Roads with high traffic volume usually require more asphalt for effective control than roads with lower volumes. Road treatment is best done in late summer or early fall if the first was in the spring. Apply asphalt in dry conditions is not recommended as it can loosen the aggregate. Prepare the surface by removing potholes and washboards and adding any necessary aggregate. Use a low viscosity product to adhere well to the road. Apply at a rate of 0.1 to 0.2 gal./sq. yd. Typically, a single application is effective, provided it is applied properly. If rains occur within 48 hours of application, the asphalt needs to be re-applied. Use longitu-dinal blade mixing coupled with rotary mixing by the pulverizer. Add water as necessary. Pulverizer action ensures that asphalt is evenly distributed over the road, then spread the mixture in two equal lifts. Each lift should be compacted with a separately-rolled drum until the tamping foot “walks out.” Finally, blade the mixture for crown and compact it with a rubber-tired roller. Allow the mix to cure long enough to prevent excessive water from percolating through it.

Maintenance for calcium chloride-treated roads

Direct spraying of asphalt is not practical since the asphalt is too hot to be applied. The asphalt is applied at a lower temperature and Tween 80 can be added to the asphalt to prevent the asphalt from curing too fast. Apply asphalt at a rate of from 0.05 to 0.1 gal./sq. yd. A minimum asphalt depth of 0.25 to 0.3 inches is recommended. However, asphalt can be applied to previously asphalted roads.

Asphalt application and maintenance

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
### Dust control agents

**Calcium Chloride**

- **Calcium chloride** is used very often as a dust control agent. It causes a surface moisture film, which helps in the sticking of soil and aggregate particles. Calcium chloride can be expensive in the liquid form, but it is less expensive when compared to salt for use in application.

**Magnesium Chloride**

- **Magnesium chloride** is the name given to magnesium chloride hexahydrate. It is a lower-cost alternative to calcium chloride, but it is less effective in controlling dust. It is also less sensitive to moisture and temperature variations.

**Salt (Sodium Chloride)**

- **Salt** is a common dust control agent and is often used in the liquid form. It is effective in controlling dust on dry surfaces but is less effective on wet surfaces. It is also corrosive to steel and can cause rusting.

**Asphalt Emulsions**

- **Asphalt emulsions** are a good choice for dust control because they are effective on wet and dry surfaces. They are also relatively inexpensive and can be used on a wide range of soils. However, they require a high water content to be effective.

**Vegetable Oils**

- **Vegetable oils** are a natural choice for dust control because they are effective on wet and dry surfaces. They are also relatively inexpensive and can be used on a wide range of soils. However, they require a high water content to be effective.

### Future plans

**Road structure**

- Dust control will be both helpful and cost-effective on unpaved roads which are already in good shape — being proper cross-drainage, a good mix of materials, and well-compacted surfaces. It will not solve problems related to poor construction, bad drainage, or lack of maintenance.

**Adjacent residents**

- When the asphalt is granular with a high amount of fines, or when surface water cannot drain away by sudden rain, dust control may be needed to minimize the nuisance for auto owners and nearby residents.

### Chlorides

<table>
<thead>
<tr>
<th>Type of Chloride</th>
<th>Application Rates</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Chloride</td>
<td>Liquid: 0.2 to 0.3 gal./sq. yd.</td>
<td>Most effective in dry conditions.</td>
</tr>
<tr>
<td>Magnesium Chloride</td>
<td>Liquid: 30-40 lb./ton, dry mix: 0.5 to 1.0 lb./yd.</td>
<td>Most effective in damp conditions.</td>
</tr>
<tr>
<td>Salt (Sodium Chloride)</td>
<td>Liquid: 0.2 to 0.3 gal./sq. yd.</td>
<td>Most effective in dry conditions.</td>
</tr>
</tbody>
</table>

### Spreading chlorides and other penetrating agents

- **Spreading chlorides and other penetrating agents** can control dust on roads where the average traffic is between 15 and 30 veh./hr., or where the average speed is between 30 and 80 mph. Special care should be taken when spreading chlorides in the street gutter. Gutter chlorides will not move on a surface, but can migrate to the base and eventually resist dust control.

### Salt and liquid deicer storage

- **Salt and liquid deicer storage** should be kept separate and in a well-ventilated area. It should be stored in an enclosed area to prevent the formation of dust and the attraction of birds. It should also be stored away from other materials that may cause a fire hazard.

### Calcium dust control

- **Calcium dust control** is a proven method for controlling dust on roads and other surfaces. It works by forming a crust on the surface, which helps in the sticking of soil and aggregate particles. Calcium dust control is a low-cost and effective method for dust control.

### Calcium dust control effectiveness

- **Calcium dust control** is effective on wet and dry surfaces. It is also effective in controlling dust on unpaved roads. However, it is not effective on paved roads.

### Calcium dust control limitations

- **Calcium dust control** has some limitations. It is not effective on paved roads. It is also not effective in controlling dust on unpaved roads. However, it is effective in controlling dust on unpaved roads.
Dust control may be useful when the gravel construction, bad drainage, or lack of maintenance.

Applying dust control agents

Proper dust control reduces blinding and material loss, improves trafficability, reduces the time to treat, and can be more cost-effective than other methods.

Calcium Chloride

Calcium chloride and magnesium chloride are the most common and cost-effective dust control agents. Calcium chloride has the advantage of being available in bulk and is relatively effective at low temperatures. Magnesium chloride has the advantage of being available in liquid form and is more effective at high temperatures.

Calcium chloride is the most common dust control agent. It is a hygroscopic material that has the ability to absorb moisture from the air. This property makes it effective at reducing dust on gravel and dirt roads. Calcium chloride is typically applied in the form of a slurry or a dry powder.

Magnesium chloride is another common dust control agent. It is a hygroscopic material that has the ability to absorb moisture from the air. This property makes it effective at reducing dust on gravel and dirt roads. Magnesium chloride is typically applied in the form of a slurry or a dry powder.

Calcium lignosulfonate is a natural cement that binds wood residues. It is made from the by-products of the paper industry and is used as a dust control agent. Calcium lignosulfonate is typically applied in the form of a slurry or a dry powder.

Calcium and magnesium chloride are the most commonly used dust control agents. They are hygroscopic materials that have the ability to absorb moisture from the air. This property makes them effective at reducing dust on gravel and dirt roads. Calcium chloride is typically applied in the form of a slurry or a dry powder, while magnesium chloride is typically applied in the form of a liquid.

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Spreading ADO is a solid form of calcium chloride. The pellets or flakes are completely dissolved before spreading. Follow dry applications with enough water to ensure complete dissolvability and to prevent any runoff into surface water or ditch systems. Sulfite liquor application rates have to be controlled by regrading and moisten. While driving the distributor, stop and add water to the road’s surface. The applications should overlap each other 0.5 to 1.2 meters to ensure the pellets or flakes are completely dissolved. Use higher viscosity asphalts for loose, open, coarse-grained road surfaces.

Scarify the top one to two inches of the road to loosen aggregate. Potholes and washboards and adding any necessary aggregate. Apply calcium chloride around the edges of ditches and culverts before applying asphalt products. Melted calcium chloride is effective down to -22 °C. Apply at a rate of 0.1 to 0.5 gal./sq. yd. Use only as a preventative and never as a corrective measure.

Grit can be spread at a rate of 5 to 10 pounds of sand per square yard of road surface. When these fines are lost as dust, it damages the asphalt. A single vehicle traveling an unpaved road for just a few miles can produce more dust per minute, according to one study. This translates to being 100 times the particle size for each mile of road traveled. Use about 2 to 3 tons per mile per year of 100 vehicles a day. Unpaved roads are the largest source of fugitive dust. Typically, 80% and cut aggregate loss by 25% to 75%. However, studies show that control measures can reduce dust by 30% to 80% and can cut required maintenance. Dust control measures can be relatively costly for their activities and wind erosion (the next two largest sources) do not exceed 10%.

Using a high-volume sprayer or using a centrifugal sprayer to produce a dry mist. Sprinkler irrigation systems are effective controls can significantly reduce dust levels and can cut required maintenance. Dust control measures can be relatively costly for their activities and wind erosion (the next two largest sources) do not exceed 10%.
Spreading chlorides

Pre-spread the surface with water at rates ranging from 0.03 to 0.3 gal./sq. yd. to reduce surface tension, to develop the capillary action that allows maximum penetration of the dust control product, and to ensure good adhesion to the road surface. Each lift already treated should be allowed to dry and reapply.

Choosing dry calcium chloride for smaller applications. The bags are easy to store and dry and require no equipment for spreading or mixing. Chlorides should be applied to silt-clay, or on aggregate roads with a silt-clay binder. On unpaved roads with tightly bonded surfaces, such as ditches and culverts before applying asphalt products.

Prepare the road surface, reshape crown, and clean the area can be compacted before it dries out. Blading in center and then feather the material back toward the road, then spread the windrows in two equal lifts. Each lift should be compacted with a sheepfoot roller until the tamping feet "walk out." Finally, blade the mixture for crown and compact it with a steel-tooth roller. Allow the mix to cure long enough to prevent excessive splash from future treatments.

Maintenance for calcium chloride-treated road

During dry periods, water the road periodically to reactivate the chloride ion properties. Apply water at the rate of 0.1 to 0.25 gal./sq. yd. Usually, a 10%-20% deposit will persist, partially at least, until a rainfall. Studies show that maintenance can be cut by 25% to 75% on calcium chloride treated roads. The grader should blade lightly from edges toward the center and fan the material back toward the center. It is a good practice to blade in short sections so the area can be compacted before it dries out.cheduling is not recommended as it can lower aggregate and deplete calcium chloride.

Appraisal and application

Prepare the road surface, remove cracks, and debase and declassify before applying asphalt products. Use calcium chloride, or SS-1h, or a cutback (SC-70, SC-250, MC-75), or a Virginia asphalt emulsion. See Chlorides. Use a dust suppressant product in place of road construction or road maintenance.

Asphalt should be applied at the rate of 1.5 to 2.5 gal./sq. yd. Use only as much asphalt as can be compacted in about 24 hours. Mixture, dry surfaces will absorb more asphalt than do wet surfaces. The dryer the surface, the lower the recommended asphalt rate.

Roads with higher traffic volumes usually require more asphalt for effective control than roads with lower traffic volumes. Roads treated with asphalt should be treated to require more asphalt than that has been treated previously. Initial seasonal treatments and one to two applications per year. Usually only a light blading is needed, preferably after a rainfall. Studies show that control measures can reduce dust by 30% to 75%.

Over the years, roads treated for the first time tend to require more asphalt for effective control than roads with lower traffic volumes. Roads treated for the first time have a higher traffic volume and are more susceptible to dust than roads with lower traffic volumes. Roads treated for the first time tend to require more asphalt for effective control than roads with lower traffic volumes.

Restrictions on asphalt cathodes and waste oil

Use asphalt as needed in Wisconsin. Used asphalt and rapid-drying asphalt may not be used for any other purpose (as a prime coat before asphalt maintenance treatment), and its use is prohibited for dust control. Hot asphalt is applied to road surfaces in 20 to 50 foot strips, and the remainder of the road is treated using a 50% to 75% asphalt application rate. These asphalt applications are made at the beginning of the season to treat cracks and improved long-term pavement condition.

Dust Control on Unpaved Roads


Road Dust Suppressants, Vermont Local Roads Program, 1513-1533, St. Michael’s College, Winooski, VT, 802/655-2000.


References and resources

Wisconsin Transportation Information Center. Road Dust Suppressants, Madison, WI, 1993.

Dust is a major source of air pollution and degrades unpaved road surfaces.

Wisconsin Transportation Bulletin • No. 13

Where and when to use dust control

Dust control measures can reasonably be costly for their short life span. It is best to apply them where they will be most effective and economical. Take into account cost of materials and application, traffic speed, daily traffic volume, road surface condition, and future plans for the road.

Dust control applications may be necessary.

Applying asphalt over dust control may make it more difficult to blade and regrade the road. Dust control applications may affect asphalt absorption. Better absorption may make it more difficult to blade and regrade the road. Dust control measures can be relatively costly for their short life span. It is best to apply them where they will be most effective and economical. Dust control applications may be necessary.

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