

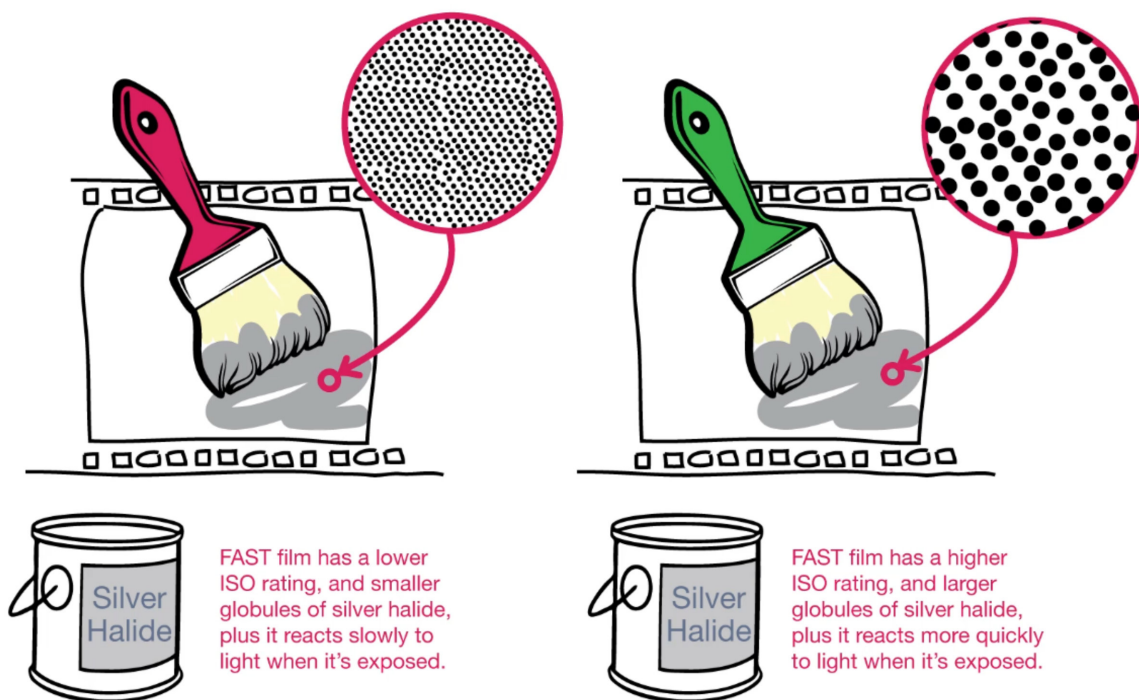
Mastering MANUAL MODE

Module 4 ISO

ISO

ISO Overview

The term ISO in your digital camera actually comes from the days when digital cameras didn't exist. In the days of film, ISO was a term to describe the light sensitivity rating of a film. Camera film is created with a chemical gelatin emulsion on the surface that contains very light sensitive microscopic crystals called silver halide. This silver halide is embedded in the emulsion in varying sizes of crystals.



The larger the crystals, the more light sensitive they are and the smaller the crystals the less light sensitive they are. Once the shutter is open, the film reacts to the light hitting on it more quickly with larger crystals due to higher sensitivity. This is described as a higher or faster rating film. If you are using a lower rating or less sensitive film it will react less quickly to the light hitting it.

For example, if you were planning on taking some photographs at nighttime indoors - when you went to buy your film, you would be advised to choose a fast film – that is a light-sensitive, fast reacting film.



ISO Scale

The sensitivity rating of the film is based on a numeric system called ISO, with a 100-speed film being a standard option for 'normal' outdoor daylight. The next option on the scale, at 200 ISO doubles the light sensitivity - that is, it goes up by a stop.

As we increase by each stop the film reaction time continues to double, and the number that depicts the films speed rating also doubles. The scale starts at 50, and continues to 100, 200, 400, 600, 800 1,600, 3200. 1,600 is usually pretty much where it stops with film, although you can sometimes find a 3,200 ISO film.



In your digital camera, the same rating system applies in terms of sensitivity. But in this case, rather than dealing with globules of silver halide, we're dealing with pixels. The sensitivity of the pixels affects the absorption of light. As a standard, on auto mode, it will usually rate at 100. If your ISO is set at 100, the pixels will be quite fine and the light sensitivity will be at a standard level. If you increase your ISO by three stops, so you're going 200, 400, 800, the light sensitivity of your sensor will increase therefore absorb light more quickly when the shutter is open.

ISO Secondary Feature

The downside to using ISO to increase light sensitivity is that there is almost always some degradation in image quality as you go higher up the range. In film format, there is a similar scenario but the dots are actually a visual representation of the microscopic crystals, which are referred to as grains rather than pixels.



A higher rated ISO film creates what is known as 'visible grain' because the grains are large enough to see, and this generally offers quite a pleasing aesthetic.

Old, grainy film is considered emotive and desirable, but unfortunately visible pixels just can't come close to creating a similar aesthetic as those film grains.

Instead, visible pixels tend to look quite unattractive. They also reduced the sharpness in your image. Plus there can also be a degradation of colour in very light or very dark areas of a high ISO image. So for example, you'll sometimes see some stray, red, blue or green pixels, particularly in darker areas, that don't look aesthetically attractive.



Finally, at higher ISOs, the sensor can start to lose the ability to create the correct range of tones in the darkest and lightest areas of an image. So you can end up with blocks of black rather than an area with delicate shades of dark grey. And similarly, at the other end of the scale, you can end up with blocks of white rather than areas with subtle shades of grey. So in my opinion, using higher ISO is really your last resort. If you can't use a slow shutter speed, or a large aperture then using a higher ISO is the only option but you will have to accept the resulting degradation in the quality of your image.

