

Indiana Law Enforcement Academy

Emergency Vehicle Operations
HYDROPLANING

Automobile Hydroplaning

- During heavy rains or slush, the front wheels of a vehicle can leave the road
- a vehicle may be driven for miles with the driver on the verge of a skid without ever knowing it - a puff of wind or a gust from a moving vehicle may send the vehicle spinning out of control
- during wet roads, the vehicle becomes a "boat"

Types of Hydroplaning

- Two Types:
 - Viscous Hydroplaning
 - Dynamic Hydroplaning

Viscous Hydroplaning

- occurs on mirror smooth pavement with badly worn tires
- can occur with water less than 1/25th of an inch
- water has “tough” surface tension that even hundreds of pounds of pressure from a tire can’t break



Dynamic Hydroplaning

- As speed increases, the tire literally mounts a cushion of water under tires
- Water chokes the open spaces on tread
 - All practical purposes, this makes the tire bald - basically simulates driving on ice
- Wind gusts becomes extremely violent upon vehicle causing an uncontrollable skid



Dynamic Hydroplaning

- Most authorities believe dynamic hydroplaning is the single most cause of one car accidents under adverse conditions

Dynamic Hydroplaning Speed Determination

- To determine your vehicle's dynamic hydroplaning speed
 - check each tire for the amount of pressure
 - take the square root of that number
 - multiply by 10.3
 - if 36 lbs. of pressure, square root is 6
 - 6 times 10.3 = 61.8 mph (speed that your vehicle could dynamic hydroplane)

Dynamic Hydroplaning Prevention

- Drive in tire wipes left on the road by other vehicles
- Best type of tire to eliminate both kinds of hydroplaning is known as “open treading” plus “sipping” (squiggles in tread)
- This tire provides hundreds of tiny local pressure release areas in the tire footprint to break the surface tension of the water



Hydroplaning Conclusion

- If the depth of the water exceeds the depth of the tire tread, the tire can hydroplane
- Crosswinds of as little as ten (10) mph can pile water to a hazardous depth
- The larger the tire print, the more efficiently the tire will hydroplane - more tire on the roadway
- This is why tire pressure and footprint area are most important