

EVERYTHING ASPHALT

Chip Seals



"The increased use of chip seals for maintenance can be a successful, cost-effective way of using preventive maintenance to preserve both low-volume and higher-volume pavements."

National Cooperative Highway Research Program (NCHRP) *Synthesis 342*



Effective Pavement Preservation

The chip seal process involves the spraying of an asphalt product by a well-calibrated distributor immediately followed by an application of aggregate by a chip spreader. Long term pavement performance studies have shown that chip seals are one of the most cost-effective methods of pavement preservation for all types of roads, from gravel county roads to high volume interstate pavements. The pavements should be structurally sound but beginning to age, and may have some minor surface distress or have lost their skid resistance. Chip seals are also commonly used as a first bituminous treatment over compacted bases on low volume roads. New technologies have been recently developed to improve the reliability of high performance chip seals, especially on high volume roads.

Material Selection and Design

The selection and application rates of both binder and aggregate are very important. Rapid setting emulsions are normally the binder of choice, although medium-setting emulsions can be used with fine aggregates and under other special circumstances. Cutback asphalts or hot applied asphalt cements are also often used; new polymer and tire rubber modified products are giving excellent results. Aggregates should be one-sized and cubic in shape to provide good stability and maximum contact with tires, and should be hard with good resistance to abrasion and degradation to resist traffic wear and impact. Dust prevents the asphalt from coating the aggregates, so the chips should be clean whenever possible. High float emulsions and cutbacks seem to be more forgiving for dusty aggregates. Polymer modified emulsions usually give excellent early chip retention. The binder shot rate should be calculated to achieve optimal embedment of the chip in the residual asphalt. In the field, the shot rate should be adjusted for the surface condition of the existing pavement, with higher rates for aged, porous surfaces. There should be enough asphalt to hold the aggregate without shelling, but not so much that it will bleed through the surface.

Chip Seal Benefits

- Waterproofs pavement surface
- Improves skid resistance and rideability
- Rejuvenates surfaces, sealing small cracks and surface imperfections
- One of the most cost-effective pavement preservation treatments

Martin Asphalt Products for Chip Seal

CRS-2	Cationic rapid setting, water-based emulsion is the most commonly used, and it sets up quickly.
CRS-2P	Polymer modified cationic rapid setting emulsion. Polymers improve durability, give earlier chip retention and are ideal for high traffic volume roads where durability, traffic delays and loose chips are concerns.
CRS-2h	Cationic rapid setting emulsion with a stiffer base asphalt for higher temperature climates.
CRS-1P	A cationic rapid setting emulsion specially formulated with polymer and emulsifier that sets up quickly at lower temperatures, so the construction season can be extended.
HFRS-2	Anionic high float rapid setting emulsion. The high float gel residue resists bleeding at high temperatures.
RS-2	Anionic rapid setting emulsion for general use.
HFRS-2P	Polymer modified high float rapid setting emulsion. Polymers improve durability, give earlier chip retention and are ideal for high traffic volume roads where durability, traffic delays and loose chips are concerns.
RC-250	A cutback asphalt binder for chip seals.
AC-20-5TR AC-15-5TR	Tire rubber modified, hot applied asphalt.
AC-15P AC-15XP	Polymer modified, hot applied binder for chip seals, designed especially for quick traffic return and durability on high volume roads.
CRF®	CRF restorative seal uses sand as the aggregate and the CRF emulsion, formulated with rejuvenator oils to restore the chemical balance of the aged asphalt surface. The sand/CRF emulsion fills cracks and rejuvenates and seals the pavement surface. CRF can be used as a standard sand seal, or in scrub seal, squeegee seal and broom seal applications.

Martin Asphalt Makes It Easy

There are a variety of treatments available for effectively keeping "good pavements good". Choosing the right treatment can make the best use of funds and give taxpayers smooth and safe roads while avoiding costly reconstruction and extended road closures. Through Martin Asphalt, you get **Everything Asphalt**—a full range of products for your pavements. In addition, you receive technical assistance in selecting the right materials and application. The company's AASHTO Certified Laboratory makes sure the products meet your specifications. And your products are delivered both on spec and on time via Martin's Gulf Coast network of production plants, storage facilities and transportation fleet including ocean-going and inland barges, rail cars and tanker trucks.

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