

# Calculating Light Requirements

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## Outdoor Photography

Outdoor photography has its own sets of quirks that make photographing outdoors quite challenging. We will try to give you some insight in order to make this easier for you.

### Outdoors at Night

Outdoor night scenes usually include large areas of darkness broken by smaller areas of light from buildings, signs, and streetlights. Pictures of outdoor scenes are quite easy to make because good results are obtainable over a wide range of exposures. Using short exposures emphasizes well-lit areas by preserving the highlight detail, while the shadow areas are dark because of underexposure. Long exposures help retain the detail of the dark areas, while highlight detail is lost because of overexposure. Large, dark areas in night scenes make it difficult to make accurate exposure meter readings from your camera position. The best meter reading results are obtained when you take close-up readings of important scene areas. Color outdoor pictures at night can be made on either daylight or tungsten-type films. Pictures made on daylight film have a warm, yellow-red appearance. Those made on tungsten film have a colder more natural look; however, both films provide pleasing results, so it is a matter of personal preference, which you use.

A good time to make outdoor night color pictures is just before it gets completely dark. At this time, some rich blue (or even orange) is in the sky. This deep color at dusk gives a dramatic background to your pictures. Neon signs, streetlights, and building lights make bright subjects for your pictures. At night, right after it stops raining and everything is still wet, is another good time to make outdoor pictures. The lights in the scene produce many colorful reflections on the wet pavement, adding interest to what may otherwise be a lifeless, dull picture. Many buildings

look rather ordinary in daylight, but at night, they are often interestingly lighted. Try photographing some lighted buildings at night. Try another building at night just after it rained outside.

Outdoor events at night in a sports stadium are usually well lighted, and make excellent subjects for existing light pictures. Most sports stadiums (as well as streets) are illuminated by mercury-vapor lamps that look blue-green in color when compared to tungsten lamps. Your best color pictures made under mercury-vapor lighting will be shot on daylight color film, although they will appear bluish green because the lights are deficient in red.

Tips for existing light photography are as follows:

1. Carry a flashlight so you can see to make camera settings.
2. Use an exposure meter
3. If you do not have an exposure meter or cannot get a good reading, bracket your exposure.
4. Focus carefully; depth of field is shallow at the wide apertures needed for existing light photography.
5. When you have a scene illuminated by a combination of light sources, use the type of color film recommended for the predominant light source. When shooting digital, use the manual color balance mode carefully.
6. For pictures of fireworks, support your camera on a tripod, focus at infinity, and aim the camera toward the sky area where the display will take place. Open the shutter for several bursts.

## **Cloudy**

Cloudy conditions are the result of a layer of clouds that further reduce the intensity of daylight and diffuse the light completely. This condition occurs on an overcast day when the position of the sun can be located only as a bright area in the clouds. Shadows are not present under this lighting condition. The scene brightness range is low and therefore photographs made during this condition usually lack good contrast. An increase of four times (two f/stops) from the basic exposure is often required to compensate for the decreased intensity of light.

## **Heavy Overcast or Open Shade**

This condition exists when the position of the sun cannot be located. The scene brightness range is low and therefore photographs made during heavy overcast conditions usually lack any contrast. An increase of eight times (three f/stops) to the exposure is often required compensate for the decreased intensity of light.

## **Direction**

When photographing outdoors, I have found that many photographers are not sure where to place the sun. In other words, what direction should the sunlight come from? It really depends on what you are shooting. If you are shooting portraits, then the best place for the sun is probably behind the subject, so they are not squinting because of the sunlight. If shooting anything else, most often it is best to put the sun at a ninety degree angle to the camera. Sometimes, even when shooting portraits, you can get away with putting the sun at about ninety degrees from the camera; but that is not always best. I often tell beginners that when they are shooting out doors, when in doubt, take your picture with the sun at ninety degrees to the camera.

The direction of the sun illuminating your subject does not affect your basic exposure. The camera settings recommended for films exposed during bright sun or light sand or snow, you may have to compensate the camera exposure, if they are front-lighted only.

You must become familiar with three basic lighting directions. These lighting directions do not affect exposure because it is extremely diffused. These directions are as follows: front lighting, side lighting, and backlighting and anywhere the direction is not apparent.

## **f/16 RULE**

You should use a light meter for most of the photographs that you take. These light meters either are built into the camera or are separate hand-held models. There may be times when your light meter does not operate properly, or you do not have time to use it in order to “grab” an awesome photograph. F/16 rule to the rescue! The f/16 rule of exposure allows you to determine basic camera exposure settings for both black-and-white and color photography without the aid of electronic devices. The f/16 rule states: The basic exposure for an average subject in bright frontal sunlight is f/16 at: 1/ the film speed. Therefore, to calculate the basic exposure for bright, sunny conditions, set f/16 on the camera lens and use the ISO speed of the film for the shutter speed. An example, when you use ISO 125 film, set the shutter speed at 1/125 second and the lens aperture at f/16. For ISO 64 film, set the shutter speed at 1/60 second and the lens aperture at f/16, and so on. When the camera does not have a shutter speed corresponding to the ISO of

the film, use the shutter speed that is closest to the ISO of the film. Bracketing your exposure might be a good idea under these conditions.

The f/16 rule is based on the correct exposure for an average subject under bright, sunny conditions. If the sun goes behind a cloud, however, then the lighting on the subject is decreased and you must change the basic exposure.

The aperture settings for different daylight intensities are as follows:

Bright sun light on sand or snow	f/22
Bright sun	f/16
Cloudy bright	f/11
Cloudy	f/8
Heavy overcast or open shade	f/5.6

For each of these different daylight intensity situations, you begin with the ASA/ISO speed to determine the shutter speed, set the aperture to f/16, and open up or stop down the aperture for the lighting conditions. After calculating the exposure, you can change the setting to any equivalent exposure; for example, if you determine the required exposure to be 1/500 second at f/5.6 but you wish to use a small aperture for greater depth of field, you can change the setting to 1/60 second at f/16. Remember, the f/16 rule provides you with a basic exposure for front-lighted subjects only. When the subjects are side-lighted or back lighted, you must double or quadruple the exposure, respectively.

Since many cameras are fully automatic, you may wonder why you need to know basic exposure. There are three good reasons for knowing and understanding the basic principles of exposure.

- You want to control the depth of field and stop action instead of the camera controlling it.
- A light meter cannot think. All a light meter does is respond to the light it receives. You must know when to override the camera
- Meters are mechanical and can fail.
- Meters can be inconsistent, consistently wrong, or fail altogether.

When you can work out in your head, roughly what the camera exposures should be, you will know when the camera or light meter is wrong. Knowing when a light meter is giving incorrect readings could make the difference between success and failure of an important photographic assignment.