



U.S. Packaging Reconditioning Industry 2013 Survey and Statistics



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RIPA Survey of U.S. Industrial Container Reconditioning Industry

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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 2013. 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 2011.

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 and Canada. 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 2014. Taken together, the 48 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 of 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; however, that data was not mixed with U.S. data nor used to project total production.)

Background: Hazmat (“UN”) Packagings

More than half of 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 products.

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, 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”).

Background: Reconditioning

Frequently, container reconditioning is mistakenly referred to as container “recycling”. However, it is important to note that “reconditioning” 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”).

¹ “Life Cycle Assessment of Newly Manufactured and Reconditioned Industrial Packaging”, (Beco) Ernst & Young, January, 2014; for Reusable industrial Packaging Association

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.

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.

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 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 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 is a reconditioner, the requirements include shipping papers and vehicle placards.

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.

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.

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

Major findings include:

- Total steel drum reconditioning showed an increase of 4% (an estimated 25,145,000 drums).
- The number of steel drums scrapped was up from 2011 to an estimated 6.5 million units.
- Combining the numbers for reconditioned drums sold and drums scrapped shows a total steel drum throughput of 31,671,000 which tracks very closely to total steel drums reconditioned in many earlier years.
- The number of plastic drums reconditioned was down approximately 4% to an estimated 4,123,000 drums.
- The number of 275-gallon IBCs reprocessed is estimated at 1,952,000, up 9%
- The number of 330-gallon IBCs reprocessed is estimated at 639,000, up 68%.
- The large increase in 330-gallon IBCs has been attributed (at least partially) to accelerated demand from the oil and gas sector.
- Approximately 56% of steel drums are used for hazmat; 73% of plastic drums; 78% of IBCs
- The number of IBC bottles scrapped is seemingly less than half the number of re-bottlings. However, there could be several reasons for this low estimate including:
 - Cages are sourced to a reconditioner while the bottle goes unreported (i.e., the source is not covered by the survey).
 - Many customers insist on new bottles. Washable bottles may be pulled (making room for new) and offered to another party. (Such pulled bottles can be transported 90/load vs 60/load for cages).
 - It is somewhat easier for the reconditioner to track purchases of new bottles as compared to the destruction of retired bottles.
 - Some survey respondents simply did not enter any data for the number of bottles scrapped, either by choice or a lack of records.

It is apparent from these results that composite IBCs continue to grow in market share and that scrap rates have climbed higher. A significantly higher rate of steel scrapping, in particular, is likely the result of both high scrap demand **and** the continuing trend towards the manufacture of thinner drums that are not reconditionable (and, thus, not sustainable).

Regarding the number of IBC bottles scrapped, the underreporting (for reasons described above) may be unavoidable. IBCs are somewhat unique in their composite, divisible design. In any case, the numbers reported 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 2013

Data Reported by Respondents is for
Calendar Year 2013

Estimates of Total 2013 Production are
extrapolated from that data

Previous RIPA Survey was for 2011

RIPA Industry Survey 2013

48 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*)

RIPA Industry Survey 2013

Total Number of U.S. Facilities with a:

Steel Drum Line 92

Plastic Drum Line 80

IBC Line 68

(estimated; includes non-members of RIPA)

RIPA Industry Survey 2013

Reconditioned Steel Drums

Total U.S. Tight Head 6,431,000

Total U.S. Open Head 18,714,000

Total Steel Recon Sales 25,145,000

Scrapped Steel *(OH and TH)* 6,526,000

Total U.S Steel Throughput 31,671,000

Production of Reconditioned
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	+4%

RIPA Industry Survey 2013

Reconditioned Plastic Drums

Total U.S Plastic Drum	4,123,000
<i>Reported Scrapped</i>	1,043,000

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	- 4%

RIPA Industry Survey 2013

Composite IBCs Estimated U.S.

275-Gallon IBCs

Washed IBCs	952,000
Re-Bottled	922,000
"Cross Bottled"	<u>78,000</u>

1,952,000

330-Gallon IBCs

Washed IBCs	94,000
Re-Bottled	454,000
"Cross Bottled"	<u>91,000</u>

639,000

Scrapped Bottles 651,000

Production of Reconditioned
Composite IBCs (*1000 units*)
RIPA Survey Years

2004	830	
2007	1,250	
2009	1,700	
2011	2,168	
2013	2,591	+19%

RIPA Industry Survey 2013

Percentage Packaging Sold for Hazmat

Steel drums:	56 %
Plastic drums:	73 %
Fiber drums:	20 %
Composite IBCs:	78 %

RIPA Industry Survey 2013

Transportation (averages of data reported)

Tractors	5
Trailers	220
Drivers	6
Hazmat endorsement	3
Do you lease tractors?	21 "Yes"
Percentage leased?	82% <i>on average</i>

RIPA Industry Survey 2013

Wastewater treatment

Facilities with treatment	23
Average gal per day	6,500
Sewer discharge	13 Yes
Discharge water tested	10 Yes

Pollutants tested: Heavy Metals, COD, BOD, TSS, pH, TTO,
Suspended Solids, Oil/Grease, Volatile
Organics, Ammonia, Phosphorus

Collect Stormwater Runoff?	4 Yes
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RIPA Industry Survey 2013

Operate Furnace(s)? 17 Yes *(U.S. Total Number by Separate Survey: 30)*

Test furnace ash? 4 Yes

How often? Yearly, every 2 yrs, each load

Monitor stack emissions for: Opacity, Temperature, NOx, SOx, CO,
PM, VOCs, Metals, Chlorinated
Compounds

RIPA Industry Survey 2013

Operate Paint Booth(s)? 29 Yes

Avg Number of Booths 2

HAP-free 7 respondents

Low HAP 21 respondents

Solvent-based 18 respondents

VOC Emissions Permit(s)? 29 Yes

Thermal equipment for VOCs? 8 Yes

RIPA Industry Survey 2013

Incoming Containers

Use Empty Certification Forms?	40 Yes	83%
Return "Heavy" Containers?	42 Yes	87%
Use RIPA rejection stickers?	36 Yes	75%
Hazardous Waste Testing?	33 Yes	69%
Test Results Hazardous?	7 Yes	

RIPA Industry Survey 2013

<u>OSHA Reportable Injuries?</u>	32 Yes
Average Number Injuries	5
Injury Types	Chemical Burns, Sprains, Strains, Cuts ,Contusions, Broken Hand, Back
Use RIPA Hazmat Employee Training Module?	43 Yes
Useful to the Company in Spanish?	12 Yes
OSHA "GHS" Training Completed?	44 Yes

RIPA Industry Survey 2013

Customer Audits *(all)* 241

Avg # of Customer Audits 9

Regulatory Audits *(all)*

Federal DOT	7	State DOT	1
Federal EPA	1	State EPA	19
Federal OSHA	1	State OSHA	10