

GLASSWARE STYLES AND PRESENTING DRAUGHT BEER

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BREWERS ASSOCIATION DRAUGHT BEER QUALITY



Draught Beer Basics: Four Keys to Excellent Beer Service

The Facts About Draught System Cleaning

The Facts About Draught Beer Carbonation

The Facts About Air Compressors

The Facts About 25/75 Gas

Brewers Association Facts About Growlers

Safety Notes For Retailers & Consumers

Draught Beer Line Cleaning Log

Brewery Name	DATE		BY		DATE		BY	
	START	END	NAME	INITIALS	START	END	NAME	INITIALS

Recommendations for Draught Beer Line Cleaning

- Pre-heat growler with cold water immediately before filling to avoid foaming during filling
- Use a sanitized 1/2" hose to fill your growler
- Do not use a cap if the growler has a lid
- Use brown bottles rather than clear to avoid changing your beer
- Keep your growler refrigerated
- Consume contents within 48 hours of filling, and within 24 hours of opening
- Enjoy draught beer in moderation
- Reuse growler well immediately upon emptying

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TOPICS...

- Brief History
- Art vs. Science
- Structural Attributes
- Hygiene, Storage, and Testing
- Pouring and Profitability



GLASSWARE HISTORY



c. 14th century BC, Egypt

- **1500 BC** – The first glass vessels come from Egypt and Mesopotamia – likely used for rituals and celebrations
- **50 BC** – Glassblowing is invented in Egypt



c. 175-200 Roman Goblet

GLASSWARE HISTORY

- **1500's** – We start to see transparent blown glass vessels that begin to resemble what we see today.
- **Late 1600s** – Lead oxide is added to glass resulting in a heavier glass. This allows for ease of cutting and additional glass styles.



c. 17th century Berkemeyer

GLASSWARE HISTORY

- **1600s to 1800s** – Roemers and Berkemeyers popular in Europe for beer and wine.
- Wide bowl
- Hollow stems
- Green or yellow due to the iron impurities



c. 17th – 19th century Roemers

GLASSWARE HISTORY

- **1825** – Pressed-glass machine is invented in the U.S. making glassware more prominent and less expensive.
- **Mid 1800s** – Breweries started using glassware as a point of differentiation in the market place.



Pre-prohibition glasses from Anheuser-Busch, Foss Schneider Brewing, and Lion Brewery

GLASSWARE HISTORY



c. 1970's Coors Brewing Company

- **Mid 1900s** – Use of obscure glass styles wane in the U.S. as beer becomes homogenized by national breweries.
- **Today...**



Present day shaker pint

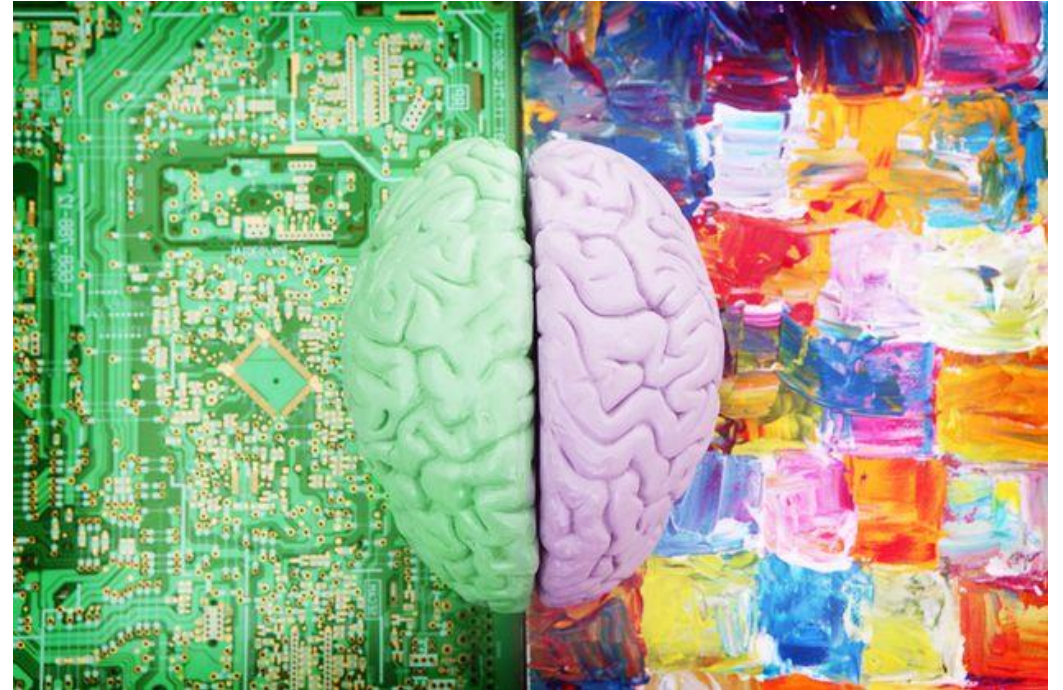
INVERTED PYRAMID OF GLASSWARE



SPECIALITY CRAFT GLASSWARE



ART VS. SCIENCE



ART VS. SCIENCE

A number of studies have shown that the shape of the glass influences:

- How rapidly consumers drink
- Post-consumption satisfaction
 - Likelihood to re-purchase
- And how consumers feel about the entire meal experience

**But is it
External Perception or
Physico-Chemical?**

EXTERNAL PERCEPTION

Studies have shown that people are willing to pay “significantly more” for beverages if the glassware is consistent with the style.



**Does the Shape of the Drinking Receptacle Influence Taste/Flavour Perception?*

**Influence of the Glassware on the Perception of Alcoholic Drinks, Food Quality Preference Journal*

EXTERNAL PERCEPTION

- More specifically, matching the beer to the correct branded glassware can **increase sales by as much as a third**.
- *“Forward-thinking drink brands would be well advised to take heed of the latest research in order to develop signature glassware for their products. In the best-case scenario, this glassware should also deliver some kind of functional benefit in terms of the consumer’s product experience.”*

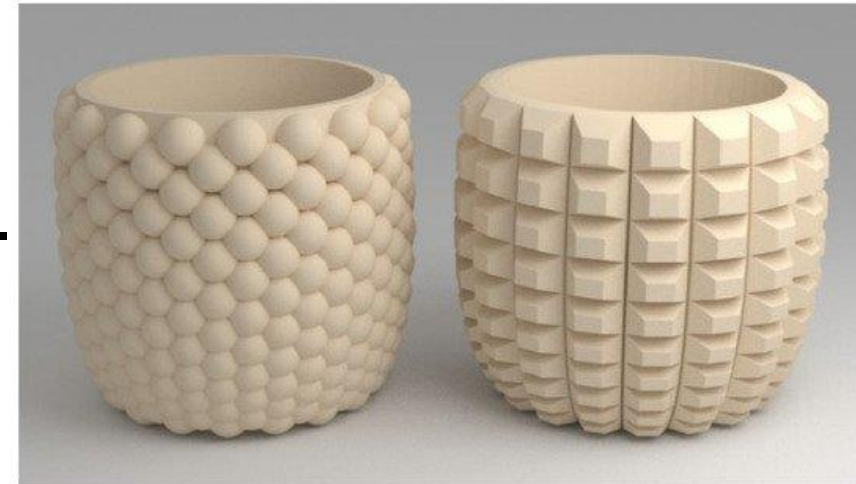


*Beer Matters: How Miller Brands Partners with Licensees to Drive Sales.

*Does the Shape of the Drinking Receptacle Influence Taste/Flavour Perception?

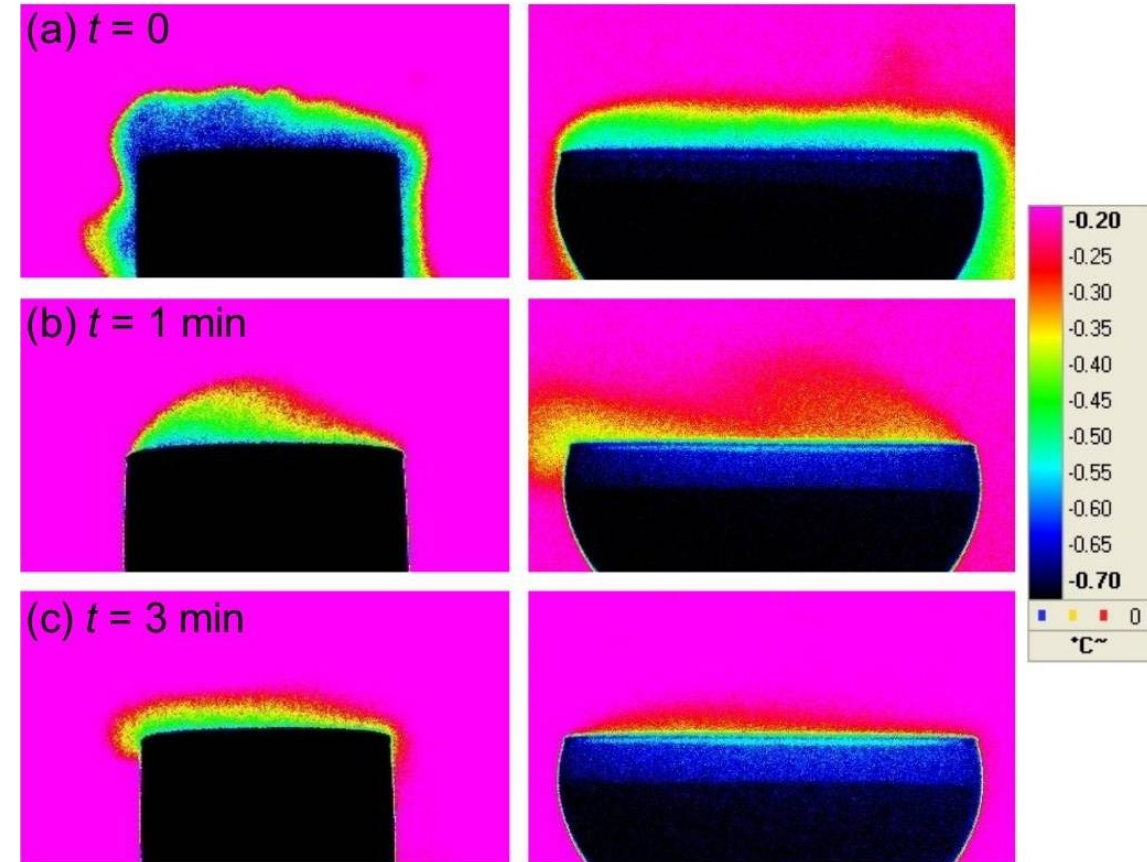
EXTERNAL PERCEPTION

- The appearance and texture of a glass can even have an impact on the perception of a beverage.
- Two vessels were 3D printed: one with an angular texture and one with a rounded texture.
- Bitterness ratings were 27% higher for the angular pattern.
- Sweetness ratings were 18% higher for the rounded pattern.
- There was no physico-chemical influence



PHYSICO-CHEMICAL

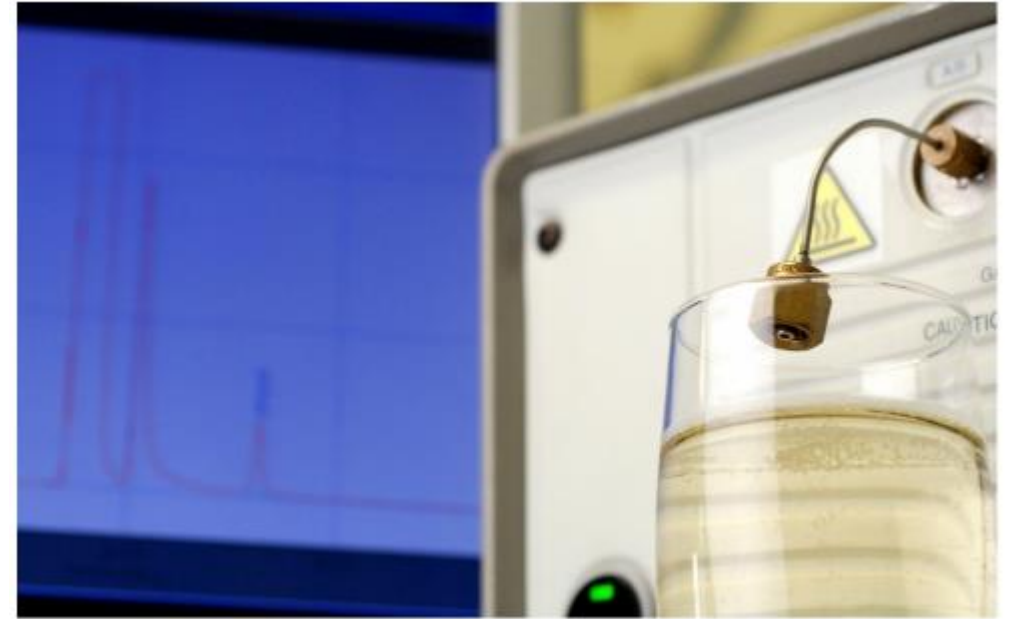
- Infrared imaging can be used to show CO₂ concentrations.
- In this example, it shows that CO₂ is more concentrated above the narrow opening than above the wide opening.



Infrared imaging of CO₂ desorbing from glasses.

PHYSICO-CHEMICAL

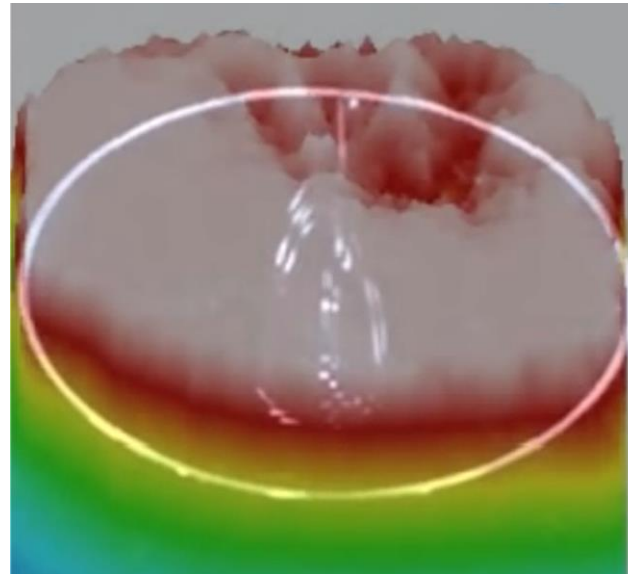
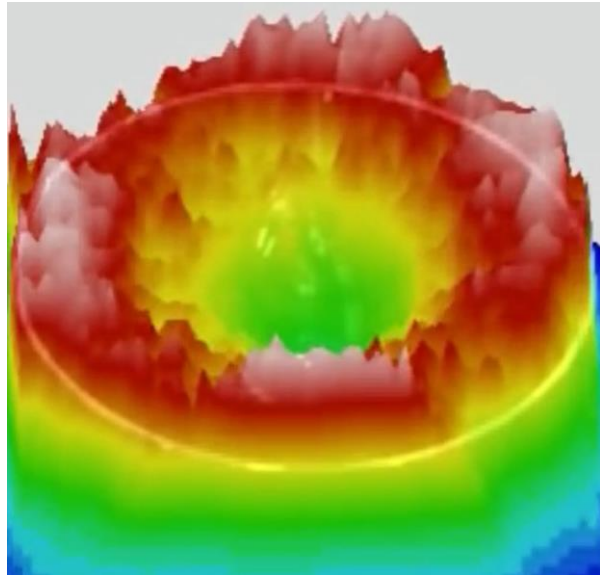
- A gas chromatograph can also be used to sample the headspace of different glass shapes to analyze CO₂ and ethanol.
- CO₂ acts on both gustatory receptors (taste) and trigeminal receptors (feel)
 - Feel: CO₂ is an irritant (feel)
 - Taste: CO₂ enhances the sour and suppresses sweetness



Gas chromatograph injection valve sampling gases in the headspace

PHYSICO-CHEMICAL

Using a specifically designed camera, Japanese researchers were able to map “aroma” in varied glass shapes and temperatures. Their research demonstrated that both glass shape and temperature have a large impact on aroma...

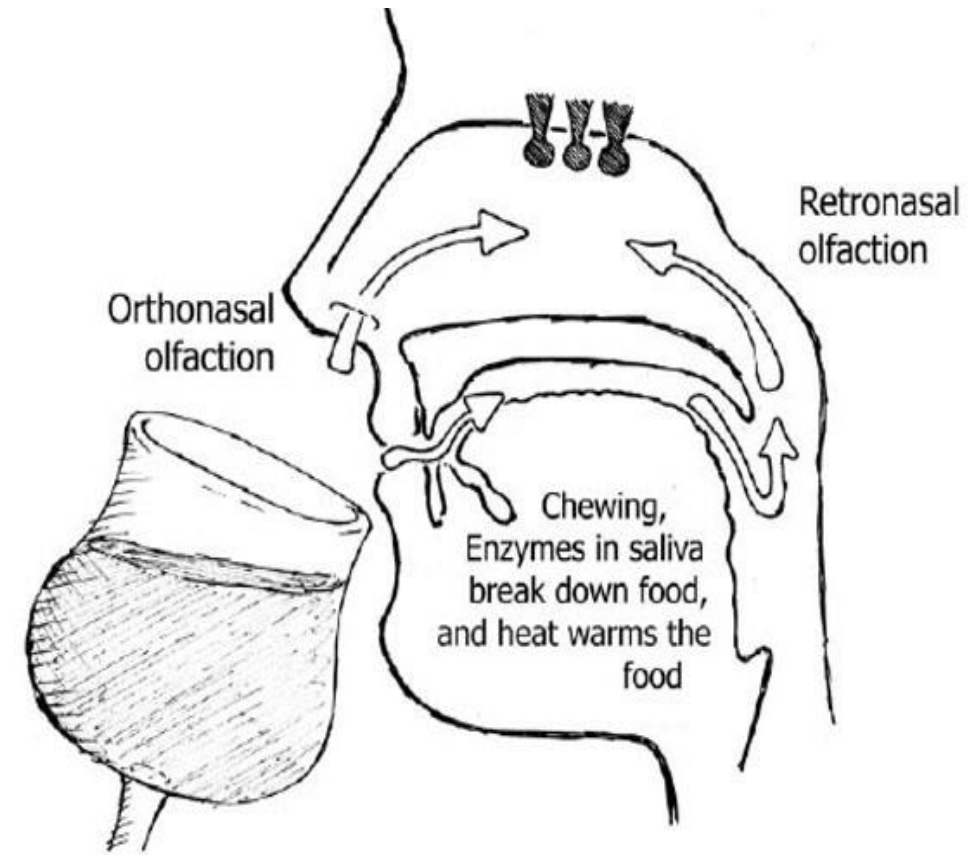


Sniffer Camera

Alcohol will compete with and suppress desired aroma compounds. A more narrow opening in relation to the belly, will concentrate desired aromas to the center of the glass.

ART VS. SCIENCE CONSIDERATIONS

Sensory Evaluation methods will also have a large impact on the perception.



ART VS. SCIENCE CONSIDERATIONS

- Different beverages will be impacted by glassware in different ways.
- For example, concentrating CO₂ and aroma may be great for beer and wine, but for champagne CO₂ can be a trigeminal irritant.



**Does the Shape of the Drinking Receptacle Influence Taste/Flavour Perception? A Review, Beverages*

**Influence of the Glassware on the Perception of Alcoholic Drinks, Food Quality Preference Journal*

ART VS. SCIENCE CONSIDERATIONS

While we can't say all glasses have been scientifically designed to perfectly show off the sensory properties of specific beers, we do know that the geometry of the glass has an impact on consumers' buying habits...

STRUCTURAL ATTRIBUTES



GLASS STRUCTURE

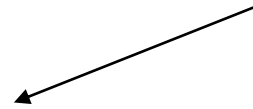
- Stemmed or homogenous foot
- Bowl or belly (contains, collects, captures)
- Inverted or everted mouth (flavor release)
- Thickness (heat transfer)
- Effect on foam stability
- Effect on nose & tongue delivery
- Spread/distribute

What characteristics are lifted or suppressed?

FUNCTION AND DURABILITY



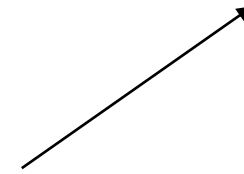
Dimple Mugs: Thick glass for durability and “clinking” glasses - Prost!



German Stein: Lid to seal in aromas and carbonation



Nonick Pint: Bump keeps rim from chipping and allows a more stable hand hold



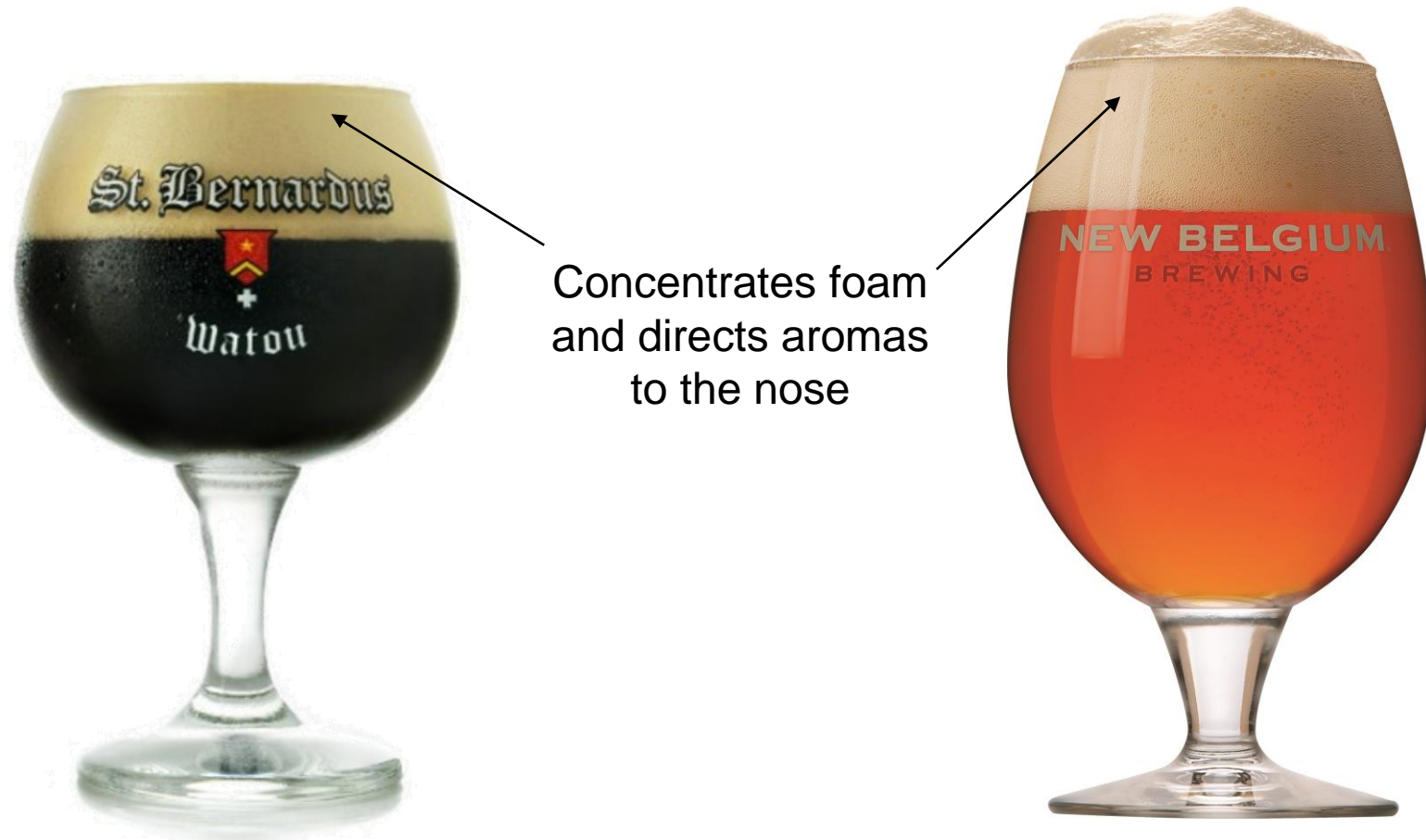
WIDE BOWL



Captures and concentrates aromas



INVERTED NARROW OPENING



EVERTED OPENING



Outward flare supports the head. Fits the mouth to evenly disperse the beer



TAPERED ANGLE



Serves as a wedge to support long lasting head



Releases delicate hop aromas



LIP AND MOUTH

Laser Cut Rim for a appealing mouthfeel and a clean delivery



Beaded Lip for durability and creates one last nucleation point as beer enters the mouth



RELEASING AROMAS AND REPLENISHING THE HEAD



Wave Pattern
aerates the beer
releasing aroma
compounds



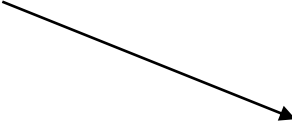
Laser Etching
maintains constant
stream of CO2 to
maintain head and
deliver aroma



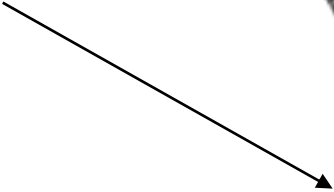
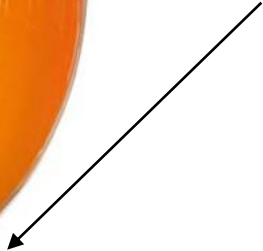
When glass is half
empty, beer will
tumble to reactivate
the head releasing
aromatics

HEAT TRANSFER

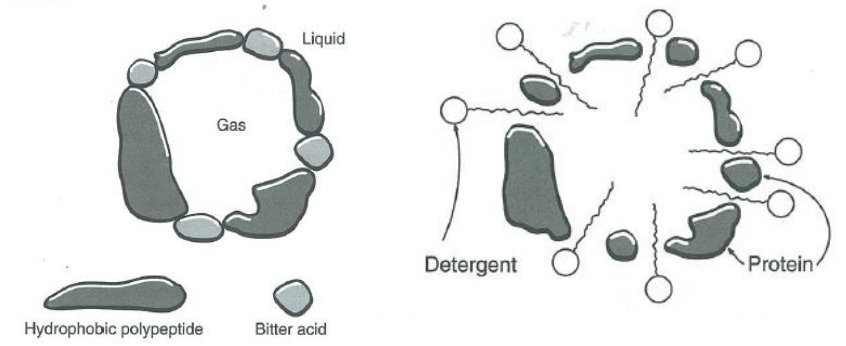
Thin wall maintains proper beer temperature longer



Stems and narrow openings prevent unintentional heat transfer from hand to beer



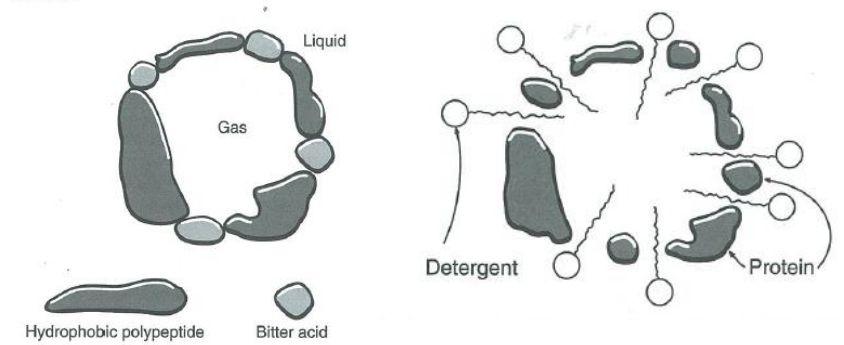
HYGIENE, STORAGE, & TESTING



CLEANING AND SANITIZING

Dedicated glasses & cleaning equipment

- **Soil & marks** – previous contents, lip cosmetics, fingerprints
- **Residue** – fat, grease, oil/soap
- **Germs** – no lingering chemical smell



CLEANING AND SANITIZING



THREE SINK SYSTEM:

- **Clean:** Brushes and warm water
- **Rinse:** Cold water
- **Sanitize:** Warm sanitizer
- Ensure proper ratio of chemical to water – too much chemical can be worse than not enough

CLEANING AND SANITIZING



CLEAN:

- Warm water
- Clean (non-petroleum based detergent)
- Ensure brush height is appropriate for the glass style
- Vigorous motion, periodically turning glass 45°
- Ensure complete scrubbing coverage including the bottom of the glass

CLEANING AND SANITIZING



RINSE:

- Cold water
- Heel-to-toe action to get a complete rinse and no air-bubbles

CLEANING AND SANITIZING



SANITIZE:

- Cold water with trichloromelamine
- NOT hypochlorite – do not use bleach or quats
- Improper sanitizers will leave residual aromas, are deadly on head retention, will kill desired aromas
- Heel-to-toe action to get a complete rinse and no air-bubbles

STORING



- Glasses need time to dry
- Glasses need time to cool down
- Space needs to be free of odors, smoke, dust
- Maximize air circulation
- No smooth surfaces

STORING



- Chilled glasses 36° F
- Never frozen/no freezers
- Ice crystals carry unwanted flavors
- Nucleation
- Dry glasses completely
- Chill in dedicated refrigerator

TESTING

Sheeting Test



Salt Test



Lacing Test



GLASS HYGIENE TESTING

Bubble patches are bad. Residue causes foam collapse



POURING AND PROFITABILITY





The CO₂ content is part of a beer's recipe.





So what does
carbonation
contribute to a
beer?

POST SERVING

Carbonation dynamics: The importance of CO₂

- Carbonation Dynamics
- Head of foam-volatile release & flavor delivery
- Taste-releases carbonic acid
- Mouthfeel-tingly, prickly, spritzy, fizzy, effervescent
- Bubbles-scrubbing & palate-cleansing

PROPER POURING TECHNIQUE

1. Hold glass at 45° angle
2. Control faucet at base
3. Gradually tilt glass upright once beer has reached about the halfway point in the glass.
4. Pour beer straight into the glass, working the glass to form a one inch collar of foam ("head"). For Presentation as well as Carbonation Release.
5. Close faucet quickly to avoid overflow.



(pages 56-57)

PROPER POURING TECHNIQUE

- Ownership of the glass: Pourer: Bottom/Exterior, Customer: Top/Interior
- In no instance should a faucet touch the inside of the glass.
- Nozzles can potentially transfer germs from one glass to another.
- In no instance should the faucet become immersed in the consumer's beer.
- Nozzles dipped in beer become a breeding ground for microorganisms.



(pages 56-57)

Which is more cost effective for the Retailer?



↑
**18 oz of Flat
and
Off-Flavor
Beer**
↓

↑
**16 oz of
Carbonated
and Full
Flavor Beer**
↓



DEMONSTRATION



DOES A 2 oz. OVERPOUR REALLY COST ME THAT MUCH?



- 124 Pints/Keg
- $124 \times \$6 = \744
- $\$744 - \$160 \text{ keg} = \$584$
- **\$584 Net Profit**

- 142 Pints/Keg
- $142 \times \$6 = \852
- $\$852 - \$160 \text{ keg} = \$692$
- **\$692 Net Profit**

- $\$692 - \$584 = \$108 / \text{keg}$
- At a keg per week = $\$5,616 / \text{year}$
 - For a 10 line system:

Additional Annual Profit:

\$56,160 / year



POURING TECHNIQUE & GAS BREAKOUT



POURING TECHNIQUE & GAS BREAKOUT



Q & A

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