

Tyre Colour Markings Explained

Edited by Ghost Writer



When you're looking for new tyres, you'll often see some **coloured dots on the tyre sidewall**, and **bands of colour in the tread**. These are all here for a reason, but it's more for the tyre fitter than for your benefit.

The dots on the sidewall typically denote uniformity and weight. It's impossible to manufacture a tyre which is perfectly balanced and perfectly manufactured in the belts. As a result, all tyres have a point on the tread which is lighter than the rest of the tyre - a thin spot if you like. It's fractional - you'd never notice it unless you used tyre manufacturing equipment to find it, but it's there.

When the tyre is manufactured, this point is found and a coloured dot is put on the sidewall of the tyre corresponding to the light spot. Typically this is a yellow dot (although some manufacturers use different colours just to confuse us) and is known as the weight mark.

Typically the yellow dot should end up aligned to the valve stem on your wheel and tyre combo.

This is because you can help minimize the amount of weight needed to balance the tyre and wheel combo by mounting the tyre so that its light point is matched up with the wheel's heavy

balance point. Every wheel has a valve stem which cannot be moved so that is considered to be the heavy balance point for the wheel.

As well as not being able to manufacture perfectly weighted tyres, it's also nearly impossible to make a tyre which is perfectly circular. By perfectly circular, I mean down to some nauseating number of decimal places. Again, you'd be hard pushed to actually be able to tell that a tyre wasn't round without specialist equipment.

Every tyre has a high and a low spot, the difference of which is called radial runout. Using sophisticated computer analysis, tyre manufacturers spin each tyre and look for the 'wobble' in the tyre at certain RPMs. It's all about harmonic frequency (the frequency at which something vibrates).

Where the first harmonic curve from the tyre wobble hits its high point, that's where the tyre's high spot is. Manufacturers typically mark this point with a red dot on the tyre sidewall, although again, some tyres have no marks, and others use different colours. This is called the uniformity mark.

Correspondingly, most wheel rims are also not 100% circular, and will have a notch or a dimple stamped into the wheel rim somewhere indicating their low point. It makes sense then, that the high point of the tyre should be matched with the low point of the wheel rim to balance out the radial runout.

What if both dots are present?

Generally speaking, if you get a tyre with both a red and a yellow dot on it, it should be mounted according to the red dot - ie. the uniformity mark should line up with the dimple on the wheel rim, and the yellow mark should be ignored.

What about the coloured stripes in the tread?

Often when you buy tyres, there will be a coloured band or stripe running around the tyre inside the tread. These can be any colour and can be placed laterally almost anywhere across the tread.

For ages I thought they were either a uniformity check - a painted mark used to check the "roundness" of the tyre - or an indication of the tyre run-out. It turns out the answer is far simpler and much more disappointing.

The lines are sprayed on to the rubber tread stock after it has been extruded during the manufacturing process. The problem is that the tread stock can be manufactured hours or days before it's actually used to make the tyres. So the lines serve one main purpose - they're an in-factory identification for the tyre builders to make sure they're using the correct tread stock for the carcass of the tyre they're assembling. Think of them like a barcode.



They can sometimes indicate the rubber compound or the intended tyre size and often you'll find other information printed on to the tread as well as the stripes (see the example below of a number code).



When a tyre is being assembled, all the components are put together (carcass, beads, belts etc) inside a tyre mould and the stripes help the technician to align the tread stock properly.

The inside of the mould has the inverse pattern of the tyre tread in it so that when heat and pressure are applied, the rubber in the tread stock is forced into the mould. Excess rubber is allowed to escape through little holes (called spew holes) which is why you'll often find what look like rubber hairs on a new tyre - they're excess rubber from the spew holes that was never trimmed.

If you look closely at where one of the sprayed-on lines crosses a tread block, you'll be able to see where it's been stretched during the moulding process. The earlier picture shows a good example.

These lines also serve one other function - a visual inspection post-assembly to make sure the tyre tread remained in the correct place. As the tyre is being spun during inspection, the lines will wander across the tread if something became misaligned during the manufacturing process. *GW*

Source: carbibles.com