

Glass Bottles: Reaching 50% Recycled Content

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Glass is ENDLESSLY Recyclable



About the GPI

The Glass Packaging Institute represents the North American glass container industry. Through GPI, glass container manufacturers advocate industry standards, provide education, and promote sound environmental policies and recycling.

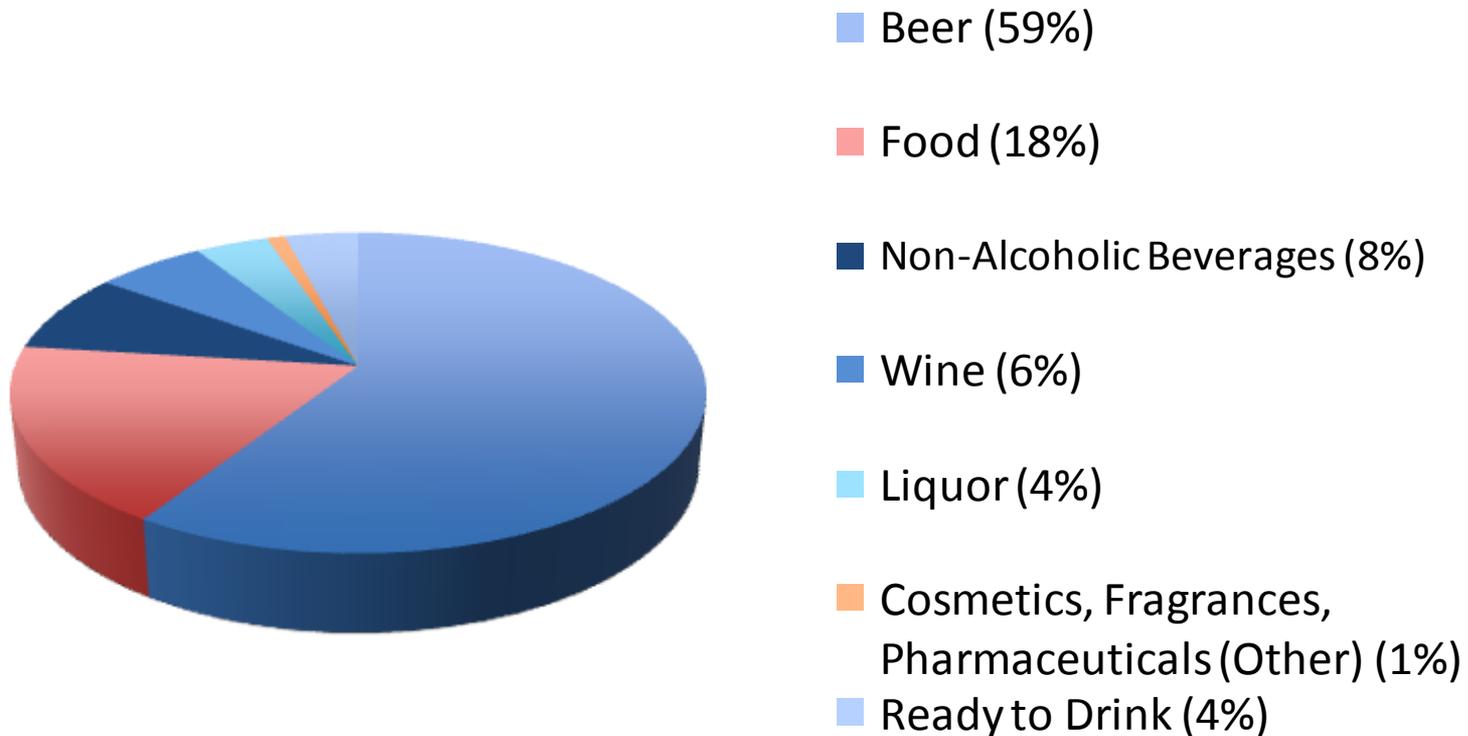
- 12 member manufacturers
- 33 associate member supplier companies



48 U.S. Glass Container Manufacturing Plants in 22 States

<u>State</u>	<u># Per State</u>
Pennsylvania	5
California	5
Indiana	4
Georgia, Illinois, New Jersey, North Carolina, Oklahoma	3
Colorado, Missouri, New York, Virginia, Texas	2
Arkansas, Florida, Louisiana, Massachusetts , Minnesota, Ohio, Oregon, Washington, Wisconsin	1

2009 U.S. Glass Container Shipments by Category



Source: Glass Packaging Institute (GPI)

U.S. Glass Container Shipments & Production

Jan - March, 2010 vs. Jan-March, 2009

Categories Jan-March, 2010 vs. Jan-March, 2009	Shipments	Production
Food	- 0.3%	-3.1%
NA Beverages	- 12.1%	-1.0%
Beer	-11.0%	-7.3%
Liquor	+2.7%	+4.2%
RTD Alcohol	-28.0%	-8.0%
Wine	+0.1%	-0.1%
Other	+26.2%	-11.9%
TOTAL	-8.1%	-4.9%

Source: Glass
Packaging Institute



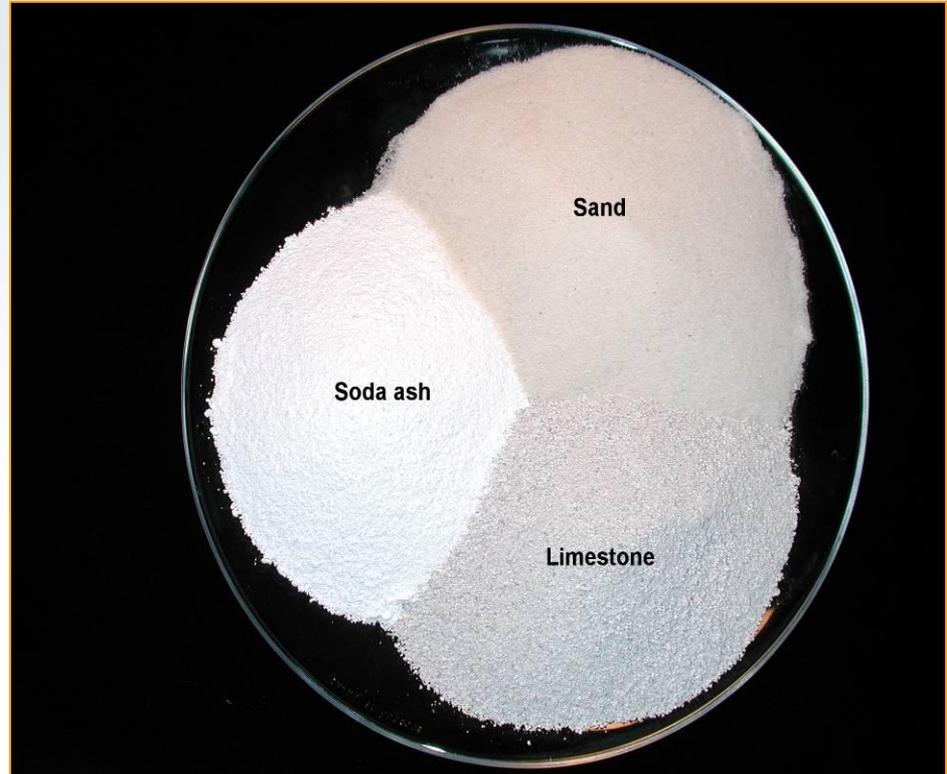
What is Glass?

Sand – 70-75%

Soda Ash – 10-15%

Limestone – 10-15%

Additives – 5%



What is Glass?

Cullet = Recycled glass used at levels as high as 80% when available



Environmental Benefits of Using Recycled Glass

- Over a ton of **natural resources saved** for every ton of glass recycled
- **Energy costs drop** about 2-3% for every 10% cullet used in the manufacturing process
- Six tons of recycled container glass used equals **one ton of carbon dioxide reduced**
- Glass has an **unlimited life**; can be recycled endlessly



2008 U.S. Glass Container Recycling Rates

- **35.6% of beer and soft drink bottles**
- **15% of wine and liquor bottles**
- **Nearly 15% food and other bottles/jars**
- **And 28% all glass containers**

Source: U.S. EPA



Glass Container Manufacturers Initiative

50% Recycled Content by 2013



- **Objectives:**
 - Encourage closed-loop recycling
 - Conserve energy
 - Save raw materials
 - Reduce CO2 emissions
 - Reduce overall costs

50% Recycled Content by 2013

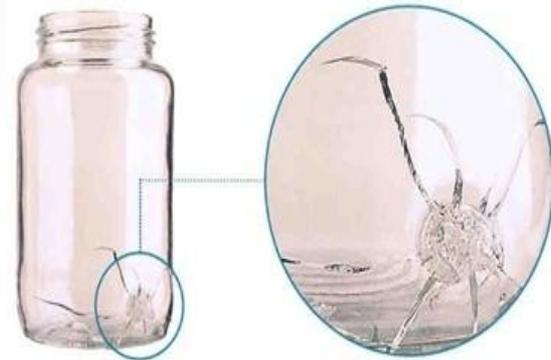
Achieving the Goal



- Support single-stream curbside recycling best practices
- Expand dual-stream curbside collection and drop-off
- Expand on-premise collection programs
- Improve beneficiation technology
- Encourage consumer glass recycling
- Build on current deposit programs
- Accelerate support of legislative initiatives

Glass Recycling: Critical Issues

- Availability
- Quality
- Cost



The effects of ceramic contamination.

Glass Recycling: Critical Issues

Energy Reduction

- Demand from other glass sectors to reduce energy costs
- Need to meet enhanced regulatory standards for air emissions



Competition for cullet

- Container glass
- Fiberglass
- Other applications
- Raw materials



Glass Recycling: Critical Issues

Current market conditions

- Not impacted by global economics
- No significant exporting of cullet
- Pricing stable/determined by geographic location



2008 Cullet Demand by Glass Container and Fiberglass Producers

Approximately 3.35 million tons used:

- O-I – 38.2%
- Saint-Gobain Containers - 15.4%
- Anchor Glass Container – 7.3%
- Gallo Glass – 7.2%
- Misc. Bottle – 3.7%

- Owens Corning Fiberglass – 14.2%
- Johns Manville – 6.4%
- Fiberglass misc. – 7.6%

1,000,000 more tons needed annually

75 Cullet Processor Locations in 30 States

- California* 11
- Pennsylvania* 9
- Indiana 4
- Ohio 4
- New Jersey* 4
- New York* 4
- North Carolina* 4
- Florida* 3
- Georgia* 3
- Texas* 3
- Connecticut 3
- CO*, KY, MI,
MO*, WA* 2
- AZ, IL*, IA, 1
ME, MA*, MS,
NE, OK, OR,
SC, TN, VA, WI

*Optical Color Sorting/Ceramic Detection Equipment



Current Cullet Usage Criteria

- **Container Glass Only:** no ceramic coffee cups, drinking glasses, Pyrex, ovenware, mirrors, etc.
- **Contaminant Free:** No ferrous materials, ceramics, etc.
- **Color Sorted:** Clear, Amber, and Green
- **Meets plant specifications** as to particle size (usually 3/8 inch)

Closed-Loop Glass Recycling

High-quality cullet =
New glass bottles and jars



=



Secondary Markets for Cullet



- Fiberglass

- Countertops and floors



- Landscaping



- Tile



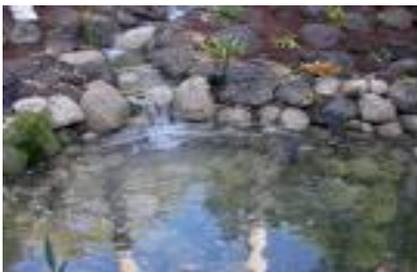
Secondary Markets for Cullet



▪ Bead



▪ Frictionators



▪ Filtration



▪ Fluxes/Additives

- Abrasives/sand blasting
- Brick manufacturing
- Roadbed Aggregate - **Diversion**
- Landfill Cover - **Diversion**

Glass Recycling: Collection Systems

- **Curbside single-stream recycling collection**
 - 40% of glass gets recycled into new glass containers, on average; another 40% ends up in landfills
- **Mixed glass collected in dual-stream systems**
 - yields an average of 90% of glass being recycled into glass containers and fiberglass
- **Container deposit systems**
 - color-sorted materials results in 98% glass being recycled

Source: Container Recycling Institute, 2009 Study



Glass Markets: Curbside Collection

Processing and Quality

- Glass handling
- Sorting equipment
- Negative sort

Markets

- Uneven geographic dispersion of end-markets
- Additional costs to process
- Diversion alternatives



South Seattle, WA

Saint-Gobain/eCullet Partnership

Achieving 50% Recycled Content



Partners:

- Saint-Gobain Containers, Inc.
- eCullet glass processors

Sources for Container Glass:

- City of Seattle curbside collection program
- Vancouver, BC bottle deposit program

Results:

- **Doubles the amount of recycled glass**—from 17% to 35%--in the manufacture of new glass wine bottles
- At full capacity delivers 7,500 – 8,000/month of furnace-ready cullet
- In operation since May 2009



Colorado Glass Recycling Drop-Off Program

“Be World Class, Sort Your Glass”



■ Partners:

- City of Fort Collins, Larimer County, City of Loveland
- Rocky Mountain Bottling Company

■ Background Research:

- Glass capture rates for single-stream recycling may only reach 30%; almost 100% for drop-off

■ Results:

- Started with 3 and expanded to 5 glass container drop-off locations in first three months
- Glass also collected at curb
- 30-35 tons/month (drop-off only); 230 tons to date in 2009



Kansas City, MO Glass Recycling Drop-Off Program



- **Partners:**

- Ripple Glass
- Mid-America Regional Council (grant)
- Retailers and businesses offering drop-off space (Whole Foods, Price Chopper, Hen House, sprint Nextel, Hallmark Cards, Harley Davidson Plant, community centers, etc.)

- **Program Details:**

- Over 60 drop-off location metro-wide (no glass collection curbside)
- Feasibility study found only 5% of glass recycled; estimate 80,000 tons of glass thrown away annually

- **Results:**

- Expect to collect 6,000 -7,000 tons of mixed glass in 2010
- Markets: Owens-Corning; Saint-Gobain Containers Inc. (in process)



Glass Markets: On Premise



- Support for on-premise bar, restaurant, and hotel initiatives
 - California
 - Colorado
 - Georgia
 - Indiana
 - Nevada
 - North Carolina
 - Texas
- 18% of beverages consumed on premise, and glass makes about 80% of the container mix

Bar/Restaurant Recycling in North Carolina



- **Alcohol Beverage Control Legislation**
 - Requires all ABC permit holders to recycle glass and plastic bottles and cans effective January 1, 2008
- **Results to Date**
 - **Total 2009 glass containers collected: 72,074 tons** (up from about 45,000 tons/year before ABC law)
 - About 6,500 in compliance out of 8,500
 - About 10 new businesses started up to collect ABC materials



Hotel Recycling Las Vegas, NV



MGM Mirage Glass Recycling

“Riding the Green Wave”

Collection

- January – April, 2010 – nearly 1,000 tons glass recycled at 10 hotel properties; est. 3,000 tons total for 2010
- Total for 2009 – 1,148 tons of glass recycled from 9 hotel properties



Special Event Recycling Monterey, CA

Special Event Collection

- 10 one-day **festivals** in 2008-2009
 - Diverted 25 tons of glass, cardboard, and other CRV containers
- Once-a-month **drop-off collection events** at Army Post
 - 2009 collection days yielded an average of 8,500-9,000 glass bottles
- Glass collection at 200 **bars/restaurants and hotels** averages 7 tons/month



Whole Foods Market

Grocery Retail Collection

- Partners
 - Whole Foods Market (CA, AZ, TX, NV)
 - Waste Management's "Greenopolis" GreenOps Tracking System
 - Glass Packaging Institute (future plans)
- On-premise "reverse vending" pilot program Whole Foods Market Stores
 - 5 stores in Phoenix, AZ
 - 2 stores in Tucson, AZ



Atlanta, GA Zero Waste Zone



▪ Atlanta Commercial District Zero Waste Zone Launched February 2009

– Partners

- “Atlanta Recycles” program
- Green Foodservice Alliance
- U.S. EPA Region 4
- Georgia Department of Natural Resources

– Retailers on-board and recycling glass bottles

- Georgia World Congress Center/Georgia Dome
- Ruth’s Chris Steak House
- Fifth Group Restaurants (5 restaurants + catering)
- Double Tree Hotel Atlanta
- Hyatt Regency Atlanta



Houston, TX Retail & Multi-Family Program



Photo courtesy of the *Houston Chronicle*

■ Partners

- WeCANRecycle
- Over 24 local bars/restaurants and other businesses
- High-rise condos

■ Results

- Nearly 360 tons glass recycled in first two months of 2010
- Over 350 tons glass recycled in 2009
- Over 88 tons of CO₂ kept out of the atmosphere from glass recycling program in 2009

Glass Markets: Legislation



- **Accelerate support of legislative and regulatory measures**
 - Improve glass recycling systems
 - Encourage on-premise/commercial recycling
 - Changes in state beverage deposit programs
 - Federal initiatives
 - Increase support for recycling
 - Improve recycling economics
 - Support recycling businesses

Glass Container Outreach



■ Education and Outreach

- New consumer-focused web site
- Recycle Glass Week
- *Inside Glass Packaging* monthly e-newsletter
- Presentations and industry events
- Consumer surveys (i.e., glass recycling, wine, craft breweries, and food)
- University and design school education program



Recycle Glass Week

September 12 – 18, 2010



Recycle Glass Week Events

- Clear Choice Awards
- “Friends of Glass” Recognition
- Race Across America Sponsorship with Earth911.com
- Recycle Glass “e-Hunt”
- GPI Member Recycling Events



Glass Packaging Institute
CLEAR CHOICE AWARDS



Race Across America



Choose Glass Recycle Glass



www.gpi.org

