

The Play of Light and Color



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It's a simple fact that light can change the appearance of any given color.

Take the same can of paint and apply it to two rooms, one that receives limited natural light and another that's flooded with sunshine, and it will look and act like two different colors. For example, a warm orange-red paint in a room with a north-facing window will make the room appear brighter and warmer and help offset the bluish cast to the light. However, that same red-orange paint in a room with a west-facing window will become intensely vivid – perhaps overwhelmingly so – in the late afternoon.

The fact is color never stands alone. Any kind of light – daylight, artificial light, even candlelight – can dramatically change the way a certain color appears. "Color is light made visible, and the atmosphere of the air we breathe and the quality of the light passing through it affect how we see color," says David Kaufman in his book *Color and Light: Luminous Atmospheres for Painted Rooms*. That's why when specifying colors for a space, it's important to take light – both its presence and its absence – into consideration.

"Sunlight is the purest light and provides the purest color from the spectrum standpoint of the perception of color," explains Debbie Zimmer, paint and color expert with the Rohm and Haas Paint Quality Institute. But even natural sunlight is not consistent. As the day progresses from sunrise to noon, late afternoon and dusk, the light changes in intensity, creating changes in the appearance of color. For instance, a bedroom that faces east and is washed with strong sunlight in the early morning will look very different when next seen late at night in artificial lighting. And a west-facing room can look dull and shadowy in the morning, but be bathed in a warm glow in the evening.

In the morning, sunlight is warmer because it's lower on the horizon. It gives a yellowish cast to a space. As the day progresses to midday, sunlight develops a cool, bluish cast. In fact, it's an interesting paradox that the physically hottest sunlight imparts the least "warmth" to color. The color with the hottest temperature (measured in Kelvin units) is actually blue and the coolest is red. At midday, especially in areas that receive direct sunlight, color can appear washed out. Then, as the afternoon wears on towards sunset, daylight again warms and gives rooms a reddish cast.

Direction of Light	Visible Temperature of Light	Color of Light	Duration of Light
North	Cool	Bluish	All day
East	Warm	Yellow	Before noon
West	Warm	Orange-Red	After noon
South	Warm	Orange-yellow	All day

The effects of different types of artificial lighting

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- **Incandescent bulbs:** These generate yellow light that intensifies warm colors but tends to dull cooler colors.
- **Halogen bulbs:** These newer incandescent bulbs produce brighter, white light that is more like sunlight.
- **Fluorescent bulbs:** These generate cool, blue light that amplifies blues and greens, but mutes warmer colors.
- **"Soft white" fluorescent bulbs:** These mimic the warmth of incandescent bulbs, but all colors can appear faded in their light.
- **Full-spectrum fluorescents:** Although expensive, these bulbs produce light that most closely resembles natural sunlight.

"Incandescent and halogen lighting tends to warm up reds and yellows because the wavelengths of these artificial lights are warm," says Zimmer. So, if a client has incandescent light fixtures in a room where they want blue walls, you'll have to make color adjustments when it comes to picking the paint, such as selecting a blue hue that has been toned with red.

The type of light fixture can also affect the coloration in a room, because the fixture typically determines how the light from any type of bulb is dispersed.

- **Sconces:** These fixtures give off indirect lighting by aiming the light toward ceilings or walls.
- **Shades:** Lampshades will change the coloration and strength of the bulb inside them. If the lampshade is of a warm hue, it will cast this glow onto the other colors in the room. Strongly colored shades will mute any surrounding colors, while white or ivory shades will give off the brightest light.
- **Parabolic lights or downlights:** They direct light straight down from the ceiling. This provides a lot of light on work surfaces and floors, but can cause ceilings and the top edges of walls to appear dark in comparison.

According to Phillip Finkelstein, vice president of Illuminations, a specialty lighting company in Rockville Center, N.Y., light trained onto the ceiling will be diffused throughout the room, giving a lofty aspect to any space. The higher the ceiling, the higher the wattage should be. Wattage plays a part in this because it is what gives the light its tone – the higher the wattage, the brighter the light, and vice versa. "The wattage is dependent on the size of the room and how much light output is needed to carry out the room's functions," says Finkelstein.

To create a crisp, airy atmosphere that will show off bright colors to best effect, consider using bright-white light bulbs, or some of the new fluorescents or halogens. For a warmer, cozier look that works well with darker colors and rich textures, go with light-pink bulbs, or even amber-colored accent lights in sconces.

Paint qualities

Characteristics of paint also affect color perception. Paint's light-reflectance value – the amount of light it reflects – can play a key role in choosing the right color for certain spaces, especially those that don't receive a lot of natural sunlight. Lighter tinted paints

have higher light reflectance values than darker ones. So, for a recessed nook off a main room, painting the walls in a lighter tint of the color used in the main room would lighten up the area while still maintaining a sense of flow and coordination.

Another paint characteristic that affects color and light is gloss level. The higher the gloss level, the higher the light reflectance – more light will bounce off a surface painted with a high gloss paint than one with a matte sheen. As a rule, higher gloss paints tend to enrich and brighten color.

When selecting a paint color and decorating a space, "it's all about balancing the type of lighting, gloss level and the impact of other colors in the space," says Zimmer. "Some things are controllable and others are not, but it's a matter of creating harmony with these three factors."

For more information:

- Lightsearch.com
 - [Paint by Design](#)
 - [Color and Light: Luminous Atmospheres for Painted Rooms by David Kaufman. \(Clarkson Potter, 1999\)](#)
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