

Chip Seal Fact Sheet

"Chip Sealing" is a common pavement maintenance practice that extends pavement life and provides a good driving surface. Since some ODOT customers may not be familiar with the chip seal construction method, this fact sheet answers some frequently asked questions.

How are Chip Seals Different from Asphalt Overlays?

The difference is in the construction method. Hot Mix Asphalt pavement is produced by heating liquid asphalt and mixing it with aggregate, with the mix then spread and compacted to form a durable road structure and riding surface. *Chip Sealing* uses the same ingredients as asphalt concrete paving, but the construction method is different. With chip seals, a thin film of heated asphalt liquid is sprayed on the road surface, followed by the placement of small aggregates ("chips"). The chips are then compacted to orient the chips for maximum adherence to the asphalt, and excess stone is swept from the surface. The ingredients of hot mix asphalt and chip seals are the same; only the construction methods are different.

Why Use Chip Seals?

1. Chip seals provide ODOT with the opportunity to maintain the roads for very low cost.
2. A chip seal is about one fourth to one fifth the cost of a conventional asphalt overlay.
3. By extending the time between asphalt overlays, chip seals result in lower costs over the long term.
4. By placing a chip seal sooner than an asphalt overlay would be placed, the traveling public benefits from roads maintained in better condition.
5. Chip Seals eliminate the need to crack seal.
6. Chip seals enhance safety by providing good skid resistance.
7. Chip seals provide an effective moisture barrier for the underlying pavement against water intrusion by sealing cracks in the pavement.
8. Chip seals prevent deterioration of the asphalt surface from the effects of aging and oxidation due to water and sun.
9. ODOT has successfully used chip seals for over 25 years to maintain state routes.
10. Chip seals are used only on low traffic routes, less than 2500 vehicles per day.
11. Chip seals virtually eliminate black ice.
12. In hot weather, chip seals re-seal cracks by flowing back together.

How Are Chip Seals Placed?

First, the road surface needs to be properly cleaned of debris and any holes patched. Next, an asphalt distributor truck starts by spraying each lane with hot liquid asphalt to assure an even application. The asphalt used is applied at a temperature between 150 and 185 degrees Fahrenheit. A chip spreader follows as rapidly as possible with a rock application, preferably within one minute. The asphalt must be fluid so the rock will be embedded by the displacement of the asphalt. The rocks are an aggregate crushed to a special specification for size and cleanliness. Next, a rubber-tire roller is used to set the rock into the liquid asphalt. Rolling orients the flat sides of the rock down and produces a tighter chip seal. It takes two to four passes of the roller to set the rock. Sweeping is done at the completion of the chip seal process to remove surplus rock from the surface. This loose rock can grind and loosen rock set in the chip seal and damage the project. Sweeping is done within 4 hours of the rolling operation, and typically again a day or two later.

