Salmon Feed Pellets Hardness - Penetration

TVT Texture Analyzer
The TVT Texture Analyzer (Figure 1) offers rapid and objective analysis for different products. The following parameters can be characterized for your product category:

- Hardness
- Fracture Force
- Break Force
- Springiness/Elasticity

Both international standard methods as well as customer tailor-made profiles are available.

Scope
- Determination of salmon feed pellets hardness by single cycle puncture.

Method Description
The recording of the measurement data commences once the probe reaches the pre-set trigger force. The probe will then penetrate the sample to a pre-defined distance of the sample height. After the penetration, the probe returns to its starting position.

Calibration
Make sure the instrument is correct calibrated before the measurements. How to perform the calibration can be found in the User’s Manual.

Load cell (recommended) 50 kg

Probe
P-CO45S, Conical probe 45° angle, stainless steel (Figure 2)
Part number: 67.15.45

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Figure 2: P-CO45
Profile Settings

Setting Parameter

Single Cycle Compression

Sample height [mm] 10.0
Starting distance from sample [mm] 5.0
Compression [%] 35.00
Initial speed [mm/s] 1.0
Test speed [mm/s] 1.0
Retract speed [mm/s] 1.0
Trigger force [g] 10
Data rate [pps] 200

Sample preparation
Take the sample directly from storage and center it below the probe, Figure 3. Commence the test.

![Sample set-up](image.png)
Curve Description
In Figure 4 a typical Force-Distance curve is illustrated. The maximum peak force value is here defined as the hardness/break force of the pellets. Smaller peaks prior to the maximum peak force indicate fractures or cracks in the pellets.

Figure 4: Break-point/hardness of salmon pellets by cone penetration.

Data Analysis
The force required to penetrate the sample to a certain distance is here defined as hardness and can be measured in the units [g] or [N]. The distance is given in [mm]. Except raw data (force, time and distance) the program also directly provides calculated results such as mean value and standard deviation.