

U.S. Packaging Reconditioning Industry 2017 Survey and Statistics



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RIPA Survey and Statistics

U.S. Industrial Container Reconditioning Industry

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HIGHLIGHTS, MAJOR FINDINGS

- Total steel drum reconditioning showed a slight decrease of 1% over two years - to an estimated total steel reconditioned sales of 23,431,000 drums.
- The number of steel drums scrapped was down almost a third from 2015 to an estimated 2.8 million units.
- The number of plastic drums reconditioned was down approximately 11% over the two years to an estimated 3,396,000 drums. The number of scrapped plastic drums remained nearly unchanged at 2.0 million.
- The number of 275-gallon IBCs reprocessed is estimated at 2,606,000, up 8% over the two years. The number of 330-gallon IBCs reprocessed is estimated at 890,800, up 18%.
- The estimated number of IBC bottles scrapped was up nearly 20% to 1,865,000
- Approximately 58% of steel drums are used for hazmat, 71% of plastic drums, 20% of fiber drums, and 64% of IBCs. These numbers have changed very little over the last several years.

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 2017. 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 2015.

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 represents 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.

Taken together, the 71 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.

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 new container or 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 – although hazardous waste companies may send empty drums for reconditioning. Generally, though, used containers with excessive residues are retrieved by and returned to the emptier as containing unused product. A written certification of empty status, 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.

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.

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

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 / fillers 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 to someone other than a reconditioner 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.

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 been steady or somewhat higher. A declined rate of steel scrapping is likely the result of lower scrap demand.

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 2017
- Estimates of Total 2017 Production are extrapolated from that data
- Previous RIPA Survey was for calendar year 2015
- 71 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 Estimated Number of U.S. Facilities with a:

Steel Drum Line	94
Plastic Drum Line	90
IBC Line	102

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

Reconditioned and Remanufactured Steel Drums in 2017

Tight Head	6,395,000
Open Head	<u>17,036,000</u>
Total Steel Recon	23,431,000
Scrapped Drums	<u>2,841,000</u>
Total US Steel	26,272,000

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	
2017	23,431	-1%

Reconditioned Plastic Drums in 2017

Total Recon 3,396,000

Scrapped 2,009,700

Total Plastic 5,405,700

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	
2017	3,396	-11%

Reprocessing of Composite IBCs in 2017

275-Gallon IBCs

Washed IBCs	1,208,000
Re-Bottled <i>and</i> "Cross Bottled"	<u>1,405,300</u>
	2,606,300

330-Gallon IBCs

Washed IBCs	402,100
Re-Bottled <i>and</i> "Cross Bottled"	<u>488,700</u>
	890,800

Total Recon **3,497,000**

Scrapped Bottles **1,865,000**

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
2017	3,497 +10%

Percentage of Packaging Sold for Hazmat

Steel drums:	58 %
Plastic drums:	71 %
Fiber drums:	20 %
Composite IBCs:	64 %

Transportation (*averages of data reported*)

Tractors	6
Trailers	180
Drivers	6
Hazmat endorsement	3
Lease tractors?	31 "yes" 60 – 100%

Use of Reconditioning Methods

Caustic Wash	80%
Acid Flush	15%
Chaining	25%
Shot Blasting	50%
Drum Furnace	35%
Use Sodium Nitrate Rust Inhibitor?	50%

Wastewater treatment

Facilities with treatment	60%
Average gal per day	2,500
Sewer discharge	90% Yes
Discharge water tested	90% 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	30%
Low VOC	40%
Solvent-based	25%
VOC Emissions Permit(s)?	47%
Thermal equipment for VOCs?	20%

Incoming Containers

Use Empty Certification Forms?	100% Yes
Return "Heavy" Containers?	90%
Use RIPA rejection stickers?	90%
Hazardous Waste Testing?	70%
Test Results Hazardous?	20%

OSHA Reportable Injuries? 50% Yes

Average Number Injuries 3
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 4

Regulatory Audits

Federal DOT	8	State DOT	3
Federal EPA	3	State EPA	7
Federal OSHA	3	State OSHA	5