

A Better Toolbox for Winter Maintenance

Determined as always to succeed in the corporate mission conferred by the ministère des Transports, i.e., to maintain THE ROAD NETWORK'S SAFETY AND FLUIDITY within the framework of sustainable development and environmental protection, the Sherbrooke service centre team has been considering how best to use its winter maintenance equipment and techniques.

In winter 2008-2009, the Sherbrooke service centre launched an experimental study of a new de-icing material that, according to technical specifications, would be more effective and ecological than conventional materials. This new product is called BLEU FUZION and is made of:

- Salt dampened with 30% magnesium chloride and an additive called Caliber, a corn derivative. This additive increases the magnesium's viscosity and makes the liquid stick better to the salt;
- A corrosion inhibitor (92% less corrosive than salt) that speeds up the salt's reaction time and makes it more effective at colder temperatures than conventional salt, i.e., up to -20°C.

BLEU FUZION melts more ice at temperatures of about -12°C, thus significantly increasing the margin of manoeuvrability for de-icing strategies.

To ensure the success of this experiment, the project team decided to put into play the following winning conditions:

- call upon the Cima firm's project management expertise;
- take advantage of the support offered by the suppliers Sebcî and Innovative;
- dispense training to all concerned operational personnel at the start of the experimental study. The training was provided to all participants in the production chain: operations managers, technicians, team leaders and operators;
- hold workshops throughout the season to discuss findings and issues, in order to determine if corrections are necessary.

Considering that this was an experimental study, it was decided to dampen the salt on site at each salt delivery made by Sebcî. Apart from a few initial adjustments, this additional dampening step did not lead to any operational constraint or significant delay in normal winter maintenance.

Accordingly, in the first year of experimentation, more than 6,000 tonnes of BLEU FUZION salt were applied. The material was applied under all weather and surface conditions (freezing rain, snow, cold weather, surface temperature of 2°C to -20°C, winter storm conditions...).

Cima's report contains promising observations and findings. The main findings are:

- BLEU FUZION is more homogenous and requires less handling during loading operations, because the added liquid prevents reserve salt from caking due to humidity;
- The road salt's bluish colour is appreciated by operators because it enables them to view the de-icing material spread on the pavement. In addition, operators feel that road users will be less critical of spreading strategies because they can actually see traces of the road salt;
- As a pre-dampened material, BLEU FUZION disperses less beyond the road when it is spread. De-icing teams thus observe a significant reduction in salt losses due to dispersion beyond the road. This feature even led a team leader to reduce coverage rates depending on the situations;
- Another consequence of the reduction in salt losses due to dispersion is that road shoulders had to be de-iced on a few occasions, which had never occurred with conventional road salt. This finding is more evidence that the concentrated action of BLEU FUZION meets the required levels of service in de-icing the pavement;
- The project team observed very interesting cold-weather performances. For instance, after the late afternoon rush hour in cold weather, the team successfully tested a cold-weather de-icing strategy. The required level of service was attained without difficulty, which would have been impossible with conventional road salt at the end of the day.

In the light of these encouraging findings, the Estrie management decided to pursue the experimentation to consolidate these new practices. It's too early to talk about budget savings, but the promising findings demonstrate that regional managers will soon have a complementary tool for daily winter maintenance management.