

Why do Tires Have Tread?

Safety grooving, the technique of cutting grooves (tire tread) into a paved road to increase tire traction, originated at a NASA research center.

Tires need to work in sun and rain. Tires grip well as-is in normal circumstances, but tread is required to move water from rain out of the way so the tire can grip on wet roads.

Hydroplaning

Hydroplaning can occur when the car drives through puddles of standing water. If the water cannot squirt out from under the tire quickly enough, the tire will lift off the ground and be supported by only the water. Because the affected tire will have almost no traction, cars can easily go out of control when hydroplaning.

Some tires are designed to help reduce the possibility of hydroplaning. These tires have deep grooves running in the same direction as the tread, giving the water an extra channel to escape from under the tire.

All-Season Tires with Mud and Snow Designation

If a tire has MS, M+S, M/S or M&S on it, then it meets the Rubber Manufacturers Association (RMA) guidelines for a mud and snow tire. For a tire to receive the Mud and Snow designation, it must meet these geometric requirements:

1. New tire treads shall have multiple pockets or slots in at least one tread edge that meet the following dimensional requirements based on mold dimensions:

- Extend toward the tread center at least 1/2 inch from the footprint edge, measured perpendicularly to the tread centerline.
- A minimum cross-sectional width of 1/16 inch.
- Edges of pockets or slots at angles between 35 and 90 degrees from the direction of travel.



2. The new tire tread contact surface void area will be a minimum of 25 percent based on mold dimensions.

The rough translation of this specification is that the tire must have a row of fairly big grooves that start at the edge of the tread and extend toward the center of the tire. The idea is to give the tread pattern enough void space so that it can bite through the snow and get traction.

Rubber Manufacturers Association and the tire industry have agreed on a standard that involves testing. The designation is called Severe Snow Use.

In order to meet this standard, tires must be tested using an American Society for Testing and Materials (ASTM) testing procedure described in "RMA Definition for Passenger and Light Truck Tires for use in Severe Snow Conditions."

Tires designed for use in severe snow conditions are recognized by manufacturers to attain a traction index equal to or greater than 110 compared to the ASTM E-1136 Standard Reference Test Tire when using the ASTM F-1805 snow traction test with equivalent percentage loads.

These tires, in addition to meeting the geometrical requirements for an M/S designation, are tested on snow using a standardized test procedure. They have to do better than the standardized test tire in order to meet the requirements for Severe Snow Use.

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