Application manual No. 110

Production: LACTOSE AGGLOMERATES

Objective: Hardness measurement of lactose agglomerates by compression with a cylinder probe

Type of action: Penetration test

Test mode settings:

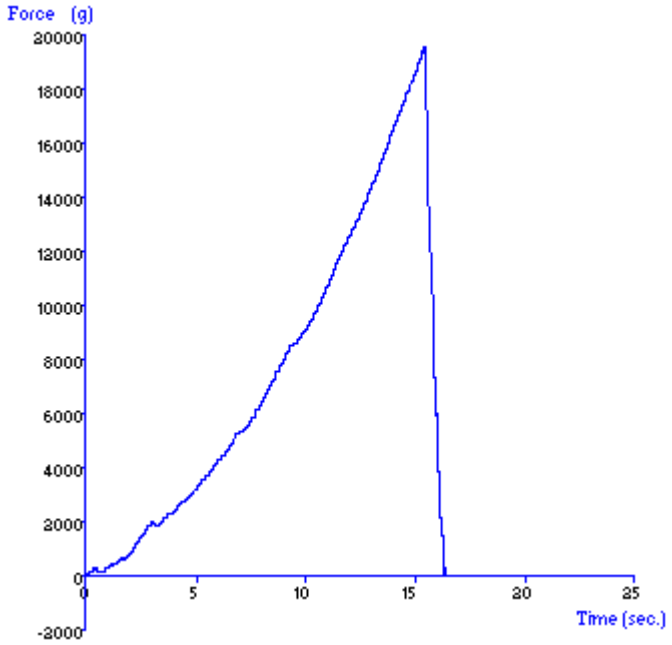
Speed	Test mode	Trigger	Target	Hold
0.1 mm/s	Distance (c)	0 gf	4.8 mm	0 sec

Accessory:
ϕ 25 mm cylinder probe. Aluminum, Platform

Sample Preparation:
Strips of adhesive tape (50mm width) are cut to a length of approx. 150mm. Strips of paper are attached to the ends for easy manoeuvre of the adhesive strips. The tape is placed (adhesive side upwards) onto a clean surface and the sample is gently poured over the tape. After pouring, the tape is lifted, gently tapped to ensure an even covering of the surface, and the excess granules tipped off.

Test Set-Up:
The probe is calibrated to recognize the adhesive tape as zero distance from the machine base (set the return distance to a few millimeters greater than the height of the sample, so that the sample can be placed under the probe easily e.g. 5mm).
The prepared tape is placed under the clean probe. The compression test is commenced and repeated two more times on other regions of the tape.

Typical plots:



The above curves were produced from lactose agglomerates (0.8mm diameter).

Observations:
Once the test is commenced, the probe proceeds to compress the sample and a rapid rise in force is observed. This rise in force continues until the sample has been compressed to 0.2mm above the machine base at which point the maximum force is taken as the hardness of the sample.

Data Analysis:

Results

Sample	Mean Maximum Force 'Hardness' (+/- S.D.) (g)
A	19356.5 +/- 1246.1

Notes:

- Ensure that the surface under the tape is completely flat and clean of debris, which otherwise, may be the cause of an early trigger of the test and hence produce erroneous results.
- When attempting to optimize test settings it is suggested that the first tests are performed on the hardest samples to anticipate the maximum testing range required and ensure that the force capacity allows testing of all future samples.