

U.S. Packaging Reconditioning Industry 2015 Survey and Statistics



51 Monroe Street Suite 812
Rockville, Maryland 20850
TEL (301) 577-3786 / FAX (301) 577-6476
www.reusablepackaging.org

RIPA Survey and Statistics

U.S. Industrial Container Reconditioning Industry

January – December 2015

HIGHLIGHTS, MAJOR FINDINGS

- Total steel drum reconditioning showed a decrease of 5% over two years - to an estimated total steel reconditioned sales of 23,754,000 drums.
- The number of steel drums scrapped was down 46% from 2013 to an estimated 3.9 million units.
- The number of plastic drums reconditioned was down approximately 7% over the two years to an estimated 3,829,000 drums. The number of scrapped plastic drums almost doubled to 2.3 million.
- The number of 275-gallon IBCs reprocessed is estimated at 2,420,000, up 23% over the two years. The number of 330-gallon IBCs reprocessed is estimated at 752,000, up 17%.

Background

This report on industrial container reconditioning in the U.S. presents summary data on the annual production of reconditioned steel and plastic 55-gallon drums as well as 275- and 330-gallon composite “intermediate bulk containers” (IBCs). Data reported is for calendar year 2015. This report also profiles the container reconditioning industry in terms of industry practices, processes used, equipment used, employee training, markets served, customer service and regulatory compliance. The association last conducted a similar survey for calendar year 2013.

The Reusable Industrial Packaging Association (RIPA) is a U.S.-based trade association comprised of businesses that recondition, distribute and/or manufacture industrial containers such as steel drums, plastic drums and IBCs. RIPA also includes among its members businesses that provide supplies and/or services to container reconditioners, distributors and manufacturers.

RIPA represent the vast majority of reconditioners operating in the U.S. As a condition of membership, these companies adhere to *Codes of Operating Practice* that were carefully developed by industry experts to ensure responsible practices and environmental stewardship. RIPA and its members take very seriously their role in helping shippers meet regulatory requirements, customer expectations, and their own goals for sustainability.

RIPA conducted this survey of its members in the spring of 2016. Taken together, the 41 facilities for which data were submitted constitute a significant sampling of the U.S. reconditioning industry. The data were aggregated and average production for respondents’ locations (plants) was calculated. The average production was then extrapolated to the estimated total number of U.S. facilities largely or exclusively in commercial reconditioning. The results are estimates for total commercial reconditioning in the U.S. (In previous surveys, some isolated data were submitted and reported for a small number of plants in Canada.)

Hazmat (“UN”) Packagings

More than half of all new and reconditioned industrial containers are used and reused for the shipment of regulated hazardous materials (referred to as “dangerous goods” outside the U.S.). As such, these containers must be qualified through testing to perform safely in shipping hazardous materials.

Different hazardous materials require containers with different performance capabilities. Containers can be rated to different levels of performance through qualifying tests. Markings on the container will indicate the level of performance to which the container has been certified.

In U.S. hazmat regulations, the UN Recommendations, and international transportation codes, industrial “containers” are more accurately referred to as industrial “packagings”. Further, a “packaging” is a container *unfilled*; a “package” is a container *filled*. Finally,

packagings certified for hazardous materials are often referred to as “UN” packagings (e.g., a “UN drum”).

Reconditioning Basics

Frequently, container reconditioning is mistakenly referred to as container “recycling”. However, it is important to note that “reconditioning” or “reprocessing” is the preparation of a used container for reuse **as** a container; “recycling” is the conversion of a used container into raw material (e.g., scrap steel or plastic) for production of a wholly different product. Significantly, the reuse of packaging has been shown to be far more environmentally beneficial than turning packaging into scrap.¹

Reconditioners will accept only used containers that are properly emptied of their contents. This means they must be “drip dry” or otherwise emptied using an appropriate means (e.g. siphoning). For viscous materials, U.S regulations allow a minimal “heel” of material which, if exceeded, could render the whole used container a hazardous waste.

Reconditioners do not accept hazardous waste. Used containers with excessive residues are returned to the sender as unused product. A written certification signed by the emptier is a key part of RIPA’s *Codes of Operating Practice* (see www.reusablepackaging.org, “Resources”, “Industry Data and Standards”)

Used drums and IBCs are inspected for structural integrity, stripped of previous labels and markings, and processed through a steel drum line, a plastic drum line or an IBC line.

IBC reprocessing can range from simple washing (referred to as “routine maintenance” in the regulations), to replacing inner bottles (“repair”), to a complete re-design and re-construction (“re-manufacturing”).

Steel drums are typically processed through mechanical “de-denters” and similar equipment. A sizeable share of closed-head drums will be converted (“re-manufactured”) into open-head (removable head) drums. This process requires equipment to roll a new “chime curl” along the top circumference. The process also requires the installation of a top head and a closing ring.

Also, steel drums are often processed through a shot blaster to strip paint and other surface adherents. Open-head drums may be processed through a drum furnace which burns off unwanted adherents.

¹ “Life Cycle Assessment of Newly Manufactured and Reconditioned Industrial Packaging”; (Beco) Ernst & Young, October, 2015; for Reusable Industrial Packaging Association

Closed-head steel drums (as well as plastic drums) are typically processed through a series of wash lines. Wash solutions may be caustic or acidic as one or both may be part of the processing plant.

Most steel drums will receive a treatment (typically a solution) for rust inhibition. Drums are then typically painted per customer specifications. Additionally, interior linings (or removable liners) may be added according to customer needs.

All reconditioning of packagings intended for hazardous materials includes a leakproofness test in (or after) the production line (referred to as “production testing”). Generally, packagings rated for a higher performance capability are subject to a more strenuous test.

All UN packagings must be properly marked according to the regulations. The “UN marks” are intended to inform users and emergency responders of the packaging’s performance capability and the identity of the person or company who certified the packaging. Other labels may be added by shippers for other purposes such as commercial branding.

Finally, reconditioners professionally clean all used packagings that have been reused and have reached the the end of their useful lives. Reconditioners do not send hazardous residues or unclean hazardous packagings to scrap yards, mills or other destinations. Shipment of hazardous residues requires full compliance with the Hazardous Materials Regulations. Significantly, unless the destination for used drums is a reconditioner, requirements include shipping papers and vehicle placards. (These requirements currently apply to emptied IBCs regardless of destination.)

Survey Results, Estimates of Production

Estimates of production levels were made by extrapolating reported data in a straight-line method out to the complete population of facilities.

The results suggest some shifts have occurred, after two years, away from or towards certain packagings. Areas of growth or contraction also can be attributed, at least in part, to fluctuation in general economic activity and/or markets for secondary materials (scrap).

Results are statistically meaningful, in line with assumptions, and well within a high confidence interval.

Major findings include:

- Total steel drum reconditioning showed a decrease of 5% over two years - to an estimated total steel reconditioned sales of 23,754,000 drums.
- The number of steel drums scrapped was down 46% from 2013 to an estimated 3.9 million units.
- Combining the numbers for reconditioned drums sold and drums scrapped shows a total steel drum throughput of 27,601,000 which tracks closely (but somewhat below) total steel drums reconditioned in many earlier years.
- The number of plastic drums reconditioned was down approximately 7% over the two years to an estimated 3,829,000 drums. The number of scrapped plastic drums almost doubled to 2.3 million.
- The number of 275-gallon IBCs reprocessed is estimated at 2,420,000, up 23% over the two years.
- The number of 330-gallon IBCs reprocessed is estimated at 752,000, up 17%.
- The estimated number of IBC re-bottlings is significantly less than the number of bottles scrapped. One might expect these two numbers to correlate more closely. However, producers of new bottles are not covered by the survey, so some data on new bottles may be currently going unreported.
- Approximately 56% of steel drums are used for hazmat; 66% of plastic drums; 68% of IBCs. These numbers have changed very little over the last several years.

It is apparent from these results that composite IBCs continue to grow in market share and that scrap rates for plastic drums and IBCs have climbed higher. A declined rate of steel scrapping is likely the result of lower scrap demand.

Regarding the relatively low number of new IBC bottles reported installed (as opposed to number of bottles scrapped), some underreporting may be unavoidable. IBCs are somewhat unique in their composite, divisible design. In any case, the numbers reported overall are significant and helpful in showing total throughput for the industry.

The following pages present these and other data as reported through the survey, including data on equipment, employees, operational features and regulatory compliance.

RIPA Industry Survey and Statistics

- Data Reported by Respondents is for Calendar Year 2015
- Estimates of Total 2015 Production are extrapolated from that data
- Previous RIPA Survey was for calendar year 2013
- 41 Reconditioning Locations Reported Survey Data
- Many plants operate in all product lines: steel drums, plastic drums and IBCs
- Several plants are exclusive to one or two product lines (*e.g., plastic drums and IBCs only*)

Total Number of U.S. Facilities with a:

Steel Drum Line	92
Plastic Drum Line	80
IBC Line	68

**estimates include members & non-members of RIPA*

Reconditioned and Remanufactured Steel Drums in 2015

Tight Head	5,914,000
Open Head	<u>17,840,000</u>
Total Steel	23,754,000
Scrapped Drums	<u>3,847,000</u>
Total US Steel	27,601,000

Production of Reconditioned (*and remanufactured*) 55-Gallon Steel Drums (*1000 units*)

RIPA Survey Years

2000	31,900	
2004	31,400	
2007	30,200	
2009	29,900	
2011	24,087	
2013	25,145	
2015	23,754	-5%

Reconditioned Plastic Drums in 2015

Total Drum 3,829,000

Scrapped 2,332,000*

**approximately doubled over 2013*

Production of Reconditioned 55-Gallon Plastic Drums (1000 units)

RIPA Survey Years

2000	4,500
2004	5,700
2007	6,200
2009	6,860
2011	4,316
2013	4,123
2015	3,829 - 7%

Reprocessing of Composite IBCs in 2015

275-Gallon IBCs

Washed IBCs	1,258,000
Re-Bottled	979,000
“Cross Bottled”	<u>183,000</u>
	2,420,000

330-Gallon IBCs

Washed IBCs	347,000
Re-Bottled	354,000
“Cross Bottled”	<u>51,000</u>
	752,000

Scrapped Bottles **1,510,000**

Production of Reconditioned Composite IBCs (1000 units)

RIPA Survey Years

2004	830
2007	1,250
2009	1,700
2011	2,168
2013	2,591
2015	3,172 +21%

Percentage of Packaging Sold for Hazmat

Steel drums:	56 %
Plastic drums:	66 %
Fiber drums:	20 %
Composite IBCs:	68 %

Transportation (*averages of data reported*)

Tractors	5
Trailers	150
Drivers	4
Hazmat endorsement	2
Lease tractors?	60 % "Yes"

Use of Reconditioning Methods

Caustic Wash	75%
Acid Flush	15%
Chaining	35%
Shot Blasting	30%
Drum Furnace	25%
Use Sodium Nitrate Rust Inhibitor?	40%

Wastewater treatment

Facilities with treatment	60%
Average gal per day	4,500
Sewer discharge	60% Yes
Discharge water tested	50% Yes
Pollutants tested: <i>Heavy Metals, COD, BOD, TSS, pH, TTO, Suspended Solids, Oil/Grease, Volatile Organics, Ammonia, Phosphorus</i>	

Operate Furnace(s)?

By Separate Survey, U.S. Total Number: 30

Test furnace ash? 30% Yes

How often? Yearly, every 2 yrs, each load

Monitor stack emissions for: *Opacity, Temperature, NO_x, SO_x, CO, PM, VOCs, Metals, Chlorinated Compounds*

Operate Paint Booth(s)? 60% Yes

Avg Number of Booths	1-2
HAP-free	25%
Low VOC	40%
Solvent-based	30%
VOC Emissions Permit(s)?	47%
Thermal equipment for VOCs?	15%

Incoming Containers

Use Empty Certification Forms?	90% Yes
Return "Heavy" Containers?	90%
Use RIPA rejection stickers?	75%
Hazardous Waste Testing?	70%
Test Results Hazardous?	20%

OSHA Reportable Injuries? 70% Yes

Average Number Injuries 4
Injury Types: *Chemical Burns, Sprains, Strains, Cuts, Contusions, Falling Drum, Broken Hand, Back*

Hazmat Training

Use RIPA Hazmat Employee Training Module? 90%

Useful to the Company in Spanish? 60%

Customer Audits

Avg # of Customer Audits 8

Regulatory Audits

Federal DOT	8	State DOT	2
Federal EPA	1	State EPA	7
Federal OSHA	1	State OSHA	4