



Glass Recycling

Understanding the Value of Glass



Agenda



- Who is Strategic Materials?
- Why Glass?
- The Glass Recycling Challenge
- Success Stories
- Supplier Services & Support

Strategic Materials

Who We Are



Strategic Materials

Markets Served

We are the largest glass recycler in North America, with nearly 50 plants.

With over 100 years of experience, we are a recycling market leader for glass and plastics.

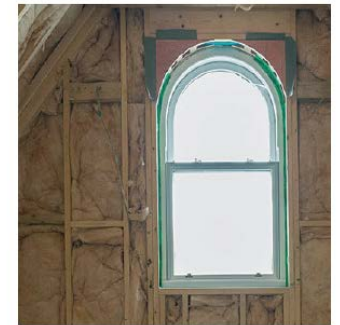
The markets we serve with our recycled glass helps to reduce manufacturing costs and improve sustainability.



Container



Abrasives



Fiberglass



Fillers



Highway Bead



Plastic



Specialty

Why Glass?

The Demand for Glass



We recycle nearly **3 million tons of glass** a year into a variety of applications.

Recycled glass demand is more than current supply in the container glass and fiberglass insulation industries.



Why Glass?

The Demand for Glass

SMI Midwest facilities supplied over 150,000 tons of glass cullet to the container industry

The benefits associated with glass packaging are many... glass containers are **nonporous** and **impermeable**, and food and drinks that are sold in glass containers are safely protected from



Taste & Quality

95% of wine drinkers prefer drinking wine that comes in a glass bottle.

81% of wine drinkers believe that glass bottles contain a higher quality wine,

Why Glass?

The Demand for Glass

According to a recent report by Global Industry Analysts (GIA), the global market for flat glass is projected to reach 84 million metric tons by 2020.

Uses for Flat Glass uses include facades and windows, windows and windshields, and solar thermal panels for the solar energy market.



Why Glass?

The Demand for Glass



Owens Corning uses more than one billion pounds of cullet every year for residential, commercial and industrial fiberglass applications.

Cullet helps cut costs, reducing energy costs roughly 2-5% for every 10% of cullet used



Single Stream Challenge

Capturing Value from Glass



Recycling Loop

Start to Finish



Glass Container Recycling Loop

Glass bottles and jars are 100% and infinitely recyclable



*A material recovery facility is a specialized plant that receives, separates and prepares recyclable materials for manufacturers.

- ISRI members acknowledge that not all glass is created equal. Clean glass has higher value than contaminated glass.
- Spec is an attempt to make glass recycling more open and transparent when
 - Cities are publishing RFB on new recycling programs. Cities can now specify specific levels of glass cleanliness so bids can be compared apples to apples
 - All in glass supply chain can understand the impacts of glass getting dirtier or cleaner
 - MRFs can calculate the payback for investing in glass cleaning systems
 - Non Glass Residue - 35% Maximum
 - Fines – 30%

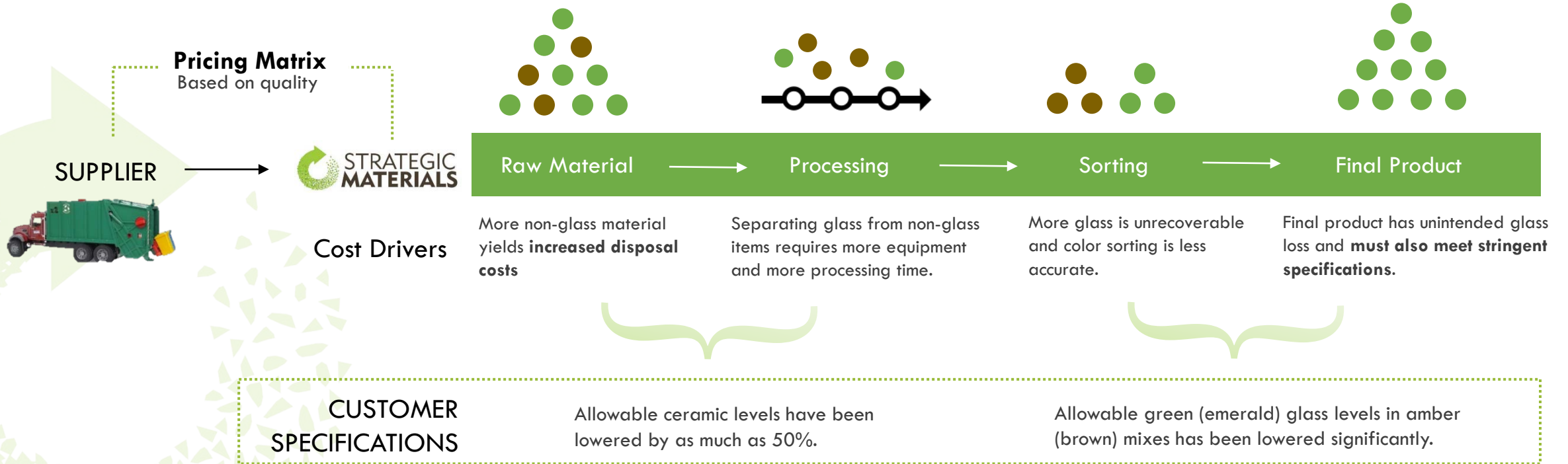


Institute of
Scrap Recycling
Industries, Inc.

Single Stream Contamination



As recycling becomes more prevalent in American households, the amount of single stream glass material has become a larger part of our supply base. We perform a sample analysis of the material for to determine glass content and undersize, ceramics, moisture and hazardous wastes. This allows us to most accurately price the incoming material, giving each supplier a pricing matrix, based on glass content.



Testing Protocols

Inspections



We perform inbound quality inspections and rate them based on the percentage of usable glass, generally clean glass with minimal or no visible contamination, and amount of ceramic, rock, or color contamination.

Our delivery inspection is either by:

- **Visual inspection** - in the case of Mixed Window Plate (MWP), Clear Window Plate (CWP), whole or 3-dimensional flint, amber, green or mixed color or
- **Sample analysis** - in the case of 3 Mix (single stream) glass from a Material Recovery Facility (MRF)



Pricing

Better Pricing = Better Supply



Our pricing for incoming glass is now tied to the quality of the supply. Key factors that drive processing:

- Non-Glass Residue % and local landfill rates
- Undersize %, plant capabilities and local disposal options
- Significant variance from these color percentages may reduce or increase the value of cullet stream.

Color	Description	Examples	Normal Target
3-Mixed glass	Brown container glass, clear container glass, and shades of green or blue	Beer bottles, beverage bottles, wine bottles	50% amber, 30% flint, 20% emerald green
Single Stream	Curbside, MRF glass	Post-consumer food or beer bottles, other recyclables	78% glass, all colors 10% non glass residuals 12% undersize

Success Stories

How to control glass prices

Supplier



Before:

Quality average last 6 months:
55% useable glass; 23% undersize; 22% NGR



After:

Quality post install:
75% useable glass; 13% undersize; 12% NGR



Price change:
110% increase



Supplier



Before:
Quality average last 6 months:
48% useable glass; 27% undersize; 25% NGR

After:
Quality post install:
67% useable glass; 22% undersize; 11% NGR



40% increase in Usable Glass



Supplier Services

Our processes and support

Supplier Services

Help in Addressing Dirty Glass & Raising Value



When you work with Strategic Materials, our experts can work with you to assess your operations and develop areas of improvement such as:

- new site construction suggestions
- quality suggestions to maximize value
- handling suggestions (i.e. spotted equipment, containers)
- improvement financing
- training



Toll-free supplier line **1-844-256-8985** | suppliers@strategicmaterials.com

- Phone is answered Monday through Friday, 7:00am - 4:00pm CST
- Voicemails and emails are typically returned within 24 hours