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:

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 from "stinking" 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 class" 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/rinse should be used to ensure thorough cleaning as well as to avoid residual chemical aromas.
- The use of a large, soft-bristled brush can be used to assist in cleaning; however, brushes with exposed metal or any brush part should not be used to clean ceramic or glass growlers.

Brewers Association Facts About 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 2.3 atm (99 psig) or 3.7 atm (52 psig) respectively. (Example assumes a growler filled to 98% of capacity with beer at 38°F containing 3.5% volume CO2; 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 manufacturer 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 overpressurization 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 cracked or chipped, 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
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

<table>
<thead>
<tr>
<th>Easy Volumes</th>
<th>Easy Volumes</th>
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<tbody>
<tr>
<td><strong>Enter these values:</strong></td>
<td><strong>Enter these values:</strong></td>
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<tr>
<td>Temperature (°F)</td>
<td>Temperature (°F)</td>
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<tr>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>Pressure (psig)</td>
<td>Pressure (psig)</td>
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<tr>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Blend (% CO₂)</td>
<td>Blend (% CO₂)</td>
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<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Altitude (feet above sea level)</td>
<td>Altitude (feet above sea level)</td>
</tr>
<tr>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Alcohol Content (% ABV)</td>
<td>Alcohol Content (% ABV)</td>
</tr>
<tr>
<td>5.6</td>
<td>5.6</td>
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<tr>
<td>Volumes per Volume</td>
<td>Volumes per Volume</td>
</tr>
<tr>
<td>1.60</td>
<td>2.54</td>
</tr>
</tbody>
</table>

**Source:** DraughtQuality.org
Getting It Right

Brewers Association

Facts About Growlers

Review resources
Test material methods
Keep raising the bar
Equipment & filling
Container type & Safety
Hygiene

Brewers Association

DraughtQuality.org
Growler Filling Methods

Charles Kyle
Security/Communication/Draught
Sierra Nevada Brewing Company
Pail a Minute
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
Growler Types

Glass:
Growler Types

Ceramic:
Growler Types

Plastic:
GROWLER TYPES

Stainless Steel:
Growler Types

Others...

Paper

Aluminum
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 (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 CO2, and then sealed).

<table>
<thead>
<tr>
<th></th>
<th>PSIG</th>
<th>BARG</th>
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<tbody>
<tr>
<td>Refrigerated</td>
<td>13.1</td>
<td>0.90</td>
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<tr>
<td>Cool</td>
<td>20.3</td>
<td>1.40</td>
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<tr>
<td>Room Temp</td>
<td>32.4</td>
<td>2.23</td>
</tr>
<tr>
<td>Hot Day</td>
<td>57.5</td>
<td>3.96</td>
</tr>
<tr>
<td>Car</td>
<td>74.2</td>
<td>5.12</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th></th>
<th>Temperature</th>
<th>PSIG at 95%</th>
<th>PSIG at 99%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerated</td>
<td>38</td>
<td>13.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Cool</td>
<td>50</td>
<td>20.3</td>
<td>20.4</td>
</tr>
<tr>
<td>Room Temp</td>
<td>68</td>
<td>32.4</td>
<td>33.2</td>
</tr>
<tr>
<td>Hot Day</td>
<td>100</td>
<td>57.5</td>
<td>60</td>
</tr>
<tr>
<td>Car</td>
<td>120</td>
<td>74.2</td>
<td>78.4</td>
</tr>
</tbody>
</table>
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 overpressurization occurs; if using metal closures you may wish to discuss this issue with your supplier.
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

\[ \text{Beer Clean} = \text{Growler Clean} \]

• 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

Properly designed and appropriately cleaned, your draught system pour perfect draught beer from its faucets. But the consumer’s experience 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° - 38ºF.
- Beer served between 38° - 44ºF.
- To accomplish this, the glycol cooling the beer lines in a long-draw system should be set to 27º - 32ºF.
- 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 serving tool, 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 have 10% alternates. This practice may also reduce local health code violations.

Two systems deliver effective beer glass cleaning:

2. Dedicated automatic glass washers.

Glassware that is dry and free of lint and residue as well as foam-killing residues and lingering aromatics such as sanitizer. 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, oil or grease from other cleaning activities.

DraughtQuality.org
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 Maintenance and Cleaning

In addition to alcohol and carbon dioxide, a
keg's inner contents includes residues
and deposits of organic compounds
and minerals that have been present in
the beer for weeks when the keg is
opened. These deposits, along with
bacteria and yeast, can accumulate in
draught systems and lines over time.

Within days of installing a brand-new draught system,
contamination begins to build up on the inner joints,
causing the system's ability to pour
quality beer to deteriorate.

Cleaning Guidelines

When properly maintained, draught lines
and systems should be clean and free
of deposits. The proper cleaning
solution will reduce the formation
of deposits in lines and other parts
of the system. The solution
should be effective in removing
decided, must be applied
with proper solutions and
practices.

Acid Cleaning quarterly by month, as follows:

• Every March, April, May, and August,
  then every November and December.

Alcohol and carbon dioxide, and yeasts
and bacteria feed on beer and become
attached to the inner parts of the system.

When alcohol and carbon dioxide are
present, yeasts and bacteria can
form deposits and biofilms that
can reduce the quality of beer.

Maintenance and cleaning
practices

Cleaning solutions must be properly
prepared and applied to
remove deposits and
biofilms. The solution
should be effective in
removing deposits
and biofilms, and
should not damage
the system or
the wine.

The solution should be
applied correctly and
with proper practices.

Summary of Draught System Cleaning

and Service Recommendations

- Diligently review cleaning
  and maintenance practices.
- Follow the recommended
  procedures and
  practices for
  cleaning and
  maintenance.
- Regularly clean
  the system
  to maintain
  quality beer.
- Use the cleaning
  solutions
  recommended
  by the manufacturer.
- Regularly inspect
  the system
  and make
  necessary
  repairs.
- Maintain proper
  storage conditions
  for the cleaning
  solutions.
- Follow all
  safety
  and
  health
  guidelines
  provided by
  the manufacturer.
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

Thank you for purchasing a growler of your favorite fresh draught beer. Following the tips on the back will ensure highest quality.

Your favorite brewery, distributor and retailer work hard to ensure the highest quality, craftsmanship and flavor of this beer. Follow these tips to experience draught beer at its best:

- Pre-rinse growler with cold water immediately before filling to avoid foaming during filling
- Use a sanitized fill tube to fill your growler
- Be sure the cap is clean
- Use brown bottles rather than clear to avoid damaging your beer
- Keep your growler refrigerated
- Consume contents within 48 hours of filling, and within 24 hours of opening
- Enjoy draught beer in moderation
- Rinse growler well immediately upon emptying

draughtquality.org