LIGHT TYPES

FLUORESCENT - wide variety of tubular bulbs from which light is emitted by a layer of fluorescent material; vary widely in spectral energy distribution, and some are not good for meat color

INCANDESCENT - light is produced by heating a filament via electric current (i.e. common household bulb)

HALOGEN - halogen gas reacts with a tungsten filament to produce light (i.e. some spotlights)

HIGH INTENSITY DISCHARGE (HID) - a group of lamps, including mercury vapor and metal halide lamps (i.e. gymnasium or auditorium lamps)

LIGHT EMITTING DIODE (LED) - emerging category of low voltage, efficient lamps that can have a color temperature suitable for meat; potential new lighting option

LIGHT TERMS

COLOR RENDERING INDEX (CRI) - numerical score referring to the ability of a light to reveal the actual color of an object

COLOR TEMPERATURE - numerical value (in Kelvin) indicating its ability to make an object appear a certain color, from cool to warm

INTENSITY - quantity of light at the product surface measured in foot candles (square feet) or lux (square meters); 10.76 lux = 1 foot candle

TARGETS

- **Color Temperature of 2800 to 3500 Kelvin.**
  Tip: this is the single best reference for meat
- **Color Rendering Index (CRI) of 80 to 90.**
  Tip: best used in conjunction with color temp.
- **Light intensity of 150 to 200 foot-candles.**
  Tip: high intensities accelerate discoloration

AVOID

- **Cool white fluorescent bulbs emit too much blue and green light.**
- **Bulbs with a color temperature of 4000-6500 Kelvin are too blue.**
- **Incandescent bulbs emit non-uniform illumination and often heat the product.**
- **HID lamps can make meat appear yellow or blue.**
- **Lamps with high amounts of UV light accelerate discoloration and fading, shortening display life.**

Questions, please contact C.R. Raines (craines@psu.edu).
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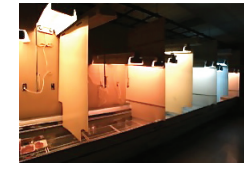
MEAT LIGHTING FACTS



A guide to selecting the best light for your meat product display

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How light affects color

Light Intensity

Light is emitted from the source with a given intensity.

Too great of light intensity accelerates discoloration of meat, whereas too low intensity does not adequately illuminate the product.

Light Type

Light is a combination of colors emitted from a light source.

Higher proportions of red light are desirable for meat product display.

Why Light Matters

Light determines how all things look. Various lighitng can make meat look redder, bluer, greener, yellower, or grayer. The same product can look different under different light sources.

See lighting effects below.

Optimizing the variables of lighting type and intensity results in the best appearance of your product and increases display life.

Different lighting affects perceived color

Color Temperature = 6500 K
CRI = 86

Bluish appearance
Not **recommended**

Color Temperature = 3500 K
CRI = 86

Desirable red appearance
Recommended

Color Temperature = 4100 K
CRI = 64

Grayish or faded appearance
Not **recommended**

The same products illuminated by different light sources