

# RECOMMENDATIONS FOR THE CORRECT SPREADING OF MELTING SALT SOLUTIONS

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# 1. INTRODUCTION

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What is the problem?

During preventive application of pre-wetted salt on heavily used roads, there is a large loss of salt within a few minutes!



## 2. Task definition

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The following questions were to be answered:

1.How great are the losses of salt?

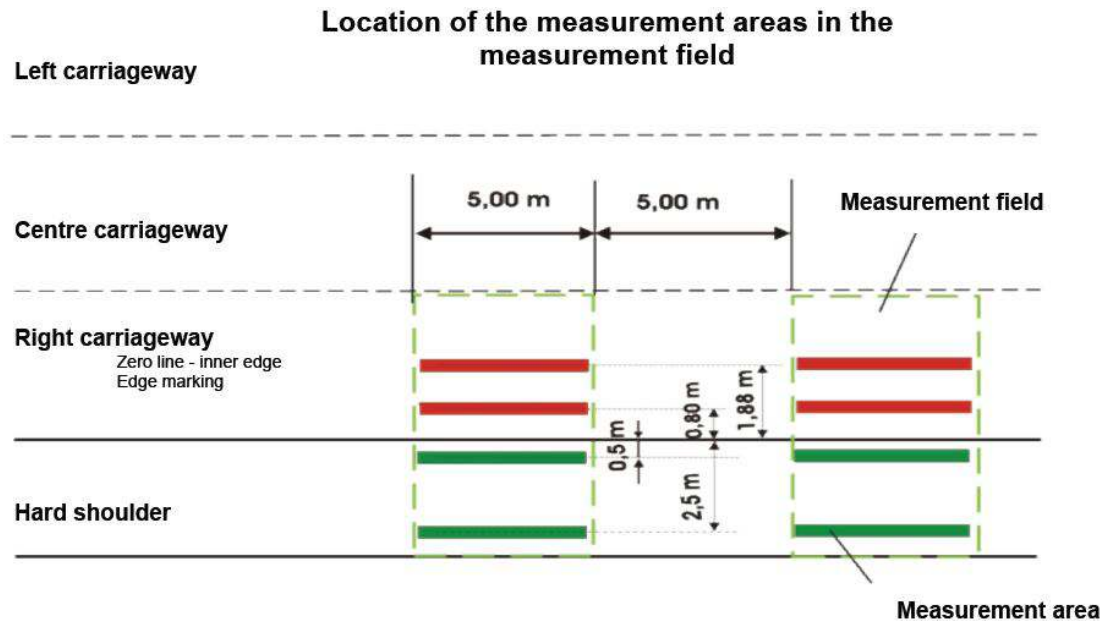
1.Is the loss of salt less when using brine?

1.What dosage is required when using brine?

### 3. Research methodology

#### 3.1 Basis for measurements

The quantity of salt on the carriageway has been measured under the influence of traffic at fixed intervals. The measurement areas were arranged on the right-hand side lane both between the wheel tracks and in the right wheel track.



### 3. Research methodology

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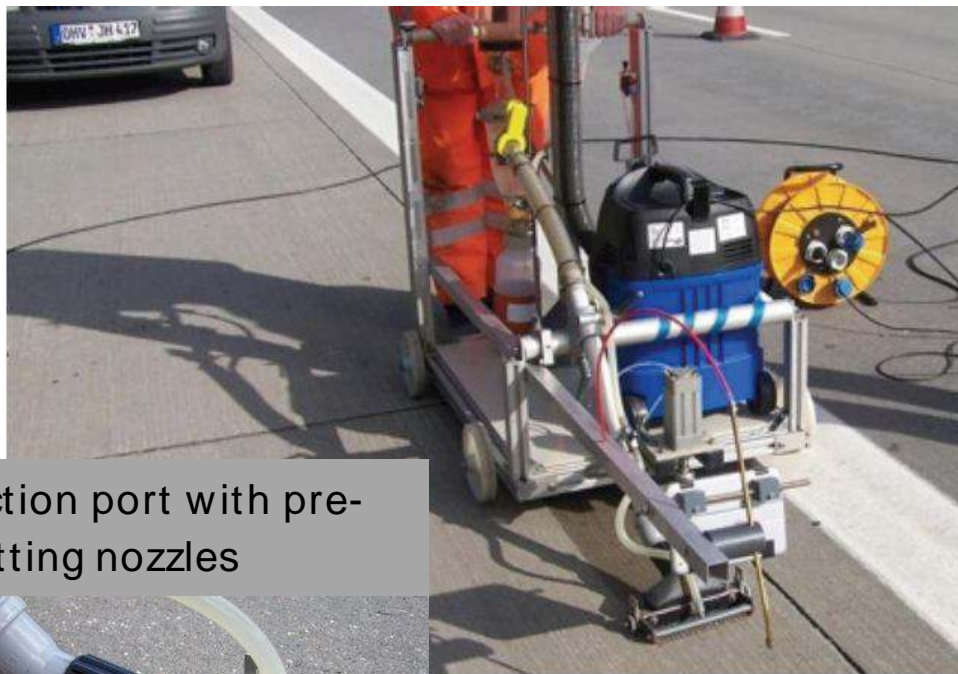
#### 3.2 Measurement cycles

1. *Zero measurement before application of pre-wetted salt or brine*
2. *Measurement directly following application of pre-wetted salt or brine*
3. *Measurement following one hour of traffic impact*
4. *Measurement after four hours of traffic impact*
5. *Measurement after 20-22 hours of traffic impact.*

### 3. Research methodology

#### 3.3 Measurement procedure

The quantity of salt on the road surface has been measured using a flush-suction device. Using this method of measurement, there is also a high degree of accuracy if there is undissolved salt remaining on the road surface.



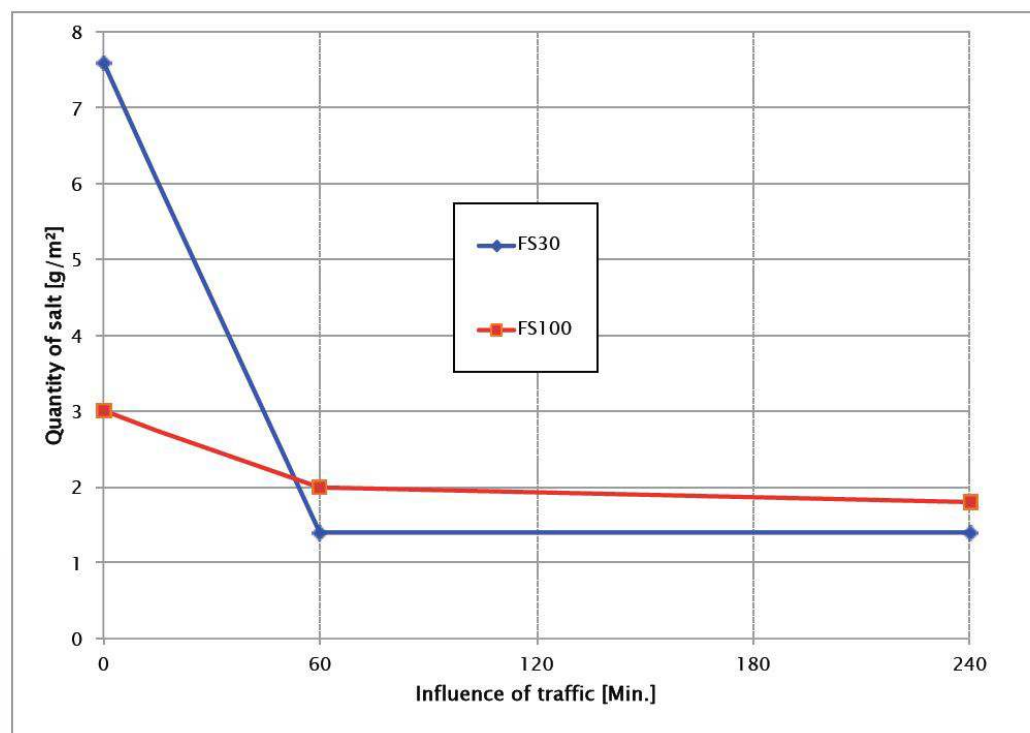
Suction port with pre-wetting nozzles



## 4. Results of investigation

### 4.1 Comparison of lay time

Salt that has been applied as brine for prevention (FS100) has a significantly longer lay time than pre-wetted salt (FS30)





## 4. Results of investigation

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### 4.2 Saving potential

- With preventative spreading, approximately 60% spreading material can be saved through the use of FS 100 technology.
- Environmental impacts are significantly reduced in relation to winter road services.

## 5. Consequences in practice

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### 5.1 Benefits

- The brine technology (FS 100) has benefits compared to the FS 30 technology particularly in relation to preventative applications.
- This then provides a significantly longer period for preventative deployments prior to forecast icy conditions.
- Less melting substance is required

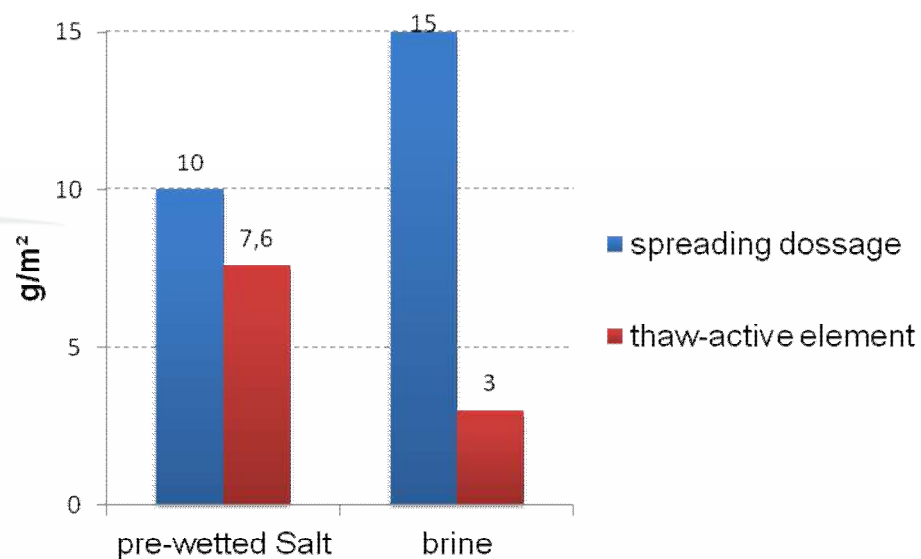
## 5. Consequences in practice

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### 5.2 Dosing of brine

According to current results the recommended dosage of brine is 1.5 times the spreading dosage of FS30 for preventative applications.

For example, this means that instead of 10 g/m<sup>2</sup> of FS30, 15 g/m<sup>2</sup> of FS 100 is spread.



## 5. Consequences in practice

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### 5.3 New technology for the application of brine

Example 1: Aebi-Schmidt liquid spreading machine with a set spray density of 40 g/m<sup>2</sup> and spray width of 11.25 m



## 5. Consequences in practice

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### 5.3 New technology for the application of brine

Example 2: Example 2: Epoke liquid spreader with a set spray density of 20 ml/m<sup>2</sup> and spray width of 11.00 m



## 5. Consequences in practice

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### 5.3 New technology for the application of brine

Example 3: Combination spreading machine from Küpper-Weisser for 10.000 l brine and 5 cbm dry salt



## 5. Consequences in practice

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### 5.4 Conclusion

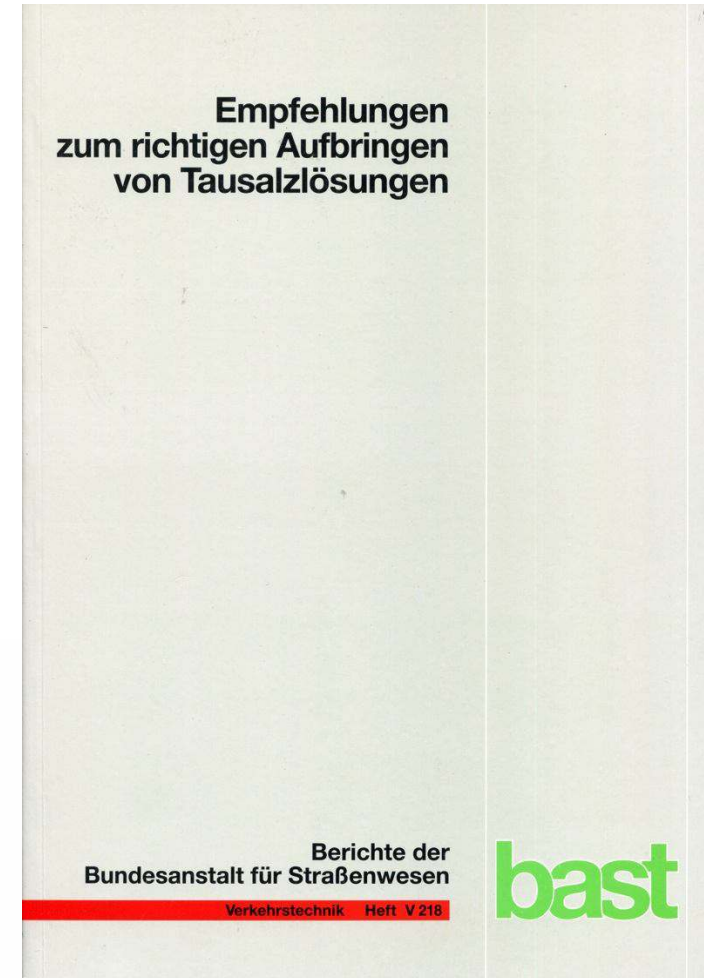
- In the practical application, there is very positive experience using the FS100
- Thus, in nearly all German states introduction of the FS100 technology has started.

## 6. Report

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A report containing the research data is available, in German, with an English abstract:

Hausmann, G.,  
Empfehlungen zum richtigen  
Aufbringen von Tausalzlösungen,  
Berichte der Bundesanstalt für  
Straßenwesen,  
Heft V 218,  
Bergisch Gladbach, Dezember 2012





# Thank you for your interest!

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