



Regulatory Compliance

Illumination Best Practices: Your Guide to OSHA's Lighting Standards

Matt Morgan | Mar 13, 2025

In manufacturing facilities, the right lighting has power. It allows employees to see what they're working on, who they're talking to, and where they're going. With adequate lighting, workers stay safe, and the company keeps in compliance.

But there's more to illumination. Studies show that *people feel better in well-lit workplaces*, helping them to be more effective at their jobs, which is good for them and good for business.

"Proper illumination is essential for the optimization of both comfort and productivity in the workplace; workplace lighting dictates quality of perception, mood, and performance of employees," the American National Standards Institute (ANSI) explains on its *workplace lighting standards webpage*. "Research on the psychological effect of lighting on people in various workplaces details the importance of adherence to workplace lighting standards."

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Jason Isaacs
Milwaukee Tool

Here's a look at several aspects of industrial lighting standards.

Lighting Standards Explained

In a broad sense, industrial lighting falls under the Occupational Safety and Health Administration's general duty clause (*29 USC 654*), which requires that employers provide a safe working environment for employees.

Although OSHA specifies illumination standards for two industries (shipyards [*29 CFR 1915.82*] and

construction [1926.56]) and two specific applications (exit routes [1910.37] and powered industrial trucks [1910.178]), metalworking and manufacturing businesses might want more guidance.

In a *1996 interpretation letter*, OSHA acknowledged ANS A11.1-1965, R1970, Practices of Industrial Lighting, as the consensus standard for workplace illumination. "OSHA recommends that employers use this standard as guidelines to determine sufficient lighting required to provide for the safety and health of employees in workplaces," the letter author wrote.

The current version of the ANS document is *ANSI/IES RP-7-21*, Recommended Practice: Lighting Industrial Facilities, from ANSI and the Illuminating Engineering Society (IES).

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As with other OSHA standards, failure to comply with illumination standards can be costly, leading to a **\$16,550 fine per violation** as of January 2025, or \$165,514 per violation if OSHA determines it is willful or repeated.

"I think if you were to go to most manufacturing facilities, you'll find they're illuminated well in excess of the OSHA safety requirements," says Jason Isaacs, director of product marketing at Milwaukee Tool.

Key Terms in Industrial Lighting

Light intensity is measured in **foot-candles**, according to OSHA's standards. It's an archaic-sounding term for the amount of light one candle casts on a surface 1 foot away.

Another popular lighting term, **lumens**, is used in parts of OSHA's standards and in other industrial lighting guides, so it's a good one to be familiar with. Where a foot-candle measures light intensity over 1 foot, a lumen measures the light that fills 1 square foot.

Though foot-candles and lumens have the same units—1 foot-candle equals 1 lumen per square foot—there is an important dynamic to consider when selecting a light product, Isaacs says.

"Lumens is the total amount of light that's emitted from a source," he explains. "It's not necessarily how far the light goes." The foot-candles of a flashlight—how much light reaches a surface at a distance—may change based on the focus of the beam.

Some lighting products and illumination guides refer to **lux**, a metric-based measurement of light per square meter: 1 lux is 10.76 times 1 lumen.

Here's how 10 foot-candles would calculate across units of measurement:

- 10 foot-candles = 10 lumens per square foot = 108 lux per square meter

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Minimum Illumination Levels for Different Work Areas

OSHA specifies the minimum illumination levels in shipyards and construction areas. Some can apply to manufacturing environments:

- **5 foot-candles** in general areas, such as exits, stairs and hallways
- **5 foot-candles** in shafts and underground work areas
- **10 foot-candles** in break areas
- **10 foot-candles** in electrical equipment rooms and storerooms

- **30 foot-candles** in first-aid stations and offices

IES provides illumination guidelines for a wide number of manufacturing applications, from aerospace to automotive to metal fabrication. Get the full list of recommendations from *the source*.

OSHA Requirements for Light Fixtures

Besides illumination requirements, OSHA also has standards on protecting lights from contact or breakage. OSHA's rules on wiring methods (**1910.305**), for example, explain that lamps used for general illumination should be protected by a fixture or a lamp holder with a guard. The shipyard lighting standard has a similar stipulation for temporary lights.

Read more: [Portable Lighting Systems – The Key to Effective Emergency Planning](#)

OSHA's hazardous locations standard (**1910.307**) governs light fixtures in environments with flammable liquids or gases or combustible dusts, and the agency refers to the National Electrical Code, **NFPA 70**, for guidelines on the type and design and installation of that equipment.

Common Application Gaps and How to Avoid Them

One area where Isaacs sees gaps in facility lighting is for task work because of equipment maintenance or repairs—"and a maintenance individual is down underneath working in an environment where light fundamentally can't get to," he says.

Outfitting workers with a flashlight or a headlamp is a simple solve in this scenario and others like it.

When facility lighting goes dark—because of an unexpected power outage or a scheduled shutdown—temporary lighting comes in handy. Using cordless, **battery-operated** products eliminates the need to snake cords in from the **backup generator** outside.

With a mix of cordless floodlights and **tower lights**, Isaacs says, "you're able to illuminate anything from a small task for one individual in a small area up to a large room that allows a crew to work safely without access to power."

What recommendations do you have for upgrading the lighting in your facility? Share in the comments.

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