

CYCLOGEN[®]

Engineered Recycling Oils



For Hot and Cold Recycling

Cyclogen[®] recycling oils are specifically designed to rejuvenate aged asphalt pavement (RAP). These engineered oils provide a one component system available in 2 grades for hot in place recycling and fixed plant recycling – **Cyclogen[®]** L and M and 2 emulsified cationic grades – **Cyclogen[®]** LE and ME for cold in place, pugmill mix or lay and spray recycling applications. Tricor manufacturer's **Cyclogen[®]** from a specific naphthenic crude supply. Naphthenic crude is a wax-free, low pour point crude with excellent natural solvency ability allowing it to penetrate, flux and co-mingle with the RAP material, all without the use of solvent or cutter stock. Cyclogen[®] grades are extremely stable: base oil grades exhibit a shelf life up to two years; the emulsion grades up to one year and can also be freeze stabilized for winter storage.

Cyclogen Engineered Recycling Oil Use:

- One component rejuvenator
- Hot in place recycling rejuvenator
- Cold in place recycling rejuvenator
- Asphalt Pugmill mixing rejuvenator
- Available in two base oil and two emulsion grades
- Extremely stable with long shelf life
- Excellent fluxing and co-mingling with the binder



 **TRICOR** REFINING, LLC

PRODUCERS of GOLDEN BEAR PRESERVATION PRODUCTS



Montana pugmilled and grader placed RAP.

CYCLOGEN® RECYCLING AGENTS THE ECONOMICAL SOLUTION FOR PAVEMENT RECYCLING

Cyclogen® Benefits:

Recycled asphalt can be rejuvenated to a stability and durability equal to or better than the original asphalt. Cyclogen® recycling oils restore select maltenes which have oxidized from the asphalt binder to re-balance the chemical composition of the aged asphalt binder. Offering benefits similar to Tricor engineered Reclamite® Rejuvenating Oil for fog seal surface treatment application, Cyclogen® increases penetration values / decreases micro viscosity, rebalancing the Asphalt components described below:

Components of Asphalt

Asphalt can be separated into five groups of components, which have great chemical similarity and behave alike. These groups are:

A = Asphaltenes (A) are solid and have the appearance of coarse graphite powder, black or dark brown in color.

PC = Polar Compounds (PC), First Acidiflins

A₁ = First Acidiflins (A₁), Second Acidiflins

A₂ = Second Acidiflins (A₂) and Saturates

S = Saturates (S) are called "Maltenes" and have the consistency and appearance of heavy liquids.

Asphaltenes are soluble only in the presence of Polar Compounds. The First and Second Acidiflins act as a medium to disperse the dissolved Asphaltenes, and the Saturates develop the setting characteristics of the entire solution.

The ratio of PC/S must be 0.5 or greater to assure these components will not separate. The ratio of (PC+A1) / (S+A2) should be between 0.2 and 1.2 to assure good aging properties. This creates the chemical composition of Cyclogen®.

The benefits of recycling asphalt include: rejuvenating a renewable resource, which has already been paid for by the agency and decreasing landfill disposal. In the hot in place recycling process, Cyclogen assists in decreasing the use of new mix and depletion of aggregate sources while increasing the cost effectiveness in remote or confined geographic areas.

Cyclogen®a proven product for recycling asphalt



Components of Asphalt



Cyclogen® is an emulsion manufactured from a naphthenic crude stock. Naphthenic base is wax free, has a natural low pour point and has excellent natural solvency ability allowing it to penetrate and absorb.



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