



Indulin®
Chip seal

The right chip seal for you.



Chip seals consists of a spraying an asphalt emulsion onto an existing road surface followed by the application of a single-size cover aggregate. The aggregate is applied in a single aggregate thickness to the emulsion layer. It is then rolled in order to “seat” the aggregate. Chip seals may be applied in multiple layers, allowing time for the emulsion to cure between applications. Double or triple seals are produced with larger aggregate in the bottom layer and progressively smaller aggregate in upper layers. The aggregate size, number of layers and binder type are chosen based on projected traffic demands along with the condition of the existing surface.

Chip seals are applied to existing road surfaces as an economical maintenance treatment. They should be used on roads that are in good condition but are at a point in their life cycle where stresses are developing. Chip seals will seal the underlying layer from water intrusion, correct surface cracking, raveling, surface hardening and can improve skid resistance. Chip seals will not correct full depth cracking, rutting, conditions caused by base failures or incorrect original road design, such as shoving or bleeding.

The emulsion is applied by a spray distributor truck and the aggregate is applied by a specialized spreader. The pneumatic tire roller is used for the compaction. The emulsion and aggregate application rate are determined by a laboratory design method to achieve a targeted embedment depth of the aggregate in the cured binder layer.

Cationic emulsifiers

Indulin AA-80 series emulsifiers are 100 percent active and are formulated to build low to high emulsion viscosity. The Indulin AA-80 series emulsifiers will give high demulsibility, even at higher surfactant use levels typically needed to emulsify polymer-modified asphalts. Emulsions made with the AA-80 series emulsifiers are compatible with a wide range of aggregates and demonstrate rapid curing properties in properly formulated systems.

PC-2181 is specifically formulated for multi-layered chip seals yielding rapid return-to-traffic.

Product	Physical appearance	Emulsion viscosity	Curing speed
Indulin AA-89	Very soft paste	Very high	Fast
Indulin AA-86	Liquid 100% active	High	Fast
Indulin AA-83	Liquid 100% active	Medium	Medium
Indulin AA-81	Liquid 100% active	Low	Medium
PC-2181	Liquid 100% active	Medium	Very fast

Dosage is 0.18-0.45%, solution pH range is 1.5-2.5

Anionic emulsifiers

The Indulin High Float System for rapid set emulsions is based on a two-component formulation that uses Indulin 201, 202, 207 or PC-2198 as the emulsifier with Indulin 206 as the asphalt additive. The Indulin High Float System produces an anionic emulsion that meets ASTM D-977 designation for high float, rapid-set and high float medium set; improves binder properties through gel matrix formulation; returns high demulsibility values; and increases asphalt film thickness without asphalt flushing.

Indulin High Float System emulsifiers are 100 percent active liquid products. Typical dosage rates are 0.2 to 0.4 percent by weight of emulsion targeting a soap solution pH of 12.0 to 12.5.

We partner with you to develop customized solutions

Pavement Technologies, a dynamic business within Ingevity, is the global leader in the development and delivery of high-performance products and technologies for the world's asphalt paving industry.

We specialize in customized solutions and support for a full range of asphalt paving demands. Ingevity partners with customers to:

- evaluate project materials
- offer plant-to-jobsite support in an effort to help ensure success
- optimize mix designs and emulsion formulations to meet project specifications

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