





# PERFORMANCE STANDARDS AND RATINGS

## ANSI STANDARDS (American National Standards Institute)

Why create standards? While Pelican was one of the first manufacturers to use quantifiable test procedures, the need was recognized to develop a common language that customers could use to select the right flashlight for their specific needs. As a result, the American National Standards

Institute (ANSI), with input from the flashlight industry, developed performance standards and symbols to effectively communicate a flashlight's features and benefits.

20 M

60 M

100 M

120 M

These standards are accredited by ANSI, which is a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.

The organization also coordinates U.S. standards with international standards so American products can be used globally. Resulting ANSI/NEMA FL 1 Standards include the six criteria described below:



### LIGHT OUTPUT

Light Output is the total luminous flux. It is the total quantity of emitted overall light energy as measured by integrating the entire angular output of the portable light source. Light output in this standard is expressed in units of lumens.



### WATER RESISTANT

Water Resistant – IPX4  
Water splashed against the device from any direction shall have no harmful effects.



### RUN TIME

Run Time is defined as the duration of time from the initial light output value – defined as 30 seconds after the point the device is first turned on – using fresh batteries, until the light output reaches 10% of the initial value.



### WATERPROOF/SUBMERSIBLE

Waterproof – IPX7  
– Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time.



### BEAM DISTANCE

Beam Distance is defined as the distance from the device at which the light beam is 0.25 lux (0.25 lux is approximately the equivalent of the light emitted from the full moon "on a clear night in an open field").



### PEAK BEAM INTENSITY

Peak Beam Intensity is the maximum luminous intensity typically along the central axis of a cone of light. The value is reported in candela and does not change with distance.

Submersible – IPX8 – Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be stated by manufacturer, but which are more severe than for IPX7.

of the device under test, or can totally enclose the device itself. The walls of the sphere should be highly diffuse with high reflectivity (>80%) and the spectroradiometer should be shielded from direct view of the device under test by a baffle system.

IP (Ingress Protection) – Ingress Protection (IP) ratings specify the environmental protection the

enclosure provides. The IP rating normally has two numbers (IPXX). The first number represents protection from solid objects or materials (dust) where the second number represents protection from liquids (water). With the IP rating IP 54, 5 describes the level of protection from solid objects and 4 describes the level of protection from liquids.



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### U.S.A.

#### CALIFORNIA

23215 Early Avenue  
Torrance, CA 90505  
Tel: 310.326.4700  
800.473.5422  
Fax: 310.326.3311  
[www.pelican.com](http://www.pelican.com)

#### MASSACHUSETTS

147 North Main Street  
South Deerfield, MA 01373  
Tel: 800.542.7344  
Fax: 413.665.8330  
[www.pelican.com](http://www.pelican.com)

### CANADA

Pelican Products ULC  
10221-184th Street  
Edmonton, Alberta  
T5S 2J4 Canada  
Tel: +780 481 6076  
Fax: +780 481 9586  
[www.pelican.ca](http://www.pelican.ca)

### AUSTRALIA

Pelican Products Australia  
Suite 2.33 West Wing,  
Platinum Building  
4 Ilya Av  
Erina NSW 2250  
Tel: +612 4367 7022  
Fax: +612 4367 7066  
[www.pelicanaustralia.com](http://www.pelicanaustralia.com)

### INDIA

Pelican Products and Services India Pvt. Ltd  
Level "4", Augusta Point, Sector-53, Golf Course Road,  
Gurgaon 122002 Haryana, India  
Tel: +91 124 4354148 • Fax: +91 124 4354001  
[www.pelican.com](http://www.pelican.com)

### INTERNATIONAL

#### EUROPE, MIDDLE EAST AND AFRICA

Peli Products, S.L.U.  
c/ Provença, 388, Planta 7  
08025 - Barcelona, Spain  
Tel: +34 934 674 999  
Fax: +34 934 877 393  
[www.peli.com](http://www.peli.com)

### CHINA

Pelican Products China Representative Office  
Pine City Building, Room 1026  
777 Zhaoliabang Road  
Shanghai, China 200032  
Tel: +86 21 64189685  
Fax: +86 21 64189679  
[www.pelican.com/cn](http://www.pelican.com/cn)

#### SE ASIA and rest of ASIA (Hong Kong, Macau, Taiwan, Sri Lanka)

Pelican Products Singapore Pte Ltd  
30 Merchant Road  
#02-08 Riverside Point  
Singapore 058282  
Phone: +65 64385418  
[www.pelican.com](http://www.pelican.com)

### JAPAN

Pelican Products K.K.  
Nisso 22 Bldg 9F  
1-11-10 Azabu Dai  
Minato ward Tokyo  
106-0041 Japan  
Tel: +81 33 585 9100  
Fax: +81 33 585 9109  
[www.pelican.com/jp](http://www.pelican.com/jp)

### KOREA

Pelican Products Korea Ltd  
#909 Hyundai 41 Tower, 917-9, Mok-dong,  
Yangchon-gu, Seoul, Korea  
Tel: +82 2 6092 4700  
Fax: +82 2 6792 4700  
[www.pelican.com/ko](http://www.pelican.com/ko)

### LATIN AMERICA

23215 Early Avenue  
Torrance, California 90505 USA  
Tel: +1 310-326-4700 x 1462  
Fax: +1 310-325-5740

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## GLOSSARY OF TERMS

**CANDELA** – A unit of measurement of the intensity of light that is power emitted by a light source in a particular direction.

**LUX** – The unit of luminous flux in the International System, equal to the amount of light given out through a solid angle by a source of one candela intensity radiating equally in all directions.

**LUMEN** – A unit of measurement of the amount of brightness that comes from a light source. Lumens define "luminous flux" which is energy within the range of frequencies we perceive as light.

**INTEGRATING SPHERE** – An integrating sphere is a measurement device with an entrance port that can accept all the directional light output

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