

**Production:** CHEWING GUM PELLETS

**Objective:** Comparison of the hardness of 2 types of chewing gum pellets (with and without coating) by penetration with a 2mm cylinder probe

**Type of action:** Penetration test

**Test mode settings:**

Speed	Test mode	Trigger	Target	Hold
1 mm/s	Distance (c)	5 gf	3 mm	0 sec

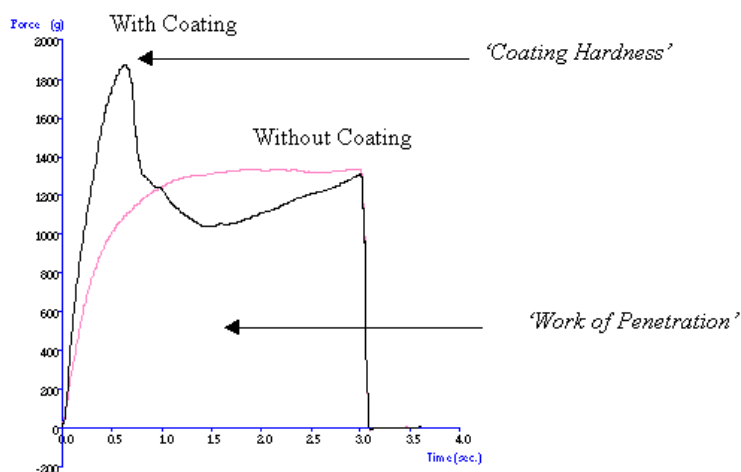
**Accessory:**

φ2 mm cylinder probe, Platform

**Test Set-Up:**

Place the Heavy Duty Platform onto the machine base. Position the sample on the platform, centrally under the probe, and commence the test.

**Typical plots:**



The curves above were produced from testing chewing gum pellets, with and without a coating, at 20C.

**Observations:**

The probe approaches the sample and once a 5g force is attained, a rapid rise in force is observed. The probe penetrates through the coating (if present), illustrated by a sharp rise in force and then interior of the pellet. The probe returns to its original starting position when a penetration distance of 3mm from the trigger point is reached. The mean penetration energy (area under the curve between 2mm and 3mm) is measured as an indication of the hardness. The presence of the coating is clearly indicated by a sharp rise in the force which is not observed when penetrating the type without a coating. However the centre of the type without a coating requires considerably more work to penetrate than that with a coating.

**Data Analysis:**

☒ Max Force

**Results**

Sample	Peak Force 'Coating Hardness' (+/-S.D.) (g)	Mean Area 'Work of Penetration' (+/-S.D.) (g)
A	2.0 +/- 0.1	2.3 +/- 0.2
Without Coating	n/a	2.7 +/- 0.2

**Notes:**

- The time period given is a general example for the analysis of a curve such as the ones above, any changes made to the test parameters or significant differences to the shape of the curve profile may require optimized.
- As these products are temperature sensitive, it is important that the temperature is carefully controlled so that test data can be compared.
- 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.