



# PEN™-Dates Moisture Meter

Measurement temperature up to 100°C

- Extremely water resistant (IP65)
- External Light Interference (ELI)
- Automatic Temperature Compensation (ATC)
- Calibration with water only
- Measurement in 2 seconds
- Light & compact, 70g
- Quick & easy cleanup!

Scale	Moisture
Measurement modes	Continuous (continuous measurements will be displayed every second)
Measurement range	15.0 to 100.0%
Resolution	0.1%
Measurement accuracy	±0.2%
Automatic temperature compensation range	10 to 100°C



# ATAGO PEN™–Dates Moisture Meter

Model No : 3759



Salient Features :	Technical Specifications:	Common Specifications :
Extremely water resistant (IP65)	Scale : Moisture	Liquid sample temperature 10 to 100°C
External Light Interference (ELI)	Measurement Mode : Continuous ( Measurement will be displayed every second)	Measurement time 2 seconds
Automatic Temperature Compensation (ATC)	Measurement Range :15.0 to 100.0%	Power supply 1×AAA alkaline battery
Calibration with water only	Resolution : 0.1%	Battery life About 8,000 times measurement
Measurement in 2 seconds	Measurement Accuracy : +/-0.2%	(when an alkaline battery is used)
Light & compact, 70g	Automatic temperature compensation range : 10 TO 100C	International protection class IP65 Water Resistant (Prism head: IP67)
Quick & easy cleanup!		Dimensions and weight 16×3.8×1.8cm, 70g (main unit only)



# Moisture –Manufacturing Facilities

- ▶ Moisture is one of the key important parameters to be taken care in Dates manufacturing facilities.
- ▶ Moisture can be measured both in the dates fruit and the Dates Paste.
- ▶ Moisture content in the dates fruit is between 16– 20 %
- ▶ Moisture content in the dates paste is between 18–20 %
- ▶ If the moisture content is above 20 % then it will slowly change in to fermentation process.
- ▶ Normally for the sale they are giving 18month as expiry date . During the time of packing if the moisture content is more than 20 % during the consuming time the seed and flesh will be apart and the flesh will be watery.
- ▶ Three categories of Dates Fruit
  - ▶ Dry Dates – 16–18 %
  - ▶ Semi Dry Dates – 18 – 20 %
  - ▶ Soft Dates – 20 % ( Soft date required more attention and refrigeration).
- ▶ Dates harvest is normally from August to December. During this time the factories they collect the maximum number of dates from the farmers and store it in their warehouse for their whole year sales.



# Moisture – Dates Farm



- ▶ Moisture content is the main difference between fresh and dry dates, which changes through the ripening stage.
- ▶ farmers scale the palm trees several times over summer's harvest season, carefully selecting each date only when perfectly ripe just as their ancestors did. As soon as the dates are harvested, they are carefully stored to prevent further ripening and lock in the fruit's luscious flavours.

## HOW DATES RIPEN

- ▶ Dates can take **around seven months to ripen** once it emerges from its spathe or casing on the tree. Each fruit undergoes four main stages of development that include:
  - ▶ **Kimri**
  - ▶ Around **four months after pollination**, the fruit grows into a green and rigid form. At this stage, it can be quite bitter in taste as the natural sugars are still developing and a **high 80 percent of moisture is present**. Branches of our date palms are regularly thinned, even if it means cutting away 50 percent of the fruit. The thinning process ensures optimum air circulation and space, so the remaining fruits grow to their best potential.

## Khalal

- ▶ About **a month later**, the dates are fully grown in size but are still hard. Its colours transform into different shades of orange, yellow and red depending on the variety, with rising levels of sugars. Some yellow dates at this point also become soft to the touch, a sign they are ready to eat. Its **moisture content is approximately 60 percent** at this stage.

## Rhutab

- ▶ Over **the next four weeks**, the dates are close to becoming ripe. Fresh dates are best at the rhutab stage. They begin to soften and turn shades of light brown, with the tannins breaking down and sugars released. rhutab dates are deliciously soft, juicy with a **moisture content of around 40 percent** making it an inimitable treat. These dates need to be stored in a cool temperature to maintain its freshness.

## Tamar

- ▶ In **another couple of weeks**, the date fruit is officially ripe **with 25 percent of moisture level**. Most dates are harvested at the tamar stage. Depending on the variety, the dates can be soft or dry in texture but they each boast complex, sweet and irresistible flavors.

## NUTRITION & SHELF LIFE

- ▶ **Every stage of the fruit's development sees its moisture content and natural sugars transform dramatically.** Subsequent stages see the moisture content reduce as the sugars become more concentrated –
- ▶ kimri (84% moisture | 6 % sugars)
- ▶ khalal (66% moisture | 27% sugars)
- ▶ rhutab (43% moisture | 45% sugars)
- ▶ tamar (24% moisture | 51% sugars)



# Methods of checking Moisture content in Laboratory.



## 3 ways of measuring the moisture content of dates:

- ▶ Laboratory Oven method (Min 3 hrs depends on Time/Temperature ratios)
- ▶ Moisture Balance (30 min)
- ▶ Pen from ATAGO 2 seconds(Fastest way)

**Thank You!**

