

Cool Roadway Solutions - Request for Information Response Form



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Solution/Product Name: CoolSeal

1. What is the expected timeline to develop and commercialize the solution if it is not currently available?

CoolSeal by GuardTop was developed in 2011. Guardtop has been manufacturing pavement maintenance products since 1983 and coolseal was designed to be a high performance maintenance product as well as an urban heat island mitigation. CoolSeal has been applied throughout the United States and in 4 other countries. It can be shipped globally.

2. What surface and air temperature reductions resulting from the roadway solution, daytime and nighttime, have you identified?

CoolSeal has seen surface temperature reductions ranging between 15-40 degrees Fahrenheit depending on weather conditions. Air temperature reduction data has been more limited but recently NASA's ecostress satellite measured a neighborhood that had coolseal applied in 2019 and saw a 2 degree temperature reduction both during the day and at night. Guardtop now has access to NASA's LST satellite data so in the future air temperature data from each installation will be easily obtained.

3. How simply can the solution be integrated into existing roadway management and maintenance operations?

CoolSeal was designed with simplicity in mind. Since it is an asphalt based sealcoat it does not require any special equipment or training to install. CoolSeal is fully compatible with the existing road maintenance equipment and practices used by municipalities and contractors. In addition to its cooling benefits, CoolSeal extends the life of the asphalt surface. By applying CoolSeal about every 7 years to a roadway you can triple the lifespan of an untreated asphalt surface.

4. What is the global warming potential associated with manufacturing the roadway solution in production and use phase?

Since CoolSeal is an asphalt based product there is little to no global warming or greenhouse gas potential during the manufacturing process. CoolSeal is mixed and applied at ambient temperatures using recycled materials that would otherwise end up in landfills. Asphalt is the most recycled material in the world and the main component of Coolseal. Many plastics and acrylics have been proven to be very toxic to manufacture and may outweigh some of the cooling benefits. While acrylics and plastics may perform well we have maintained our asphalt based approach due to the data about plastics and greenhouse gases.

5. Add any additional information for the proposed solution. Attach photos, videos or links to materials demonstrating application, installed condition, and relevant characteristics of the solution such as product material safety data sheets

See attached

Installation

1. Can the solution be purchased and installed by in-house department staff (i.e. does not require a licensed installer): Yes

• **If so, does it require special equipment to install it:** No

• **If so, what is the cost per square yard for materials: \$/SY**

Material is about \$13.50 per square yard on a two coat application

2. What is the cost per square yard for material if installed by contractor: \$/SY

All in cost for material and labor is between \$4-\$4.75 per square yard

3. What is the average installation rate: SY/Day?

Average installation rate is about 22,000 SY for two coats of material

Use Cases

1. What are the appropriate use cases for the solution (e.g., pavement type, age, condition, climate)? Please provide appropriate case studies, testing, and/or supporting research.

Like any asphalt based sealcoat CoolSeal is designed to be applied to surfaces in relatively good condition for the purpose of maintenance that surface. It can be applied to surfaces that are older with some cracking. Coolseal cannot be applied surfaces with excessive potholes and structurally failed areas.

2. What are the safety, slipperiness, and friction characteristics (e.g. typical Surface Coefficient of Friction)?

Coolseal has an average coefficient of friction of .82 when dry and .76 when wet under ASTM C1028 specification

3. What is the curing time including how quickly the road can open to traffic after installation given average temperatures, partly sunny, and non-humid conditions? How does this compare to existing relevant products?

Coolseal takes about an hour to try under average conditions and must cure for a few hours before being opened to traffic. Most projects with municipalities that we have completed have closed streets from 7AM-5PM. This is on par with regular asphalt sealants.

4. Is it sensitive to placement in cool weather, i.e. 50o F and falling? Yes/No

Yes, CoolSeal must be applied on days where temperatures are 50 degrees and rising. As is typical with most asphalt coatings to allow for proper drying and surface adhesion.

5. Is it sensitive to placement in high humidity or damp conditions? Yes/No

As with traditional black sealcoat there is no issue with applying CoolSeal in humid conditions.

6. How long does this treatment typically last under average traffic conditions in years?

How does this compare to similar products?

Coolseal on average lasts about 7 years. Traditional black asphalt sealcoats last about 4 years.

7. Can it be re-applied over itself for renewal? Yes/No

Yes, Coolseal is typically reapplied after 7-10 years after the initial application has started to wear off but there is no issue with applying before wear has occurred. Coolseal can also be applied over existing surface treatments with no issue such as traditional black sealcoat, slurry seal, fog seal, chip seal, and micro surfacing.

8. Is it recommended for heavy traffic conditions like urban arterials? Yes/No

Coolseal current flagship formulation is designed for lower traffic streets with speed limits of 35 MPH or less but we have developed a high traffic formulation with larger aggregate to meet skid resistance specifications for larger arterials.

9. Are standard MUTCD compliant white and yellow markings clearly visible? Yes/No

Yes, see attached photos.