

# **Investigation of the deflagration velocity in a 200 mL-Autoclave - Are the experimental results applicable regarding the process conditions?**

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The deflagration velocity is an important parameter for determining the potential hazard of a substance. Deflagrations are a serious danger in chemical plants and the assessment about the deflagration ability is also a significant value for the transport classification regarding the UN Recommendations on the Transport of Dangerous Goods.

The transport of thermal energy is one of the key factors to understand the dependence of the deflagration velocity on the experimental parameters. The effective thermal conductivity of the bulk material depends on several parameters, for example the porosity of the bulk, the thermal conductivity of the gas phase as well as the starting pressure. These factors were investigated by a series of experiments by variation of the starting pressure, different inert gases and various porosities. In addition, the influence of the ignition method on the deflagration was investigated using three different ignition methods. The experiments are carried out in a 200 ml autoclave, investigating several factors which have an influence on the deflagration velocity.

The experiments performed show that the investigated parameters have an influence on the determined deflagration velocity. In the future these circumstances must be taken into account if the results are transferred to process conditions.