

Figure 7. Bias-ply tire construction.

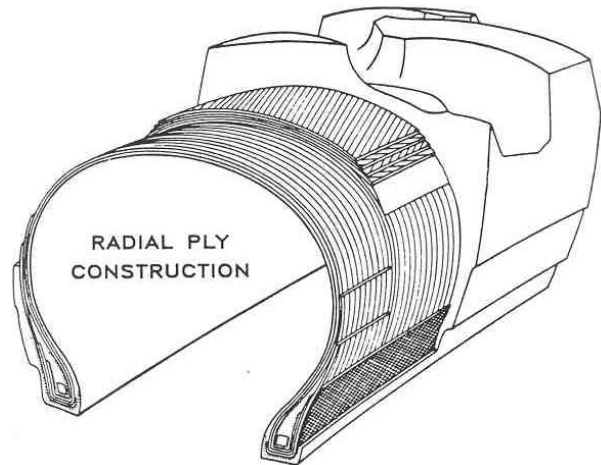


Figure 8. Radial tire construction.

Bias Tire Construction

The carcass of a bias-ply tire consists of layers (or plies) of fabric with cords that run diagonally from bead to bead at an angle called a bias angle (fig. 7). The cords of adjacent plies run in opposite directions, giving stability to the tire. The sidewalls of a bias tire are relatively stiff due to this criss-crossing of the body plies.

The bias tire's relatively stiff sidewall offers advantages over the radial tire in certain applications, such as forestry, where the radial tire sidewall can be prone to cuts and punctures while working in a severe environment.

Because of the criss-crossing of the body plies, the bias tire has more internal friction than the radial tire. This is one of the major reasons that bias tires have been replaced in many applications, the radial runs cooler and more efficiently. Depending on conditions, radial tires show an advantage of 6% to 14% in traction, fuel efficiency, and reduced wheel slippage over bias tires.

Radial Tire Construction

The body cords of a radial tire run parallel to each other from bead to bead at right angles to the tread centerline (fig. 8). Radial tires also have stabilizer plies (or belts) beneath the tread, with cords that run in a nearly circumferential direction (at a small angle to the tread center-line). Most of the flexing in the radial tire occurs in the sidewall area, while the tread area remains relatively stiff due to the belts.

Tread Designs for Powered Axles

There are five principle drive tire tread designs: R1, R1W, R2, R3, and R4 (fig. 9).

R1 tread is used for general farming and typically provides the best traction in most soil conditions. The tread is an aggressive pattern for developing traction in hard to soft soil conditions. The tread void area is approximately 70% of the total footprint for good cleaning in wet soils and good penetration in firmer soils.



Figure 9. Basic drive tire tread patterns.