Perspectives on Draught Beer Quality

S.N.O.B.s

2/6/12
Draught Beer Basics: Four Keys to Excellent Beer Service

Temperature is key to pouring a perfect draught beer
Balanced and maintained
Beer clean glass
Proper pouring
Balanced System *Great Taste, No Waste*

Gauge psi = Pounds restriction + gravity

Gas Pressure

Equilibrium

Flow Rate

Balance
Beer-clean Glass *No Soil, No Oil*

- NO fat, oil, grease residue
- NO bacteria, film
- NO odor like smoke, sanitizer

---

YES: Fresh glass every serving

YES: Cleaned, rinsed, sanitized

YES: Passes sheeting, salt, lacing tests
One-inch Head

Nozzle – safety & hygiene

45 degree angle

Straighten

Craft one-inch head

Off-gas, de-gas, release, escape

Appearance, texture, flavor, insulates, less-filling
Carbon Dioxide Sensory Attributes

Taste
- releases carbonic acid (lightly acidic)

Mouthfeel
“tingle/sparkle/spritz/fizz/prickle/sting/effervescent”
- pain/pleasure sensation

Head
- breakout carries flavors (hop oil)
- volatile delivery vehicle

Bubbles
- scrubbing/palate-cleansing

Nitrogen smooth texture/suppress hop flavor
## CO₂ Solubility Chart

### Determination of CO₂ application pressure given volumes of CO₂ and temperature

<table>
<thead>
<tr>
<th>Vol. CO₂</th>
<th>2.1</th>
<th>2.2</th>
<th>2.3</th>
<th>2.4</th>
<th>2.5</th>
<th>2.6</th>
<th>2.7</th>
<th>2.8</th>
<th>2.9</th>
<th>3.0</th>
<th>3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp. °F</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
<td>PSI</td>
</tr>
<tr>
<td>33</td>
<td>5.0</td>
<td>6.0</td>
<td>6.9</td>
<td>7.9</td>
<td>8.8</td>
<td>9.8</td>
<td>10.7</td>
<td>11.7</td>
<td>12.6</td>
<td>13.6</td>
<td>14.5</td>
</tr>
<tr>
<td>34</td>
<td>5.2</td>
<td>6.2</td>
<td>7.2</td>
<td>8.1</td>
<td>9.1</td>
<td>10.1</td>
<td>11.1</td>
<td>12.0</td>
<td>13.0</td>
<td>14.0</td>
<td>15.0</td>
</tr>
<tr>
<td>35</td>
<td>5.6</td>
<td>6.6</td>
<td>7.6</td>
<td>8.6</td>
<td>9.7</td>
<td>10.7</td>
<td>11.7</td>
<td>12.7</td>
<td>13.7</td>
<td>14.8</td>
<td>15.8</td>
</tr>
<tr>
<td>36</td>
<td>6.1</td>
<td>7.1</td>
<td>8.2</td>
<td>9.2</td>
<td>10.2</td>
<td>11.3</td>
<td>12.3</td>
<td>13.4</td>
<td>14.4</td>
<td>15.5</td>
<td>16.5</td>
</tr>
<tr>
<td>37</td>
<td>6.6</td>
<td>7.6</td>
<td>8.7</td>
<td>9.8</td>
<td>10.8</td>
<td>11.9</td>
<td>12.9</td>
<td>14.0</td>
<td>15.1</td>
<td>16.1</td>
<td>17.2</td>
</tr>
<tr>
<td>38</td>
<td>7.0</td>
<td>8.1</td>
<td>9.2</td>
<td>10.3</td>
<td>11.3</td>
<td>12.4</td>
<td>13.5</td>
<td>14.5</td>
<td>15.6</td>
<td>16.7</td>
<td>17.8</td>
</tr>
<tr>
<td>39</td>
<td>7.6</td>
<td>8.7</td>
<td>9.8</td>
<td>10.8</td>
<td>11.9</td>
<td>13.0</td>
<td>14.1</td>
<td>15.2</td>
<td>16.3</td>
<td>17.4</td>
<td>18.5</td>
</tr>
<tr>
<td>40</td>
<td>8.0</td>
<td>9.1</td>
<td>10.2</td>
<td>11.3</td>
<td>12.4</td>
<td>13.5</td>
<td>14.6</td>
<td>15.7</td>
<td>16.8</td>
<td>17.9</td>
<td>19.0</td>
</tr>
<tr>
<td>41</td>
<td>8.3</td>
<td>9.4</td>
<td>10.6</td>
<td>11.7</td>
<td>12.8</td>
<td>13.9</td>
<td>15.1</td>
<td>16.2</td>
<td>17.3</td>
<td>18.4</td>
<td>19.5</td>
</tr>
<tr>
<td>42</td>
<td>8.8</td>
<td>9.9</td>
<td>11.0</td>
<td>12.2</td>
<td>13.3</td>
<td>14.4</td>
<td>15.6</td>
<td>16.7</td>
<td>17.8</td>
<td>19.0</td>
<td>20.1</td>
</tr>
</tbody>
</table>

* Chart assumes sea-level altitudes. Add 1 psi for every 2,000 ft. above sea level.
McDantim Slide Rule
Draught Beer Necessities

Cold – 38 degrees F
(Warm = 4x faster than cool)

Clean

Controlled
## Temperature Chart

<table>
<thead>
<tr>
<th>Start Temp</th>
<th>Time to 38°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>50°F</td>
<td>25 hrs</td>
</tr>
<tr>
<td>48°F</td>
<td>23.5 hrs</td>
</tr>
<tr>
<td>46°F</td>
<td>21 hrs</td>
</tr>
<tr>
<td>44°F</td>
<td>18 hrs</td>
</tr>
<tr>
<td>40°F</td>
<td>7 hrs</td>
</tr>
<tr>
<td>38°F</td>
<td>0 hrs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 hrs</td>
<td>38°F</td>
</tr>
<tr>
<td>1 hrs</td>
<td>39°F</td>
</tr>
<tr>
<td>2 hrs</td>
<td>41°F</td>
</tr>
<tr>
<td>3 hrs</td>
<td>42°F</td>
</tr>
<tr>
<td>4 hrs</td>
<td>43°F</td>
</tr>
<tr>
<td>5 hrs</td>
<td>45°F</td>
</tr>
<tr>
<td>6 hrs</td>
<td>48°F</td>
</tr>
</tbody>
</table>
The importance of draught system cleaning
How clean is your system?
Electric pump cleaning
Draught Hygiene

Homogenous mass of organic & inorganic

Bacteria, mold, wild yeast
Cereal protein
Hop resin
Minerals

System deterioration = flavor degradation
Draught Hygiene

Challenges

Cold
Restrictive
Time-consuming

Draught systems pose numerous obstacles for hygiene
Draught Hygiene

Cleaning agent – Caustic solution 2-3% (Read safety guidelines for proper handling!)
Temperature – 90 degrees F
Method – pump recirculation 15 minutes
Frequency – every two weeks
(tubing & hardware)
Draught Hygiene

Off-tastes from system limitations
- loss of carbonation (flat), oxygen ingress (stale)

Off-tastes from microbial infection

- **Pediococcus**
  - diacetyl
  - "buttery"

- **Lactobacillus**
  - lactic acid
  - "dairy sour"

- **Acetobacter**
  - acetic acid
  - "vinegar"

- **Pectinatus**
  - hydrogen sulfide
  - "rotten egg"
Benefits of Stainless Steel

- Inert, non-reactive
- Stable, non-leaching
- Corrosion resistant (chemicals, carbonation, low pH)
- Smooth surface
- Hygiene

www.DraughtQuality.org
Metal Parts in Draught Dispense

Probe (coupler)
Tailpiece
Splicer
Wall bracket
Shank
Faucet
(All available in stainless steel & brass)
## Flavor

<table>
<thead>
<tr>
<th>Brass</th>
<th>Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper 700-800 ppb</td>
<td>Copper 50-100 ppb</td>
</tr>
<tr>
<td>Muted/restrained aroma</td>
<td>Expressive hoppy aroma</td>
</tr>
<tr>
<td>Slight loss of CO2</td>
<td>Carbonated mouthfeel</td>
</tr>
<tr>
<td>Harsh/astringent</td>
<td>Malt/hop taste</td>
</tr>
<tr>
<td>Metallic coating tongue</td>
<td>Clean finish, hop bitter</td>
</tr>
<tr>
<td>Overall taint</td>
<td>Overall pure</td>
</tr>
</tbody>
</table>

www.DraughtQuality.org
Info for Everyone

Resource

Access

www.draughtquality.org