

Biorestor

Bio Preferred Asphalt Pavement Rejuvenator Seal

Ag-based Oils
+
Polymers
=

Biorestor
Bio Preferred Asphalt Pavement Rejuvenator Seal

GSA

Contract Holder
Contract GS-21F-132AA





Biorestor is made from 100% agricultural oils and as they penetrate into the asphalt binder, they reverse oxidation and leaves a polymer coating to aid against further oxidation. The heating and mixing process in manufacturing greatly oxidizes asphalt pavements before they are placed on your road.

Independent Laboratory testing of five year simulated aging shows that Biorestor helps increase the AC penetration value 20% (Fig. 1) while also reducing the viscosity value 49% (Fig. 2). Both showing that Biorestor restores what the asphalt plant has taken away. Marshall Stability values (Fig. 3) also benefitted showing that the Biorestor treatment had prevented over 90% of the oxidation of the control.

Fig. 1

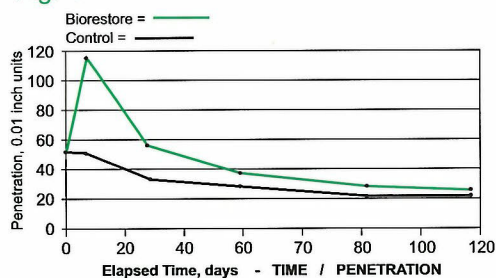


Fig. 2

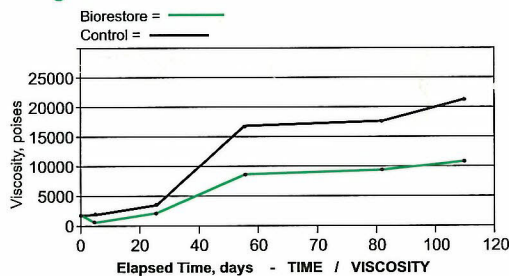
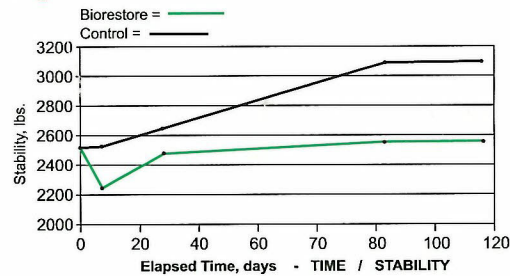


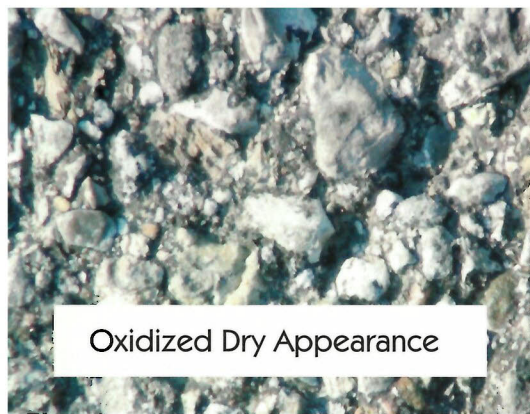
Fig. 3



Our Biorestor treatment philosophy is that of stopping the small things that happen early in a pavements life. This is preventative maintenance. The act of repairing cracks, potholes, or treatments that are last ditch efforts can be classified as crisis management. We are sure you know which is cheaper.

For decades, money and action have been applied to the worst roads in our systems. Over those decades, the average value has not changed. If anything with increased costs, higher traffic, and a lower quality of asphalt; most of our systems are not as good as they were decades ago. The projected tax base just to keep up with our system is staggering.

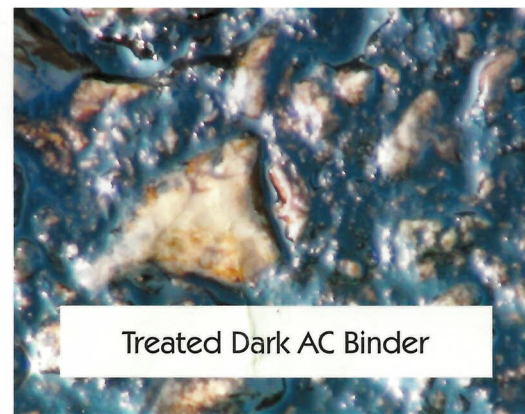
Join the Biorestor preservation effort and use what we make grow and protect our systems.



Oxidized Dry Appearance

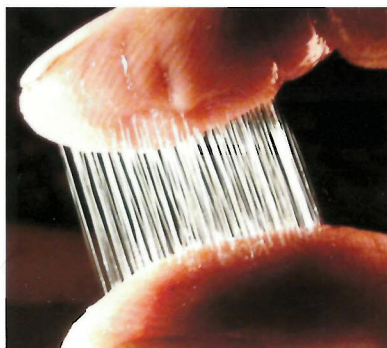
Treated asphalt pavement shows that Bioresor oils darken and flush the asphalt binder within the pavement matrix vs. the untreated sample which appears dry, brittle, oxidized, ridged and i n f l e x i b l e .

Bioresor quickly penetrates into matrix and virtually dry to touch in 20 - 30 minutes.



Treated Dark AC Binder

Bioresor brings polymers and oils to the AC binder, helping reverse the oxidation of new asphalt to help slow down what we all know is going to happen. Doing nothing results in crisis management-fixing the problems as they appear.

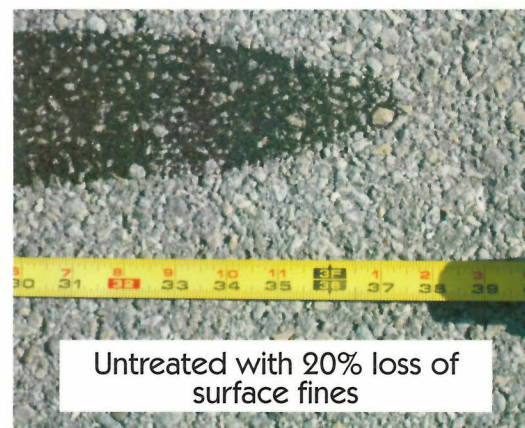


"The oxidative aging of pavements begins at the time of construction and continues throughout a pavement's life. However, most aging occurs within the first two to four years of service life." Foundation for Pavement Preservation.



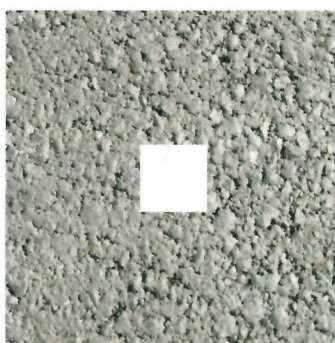
Treated Pavement

ASTM E 965 Modified Sand Test of treated (43" above) and untreated (37" below) after 2 years. This test measures the loss of fines from the pavement surface; one of the first signs of oxidation .



Untreated with 20% loss of surface fines

In almost all cases, a 95% density is looked for as proper placement of asphalt.



The white square on this pavement square is a representation of the total air void that a 95% density pavement offers.

Water will get in.



Bioresor

Bioresor penetrates and becomes part of the matrix while it also rejuvenates and protects the asphalt cement binder from oxidation with the polymer portion of it's composition.

Many of the black surface seals for asphalt pavements sit on the top, become brittle and once they are wore off provide little or no protection to oxidation.

Much like Primer for wood, vs. Paint.



Most Sealers



Untreated 0.03 gal/SY 0.015

Clear and does not affect striping - this state route was treated within 60 days of paving and line markings were not effected by the Biorestor treatment applied.

Many states are looking for a preservation treatment for the construction joint. In the last 3 years Tennessee DOT has been aggressive in proactive construction joint treatment.

"Premature longitudinal joint failures provide with the ability to ravel, propagate cracks throughout the mainline, and ultimately destroy the pavement prior to reaching it's desired design life."
~Tennessee Department of Transportation



Biorestor

The right color choice as it is virtually clear, only darkening the matrix of the pavement lightly.

"Simply by choosing a material that is not black, we can reduce the heat island effect and air conditioning costs can be lowered by as much as 8-12%

~National Ready Mix Concrete Association



Figure 1 Tyndall Air Force Base



Figure 2 Runway Treatment

Early treatment (first year) has been recognized as best pavement preservation strategy. The biggest enemy in an airport system is oxidation (water & uv).

Environmental Stewardship

Biorestor is made from 100% agricultural oils which leaves a polymer residue to offer protection to the asphalt binder from oxidation. Many surface sealers and or rejuvenators are petroleum or coal tar derived. These products have been to some degree, classified as carcinogenic products. Some of these have mild and others have a much higher degree of carcinogenic concern. Polycyclic Aromatic Hydrocarbons (PAH's) is the exact name of the emitted substance from coal tar and asphalt products and has been a growing concern over the past 10 years as this residue has become a more common and higher level of pollutant in our water and soil.

Biorestor contains ZERO PAH's

We have been given a letter of introduction as official notification the BioBased Spray Systems, LLC. is a participant in the US Department of Agriculture's (USDA) BioPreferred program.

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