

Identify material or blend/mixture (after preliminary cost evaluation in terms of availability & relative cost to NaCl) and run tests below compared to NaCl

Laboratory tests for deicer performance^a:

- DSC Thermogram Test
- Modified SHRP Ice Melting Test

Favorable?

Yes

No

End

Laboratory tests for deicer environmental impact:

- BOD₅ at 20°C^b and modified to be run at 2°C
- Acute and chronic toxicity bioassays using 3 species (alga, invertebrate, fish) in eutectic solutions^c

Favorable?

Yes

No

End

Note: Research forthcoming on more realistic exposure profile testing methods

Laboratory tests for deicer infrastructure impact^d:

- SHRP H205.8 Test (freeze/thaw impact on concrete)
- PNS/NACE Corrosion Test
- Corrosivity Test using electrochemical techniques

Favorable?

Yes

No

End

Field tests for deicer performance^e:

- Simple Garage Test
- Single Roadway Test
- Side-by-Side Test

Favorable?

Yes

No

End

Summarize information relative to NaCl results

Evaluate final cost effectiveness considering results from above relative to NaCl

^a<https://clearroads.org/project/development-of-standardized-test-procedures-for-evaluating-deicing-chemicals/>

^bhttps://www.nemi.gov/methods/method_summary/5715/

^c<https://clearroads.org/project/11-02/>

^dhttps://www.codot.gov/programs/research/pdfs/2009/antiicing.pdf/at_download/file

^e<http://clearroads.org/project/determining-effectiveness-of-deicing-materials-and-procedures/>