

Salt Spreading - Preparing for winter

It is important to properly prepare and be fully equipped for the sub-zero temperatures.

What is it?

In winter, slip hazards are one of the many concerns in terms of health and safety both for people and vehicles on and off site.

Local councils will grit paths and roads for the public but the roads leading up to and in the quarry fall out of their remit, requiring the site itself to take on the responsibility.

Why use salt?

Salt causes “freezing point depression”. In its pure state, water freezes at 0°C (32°F). By adding salt, that freezing point can be lowered, forcing the ice to melt and preventing the water from freezing or re-freezing.

However, it must be noted that salt alone cannot melt ice. It must first be combined with water to start the melting process. Fortunately, ice and snow are generally covered with a thin film of water. As salt touches this water, it starts to dissolve – subsequently lowering the freezing point and melting the ice surrounding it.

Average winter conditions make rock salt an efficient and relatively inexpensive de-icing product and much cheaper than bagged dry salt.

It is good practice to pro-actively spread salt prior to any cold weather front as the salt will prevent ice from forming in the first place – this will reduce the risk of slipping on pre-formed ice whilst attempted to spread salt.

Highway salt spreaders frequently work using a rate of 10g/m² (a normal, pre-frost application rate).

Why is it important to me?

Issues with the characteristics of salt

Salt is hygroscopic (it attracts and absorbs moisture from the air) meaning that it 'cakes' very easily. The flow characteristics are extremely variable, as a result it rarely remains free-flowing and often becomes compacted, lumpy and awkward to handle.

To evenly spread rock salt it must be physically delivered to a spreading mechanism, depending upon gravity alone is not enough as the salt will 'bridge' and stick.

Logic, a company who have manufactured British built salt-spreading products for many years, which Ace Plant supply nationally, have a solution. Their solution to the handling issues mentioned above is to employ a moving-floor conveyor incorporating a full-length agitator, which delivers salt to a spinning spreader disc. Due to the highly corrosive properties of salt, all systems on Logic's machines are capable of operating and lasting in this harsh and aggressive environment.

What salt spreading methods are available?

Towed - GDS (Ground Driven Spreader)



Logic's range of ground driven towed units are available in either 270L or 465L hopper capacity. The agitator, walking floor and spinning spreader disc are connected to a gear box and powered by the revolutions of the unit's axle – this can be turned on and off so that the appliance is not spreading all the time.

With the spreading mechanism disengaged the spreader can be towed at a maximum speed of 30mph making the unit ideal to travel short distances to and from the spreading area.

The GDS spreaders are very quick to deploy. A 50mm swivel ball hitch is fitted as standard, however a range of alternative hitches are available to suit the towing vehicle.

Being ground driven, the faster the forward speed, the greater the

spread width: where site speed restrictions are in place the GDS can be fitted with a high-speed gearbox to drive the spreading disc: the standard gearbox will spread salt from 1.5 metres at 5mph up to 10 metres at 15mph and the high-speed version will spread from 3 metres at 5mph up to 14 metres at 15mph.

With a full hopper and set up correctly a 465L GDS is able to treat 10km (over 6 miles) of roadway at a 6m spread width. Application rates can be adjusted from 10g - 80g/m² to allow heavier application rates (e.g. during snowfall conditions) and is adjusted by a simple sluice gate.

Optional extras for all models include a flashing beacon, a hopper cover and a quick attach disc shroud to restrict spread width to 1.5m without reducing forward speed.

3-point-linkage mounted

The 3-point-linkage mounted spreaders are typically rear mounted on an agricultural tractor but can also be fitted to Unimog's etc giving the application more versatility in terms of utilising existing fleet.

Manufactured from stainless steel the hopper capacities range from 0.35m³ (approx 450kg of salt) to 1.5m³ (approx 1900kg of salt).

These hydraulically driven units are complete with an agitator and a spinning disc and can distribute salt up to a width of 15m. Complete with an in-cab control box, these units allow the operator to remain safely in the cab of the machine and they give the operator greater control.

What's more, these machines can be taken into areas that could potentially be too rough for any ground driven unit.

Telehandler/Forklift Mounted



Mounted using fork tine pockets, this unit is secured with pins behind the tine uprights.

Powered by third service hydraulics the agitator, walking floor conveyor and spinning spreader disc are controlled

entirely from the inside of the cab of the machine again giving the operator greater safety and control.

Through this specific design for the UK market which primarily uses rock salt, it provides a reliable and efficient method of application.

The design provides a low filling height, a low centre of gravity and even distribution of weight throughout the spreading process, which is important for vehicle stability.

This unit is ideal for roads, quarries, industrial sites, car parks etc. etc. At a spreading rate of 10g/m², on a road 3m wide, 11km can be covered with one load.

NOTE: Fork lifts must have suitable auxiliary hydraulics for the spreader to function. Minimum hydraulic flow rate required is 25l/min.

De-mountable



The de-mountable spreader is an ideal solution to any site which does not have access to tractors or telehandlers or is too small for a towed unit.

Powered by an on-board petrol engine and a similar layout as the GDS unit, Logic's de-mountable units can be fitted in the bed of pick-up trucks or onto a flatbed trailer of any kind.

Mounting and securing the unit is enhanced by rubber pads under the chassis and is complete with integral rig mounts for tie down straps.

Like the telehandler mounted spreader – set at a rate of 10g/m², on a road 3m wide the demountable spreader will cover 11km with one load.

Where Next?

Institute of Quarrying

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Further information can be found via the careers section on the IQ website <https://www.quarrying.org/careers>

Ace Plant

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This factsheet was produced by Ace Plant in conjunction with the IQ.