

Lamp Depreciation

Incandescent lamp filaments evaporate and decrease in size with operation over time. The decrease in cross-section increases the resistance of the filament. Operated in a current regulated circuit, the increase in the filament resistance causes an increase in the voltage across the lamp and consequently increased wattage and radiated lumens.

The evaporated tungsten particles deposit on the interior surface of the bulb. The increase in luminous flux from increased resistance is offset to varying degrees by the tungsten deposit's absorption of light.

Labsphere employs tungsten halogen lamps. Halogen-filled lamps provide a tungsten regenerative cycle. This cycle removes the evaporated tungsten film on the bulb interior and redeposits it on the filament. This results in a very small depreciation of light output during the lamp life.

Figure I presents the change in light output for typical tungsten halogen lamps. Rated lamp life is defined as the life value assigned to a particular type lamp. Rated life is a statistically determined estimate of average or median operational life¹.

Table I

Labsphere's Standard Tungsten Halogen Light Sources for Uniform Source Systems

EXTERNAL HALOGEN LAMPS			INTERNAL HALOGEN LAMPS		
Part Number	Current (A)	Rated Life (Hrs)	Part Number	Current (A)	Rated Life (Hrs)
Dichroic Reflector			IHLS-100-06	1.000	100
EHLS-100-30D	2.778	200	IHLS-100-10	1.670	1910
EHLS-100-80D	4.211	200	IHLS-100-20	3.300	2560
EHLS-100-120D	6.557	396	IHLS-100-30	2.780	390
Rhodium Reflector			IHLS-100-75	6.250	3000
EHLS-100-30R	2.778	200	IHLS-100-125	6.600	2650
EHLS-100-75R	6.250	3000	Direct Mount		
EHLS-100-125R	6.600	2650	IHLS-DM-45	6.600	1000
			IHLS-DM-150	6.000	2000

¹Illuminating Engineering Society of North America, "The Lighting Handbook," Ninth Edition, 2000, Chapter 6



LAMP DEPRECIATION (continued)

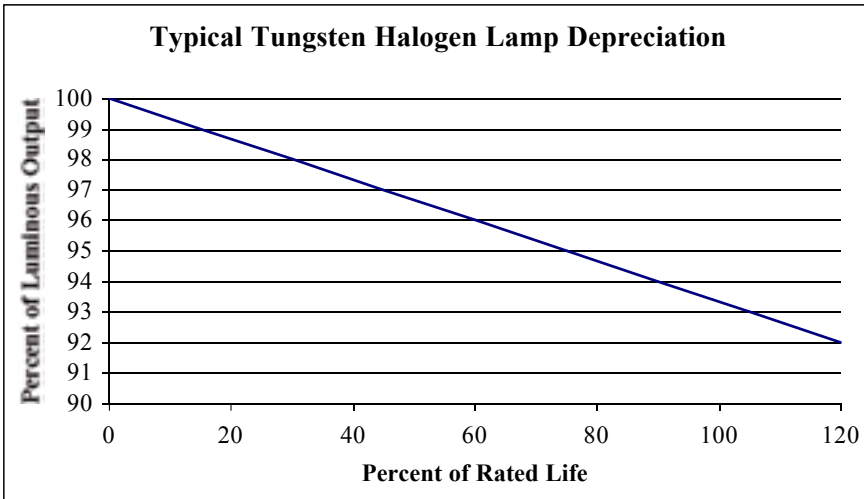
Table II

Labsphere's Tungsten Halogen Flux Standards

FLUX STANDARDS		
Part Number	Current (A)	Rated Life (Hrs)
CL-600	2.600	1050
SCL-600	2.600	1050
CL-600	2.679	2000
SCL-1400	2.679	2000

Figure I

Typical Light Output Characteristics of Tungsten Halogen Lamps as a Function of Burning Time



Labsphere's calibration technicians set the elapsed time feature of the uniform source system lamp power supplies to 0.00 hours prior to operating the uniform source system lamps for measurement or calibration. The end user may refer to the typical lamp characteristic described above for estimating the depreciation in luminous flux output.



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