



## All-Season, Studless, or Studded Tires? You Decide!

*Technical Translation by Dave Waldo*

Studded tire use continues to be a controversial topic. Many states have banned studded tires and still others have restricted the kind of studs that can be used. Advocates of studded tires argue they improve winter driving through increased vehicle traction. Opponents say they accelerate pavement wear such as rutting, costing taxpayers millions, and believe any traction benefits over newer tire technologies are largely perceived.

In a report completed for the Washington State Transportation Center entitled An Overview of Studded and Studless Tire Traction and Safety, Robert Scheibe provided a brief history of studded tires, studless winter tires, and traction performance characteristics. We've summarized some of those characteristics by tire type and then listed pros and cons.

### All-Season Tires

All-season tires can provide acceptable traction for winter snow and ice driving conditions, without excessively compromising dry and wet traction. Performance on ice and snow will depend on tread configuration and the materials used in their construction. They are available in many different configurations.

#### *Pros*

- No swapping out tires summer to winter.
- The most reasonably priced tire, available in a wide range of sizes, treads, and produced by virtually all tire manufacturers.
- Perform well on packed snow surfaces.

#### *Cons*

- Not good performers on icy roads, especially near the freezing mark.

### Studless Winter Tires

Studless tires contain millions of uniformly distributed microscopic pores constantly being exposed as the tread surface wears and gripping like suction cups. In addition to providing thousands of miniature biting edges, these pores help wick away the thin layer of water that often develops on top of snow-packed and icy roads, allowing the biting edges to better adhere to the surface for more traction. Virtually all tire manufacturers now make studless tires—Bridgestone Blizzaks are one such tire popular in Alaska.

#### *Pros*

- Approach studded tire performance without the damaging characteristics of studs.
- Tests conducted in Alaska showed studless tire performance equal to studded tires on snow.
- During cornering on packed snow, studless tires performed better than studded tires. Performance was nearly identical on icy corners.
- Due to their softer composition, studless tires wear faster than regular tires but maintain their effectiveness much longer than studs.

#### *Cons*

- On ice near the freezing mark, studless tires are slightly less effective than studs; however, this represents 6% of the winter in Alaska.
- Studless tires are more expensive. In Fairbanks, a set of four studless tires is about 30 to 40% more expensive than a set of studded tires by the same manufacturer.
- Require regular swap out.

### Studded Tires

Studded tires were introduced in the U.S. in the early 1960s. Studded tires rely on the studs' contact with the snow and ice surface for traction. Most studs are applied to winter or all-season tire tread at an additional cost.

### Pros

- On ice near the freezing mark studded tires perform better than any other tire; however, this represents 6% of the winter in Alaska.
- Less expensive than studless tires.

### Cons

- Studs wear quickly on bare pavement—a common occurrence during Alaska winters. Once a stud is worn, the effectiveness on snow or ice is greatly diminished.
- Offer no advantage on snow-covered roads.
- Create costly ruts in pavement, generating dangerous driving conditions such as tramlining (disruption of directional control because of the vehicle's tendency to follow ruts).
- Heavy-weight studs, where allowed, create even greater road damage, costing taxpayers millions of dollars every year.
- Suspend particulate matter from pavement dust created from the stud.
- Require regular swap out.

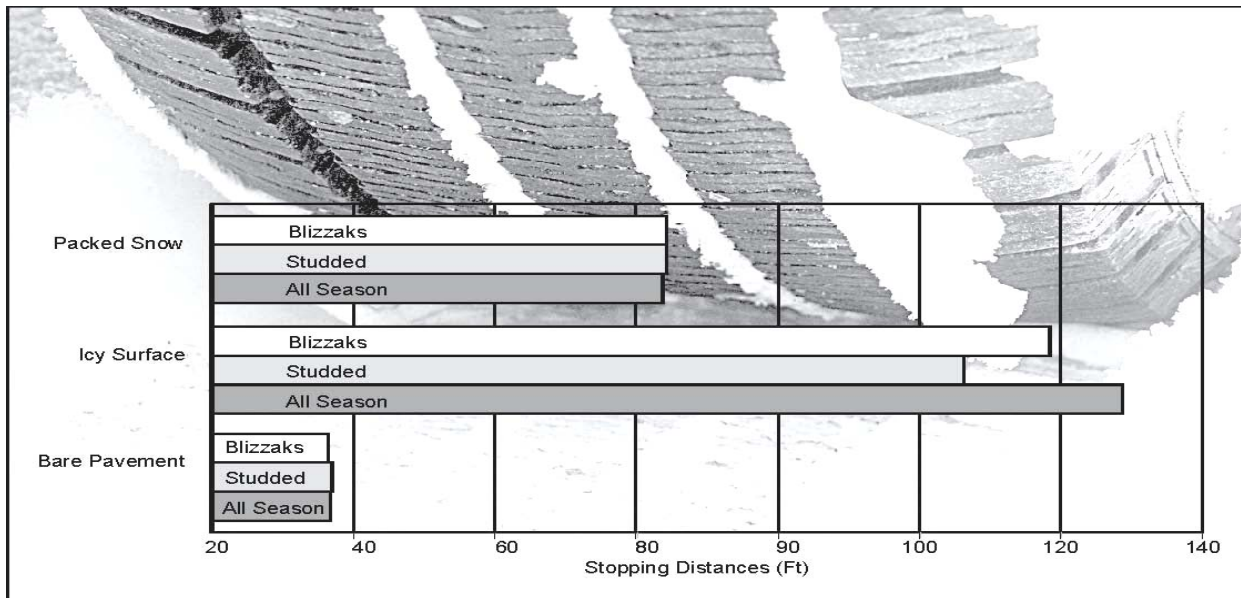
### Conclusion

The precise environmental conditions under which studded tires provide a traction benefit are rare. On smooth ice near the freezing mark they are great. As the temperature drops, so does the effectiveness of studded tires.

Studless snow tires seem to offer an excellent alternative. They are good on ice, great on snow, but definitely more expensive.

All-season tires can provide good traction on snow and ice. However, on ice near the freezing mark they perform poorly when compared to studded tires or studless winter tires.

Ultimately, the most important factor on ice and snow is you, the driver! Control on ice and snow are related more to how you drive than to tire performance. There is no substitute for knowing the capabilities of your tires or vehicle and reducing speed accordingly.



Traction performance can be characterized in many ways, including braking, acceleration, cornering, controllability, and grade climbing. Although all factors are important, the single best indicator of tire performance is braking distance and deceleration.

The chart shows stopping distances at 25 mph. They are the average of a front-wheel drive car, a rear-wheel-drive pickup, and a rear-wheel-drive car. The test was conducted in Fairbanks at near-freezing temperatures.

All three tire types performed well on packed snow surfaces. On ice, studded tires performed only slightly better than Blizzaks. On bare pavement, studded tires performed the worst.