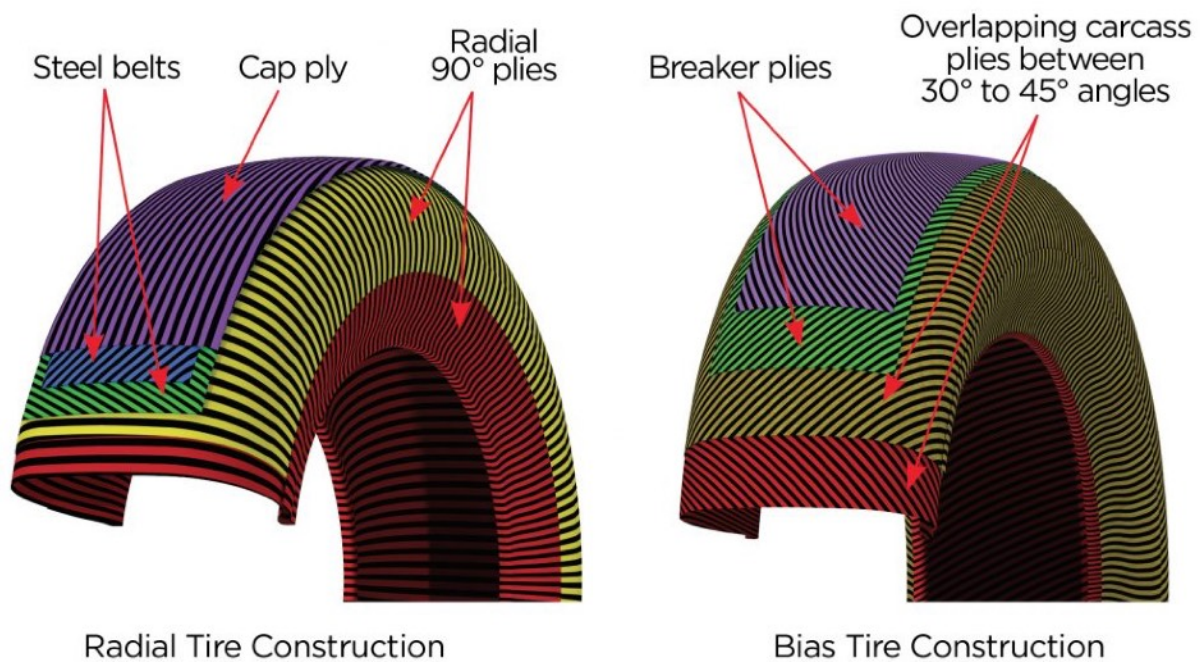


Simple Stuff

Radial vs Bias Ply Tires

by Bob Vitrikas

Back when dinosaurs roamed the Earth, bias ply tires (tyres?) were about all you could buy to keep your motor vehicle rolling along the highway even though radial tires were patented by San Diego native Arthur Savage in 1915. By the way, Arthur's patent expired in 1949 just about the time that radial tires began to be adopted. Sorry Arthur. Across the "pond" French researcher Marius Mignol designed, developed and patented a radial tire design for Michelin. Michelin in turn commercialized the radial tire and in 1948 Citroen started fitting Michelin X radials as standard equipment on the Citroen 2CV. We Americans were slower to adopt radials but indeed we did about 20 years later. The August 1968 issue of "Consumer Reports" concluded that radial tires compared to bias ply tires had "better tread life, better steering characteristics, and less rolling resistance." Presto chango, the 1970 Lincoln Continental Mark III was the first American car to offer radial tires as standard equipment and by 1974 bias ply tires were no longer used on passenger cars. The radial tire was king of the road!



(Courtesy Kendra Americana Tire and Wheel)

So what's the difference between bias ply and radial tires? It's all about the tire belts you can't see because they are deep inside the core of the tire. Bias ply tires commonly use rubber belts and radial tires typically use steel belts. Bias ply rubber tire belts are arranged in multiple layers criss-crossing at a 30-45 degree angle. The more layers, the stronger the tire and the better able it is to carry heavy loads and the stiffer

sidewalls reduce trailer sway. Typically bias ply tires have between four and ten plies. Therefore they make better trailer tires or for use on construction or agriculture machinery. On the downside, the stiffer sidewalls result in a harsher ride on an automobile and can also have greater heat buildup compared to radials which can be the death of a tire. I recall one hot summer when our family took our 1965 Pontiac Tempest on a long trip and by the time we got home all of the 'el cheapo' two ply bias tires fitted at the factory had suffered tread separation due to the extreme heat generated on those hot asphalt roads, and had to be replaced. Bias ply tires are also susceptible to flat spotting if the car sits for long periods. Thumpety thump thump down the road you go after taking your classic out of winter storage. Lastly bias ply tires tend to follow imperfections in the road surface which can be annoying, if not downright dangerous.

Radial tire carcass plies are at 90 degrees to the outer circumference held by steel belts. Because they allow the tread and sidewall to flex independently, radial tires provide a smoother ride, better traction, less noise, better gas mileage, and are better suited to passenger car application. Their construction also allows a wider and lower profile tire footprint which is all the rage on high performance tires these days due to the stiffer sidewall resulting from the lower profile and greater grip from the wider footprint. Radial tires are also popular for use on longer distance vehicles such as RVs, marine and livestock trailers. Radials have longer tread life which typically more than compensates for the greater purchase price (8-10%) over bias ply tires.



Here's a side by side comparison; bias ply tire on the left, radial on the right. Note the "crew cut" appearance of the tread on the bias ply and the rounded tread on the radial. The Dunlop tire on the left is a 69 year old original tire supplied on our 1955 MG TF 1500. I'll bet it is still filled with air from Abingdon!

Simply put: bias ply tires for your trailer and radials for your car, SUV or light truck. And please follow this simple rule: don't mix bias ply and radial tires on your car, SUV, truck or trailer or you may find yourself in a ditch!