

*Liquid Calcium Chloride Sales
2715 S. Huron Rd
Kawkawlin, MI 48631
989-684-5860*

LIQUIDOW™

The Perfect Solution

There is nothing complicated about LIQUIDOW. It is produced from one of Earth's simple yet valuable resources, natural brine deposits found underground. What happens once it leaves the ground is what makes it special.

Occidental Chemical Company (OxyChem) processes the brine into an odorless liquid called LIQUIDOW liquid calcium chloride. LIQUIDOW is a hygroscopic solution, which means it attracts moisture from the atmosphere and its surroundings.

LIQUIDOW is the perfect solution for many applications. Spread on unpaved roads, it keeps dust down. Applied to snowy and icy roads, it is a powerful deicer. Mixed with concrete, it accelerates setting time. LIQUIDOW offers you the highest levels of quality, performance, and cost effectiveness.

A LIQUIDOW distributor since 1969.

Rodney Gerard, Operations Manager

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Tyler Gerard, Sales Representative

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Visit us at www.liquidcalciumchloride.com

Additional materials

DOWFLAKE XTRA 87%

PELADOW 90%

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LIQUIDOW™ PUTS THE HEAT ON SNOW AND ICE

ANTI- ICING; THE PREVENTITIVE 'FIRST STEP' STRATEGY

Anti-icing is the newest snow and ice control practice. It was pioneered in Europe and involves preventing the formation of bonded snow and ice by timely applications of chemical freeze-point depressants. Relatively small amounts of a liquid chemical or wetted salt are applied before or immediately at the start of freezing precipitation this strategy either eliminates the need for further action or reduces the task of clearing roadways to bare pavement conditions. At the same time, it requires smaller chemical amounts than would be required under conventional deicing practices. As a result, anti-icing is quickly becoming a vital strategy for many of city, county, and state highway departments.

Recommended Practices

OxyChem supports the recommendations for anti-icing practice published by the Federal Highway Administration in its Manual of Practice for an Effective Anti-Icing Program: A Guide for Highway Winter Maintenance Personnel (FHWA-RD-95-202). The following guidelines are based on information in this manual.

The decision of when to use straight liquid calcium chloride or salt wetted with liquid calcium chloride will be based on a number of factors, including available equipment/services, onset of precipitation, type and amount of precipitation anticipated, air and pavement temperatures, trend of temperatures, expected sky conditions, wind, humidity, and timing of application. The usage guidelines and application rates given in the table at right are not to be considered as fixed values, but rather the middle of a range to be selected by an agency according to its local conditions and experience

The Texas Transportation Institute Study

An Economic Case for Anti-Icing

Created in 1950 as the research arm of the Texas Department of Transportation, the Texas Transportation Institute (TTI is now the largest university-based transportation research organization in the United States. TTI recently conducted a study based on the results of anti-icing evaluations under the Strategic Highway Research Program (SHRP). Here is an excerpt from a report on the TTI study published in FOCUS magazine in March, 1997.

"According to the study, highway agencies that adopt RWIS (road weather information system) technology and switch to an anti-icing strategy can expect to reduce the amount of time that equipment and crews must spend on the road and the amount of salt, sand, and other materials needed to keep pavements clear of ice and packed snow.

Slightly more than half of the U.S. highway network is located in states hit by at least five winter storms every year. If the state and local highway agencies in these states were to immediately begin adopting anti-icing strategies, they could cut winter maintenance costs by almost \$108 million per year. A more likely scenario, however, would be for implementation to begin gradually, with half or three-quarters of all highway agencies switching to anti-icing techniques over the next 20 years. Depending on the pace of implementation, TTI projects the total agency savings could range between \$55 million and \$81 million per year?

"But even larger benefits will accrue to motorists who travel during winter storms. Because anti-icing strategies leave roads wet air slushy, instead of icy or snowpacked, TTI estimates that the number of accidents will drop dramatically, potentially saving highway users between \$229 million and \$447 million per year"

Application Rate: one-half oz to one oz per sq. yard (25-40 gallons/acre)

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PREWETTING SALT WITH LIQUIDOW

THE LIMITATIONS OF PLAIN ROCK SALT

For cost-effective deicing when temperatures are at or near freezing, you just can't beat plain rock salt. But when the temperature drops below 20°-25°F, salt's effectiveness diminishes rapidly.

That's because salt must first turn into a solution, or brine, to penetrate snow and ice. To form a brine, salt must come into direct contact with moisture. Naturally, the further temperatures drop below 32° F, the less free liquid there is available to dissolve the salt in a reasonable amount of time.

As the temperature drops, so does the ability of untreated rock salt to melt a significant amount of ice in a given period of time. This limitation cannot be totally overcome by increasing application rates; although performance increases somewhat by creating more brine, the speed and temperature range limitations of plain rock salt persist.

The sluggishness of untreated salt at low temperatures can lead to other problems. While salt truck drivers wait for salt to begin working, traffic and wind scatter salt particles off the road. Also, drivers tend to re-spread soon after the first application because they don't see much melting action. This dramatically increases the cost of material, labor and equipment. In addition, hazardous conditions last longer on main commuter routes. Therefore the clearing of less-critical roads is delayed, and timeliness of service to suburban residents suffers.

This is not to say that rock salt is a poor solution to the problem of slippery, hazardous roadways. Quite the contrary. For decades, no other methods, chemical or mechanical, have proven superior until the pre wetting concept was developed.

ADVANTAGES OF PREWETTING SALT WITH LIQUIDOW

Let's examine how wetting salt with LIQUIDOW liquid calcium chloride solution overcomes the limitations of rock salt.

First, LIQUIDOW provides moisture which permits salt to become brine quickly.

Second, LIQUIDOW itself is a powerful deicer. Calcium chloride solutions easily dissolve snow and ice at low temperatures. Since it's already a liquid, LIQUIDOW begins undercutting immediately on contact with the pavement, significantly enhancing the entire deicing process.

Thus, when wetted, salt works faster within its normal operating range. And wetted salt can work effectively at lower temperatures ... all the way down to 0° F. Tests by an independent research organization have shown that 100 lbs. of rock salt wetted with LIQUIDOW calcium chloride has the equivalent ice melting capacity of 110-125 lbs. of plain rock salt, depending on temperature and time elapsed after deicer application. This means rock salt wetted with LIQUIDOW calcium chloride is 10-25% more efficient, which can mean a significant savings in product used and dollars spent

In addition to laboratory data, there's the firsthand experience of many local governments. Surveys we've conducted indicate that most highway maintenance personnel believe the addition of LIQUIDOW Liquid Calcium Chloride enhances rock salt's effectiveness considerably.

Application Rate: 8-10 gallons per ton

With a growing body of scientific data and case history reports supporting the performance of pre wetting, the only question remaining is, "Can the added cost of pre wetting with LIQUIDOW be offset with equal or greater savings?"

JUSTIFYING THE COST OF LIQUIDOW

To answer the cost question, it's necessary to balance the anticipated investment in a salt-wetting program against the potential savings it can offer in the costs of both material and labor.

MATERIAL COSTS - At typical addition rates of 8-15 gallons per ton of rock salt, a solution of LIQUIDOW calcium chloride will add about 10-15% to the cost of the salt, depending on your location relative to shipping points for salt and LIQUIDOW.

But there's another factor to consider: wetted salt is much less likely to "bounce and scatter" when spread. In fact, research conducted by the State of Michigan found that 30% of plain salt is lost when spread and another 24% ends up outside the center third of the road, where it is less driver-height level effective.

A Public Technology report concluded that 30-50% less wetted salt could be spread for the same effectiveness because of reduced waste and improved performance. Indeed, just the 26% reduction in salt loss observed in the Michigan research would not only recapture the cost of LIQUIDOW but actually reduce costs as well.

Since wetted salt is effective at lower temperatures, however, you might spread it at temperatures when only abrasives would have been used before. If so, you might want to assume an even more conservative estimate of 10% less salt per road mile. Considering that abrasives are spread at much higher rates than salt and require additional time and cost for the spreading effort, reducing their use could also help to offset the small added cost of LIQUIDOW.

LABOR COSTS -Achieving bare pavement conditions with less deicer per road mile and fewer repeat-spreading and plowing runs means your road crews can treat more road miles with each truckload during each work shift. In short, as productivity increases, the need to pay overtime charges decreases.

APPLICATION OPTIONS: AFFORDABLE AND EFFICIENT

Three well-established application methods are being used separately or in combination to the advantage of many street and highway departments. This overview will help you determine the method(s) most appropriate for your specific situation.

PREWETTING: TRUCKLOAD APPLICATION

The most common method in use today is some form of truckload application. In one version of such a system, the truck, loaded with dry salt, is parked beneath a time-controlled overhead spray bar system. By pushing a timer button, the driver activates a pump which sprays the salt with a 32% concentration of LIQUIDOW Liquid Calcium Chloride at an average rate of 12 gallons per ton.

Many variations on this system are possible. In one, liquid is applied to each bucketful of salt as it's placed in the truck. In another, LIQUIDOW is sprayed on the salt as it travels up a conveyor belt to the truck.

Whichever variation is used, this method offers the advantage of a very modest investment in equipment. The basic components are a storage tank, a centrifugal pump, piping, a metering device, and wiring. Agencies can minimize these costs considerably by using components already on hand.

Application Rate: 8-10 gallons per ton

PREWETTING: TRUCK-MOUNTED APPLICATION - Some agencies prefer a truck-mounted application system. These on-board wetting systems typically consist of a pump and hydraulic motor which direct the calcium chloride solution to a spray bar unit mounted above the spreader discharge chute.

Tanks located alongside the hopper box store the LIQUIDOW. The operator controls the liquid application from the truck cab. Most on-board systems are designed by their owners. However, those in the market for new equipment can purchase spreader units with liquid application systems already installed.

STOCKPILE WETTING APPLICATION - For those who wish to adopt a wetted salt program without equipment expenditures, a new application technique, stockpile wetting, offers an economical alternative.

Stockpile wetting requires no equipment at all. Rather, it is a service provided by authorized Dow distributors.

Stockpile wetting is performed in the late fall or early winter when the temperature of salt stockpiles drops to approximately 30° F. A heated solution of LIQUIDOW SW-42% Liquid Calcium Chloride is pumped into the pile at approximately 1-2 foot intervals using a special probe that penetrates into the pile. The application rate is 8 gallons of LIQUIDOW SW-42% per ton of salt. The heated LIQUIDOW flows through the stockpile, coating the salt with calcium chloride. As the solution is dispersed in the cool stockpile, its temperature drops rapidly. At 69° F, crystallization of the LIQUIDOW SW-42% begins to occur. Deeper into the stockpile, crystal growth continues to advance until the stockpile is a mixture of calcium chloride crystals and rock salt. As long as the stockpile temperature remains below 69° F, runoff of the solution should not be expected. Yet the wetted salt remains manageable even in the coldest weather. More important, you are ready to go with the deicer combination that improves your snow fighting program significantly.

It's important to note several points about wetted stockpiles. Only LIQUIDOW SW-42% Liquid Calcium Chloride should be used for stockpile wetting. Weaker solutions will run through the stockpile. That's because a 42% concentration of liquid calcium chloride crystallizes at 69° F, so as long as the wetted stockpile remains below this temperature, LIQUIDOW at 42% concentration added at the recommended rate of 8 gallons per ton of salt, will be completely crystallized in the stockpile. However, concentrations between 32% and 38% crystallized at much lower temperatures, and thus would partially run through the stockpile even at temperatures as low as 30° F.

Also, all wetted stockpiles must be stored on impervious asphalt or concrete slabs, and covered to prevent dilution and runoff caused by rain or snow. Users are also urged to follow the recommendations for salt storage outlined in the "Sensible Salting Program" suggested by the Salt Institute, with guidelines for salt storage and handling, equipment management, and employee training.

Application Rate: 10-15 gallons per ton

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TREATING ABRASIVES WITH LIQUIDOW

WHY TREAT ABRASIVES AT ALL? - During many winter storm conditions, abrasives become one of the few effective materials for keeping roads safe for travel. It follows that they must be quickly available at all times to ease these severe conditions when plowing cannot keep pace and the use of chemical deicers alone is not practical.

The key to fast response with abrasives is keeping them easy to handle. Unfortunately, abrasives tend to freeze and become most difficult to mix, store and handle during the extreme conditions they are intended to remedy. Mixing sand, cinders and aggregates with chemical deicers prevents moisture in the abrasive mix from freezing so these materials remain loose, manageable and instantly available. Road crews are able to load quickly and easily from free-flowing stockpiles. Equipment works easily and efficiently without clogging or added strain.

WHY CALCIUM CHLORIDE? - Calcium chloride is the preferred chemical deicer for treatment of abrasives for one simple reason; it gives protection from freezing at much lower temperatures than any other. When either the dry or liquid forms of calcium chloride are applied as recommended, they can be expected to perform at temperatures down to -20°F, and lower, depending on the type of abrasive and its water content. Calcium chloride also melts from 12%-56% more ice than salt and is able to begin melting action much faster at lower temperatures. Sodium chloride (rock salt) cannot give protection at these very low temperatures, and it creates difficult handling and mixing problems.

BY-PRODUCT BENEFITS - Besides keeping abrasives quickly and easily available, calcium chloride also makes these materials more effective in two related ways.

First, because the abrasive particles are coated with the most potent chemical deicer available, they imbed into hard-packed snow and ice immediately. The abrasive becomes the instant traction aid it's meant to be. Under many conditions, the treated particles even bore through snow and ice to create a "honeycomb" effect. This makes blading to bare pavement possible more quickly.

Second, since each particle imbeds itself far more quickly, there's less chance of material being lost due to "whipping" by passing traffic. The net effect is a reduction of waste during winter and less unneeded cleanup in spring. Total dollar savings can be dramatic as a direct result.

Application Rate: 10-12 gallons per ton

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VENDORS (tanks, pumps, accessories, components)

Fertilizer Dealer Supply	517-625-4716	937-693-3888 (OH)
Certified Power	419-873-7411	
GVM Snow Equipment Sales	800-377-2522	