Eco-Binder F dust control tests

City of Helsinki and VTI Sweden

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Helsinki street dust control tests

- Street dust control tests with Eco-Binder F were performed during springtime
- Application rate was 28 g/m2 with a dilution ratio of 1:5
- Two application methods were tested: only applying the solutions to the kerbside and between lanes, where most of the dust is located and also applying the solution on the entire road surface
- PM10 levels were monitored in the area in the following days
- Chart shows the relatice reduction in PM10 levels
- Effectiveness was similar to calcium chloride

Treatment	1 day after treatment	2 days after	3 days after	4 day after	5 days after
Center & kerbside	40 % reduction	20 %	No effect	No effect	No effect
Whole area	90 % reduction	60 %	30 %	No effect	No effect

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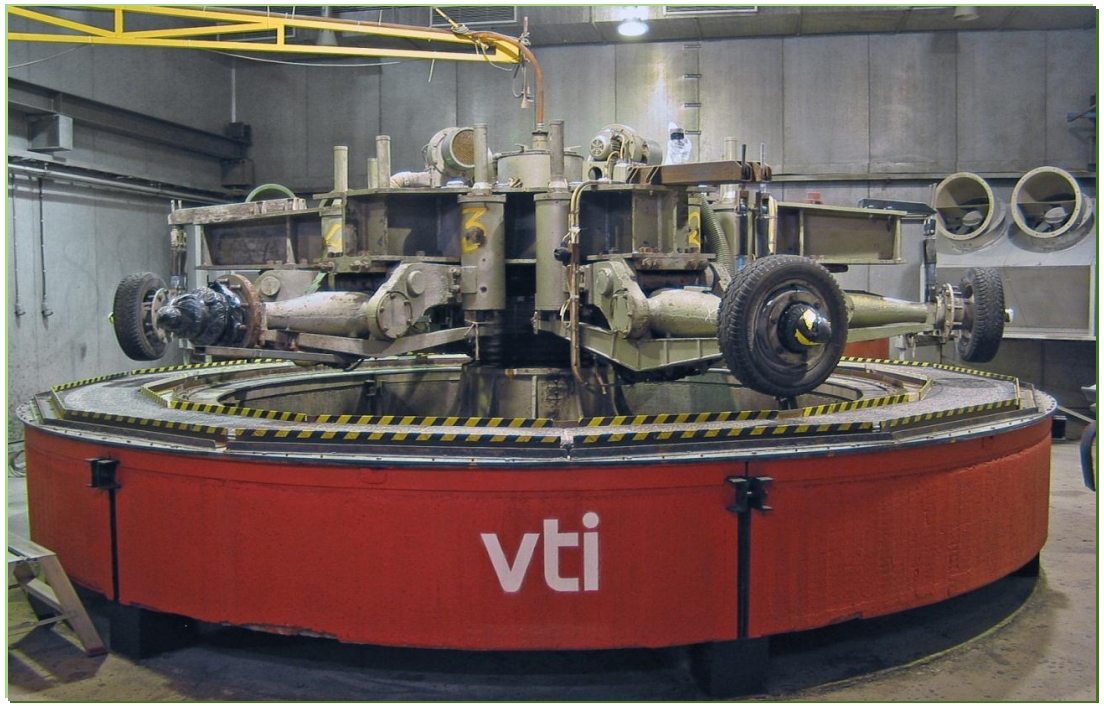
VTI test method



- Equipment consists of four tires rolling on an asphalt surface
- PM10 levels in the room are monitored
- The road simulator is accelerated to 30 km/h. When the PM10 concentration in the room has adjusted to this source, the dust binder is applied.
- In the application moment the speed is temporarily decreased to 15 km/h. The total time for the application is less than two minutes. The method has been adjusted so that one turn of the simulator applies 5 g solution/m2.
- The method results in two different parameters that can be compared with measurements of source and concentrations in ambient air. The first is the maximum decrease in the emission factor and the second is the duration of the dust binder effect on the source.

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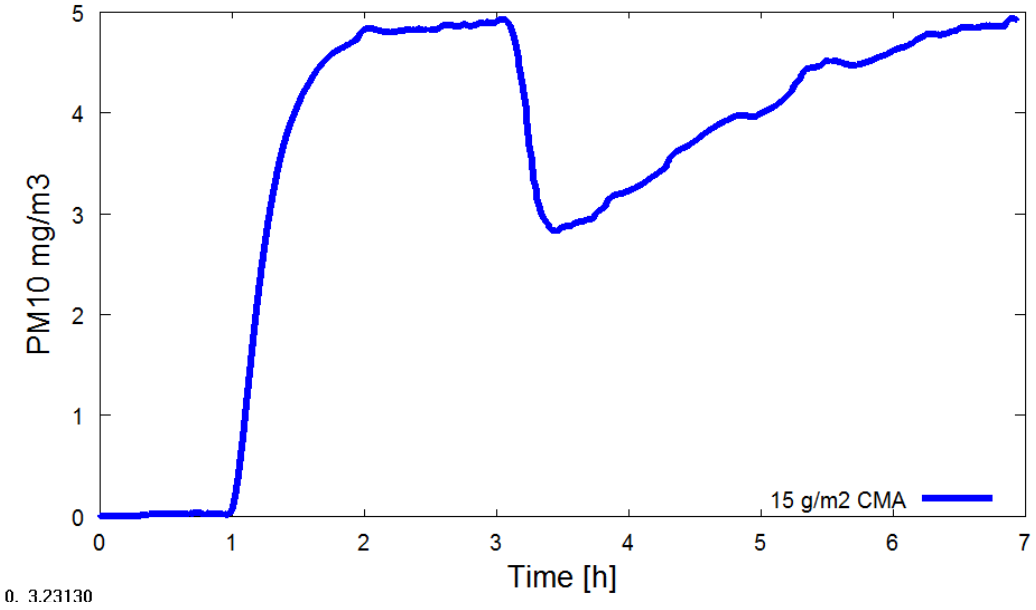
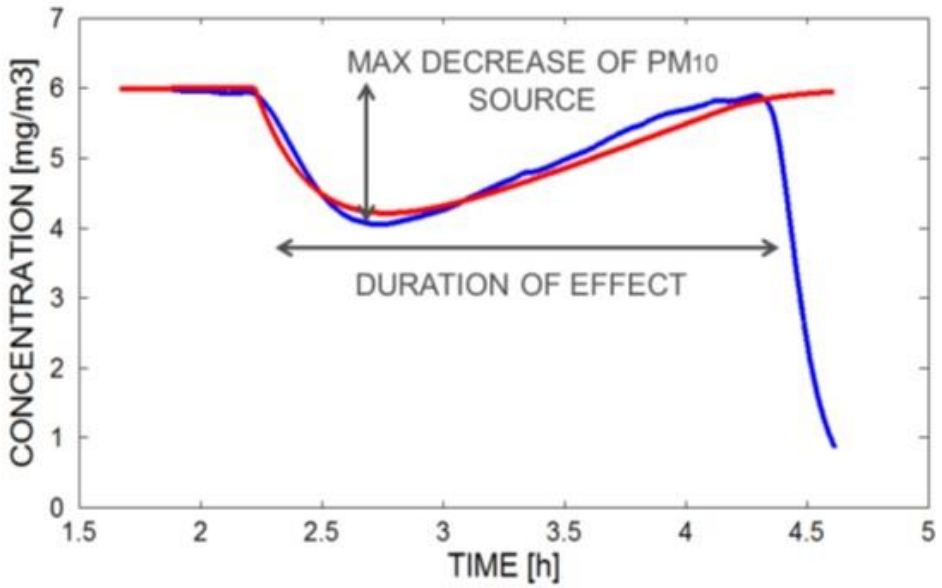
VTI result graph examples





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VTI dust control results

- Dust binding effectiveness of Eco-Binder F has been tested at VTI Sweden with comparison to other dust binding agents.
- As a reference calcium magnesium acetate and lingo-sulphonate based material. (Salt was not used as reference because of its corrosive properties to testing equipment)
- PM10 reduction indicates the amount of reduction in particulate matter of the size 10 micrometers or less.
- Tested materials have the same active ingredient level.
- Dosage level of all dust binding agents is the same, 12.5 g/m2

Dust binding agent	Duration (ref. water)	PM10 reduction %
Water	1.00	11
Calcium/magnesium acetate	2.18	43
Lignosulphonate	2.03	34
Eco-Binder F	3.43	74

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