



The Maryland Department of Transportation State Highway Administration (MDOT SHA) -- Winter Operations Facts and Figures 2017-2018 Winter Season

MDOT SHA maintains most interstate, U.S. and numbered state routes in Maryland. The Maryland Transportation Authority (MDTA) maintains Maryland's eight toll facilities. [Know Your Roads](http://www.mdot.maryland.gov/knowyourroads.html) is a great link to ascertain what agency maintains which roads-<http://www.mdot.maryland.gov/knowyourroads.html>.

Statewide Quantities of Materials Available at Start of 2017-2018 Winter Season

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|---|-------------------|
| • Rock salt in 95 salt Barns and domes | 380,000 tons |
| • Salt brine at 77 sites | 1,380,600 gallons |
| • Abrasives (statewide) – sand and crushed stone | 40,000 tons |
| • Magnesium chloride at 16 sites | 100,000 gallons |

Budget for winter 2017/2018: \$66 million

Lane Miles Maintained by MDOT SHA and MDTA: 17,143 miles
(Length of roadway times the number of lanes, including ramps)

Pieces of Equipment Available to Fight Winter Storms: Up To 2,700
(Including MDOT SHA, MDTA and contract forces)

Number of People Available to Fight Winter Storms: Up To 2,700
(Including MDOT SHA, MDTA and contract forces)

Winter Operations Expenditures and Salt Usage (5-year period)

<u>Fiscal Year</u>	<u>Expenditures</u>	<u>Salt Used</u>
FY 2013	\$65,240,773	205,171 tons
FY 2014	\$149,681,835	551,312 tons
FY 2015	\$116,338,268	339,649 tons
FY 2016	\$100,176,147	137,307 tons
FY 2017	\$53,679,482	91,494 tons

Almanac Data

Average Number of Winter Snow Storms per Year Since 2000 (Does not include the numerous maintenance shop activations for frost, black ice, and post-storm blowing and drifting snow)

Eastern Shore	6
Southern Maryland	6
Baltimore/Washington DC Metro Area	7
Western Maryland	28

<u>Date of Earliest Metro Area Winter Storm since 2000</u>	10/29/2011
<u>Date of Latest Metro Area Winter Storm since 2000</u>	4/9/2000

Strategies for Winter Operations

- **Anti-icing** - Proactive preventive winter maintenance strategy of applying materials prior to or at the onset of precipitation to prevent snow and from bonding to pavement. Anti-icing, or pre-treating, is salt brine that is applied to the pavement in advance of a snow storm, not rain or freezing rain, to prohibit the initial bonding of snow and ice from forming on roads. MDOT SHA is expanding its anti-icing operations to lessen overall salt usage throughout Maryland. Salt brine is produced at 15 SHA maintenance facilities. It is also transported to SHA satellite facilities and stored in large tanks for rapid deployment. Additionally, MDOT SHA will not apply salt brine in temperatures 20 degrees or colder because the application can freeze on contact.
- **Deicing** - Traditional winter maintenance strategy of breaking the snow/ice/pavement bond after it has occurred. Salt is the primary material used to treat pavement in snow or ice operations. In colder areas or for a thicker snow pack on the road, crews can pre-treat salt with magnesium chloride or “Liquid Mag” that is highly effective in colder temperatures.

Material Description and Uses

- **Salt** is the principal winter material used by MDOT SHA. It is effective at pavement temperatures of 20° F and above.
- **Salt brine** is a solution that is 27 percent salt and 73 percent water. MDOT SHA makes extensive use of this material. It has a freeze point of -6° F. and costs approximately 14.8 cents per gallon to produce and transport.
- **Magnesium chloride** (liquid mag) is a material used by MDOT SHA in deicing operations. The material has a freeze point of approximately -26° F. It is used in the colder regions of the state, primarily in the northern and western counties.
- **Abrasives** including sand and crushed stone are used to increase traction for motorists during storms, especially in the mountainous regions.

Technology Available for 2017-2018 Winter Season

In addition to its fleet of salt spreading/snow plowing dump trucks, MDOT SHA will deploy:

- **1 mobile Salt Brine Making Machine:** MDOT SHA purchased and is piloting the use of a mobile salt brine making machine in Garrett County.
- **550 truck-mounted saddle tanks:** These are used to pre-wet salt with salt brine or liquid magnesium at the point where salt is disbursed on highways. Pre-wetting salt helps it adhere to the pavement (reducing bounce and scatter waste), dilute into a brine solution quicker (making salt more effective) and work at lower temperatures
- **205 wing plows:** A wing plow is an additional plow mounted on the right side of a plow truck or grader. The extra plow is a force multiplier that enables crews to clear more snow from the road and shoulder in one pass, increasing efficiency.
- **14 truck/trailer-mounted liquid applicator spray tanks:** These units are used for anti-icing operations and liquid only routes (spraying salt brine on roads and bridges prior to precipitation to prevent snow and ice from bonding to the pavement).
- **15 salt brine makers:** These salt brine makers are strategically placed around the state to fill and replenish up to 77 different locations throughout Maryland. MDOT SHA is also piloting a portable brine maker, which will ease the burden of brine tank replenishment by being able to make the solution at multiple sites.

- **2 tow plows:** A tow plow is a separate plow that is towed behind an MDOT SHA salt/plow truck and will clear an extra highway travel lane. Tow plows are used in conjunction with snow plow trains (several trucks driving in tandem). The tow plows are helping enhance highway snow clearing operations with fewer passes and less trucks on the highway.
- **4 Dual-Wing plows:** MDOT SHA has four dual-wing plows in Allegany, Frederick, Garrett and Montgomery counties. The extra wing plow can clear a two-lane highway in one pass.
- **9 Quad Axle trucks:** MDOT SHA is employing trucks with enhanced material carrying capacity in order to treat longer sections of road. The enhanced capacity will allow the plow trucks to apply anti-icing material to more lane miles thus allowing better clearing results.
- **62 Non-Invasive Road Sensors:** Non-invasive sensors mounted to overhead signs or poles and can detect the thickness of water, snow or ice within 1 mm of accuracy. It also measures surface temperature, road condition, and freeze point/salt concentration on the road surface. This type of unit eliminates the need to install a sensor in the pavement.

[Contacting MDOT SHA](#)

Citizens can also log onto www.roads.maryland.gov and click "Contact us." There is an online submission form to report any issues pertaining to MDOT SHA-maintained highways for non-emergencies. Free, real-time local traveler information can be obtained logging onto www.md511.org.

