

Abstract

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department of Pharmaceutical Technology

Student: Petra Pavelková

Consultant: Doc. RNDr. Milan Řehula, CSc.

Evaluation of compressibility of acetylsalicylic acid

The aim of this thesis was evaluation of stability of acetylsalicylic acid crystallographic aspect during compression process and to determine compressibility of this medical substance in the same time.

For this purpose it was performed measurement of differential scanning calorimetry in range from - 30 °C to 220 °C by a speed of heating 10 °C/min. and cooling – 20 °C/min..

Further, the compaction equation, force-displacement record at compression forces ranging from 5 to 40 kN, and the stress relaxation at compression forces of 5, 10 and 15 kN were used.

Measurement took place in specific conditions, which are described below.

The experimental results showed following conclusions:

- The relation between the parameter E_3 and compression force (LS) is non-linear and described by the equation:

$$E_{SD3} = 0,086 LS + 0,013 LS^2 - 0,211$$

$$R^2 = 0,9999$$

- The relation between plasticity and compression force (LS) is also non-linear and described by the equation:

$$PI = - 3,603 LS + 0,049 LS^2 + 85,506$$

$$R^2 = 0,9903$$

Values of the parameter PL show that ASA has a poor compressibility. At a compression force of 15 kN, the plasticity was only 40.28%.