

## INTRODUCTION:

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## **GROWLERS: BEST PRACTICES FOR RETAILERS, BREWERS AND CONSUMERS**

### **TODAY'S TOPICS:**

- **The Growing Growler Trend**
- **Growler Filling Methods**
- **Container Type and Safety**
- **Hygiene and Post-filling Practices**

# Growler Fact Sheet:



## Brewers Association Facts About Growlers

Growler use by consumers and retailers is becoming an increasingly popular way to bring the retail draught beer experience home or to transport rare or small production beers. The important decision to fill and use growlers must be made with an eye towards safety, delivering quality draught beer and compliance with all state and local regulations. The following best practices will help brewers, wholesalers, retailers, and consumers avoid many potential pitfalls and ensure the highest quality growler experience possible.

### Growler Containers

Growlers have evolved from simple galvanized pails with lids of yore to today's many container options including glass, stainless steel, ceramic, and a variety of plastics. Dark brown glass or opaque materials such as stainless steel or ceramic will protect beer best from "skunking" caused by light; clear glass will not protect beer from light. No matter what kind of container is used, consumers and filling establishments must be aware that all filled growlers are pressurized containers. The growler container used must be able to withstand the pressures exerted by carbonated beer as well as the growler filling method.

### Growler Container Cleanliness

- Retailers are ultimately responsible for ensuring a sanitary "beer clean" container is filled. Consumers also have a responsibility to maintain and care for growlers they own. Growler cleaning concepts mirror those outlined in the glassware cleaning section of the Brewers Association Draught Beer Quality Manual.
- Detergents should not be fat- or oil-based.
- Proper detergent ratios should be used to ensure thorough cleaning as well as to avoid residual chemical aromas.
- The use of a large carboy-type brush can be used to assist in cleaning; however brushes with exposed metal on any brush part should not be used to clean ceramic or glass growlers.

### Safety Notes For Retailers & Consumers

Filled growlers can shatter or explode if allowed to warm or freeze, especially if they are overfilled. The internal pressure of a filled growler warmed to room temperature (68°F) or in a hot car (90°F) may be as high as 2.0 atm (29 psi) or 3.7 atm (52 psig) respectively. (Example assumes a growler filled to 99% of capacity with beer at 38°F containing 2.5 volumes CO<sub>2</sub>, and then sealed). Brewers Association recommends:

- only use growler containers specifically designed for packaged carbonated beer, and ask the container supplier to verify that the pressure rating is equal to or greater than the pressure from carbonation in the beer being filled. Many containers currently in use are not designed for carbonated beverages.
- if filling by counter-pressure, know the pressure rating of the system used and ensure the system includes shielding between the growler being filled and people nearby in case of failure
- do not overfill a growler. Always leave 5% headspace or fill to the manufacturers recommended fill line if one is shown.
- for growlers with threaded screw-on closures, consider using plastic rather than metal closures; plastic closures may vent more readily if over pressurization occurs; if using metal closures you may wish to discuss this issue with your supplier
- keep filled growlers cold and dark, and never allow a filled growler to warm or to freeze, due to potentially hazardous shattering.
- visually inspect every growler before filling. Do not fill glass or ceramic growlers with cracks or chips, those which have been engraved, or older growlers with pitted or unsmooth glass surfaces, as the pressure strength of these growlers will be significantly reduced.

## Quality & Growlers

Rob Gerrity  
*Trade Quality Manager*  
Sierra Nevada Brewing Co..



# Interest in Growlers

- More breweries
- More brands
- Rare, cheeky, ltd. production, *du jour* mindset
- Packaging limitations
- Space at retail
- Quality, safety, legal considerations



# Where to Get a Growler

- Breweries
- Craft-centric bars
- Grocery stores
- Gas stations
- Drug stores
- Growlers-To-Go only business model



# State by State Regs

## BREWERS ASSOCIATION

A Passionate Voice for Craft Brewers

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### GROWLER LAWS



#### Disclaimer

*While this database has undergone several edits, it should not be considered the final word on growler laws across the country. In no way should this be interpreted as legal advice. Instead, it should be an additional resource in your own unique research. All materials have been prepared for general information purposes only to permit the reader to learn more about craft beer legal issues. The information presented is not legal advice, is not to be acted on as such, may not be current and is subject to change without notice. Always seek the advice of a competent attorney on any legal or contractual matter.*

#### We Appreciate Your Feedback

Please review your state's statute citation and provide us feedback based on your experiences.

- Does the database cite the applicable growler laws in your state?
- Are there additional container and/or filling restrictions that affect

Your assistance is essential to ensuring the database is both comprehensive and accurate. [Comments](#) are welcome.

Learn more about the [TTB's policy with respect to "growlers"](#)

### EVENTS

- THU MAY 09, 2013  
**SAVOR: An American Craft Beer & Food Experience - May 9-10, 2014**
- SUN APRIL 06, 2014  
**World Beer Cup 2014**
- TUE APRIL 08, 2014  
**Craft Brewers Conference & BrewExpo America® - April 8-11, 2014**
- MON MAY 12, 2014  
**American Craft Beer Week - May 12-18, 2014**

[view more events »](#)



# Quality Concerns

- Nature of beer
- Nature of filling
- Factors of stability
- DBQ basics
- System evaluation





# System Assessment-DBQ situation

- Craft beer 2.5 v/v
- Temp 40
- CO2 pressure 3 psi
- Restriction 1/4" vinyl, 4 feet = 3.4 #s
- Monthly cleaning, static pot, hardware
- Out of balance, inadequately cleaned



# System Assessment-DBQ solution

- Craft beer 2.5 v/v
- Temp 36
- CO2 pressure 11 psi
- Restriction 3/16" vinyl, 4 feet = 12 #s
- Two weeks, recirc pump, hardware
- Balanced system, clean



# System Assessment-CO2 Level

Easy Volumes	
Enter these values:	
Temperature (°F)	40
Pressure (psig)	3
Blend (% CO <sub>2</sub> )	100
Altitude (feet above sea level)	700
Alcohol Content (% ABV)	5.6
Volumes per Volume	1.60

Easy Volumes	
Enter these values:	
Temperature (°F)	36
Pressure (psig)	11
Blend (% CO <sub>2</sub> )	100
Altitude (feet above sea level)	700
Alcohol Content (% ABV)	5.6
Volumes per Volume	2.54



# Getting It Right



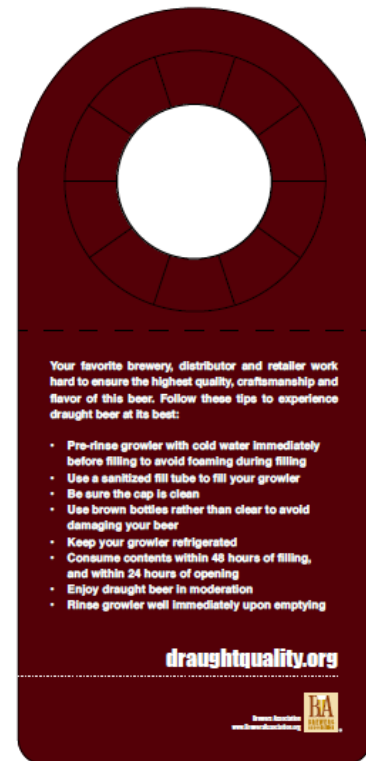
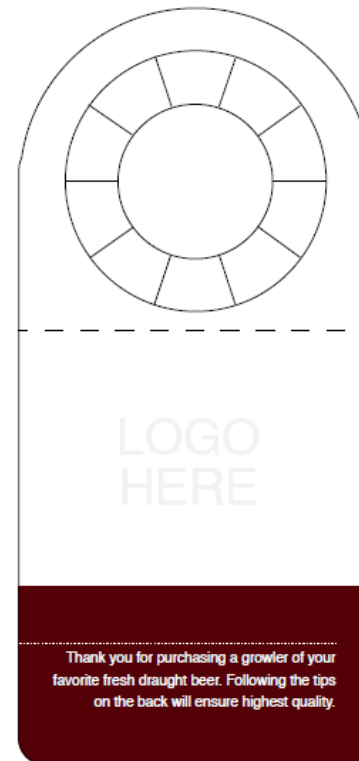
## Brewers Association Facts About Growlers

Review resources

Test material methods

Keep raising the bar

Equipment & filling  
Container type & Safety  
Hygiene





## Growler Filling Methods

Charles Kyle  
*Security/Communication/Draught*  
Sierra Nevada Brewing Company

# The Original



# Pail a Minute



THE BUCKET BOY

—Milwaukee County Historical Society

# The Free Pour





Uncontrolled pouring and foaming

Oxygen rich environment

Causing rapid oxidation to the beer

Growler has to be held and watched by bartender

Fill height subject to bartender discretion



# Tubes

3/8" id x 1/2" od

Perfect for inside  
standard faucet



# Tubes



# Bottle with tube





# Pre-rinse



With proper size tubing

Controlled even pouring with minimum foaming

Oxygen is “pushed” out of bottle by raising beer level

Growler can be placed on drip tray to fill operator  
may attend to other duties

Proper fill height made by removal of tube



# Beer Gun



Displaces oxygen with CO2 prior to filling

Each flavor needs a separate gun

Operator needs to run the gun during fill

Proper fill height made by removal of gun



# Faucet/Filler



Uses same faucet for filling pint and growler

Requires PET bottle that fits the filler head

Proper fill height subject to operator





# Cascading Filler





Displace oxygen with CO2 prior to filling

Fits multiple bottle styles

Depending on number of fillers, lines need to be moved and purged prior to filling

Bartender needed to control during filling

Proper fill height subject to operator



# Down Tube Counter pressure



Displaces oxygen with CO2 prior to filling

Fits multiple bottle styles

Purges lines for style change

Push a button to fill, Bartender can attend to other duties



CIP part of the manifold

# Extended Life Caps



Added expense of canisters

Takes away from convenience



## Container Type and Safety

Matt Meadows

*Director of Field Quality*

New Belgium Brewing Co.

*Brewers Association Draught Quality Committee Chair*

# GROWLER TYPES

## Glass:



# GROWLER TYPES

## Ceramic:



# GROWLER TYPES

## Plastic:





# GROWLER TYPES

## Stainless Steel:



# GROWLER TYPES

## Others...



**Paper**



**Aluminum**



# CLOSURES



# SAFETY

The types of containers and closures can lead to or prevent potential safety concerns.

Filled growlers can shatter or explode if allowed to warm or freeze, especially if they are overfilled. The internal pressure of a filled growler warmed to room temperature (68F) or in a hot car (90F) may be as high as 2.0 atm (29 psi) or 3.7 atm (52 psig) respectively. (Example assumes a growler filled to 99% of capacity with beer at 38F containing 2.5 volumes CO<sub>2</sub>, and then sealed).

2.7 Vols/Vol, 5% ABV, at a 95% fill			
	Temperature	PSIG	BARG
Refrigerated	38	13.1	0.90
Cool	50	20.3	1.40
Room Temp	68	32.4	2.23
Hot Day	100	57.5	3.96
Car	120	74.2	5.12



# SAFETY

Only use growler containers specifically designed for packaged carbonated beer, and ask the container supplier to verify that the pressure rating is equal to or greater than the pressure from carbonation in the beer being filled.



Many containers currently in use are not designed for carbonated beverages.



# SAFETY



If filling by counter-pressure, know the pressure rating of the system used and ensure the system includes shielding between the growler being filled and people nearby in case of failure



# SAFETY

Do not overfill a growler. Always leave 5% headspace or fill to the manufacturers recommended fill line if one is shown.

2.7 Vols/Vol, 5% ABV			
	Temperature	PSIG at 95%	PSIG at 99%
Refrigerated	38	13.0	13.0
Cool	50	20.3	20.4
Room Temp	68	32.4	33.2
Hot Day	100	57.5	60
Car	120	74.2	78.4





# SAFETY

The closures that keep the best seal may be more of a safety risk

For growlers with threaded screw-on closures, consider using plastic rather than metal closures; plastic closures may vent more readily if over pressurization occurs; if using metal closures you may wish to discuss this issue with your supplier.





# SAFETY

Visually inspect every growler before filling. Do not fill glass or ceramic growlers with cracks or chips, those which have been engraved, or older growlers with pitted or unsmooth glass surfaces, as the pressure strength of these growlers will be significantly reduced.



## Growler Hygiene

Neil Witte

*Technical Support and Training Manager*

Duvel USA/Boulevard Brewing Co/Brewery Ommegang

# Cleanliness

- The inside of the growler should be cleaned in the same manner as any other beer glassware

**Beer Clean = Growler Clean**

- 3 options for refilling:
  - Rely on the customer to bring in a clean growler
  - Clean growlers as they come in
  - Exchange program – everyone gets a freshly cleaned growler



# How to Clean a Growler



## chapter 7 serving draught beer

**p**roperly designed and appropriately operated, your draught system pours perfect draught beer from its faucets. But the con-draught beer can still be ruined by improper pouring, glass residue, and unsanitary practices. In this chapter, we review the serving practices required to deliver high quality draught beer.

To achieve the qualities the brewer intended, beer must be served following specific conditions and techniques. Let's review some of the critical conditions necessary for proper draught dispense.

- Beer stored between 34° - 38°F.
- Beer served between 38° - 44°F.
- To accomplish this, the glycol cooling the beer lines in a long-draw system should be set to 27° - 32°F.
- Balanced draught settings (pressure = resistance).
- Normal flow rate of 2 ounces per second.

### Glassware Cleaning

A perfectly poured beer requires a properly cleaned glass. As a starting point, glassware must be free of visible soil and marks. A beer-clean glass is also free of foam-killing residues and lingering aromatics such as sanitizer.

A freshly cleaned glass should be used for every pour. We recommend that accounts never refill a used glass. This practice may also violate local health codes.

- Two systems deliver effective beer glass cleaning:
1. Manual cleaning in the three-tub sink, or
  2. Dedicated automatic glass washers.

Each approach requires specific techniques and a certain degree of discipline. Let's look at what's involved with each one.

### Manual or Hand Cleaning in the Three-Tub Sink

1. Clean sinks and work area prior to starting to remove any chemicals, oils, or grease from other cleaning activities.



2. Empty residual liquid from the glass to a drain. Glasses should NOT be emptied into the cleaning water as it will dilute the cleaning solutions.

Clean the glass in hot water and suitable detergents. Detergent must not be fat- or oil-based. Detergents suitable for beer glass cleaning are available through restaurant and bar suppliers. Clean the glass with cleaning brushes to remove film, lipstick, and other residue. Rotate the brushes to scrub all interior surfaces. Be sure to clean the bottom of the glass.

Bottom/butt down in cold water. Water should not be stagnant but should be changed via an overflow tube. If time permits, a dunk is recommended and pre-



path periodically to hot water temperature. Chlorine concentration required local health codes.

and beer or dairy



3. Use correct detergent, sanitizer, and rinse agents in properly metered amounts.
3. Check concentrations once each day using kits, or follow detergent and sanitizer supplier recommendations.
4. Use water temperatures of 130° to 140°F. High temperature machines designed to operate at 180°F can be used without additional chemical for local requirements.
5. Maintain the machine to assure good water flow through the system including free flow through each nozzle and washer arm.
6. Regularly service the machine based on the manufacturer's or installer's guidelines.

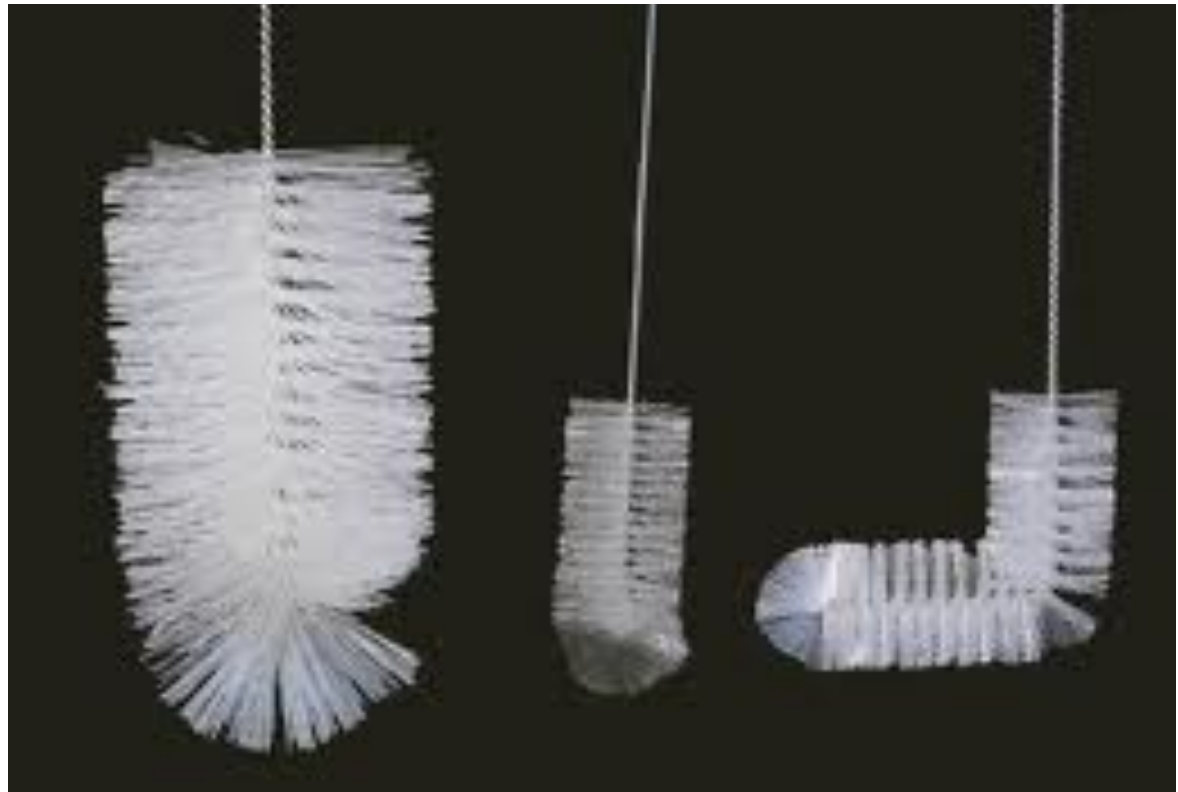
### Handling Clean Glasses

- Keep glassware clean and odor-free after washing:
1. Air-dry glassware. Drying glasses with a towel can leave lint and may transmit germs and odors.
  2. Dry and store glasses in a stainless-steel wire basket to provide maximum air circulation. Similar deeply corrugated baskets or surfaces also work.
  3. Do not dry or store glassware on a towel, rubber drain pad, or other smooth surface, as they can transfer odors to the glass and slow the drying process.
  4. Store glassware in an area free of odors, smoke, grease, or dust.



# How to Clean a Growler

- Low foam, Non oil-based detergent in warm/hot water
- Scrub with a brush (carboy type)
- Clean the lid





# How to Clean a Growler

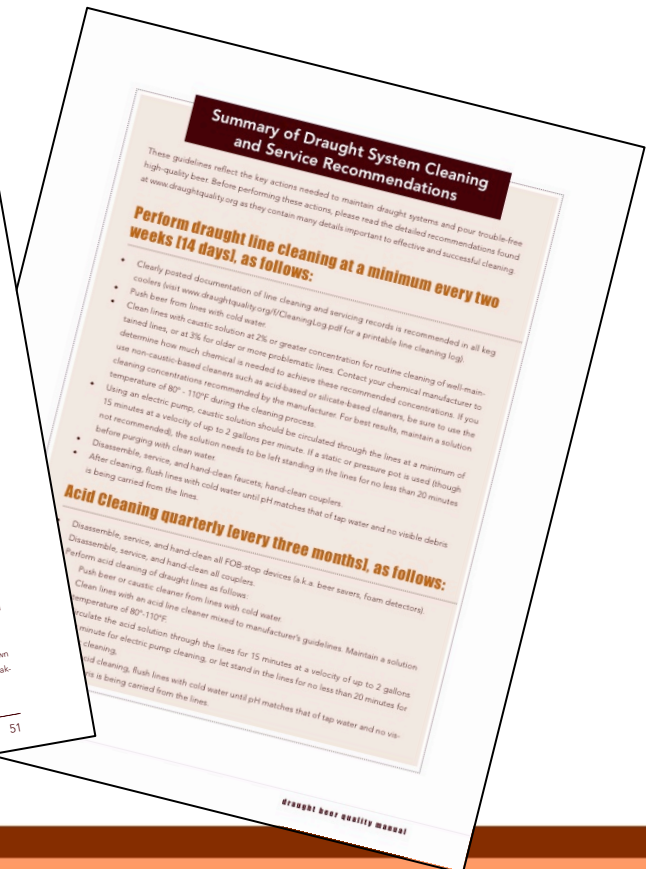
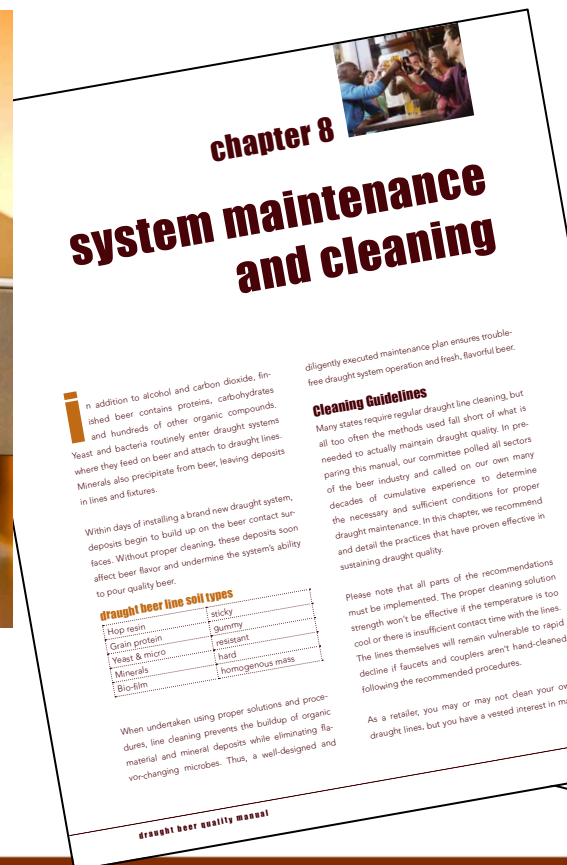
- Cold rinse
- Warm/hot sanitize with appropriate chemical
- Rack dry inverted





# System Cleanliness

- A clean draught system is paramount



# System Cleanliness

- Clean every two weeks
  - Caustic chemical solution at 80-110F
    - 2% solution, 3% for old or problem lines
  - Recirculate with an electric cleaning pump 15 minutes
- Disassemble and clean faucet at every cleaning
- Scrub Coupler at every cleaning
- Quarterly
  - Acid line cleaner – descaling
  - Disassemble and detail FOBs
  - Disassemble and detail couplers



# Filling Device Cleanliness

- Filling tubes should be cleaned with caustic and sanitized on the same cleaning cycle as the draught system.
- Vinyl fill tubes should not be stored long term in sanitizer as it will absorb sanitizer flavors
- Rinse before use



# Filling Device Cleanliness

- Counter-pressure fillers should be treated as a separate draught system and cleaned by the same guidelines
- Some systems may have more restrictive cleaning recommendations



# Post-Fill Quality

- Numerous potential off-flavors depending on:
  - Fill method
  - Growler type
  - Growler cleanliness
  - Storage conditions



# Post-Fill Quality

## Lightstruck/Skunky

- Choose the right container
- Store out of direct sunlight/flourescent light





# Post-Fill Quality

## Infection

- Sour, vinegar, butter flavors from infection with lactobacillus, acetobacter, pediococcus
- Insure cleanliness of growler filler, growler and draught system
  - Insure compliance with BA recommendations of pump cleaning, caustic strength, etc.
  - Some growlers are harder to visually inspect, i.e., ceramic
- Allow cleaned growlers to dry; don't seal and store wet



# Post-Fill Quality

## Carbonation Loss

- Changes mouthfeel, aroma and flavor
- Highly dependent upon fill method
  - Counter-pressure fill is preferred
- Cool water rinse minimizes foaming
- Consume promptly – within 24-72 hours of filling
  - Testing shows noticeable carbonation loss and mouthfeel change within 24 hours of filling



# Post-Fill Quality

## Sanitizer

- Chlorine or iodine aromas and flavors
- Do not overuse sanitizer
- Allow growler to drip-dry, never fill while still wet with sanitizer
- Cool water rinse



# Post-Fill Quality

## Oxidation

- Paper, Cardboard aromas and flavors
- Highly dependent upon fill method
  - Pre-evacuation is preferred
- Store cold – heat accelerates oxidation
- Consume promptly – within 24-72 hours of filling
- Testing shows noticeable oxidation characteristics within 72hrs of filling



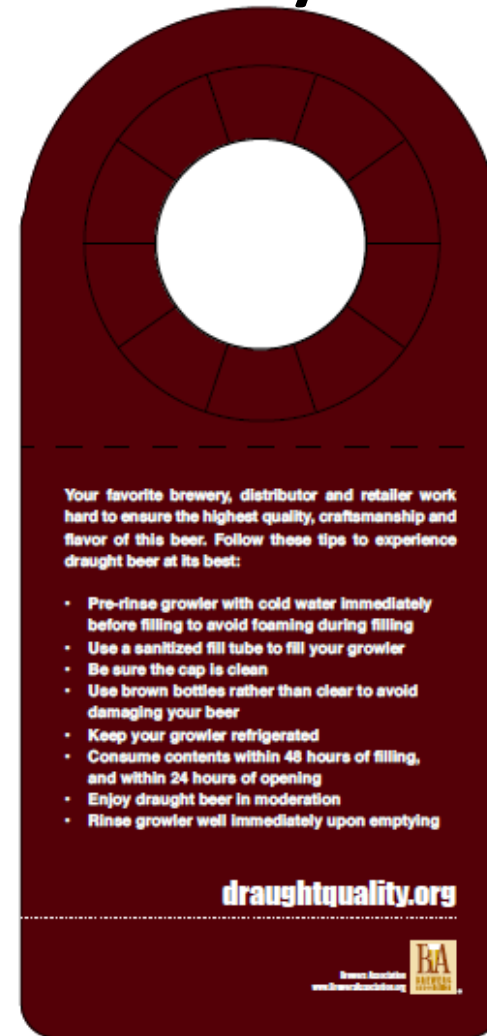
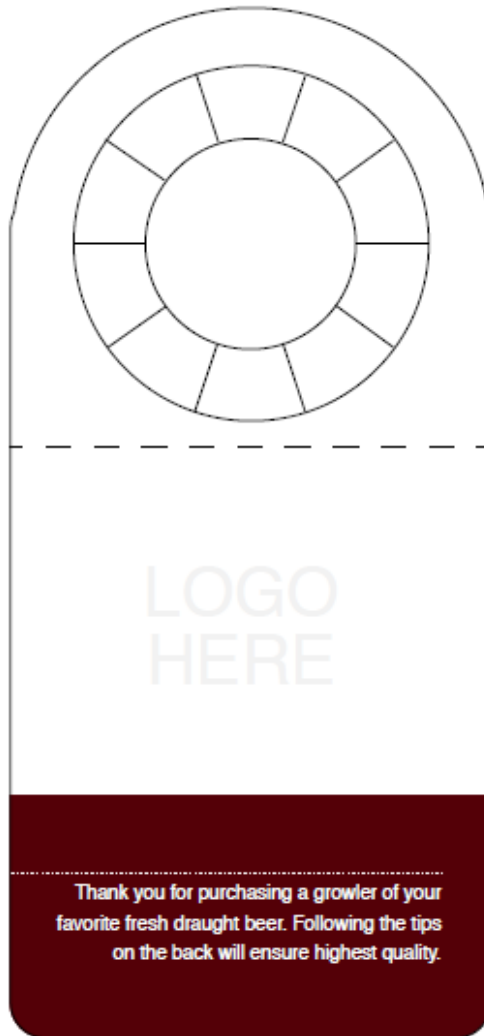
# Post-Fill Quality

## Consume in one sitting

- Oxidation and Carbonation loss will rapidly damage the beer after opening
- Growlers are meant for sharing!
- Enjoy responsibly!



# Post-Fill Quality





The background of the slide is a photograph of three glasses of beer. In the foreground, a tulip-shaped glass filled with a dark beer and a thick head of foam is in sharp focus. Behind it, two other glasses, one a tulip shape and the other a pilsner style, are blurred. The scene is set on a light-colored surface with soft, natural lighting.

# QUESTIONS?