | 2700 | 4,5W | GU 10 | 230 | 200 | 51 | 400 | 40° | 25,000 | 35 | 5410288265254 |
| 0026526 | RefLED ES50 230lm 3000K 25° SL | 220-240 V | warm white | 830 | 3000 | 4,5W | GU 10 | 230 | 200 | 51 | 900 | 25° | 25,000 | 35 | 5410288265261 |
| 0026527 | RefLED ES50 230lm 2700K 40° BL | 220-240 V | Homelight | 827 | 2700 | 4,5W | GU 10 | 230 | 200 | 51 | 900 | 40° | 25,000 | 35 | 5410288265278 |
| 0026528 | RefLED ES50 230lm 3000K 40° SL | 220-240 V | warm white | 830 | 3000 | 4,5W | GU 10 | 230 | 200 | 51 | 400 | 40° | 25,000 | 35 | 5410288265285 |
| 0026529 | RefLED ES50 230lm 4000K 25° SL | 220-240 V | cool white | 840 | 4000 | 4,5W | GU 10 | 230 | 200 | 51 | 900 | 25° | 25,000 | 35 | 5410288265292 |

BEAM DISTRIBUTION

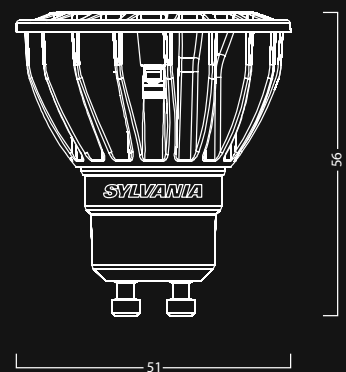
ES50 4.5W 25°



ES50 4.5W 40°

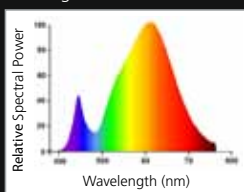


Dimensions (MM)

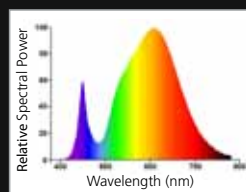


SPECTRAL DATA

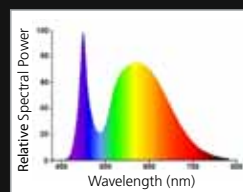
Homelight - 827



Warm white - 830



Cool white - 840



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SYLVANIA



HI-SPOT RefLED PAR 38 Outdoor

Great outdoor lamps



The new LED **HI-SPOT RefLED PAR 38 Outdoor** lamp is perfect for exterior lighting thanks to their weather resistant build. They come with an attractive and unique matt finish, making them a subtle addition to your outdoor lighting installations.

HI-SPOT RefLED PAR 38 Outdoor comes in 3000K Warm white and offer a good light distribution.

What's more since they are LED based lamps, they offer up to 90% energy savings and need a minimum maintenance.

SYLVANIA

HI-SPOT RefLED PAR 38 Outdoor

Great outdoor lamps

Features:

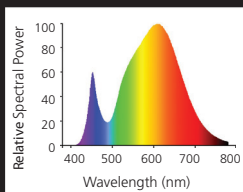
- Suitable for retrofit replacement of incandescent and halogen PAR lamps (220V- 240V)
- Up to 90% energy savings compared to Incandescent or Halogen equivalents
- Suitable for exterior lighting with suitably rated luminaires
- Weather-resistant 3000K Warm white
- Good colour rendering CRI = 85
- Very long lifetime 30,000 hours
- Minimum maintenance costs



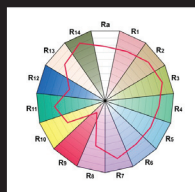
| Item number | General description | Voltage | Colour | Colour in (Kelvin) | Watt | Base | Lumen | Lm in 90° cone | Lm/W | Candela (cd) | Beam (hours) | Life (hours) | Equivalence |
|-------------|---------------------------------|-----------|--------|--------------------|------|------|-------|----------------|------|--------------|--------------|--------------|-------------|
| 0026500 | HI-SPOT RefLED PAR38 outdoor SL | 100-250 V | 830 | 3000 | 15W | E27 | 700 | 600 | 47 | 2500 | 25 | 30,000 | 60W |

Spectral data

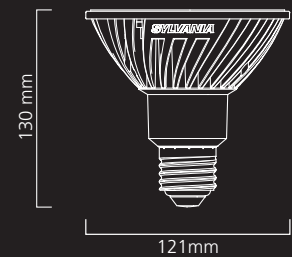
LED-Warm White 830



LED-Warm White 830



Dimensions (mm)





HI-SPOT RefLED PAR 38 Outdoor

Great outdoor lamps



The new LED **HI-SPOT RefLED PAR 38 Outdoor** lamp is perfect for exterior lighting thanks to their weather resistant build. They come with an attractive and unique matt finish, making them a subtle addition to your outdoor lighting installations.

HI-SPOT RefLED PAR 38 Outdoor comes in 3000K Warm white and offer a good light distribution.

What's more since they are LED based lamps, they offer up to 90% energy savings and need a minimum maintenance.

HI-SPOT RefLED PAR 38 Outdoor

Great outdoor lamps

Features:

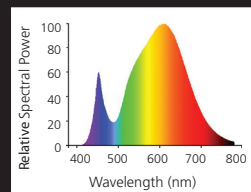
- Suitable for retrofit replacement of incandescent and halogen PAR lamps (220V- 240V)
- Up to 90% energy savings compared to Incandescent or Halogen equivalents
- Suitable for exterior lighting with suitably rated luminaires
- Weather-resistant 3000K Warm white
- Good colour rendering CRI = 85
- Very long lifetime 30,000 hours
- Minimum maintenance costs



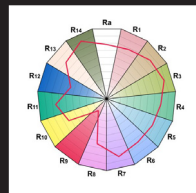
| Item number | General description | Voltage | Colour | Colour in (Kelvin) | Watt | Base | Lumen | Lm in 90° cone | Lm/W | Candela (cd) | Beam | Life (hours) | Equivalence |
|-------------|---------------------------------|-----------|--------|--------------------|------|------|-------|----------------|------|--------------|------|--------------|-------------|
| 0026500 | HI-SPOT RefLED PAR38 outdoor SL | 100-250 V | 830 | 3000 | 15W | E27 | 700 | 600 | 47 | 2500 | 25 | 30,000 | 60W |

Spectral data

LED-Warm White 830



LED-Warm White 830



Dimensions (mm)

