New Strategies for Winter Maintenance in Germany

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0. CONTENT

1. PRECACE

Salt is an essential part of an effective winter maintenance

Pre-Wetted Salt spreading is standard on roads with strong and fast traffic in Germany

But still questions for the best time and the right density for spreading

Last years: intensive research and development concerning spreading technology and strategy
→ New Guidelines for practical snow removal and spreading

2. PREVENTIVE SALTING

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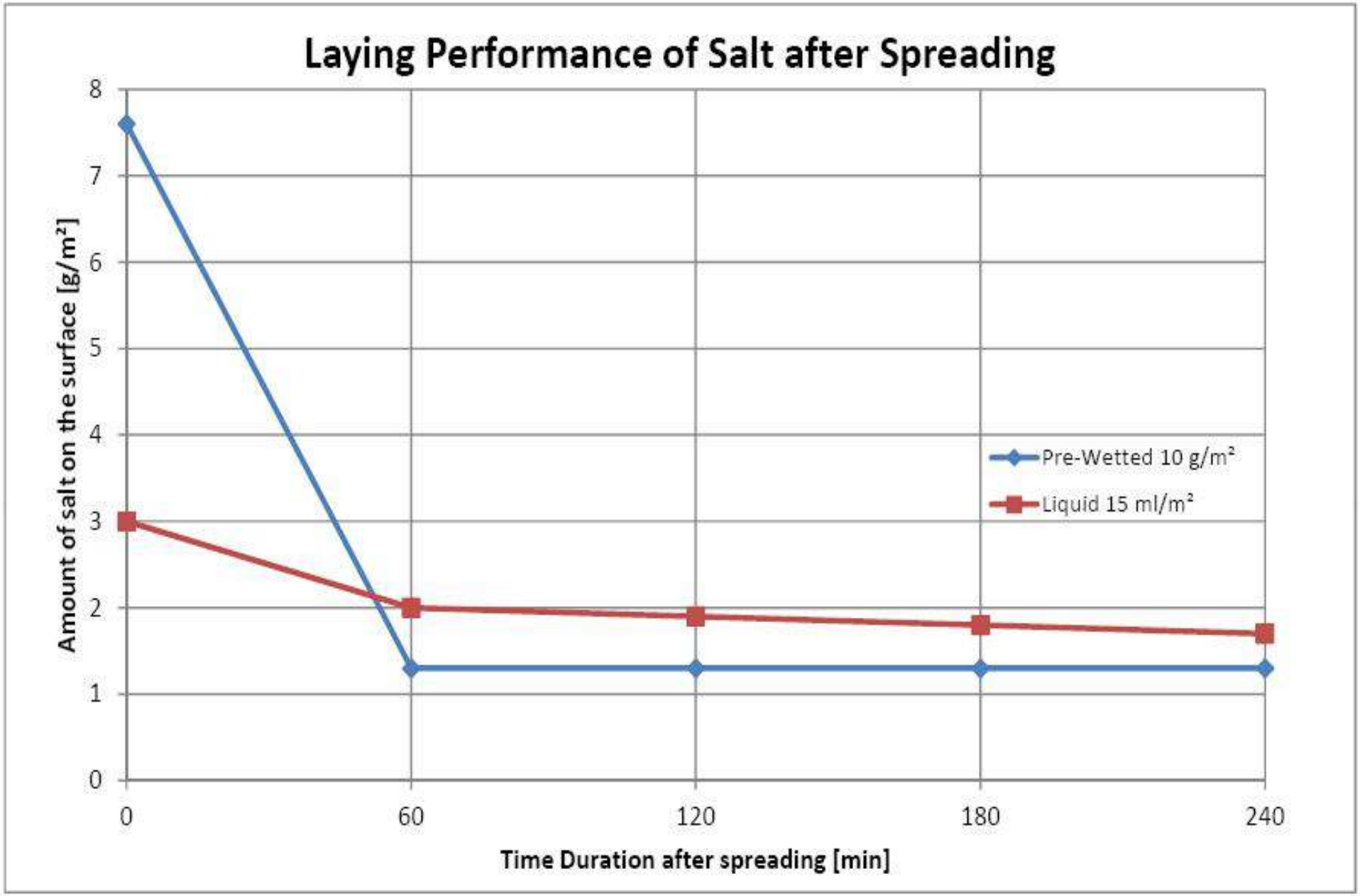
In Germany often temperatures around 0°C with quick changes between freezing and thawing
Punctually and unexpected slipperiness is the most dangerous surface condition
In former times preventive spreading was not allowed or not welcome because weather forecasts and spreading techniques were not sufficient

But now we have the know-how, the weather information and the spreading techniques to spread the right density at the best time

Advantages of preventive spreading are

- better traffic safety and traffic flow (avoid accidents and congestions)
- saving of salt because only half of the amount of salt is needed (this leads to higher economy and better environment)
- in Germany there is a legal duty for preventive spreading when the situation is clear

3. LAYING PERFORMANCE OF SALT ON THE ROAD



3. LAYING PERFORMANCE OF SALT ON THE ROAD

With more preventive spreading the laying performance of salt on the roads becomes more important

In the last years pre-wetted spreading was used for preventive actions

But new research projects show there is a big loss of salt in a short time

These researches show that liquid spreading has a much better performance on the road concerning remaining salt amounts

This leads to the conclusion that liquid spreading is the best method for preventive spreading leading to big savings of salt

But liquid spreading only is recommended down to -6 °C

4. LIQUID SPREADING

Andorra
2014
ARPER - PYARE

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Winterdienst
ThermoMAT
iMS
KÜPPER WEISSER
KÜPPER WEISSER
OptiWet
Mercedes-Benz
WEISSER


MS
KUPPER WEISSER
Autobahndirektion Südbayern
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ASSALONI.COM
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5. SPREADING DURING SNOWFALL

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It is an old experience tha it is useful to spread salt in the falling snow to hold the snow loose and better removable^.

Up to now we recommended for this action maximum densities of 30 or 40 g/m².

New experiences and research analysis show that this is not necessary.

These amounts do not suffice to melt the snow, because even for 1 cm snow we would need up to 100 g/m²

This leads to the new recommendations:

- preventive spreading before snowfall to have a salt film on the surface
- spreading of small amounts (10 … 15 gm/²) during snowfall
- after snowfall intensive mechanical snow removal and after this spreading with high density to melt the remaining snow

Good snow removal leads to saving of salt for melting of the residual snow

6. NEW RECOMMENDATIONS FOR PRACTICAL WINTER MAINTENANCE

These new findings and experiences lead to renewed guidelines with new recommendations for practical winter maintenance in Germany including

- more preventive spreading (at every time when possible)
- liquid spreading for preventive actions
- new recommendations for snow fall actions

For each situation there are recommendations for the maintenance actions and the spreading density following the expected surface temperature

Expected Surface Condition	Recommended Winter Maintenance Action	Recommended Spreading Density ***
Hoarfrost	Preventive Spreading** - preferential Liquid Spreading* - otherwise Pre-Wetted Salt	 10 – 15 ml/m² 5 – 15 g/m²
Light Black Ice (freezing moisture)	Preventive Spreading** - preferential Liquid Spreading* - otherwise Pre-Wetted Salt	 10 – 25 ml/m² 5 – 30 g/m²
Black Ice (freezing wetness)	Preventive Spreading** - Pre-Wetted Salt or Liquid Spreading*	 15 – 40 g/m² (20 – 50 ml/m²)
Freezing Rain (black ice)	If possible Preventive Spreading** - preferential Liquid Spreading* - otherwise Pre-Wetted Salt	 40 – 60 ml/m² 30 – 40 g/m²
Snow Fall (packed snow)	1. Where possible Preventive Spreading with Liquid Spreading* or Pre-Wetted Salt 2. During Snow Fall Snow Removal and Spreading of Pre-Wetted Salt with low spreading density 3. After Snow Fall aggressive Removal of Snow and Spreading with Pre-Wetted Salt	15 – 30 ml/m² (10 – 20 g/m²) 10 – 15 g/m² 20 – 40 g/m²
	* *Liquid Spreading only at temperatures above -6°C, at lower temperatures only Pre-Wetted Salt* ** *if preventive salting was not possible, existing slipperiness must be eliminated with Pre-Wetted Salt with double spreading density*	*** *low values for temperatures tight below 0°C, higher values for lower temperatures*

Thank You …

… for your attendance