# Heubach Method to Determine the Particulate Matter of Maize Seeds Treated with Insecticides

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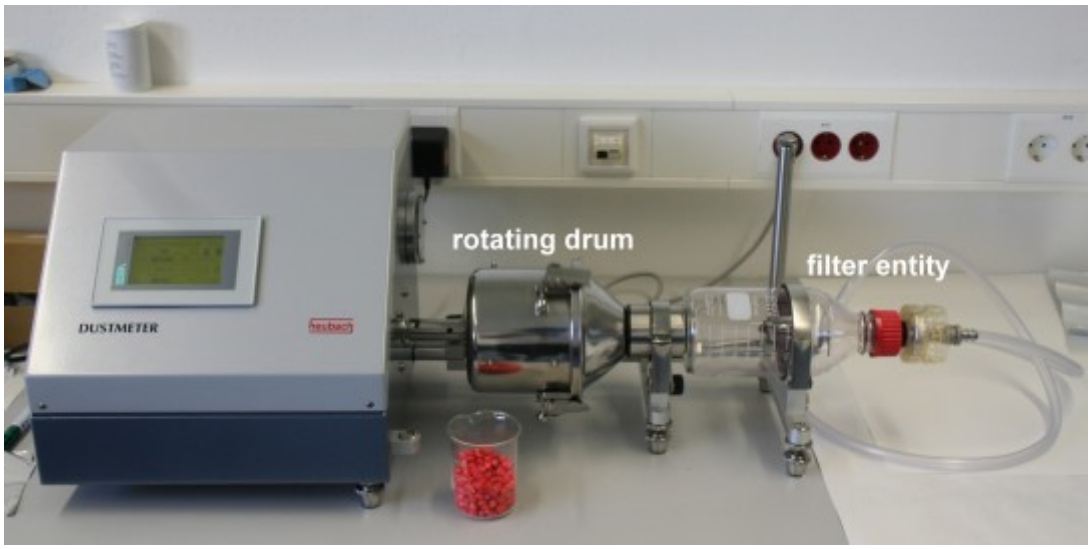
**Appliance: Heubach Dustmeter Type I** (www.heubachcolor.de)



*Heubach-Dustmeter with rotating drum and filter entity [Source: Heimbach / JKI]*

***Sampling and Preparation***

Sampling is done immediately before the treated maize seeds are bagged, after the last dust extraction has been made as part of the seed treatment process. Samples should be taken each time the seed treatment appliance has been readjusted, e.g. after a change in the applied materials or in seed lots. A sample should consist of at least 500 g of seeds taken from the seed flow in a representative manner, at best by automatic continuous sampling. Prior to testing, seed samples have to be stored for at least 2 days at 20 ± 2°C and at 50 ± 10 % relative humidity. The thousand seed weight (TSW) of the seeds must be known.

Weigh 100 ± 1 g of the seeds and insert them into the rotational drum of the Heubach appliance for testing. The number of seeds is calculated on the basis of the TSW.

***Testing***

The testing must be repeated at least twice, each time loading the drum with new seeds from the initial seed sample. If both test results deviate by more than 20 %, the test must be repeated twice. The Heubach value is calculated as the mean of the individual testing results.

The Heubach dustmeter must be set to 30 rotations per minute, to an air throughput of 20 l per minute and the duration of the rotation time is 120 seconds.

In case the display shows that the rotational velocity or the air throughput has not been maintained throughout the test (±10%), the test must be repeated using a new seed sample.

Testing is done at a room temperature of 20 to 25 °C and at 30 to 50 % relative humidity.

A glass fibre filter should be used in the filter entity of the Heubach appliance (Whatman GF 92 or equivalent specification). The filter entity including the inserted filter has to be weighed on an analytic balance before and after the test with a precision of 0.1 mg.

The Heubach value is calculated by subtracting starting from ending weight and is converted into milligram per 100,000 seeds. After a test, the Heubach appliance has to be thoroughly cleaned, e.g. by intensively vacuum cleaning of all parts of the appliance with a suitable vacuum cleaner for toxic particulate matter. The contaminated filter has to be removed and can be used e.g. for an analysis of residues in the dust if required As an additional measure, the seeds can be weighed before and after the testing with a precision of ±0.1 mg. The weight difference combined with the dust retained in the filter parts gives an indication of the entire amount of dust, since larger particulate matter can also remain in the rotating drum or in the glass bottle.

***Heubach maximum permissible value for particulate matter***

In case the Heubach value exceeds the tolerance set by the Federal Office for Consumer Protection and Food Safety in the course of the authorisation of plant protection products or a tolerance set by a regulation of the Federal Ministry for Food, Agriculture and Consumer Protection, the respective seed lot should not be placed onto the market in Germany. The maximum permissible value is applicable to samples taken immediately before the treated maize seeds are bagged, after the last dust extraction has been made as part of the seed treatment process. Heubach values of samples taken from lots after transport may exceed the maximum permissible value.

***Reporting***

Records of the seed samples and test protocols have to be kept and presented to the competent authorities upon request.