

# Malt Modification by Friability



Friability analysis involves crushing a sample of malt in a friability instrument and then weighing the portion remaining on the screen. Percent unmodified is then determined by further sieving

# Friability and unmodified malt values relate to overall malt modification



American Society of Brewing Chemists

# Malt Friability Instrument

- Screen Drum
- Pressure Roller
- Drive Roller
- 8 Minute Time Cycle
- 5/64 slotted sieve screen



# Malt Friability Instrument

- Crushable Malt passes thru screen.
- Unmodified Malt remains in screen drum.



# Unmodified Malt

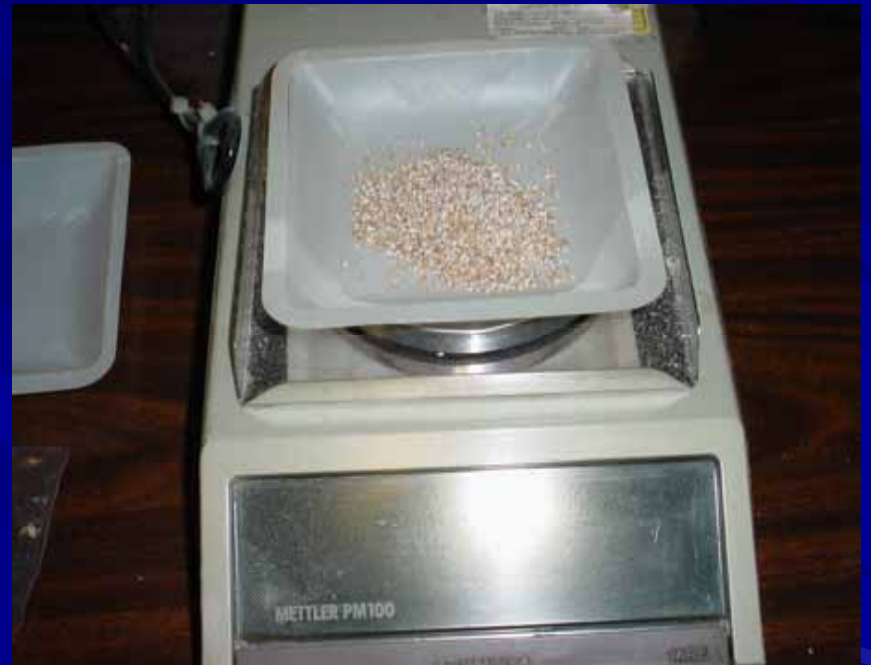
- After the 8 minute test, the unmodified malt remains in the drum screen.



# Unmodified Malt – All Glassy



# Unmodified Malt – ½ Glassy





# Crushable Modified Malt

- The Crushable portion of Modified Malt that passes thru the roller drum.



# Friability Calculation

- Starting Sample Size = 50 grams
- Weigh the All-Glassy Portion – Top of 5/64 Screen.
- Weigh the ½ Glassy Portion – Thru 5/64 screen.
- Friability =  $100 - (2 \times AG + 2 \times \frac{1}{2} G)$
- Reported as Percent Friability

# What do the numbers tell you?

- A high All-Glassy portion will exhibit a Malt Analysis with elevated viscosities, elevated beta-glucans, lower enzymes, lower soluble proteins.
- A high ½ Glassy will exhibit slightly elevated viscosities and Beta-Glucans, lower enzymes and solubles. Needed to stay in Germination longer.