Fresh, good-tasting water is essential since it makes up more than 98 percent of a cup of coffee. Mineral content can affect taste. For best results, water should never be artificially softened and should not exceed the following parts per million (ppm) of dissolved minerals:

- Ideal: 50 - 100 ppm (50 - 100 mg/L)
- Acceptable: Below 300 ppm (300 mg/L) or 18 grains of hardness

Water deposits. Specifically, assure the following are spotlessly clean:

- Fresh, good-tasting water is essential since it makes up more than 98 percent of a cup of coffee. BUNN filters are produced using an elemental chlorine-free process. The paper stock used in manufacturing BUNN filters is produced using an elemental chlorine-free process. The paper stock used in manufacturing BUNN filters is produced using an elemental chlorine-free process. The paper stock used in manufacturing BUNN filters is produced using an elemental chlorine-free process. The paper stock used in manufacturing BUNN filters is produced using an elemental chlorine-free process.

Wetting

The grounds begin to absorb the hot water from the sprayhead and release gasses from the coffee. For consistent extraction from all parts of the coffee grounds, the entire bed of coffee must be evenly wet in the first 10% of the brew cycle time.

Extraction

The water-soluble materials diffuse and move out of the coffee grounds and into the water. The best flavors are extracted at the beginning of the process as seen in the Brew Cycle Time table.

Hydrolysis

The chemical reactions, the materials created during extraction break down further into water soluble proteins and sugars.

Turbulence

Turbulence is created as the water passes through and over the coffee. It should cause the particles in the coffee to separate and create a uniform fine of water around them for proper extraction.

CLEANLINESS

Make sure everything related to coffee brewing and serving is clean and free from lime and hard water deposits. Specifically, assure the following are spotlessly clean:

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TIMING

The timing of the temperature during brewing affects flavor and extraction.

- Ideal Water Temperature: 90 - 96°C
- Higher temperatures may result in undesirable flavoring material in the finished coffee. The ideal percentage of coffee dissolved in the finished coffee is most accurately measured by a BUNN Bright Service Water Hardness Hydrometer or refractometer.

FILTRATION

Paper filters produce the clearest brew. BUNN filters are:

- Porous enough to allow free flow of the extracted coffee solubles.
- Perfect for coffees requiring exact brewing, paper and pre-ground coffees.
- Strong enough to prevent collapsing.

Brewer Cycle Timing

The brew cycle delivery time of a coffee brewer assists in determining the extraction.

- Experimenting with a coarser grind to produce a quality cup.
- The brew cycle delivery time of a coffee brewer assists in determining the extraction.

THE TECHNIQUE OF BREWING CONTROL

Brewing Ratio

Using the Chart

By using the weight of ground coffee in the brew basket, the volume of water used, and the strength of the brewed coffee, you can plot these in relative ratios on the chart. Use the left side as the Y-axis and the right side as the X-axis. For example, if you use 55g of coffee and the strength of the brew was 1.15%, you would plot 55g on the bottom of the chart and the solubles yield is approximately 22%. This coffee is slighty stronger. To move the brew outcome, the extraction needs to increase and fall within 18% - 22% by decreasing the brew time and/or increasing the grind size.

Optimum Balance

Balancing strength and extraction produces a standard designated as “Golden Cup” by the Specialty Coffee Association of America.

THE SCIENCE OF THE BREWING PROCESS

WATER

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The process of running hot water through coffee removes various materials from the grind. Those materials are:

**Soluble Materials:** Compounds that dissolve in water.

**Non-soluble Materials:** Compounds that do not dissolve in water.

**Volatiles:** Soluble materials that evaporate easily.

**Non-volatiles:** Soluble materials that do not evaporate, but stay in solution.

The terms used to describe the characteristics of the coffee drinking experience are:

**Fragrance:** Sometimes confused with aroma, this is the smell of ground coffee before the addition of water.

**Aroma:** The gases that evaporate as ground coffee is exposed to water.

**Flavor:** The liquids that are responsible for the overall taste of coffee.

**Acidity:** The taste of coffee that creates differing sensations on certain areas of the tongue.

**Body:** The solids that determine the way coffee feels in your mouth.

**Aftertaste (or Finish):** The lingering remnant of taste after the coffee is swallowed that often changes over time.

Brewed coffee should be enjoyed while flavor and aroma are at their peak. BUNN offers a range of holding and serving equipment designed to keep your coffee at its best.

**Ideal holding temperature:** 80ºF to 85ºC

Most volatile aromatics in coffee have boiling points well below that of water and continue to evaporate from the surface until pressure in the serving container reaches equilibrium. A closed container can slow the process of evaporation.

**Ideal serving temperature:** 80ºF to 85ºC

Volatile aromatics in coffee are not perceived when coffee is served at lower temperatures.

**Ideal holding time:** 20 minutes in an open top decanter / 60 minutes in a closed container

Holding coffee longer will result in loss of the smooth, sweet and complex flavors and instead produce a scorched or bitter taste.

**BrewLOGIC®** Easy programming compensates for flow rate variations to ensure consistent dispense levels when water quality is a consideration.

**BrewWISE®, Smart Funnel® and Smart Hopper®** Features RFID communications between grinder, funnel, and brewer, managing the brewing process from start to finish consistently and without error.

**BrewWISE® Recipe Writer** Unique information storage and transfer media dramatically reduces brewer programming times and input errors.

**BrewWIZARD®** Easy access to the most used setup parameters, including a lock-out feature to prevent brewing if the water is less than ready temperature

**SmartWAVE®** A BUNN exclusive design that uses technology to increase turbulence in the brew funnel, providing more contact time between water and coffee and uniformity of extraction.

Others include: Language/Units, Temperature, Freshness Timer, Advertising, Sanitation Timer, Recipe Cards, Service & Asset Numbers, and Brew Counters

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