

## Conversion Factor for Lumens to Pupil Lumens

Correction factors applied to conventional values of lumens per watt yield a value for **pupil lumens per watt, which is a measure of how effectively the eye sees the light that is emitted.** The pupil is more receptive to light at the blue end of the spectrum.

<u>Light source</u>	<u>Conventional lumens per watt</u>	<u>Correction factor</u>	<u>Pupil lumens per watt</u>
Low-pressure sodium	165	0.38	63
5,000-K T5 fluorescent	104	1.83	190
4,100-K T8 fluorescent	90	1.62	145
Clear metal halide	85	1.49	126
5,000-K pure triphosphor fluor	70	1.58	111
3,500-K triphosphor fluor.	69	1.24	85
50-watt high-pressure sodium	65	0.76	49
2,900-K warm white fluor.	65	0.98	64
Daylight fluorescent	55	1.72	95
35-watt high-pressure sodium	55	0.57	31
5,000-I 90 CRI fluorescent	46	1.70	78
Vitalite fluorescent	46	1.71	79
Deluxe mercury vapor	40	0.86	34
Standard incandescent	15	1.26	19
Tungsten halogen	22	1.32	29

Note: K = Kelvin; CRI = color rendering index.

(Source: Platts Research and Consulting 2004: The world's largest and most authoritative source of energy industry information and services - see report in [http://www.nstaronline.com/your\\_business/energy\\_advisor/PA\\_46.html](http://www.nstaronline.com/your_business/energy_advisor/PA_46.html))

# Color Rendering Index (CRI) Comparison

Measured on a scale of 0 to 100, the color rendering index (CRI) describes the capability of a light source to accurately render a sample of eight standard colors relative to a standard source. **Light sources that exhibit higher CRIs render color better than sources with low CRIs.**

<b><i>Lamp type</i></b>	<b><i>CRI</i></b>
<b>T8 fluorescent</b>	<b>75-98</b>
<b>T5 fluorescent</b>	<b>75-98</b>
<b>High-color-rendering metal halide</b>	<b>80-93</b>
<b>White high-pressure sodium</b>	<b>60-85</b>
<b>Standard metal halide</b>	<b>60-70</b>
<b>Pulse-start metal halide</b>	<b>65-70</b>
<b>High-pressure sodium</b>	<b>27</b>
<b>Low-pressure sodium</b>	<b>5</b>

(Source: GE, Osram, and Philips)