

# **Abstract**

## **Calculation of Elasticity and Plasticity of Microcrystalline Cellulose Avicel<sup>®</sup> PH - 103**

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Avicel<sup>®</sup> PH – 103, well-known type of microcrystalline cellulose, is an important pharmaceutical excipient. Solid technological forms use to contain Avicel for its ability to reduce addition amount of pharmaceutical powders, tablets especially. Avicel also facilitates tableting of pressing power, this fact is important for therapeutical agents, that are sensitive for high pressure.

The aim of this work was the definition and calculation of elasticity and plasticity of microcrystalline cellulose Avicel<sup>®</sup> PH – 103. The plasticity was determined from the "force - time" profile with three different methods. The first one was based on the proportion of the highest and the lowest pressing force. The second one used "one - parameter" evaluation of the "force - time" profile and the last one was established by using "three - parameter" rate. Further we had to determine Young's modulus, the elasticity character of system. The value equals 100,75023 MPa.

From the "plasticity - force" profile we were able to distinguish the all compression phases with eventual progressing changes. Exactly there was the phase of precompression followed by the elastic and then the plastic deformation. This rigorous thesis deals with confrontation of plasticity of Ceolus<sup>®</sup> KG 802, Avicel<sup>®</sup> PH 102 and Avicel<sup>®</sup> PH 103 as well. Acquired results allowed us to confirm the influence of different type of microcrystalline cellulose on the plasticity of tablets.