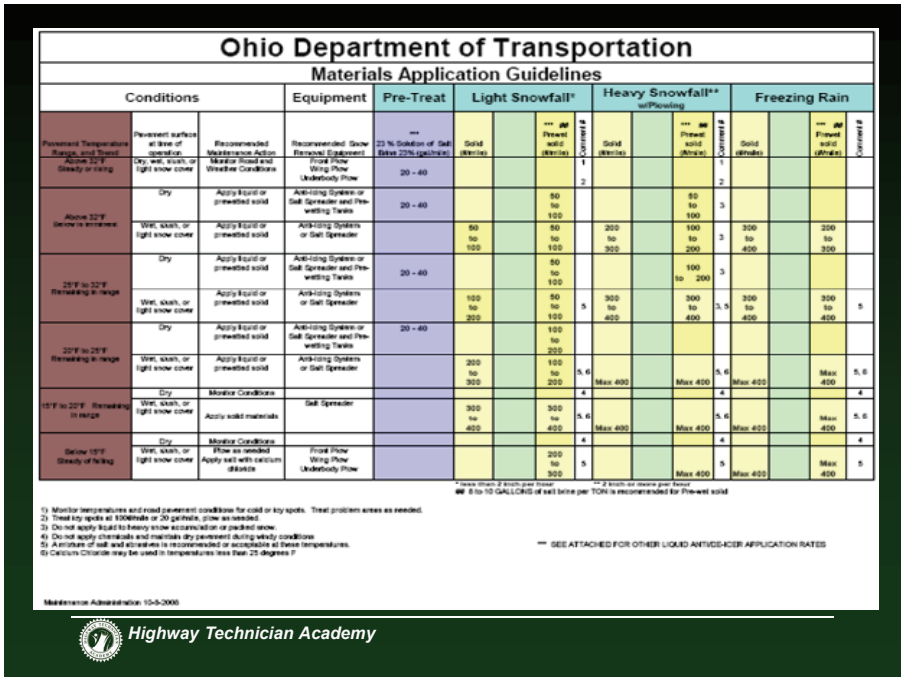


Ohio Department of Transportation

Materials Application Guidelines

Conditions			Equipment	Pre-Treat	Light Snowfall*				Heavy Snowfall** w/Plowing				Freezing Rain			
Pavement Temperature Range, and Trend	Pavement surface at time of operation	Recommended Maintenance Action	Recommended Snow Removal Equipment	*** 23 % Solution of Salt Brine 23% (gal/mile)	Solid (lbs/mi)		*** ## Prewet solid (lbs/mi)	Comment #	Solid (lbs/mi)		*** ## Prewet solid (lbs/mi)	Comment #	Solid (lbs/mi)		*** ## Prewet solid (lbs/mi)	Comment #
Above 32°F Steady or rising	Dry, wet, slush, or light snow cover	Monitor Road and Weather Conditions	Front Plow Wing Plow Underbody Plow	20 - 40				1 2				1 2				
Above 32°F Snow is imminent	Dry	Apply liquid or prewetted solid	Anti-Icing Systems or Salt Spreader and Pre-wetting Tanks	20 - 40			50 to 100				50 to 100	3				
	Wet, slush, or light snow cover	Apply liquid or prewetted solid	Anti-Icing Systems or Salt Spreader		50 to 100		50 to 100		200 to 300		100 to 200	3	300 to 400		200 to 300	
25°F to 32°F Remaining in range	Dry	Apply liquid or prewetted solid	Anti-Icing Systems or Salt Spreader and Pre-wetting Tanks	20 - 40			50 to 100				100 to 200	3				
	Wet, slush, or light snow cover	Apply liquid or prewetted solid	Anti-Icing Systems or Salt Spreader		100 to 200		50 to 100	5	300 to 400		300 to 400	3, 5	300 to 400		300 to 400	5
20°F to 25°F Remaining in range	Dry	Apply liquid or prewetted solid	Anti-Icing Systems or Salt Spreader and Pre-wetting Tanks	20 - 40			100 to 200									
	Wet, slush, or light snow cover	Apply liquid or prewetted solid	Anti-Icing Systems or Salt Spreader		200 to 300		100 to 200	5, 6	Max 400		Max 400	5, 6	Max 400		Max 400	5, 6
15°F to 20°F Remaining in range	Dry	Monitor Conditions						4				4				4
	Wet, slush, or light snow cover	Apply solid materials	Salt Spreader		300 to 400		300 to 400	5, 6	Max 400		Max 400	5, 6	Max 400		Max 400	5, 6
Below 15°F Steady or falling	Dry	Monitor Conditions						4				4				4
	Wet, slush, or light snow cover	Plow as needed Apply salt with calcium chloride	Front Plow Wing Plow Underbody Plow				200 to 300	5			Max 400	5	Max 400		Max 400	5

* less than 2 inch per hour ** 2 inch or more per hour

8 to 10 GALLONS of salt brine per TON is recommended for Pre-wet solid

1) Monitor temperatures and road pavement conditions for cold or icy spots. Treat problem areas as needed.
2) Treat icy spots at 100#/mile or 20 gal/mile, plow as needed.
3) Do not apply liquid to heavy snow accumulation or packed snow.
4) Do not apply chemicals and maintain dry pavement during windy conditions.
5) A mixture of salt and abrasives is recommended or acceptable at these temperatures.
6) Calcium Chloride may be used in temperatures less than 25 degrees F

*** SEE ATTACHED FOR OTHER LIQUID ANTI/DE-ICER APPLICATION RATES

Maintenance Administration 10-5-2006

Highway Technician Academy

2. Material Application Guidelines

a. Within ODOT those best practices have been documented on our Material Application Guidelines (MAG). See the Appendix for a copy.

b. Recommendations are detailed for guidance in achieving effective and efficient treatment types under various conditions. The MAG is illustrated below for three winter event conditions:

Exercise: Using the MAG

Given pavement temperatures that are in the range of 20°F to 25°F, with wet pavement surface and heavy snow fall, what is the recommended application rate if using pre-wetted solids? See the Appendix for a copy of the MAG.

3. Pre-Treatment Plan

a. Use

i. Anti-icing or pre-treating measures take place before snow falls and ice forms on the roadway.

a) These measures are intended to prevent frost or black-ice from forming on the surface of the pavement or to prevent the bond of frozen precipitation to the road surface.

ii. Additionally, pre-treatment of a pavement can provide critical response time to remote areas.

b. Advantages

i. The roadway surface is never "lost". Operators respond proactively.

ii. Anti-icing returns road surfaces to normal faster, resulting in fewer accidents and delays.

iii. Using a liquid jumpstarts the melting process because salt needs moisture to be effective.

iv. Brine doesn't bounce or blow off the road surface so material is more efficiently used.

v. If the storm is delayed, salt residue remains on the road ready to begin work when precipitation does occur.

vi. Crews can cover more territory by beginning treatment in advance of a storm.

vii. Increased efficiency results in use of less salt, minimizing environmental concerns.

c. Pre-Treatment Plan Document

i. Just as ODOT has documented best practices for material applications in the MAG, the Department has also documented operational guidelines for establishing a uniform anti-icing or "Pre-treatment Plan".

ii. The guidelines provide support for the commitment of anti-icing as well as practical guidance for daily operations. Here is an example of the Pre-treatment Plan:

OHIO DEPARTMENT OF TRANSPORTATION
SNOW & ICE
PRE-TREATMENT GUIDELINES

I. PURPOSE

Pre-treat Priority Routes and any identified trouble spots with liquid material for black ice, unexpected winter events, frost control, and forecasted winter events when conditions warrant.

II. PRE-TREATMENT LIQUIDS

Salt Brine or equivalent

III. APPLICATION

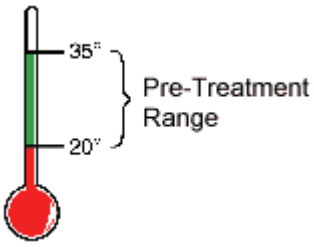
Pre-treat Priority Routes when conditions or forecast warrants. On higher volume roads where material may be tracked away by traffic, pre-treat as close to the onset of an event as possible.

IV. WHEN CONDITIONS WARRANT

A. Roadways are dry.
B. Rain is not forecasted for the next 24 hours.
C. Forecasted low temperature to fall within the range of 20 to 35 degrees Fahrenheit or within critical dew point range.
D. Sufficient time exists for pavement to dry before pavement temperature falls below 20 degrees Fahrenheit.
E. Blowing snow is not anticipated.
F. Visual observation indicates sufficient material residue does not exist.

V. IMPLEMENTATION

The Pre-Treatment Plan will begin immediately.



VI. SPECIAL CONDITIONS

A. Refer to the Material Application Guidelines.
B. "Black Ice" - Pavement temperature is equal to or predicted to be less than the due point temperature and is equal to or below 32 degrees Fahrenheit. When available, utilize RWIS data for pavement temperature, dew point temperature, etc.

Maintenance Administration 10-8-2008