

# Abstract

## Calculation of Elasticity and Plasticity of Microcrystalline Cellulose PH 102

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Microcrystalline cellulose is widely used as a filler for direct compression. Avicel PH 102 is very often used because of its size of particles (100  $\mu\text{m}$ ), appropriate, bulk volume, compressibility.

The aim of Rigorous thesis was to calculate plasticity and elasticity using different methods, to describe Young's modulus of elasticity and complete confront plasticity from monitored microcrystalline cellulose. The plasticity was determined from graphs showing the decreasing trend of force on the time. For the evaluation was used three methods. The first one used „one–point“ evaluation and put into rate value of maximal and minimal forces. The second one used „one-parameter“ evaluation by the help of parameter  $t_1$  and third one „three-parameter“ evaluation by the help of parameter  $t_1$ ,  $t_2$  and  $t_3$ . Young's modulus of elasticity expresses stiffness of material and is very important for determination of plasticity.

Two sections of curve from graphs showing the dependence of the plasticity on the compression force can be distinguished. The first one characterized the phase of precompression, second one characterized the plastic deformation of tablets. We also confirmed the influence of different type of microcrystalline cellulose on the second section of the curve showing the dependence of the plasticity to the compression force.