

By making assumptions, what would happen if suddenly the weather at Sepang is rainy and all the Formula 1 team need to continue the race? Discuss all the risks and suggest any alternative idea to reduce the problems.

Answer: According to the first Newton's law, an object in motion tends to stay in motion unless acted on by outside forces. The main force which acts on a car is the friction between the tires and the road. Ability to control the car depends on it. Without friction, you can't steer, stop, or go. When a driver needs to slow or stop, he steps on the brakes, which are slowing the rotation of the vehicle's wheels. If the road is bare, the coefficient of friction is high and the tires grip the road well, slowing or stopping the vehicle is quite easy. However, if the road surface is slippery (coated with water), the coefficient of friction is much lower and therefore the wheels cannot stop the momentum of the vehicle as quickly. Thus, a greater distance is required for slowing or stopping. Also, when you need to turn your vehicle, such as rounding a curve, the higher is the speed, the greater the vehicle's momentum will act to resist the turn, and the less the coefficient of friction, the less chance the vehicle has to negotiate the turn. Thus, on slippery surfaces with a reduced coefficient of friction, a reduced speed is vital to negotiating the change in direction. Rain drastically reduces friction between tires and the road, and a skid is much more likely. At high speeds the car may hydroplane by trying to "water ski" and actually lift off the surface, reducing friction dramatically.

To prevent an accident, there are few things which the F1 team should do: use special tires with increased adhesiveness to the road and which will be pumped to a certain pressure (it prevents hydroplaning); antilock brakes, which automatically pulse to help prevent skids etc. But the main factor is the pilot's experience and driving abilities.