Composite IBC Compliance Manual

2020

REUSABLE INDUSTRIAL PACKAGING ASSOCIATION

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INTRODUCTION

The Reusable Industrial Packaging Association is pleased to provide you with the "Composite IBC Compliance Manual." The Manual was developed to help RIPA members understand and comply with the full range of U.S. Department of Transportation (DOT) and Environmental Protection Agency (EPA) regulations affecting the transportation, handling and reprocessing of composite intermediate bulk containers. In addition, the manual contains several unique documents that provide plant managers with important tools designed to help manage IBCs, improve worker safety and educate customers about IBC safety issues.

While comprehensive, the Manual is not intended to be a complete regulatory reference guide or a replacement for the binding government regulations. RIPA members with questions about specific DOT regulatory compliance issues should refer to 49 CFR, Parts 105–180, or call the association for assistance.

DEFINITIONS AND TERMS – IBC REPROCESSING

Note: All regulatory references are found in 49 CFR Parts 100 to 199 unless otherwise noted.

Body
The receptacle proper (including openings and their closures, but not including service equipment), that has a volumetric capacity of not more than three (3) cubic meters (3,000 liters, 793 gallons, or 106 cubic feet). (§178.700(c)(1))

Competent authority (US)
The Pipeline and Hazardous Materials Safety Administration's Office of Hazardous Materials Safety. (§171.8)

Composite IBC
A rigid IBC designed for mechanical handling, comprised of a plastic inner receptacle surrounded by a metal frame (outer receptacle) that holds the inner receptacle in place, and is affixed to a pallet. (§178.702(b))

Cross-bottled IBC (non-regulatory term)
A remanufactured composite IBC in which an inner receptacle from one manufacturer is placed into an IBC frame/pallet produced by another manufacturer. (See also Remanufactured IBC).

Design qualification tests
Performance tests, which apply to composite intermediate bulk containers. Test are performed in the sequence specified. (§178.803)

Emptier (non-regulatory)
A company that empties filled IBCs and offers them to an IBC reprocessor (or for-hire carrier) for transport to an IBC reprocessing facility.

HazMat employee training
Training conducted in accordance with Subpart H-Training, which includes, as applicable, general awareness, function-specific, safety, and security awareness training. (§172.700)

Inner receptacle
A receptacle which requires an outer packaging to perform its containment function, such as an inner receptacle of a composite IBC. (§171.8)

Intermediate bulk container or IBC
A rigid or flexible portable packaging, other than a cylinder or portable tank, which is designed for mechanical handling. The capacity of the container ranges from >450 L to 3000 L. (§171.8)

Quality assurance guidelines (non-regulatory)
The guidelines set forth in Appendix III of this document.

Re-bottled IBC (non-regulatory)
A repaired composite IBC in which an inner receptacle from one manufacturer is replaced by an inner receptacle of the same design type from the same manufacturer. (See also Repaired IBC.)

Remanufactured IBC
A metal, rigid plastic or composite IBC produced as a UN type from a non-UN type, or converted from one UN design type to another UN design type. An inner receptacle produced by one manufacturer that is placed into a frame produced by another manufacturer (or vice versa) is remanufacturing. (§180.350(a)) (See also Appendix VII; DOT Special Permit 16323)

Repaired IBC
A metal, rigid plastic or composite IBC that is restored to conform to the design type and is able to withstand the design type tests. The inner receptacle of a repaired IBC may be replaced with another inner receptacle of the same design from the original manufacturer. The bodies of IBCs and inner receptacles of composite IBCs are not repairable. (§180.350(b))

Resource Conservation & Recovery Act
A law giving authority to the U.S. Environmental Protection Agency (EPA) to write regulations, including criteria for container emptiness.

Routine maintenance (IBC)
A routinely maintained IBC is a metal, rigid plastic or composite IBC that is cleaned, with body closures reinstalled or replaced in conformance with the original manufacturer's specifications. Routine maintenance also includes restoration of structural equipment not performing a hazardous materials containment function (e.g. legs) as necessary to conform to the design type. (§180.350(c))

Service equipment
The filling and discharge, pressure relief, safety, heating and heat-insulating devices and measuring devices on an IBC. (§178.700(c)(2))

Structural equipment
The reinforcing, fastening, handling, protective or stabilizing members of the body or stacking load bearing structural members (such as metal cages). (§178.700(c)(3))

EMPTY IBC REQUIREMENTS

1. Empty IBC transportation requirements

a. IBCs must meet RCRA emptiness requirements AND the IBC must be properly prepared for transportation. (Shipper requirement – see (3).)

b. All empty IBCs should be accompanied by a signed and dated "Empty IBC Certification". (A copy of the certification is included, in Appendix V of this manual.)

2. RCRA emptiness requirements for IBCs (40 CFR 261.7)

a. All residues have been removed that can be removed using the practices commonly employed to remove materials of that type of packaging, e.g. pouring, pumping, and aspirating, AND

b. No more than 0.3 percent by weight of the total capacity of the packaging remains if it is greater than 119 gallon capacity in the packaging or inner liner. Example: A RCRA-empty 275-gallon capacity IBC may retain not more than 0.82 gallons of residue.

NOTE: California has adopted more stringent emptiness requirements that include "drip dry" provision for pourable liquids. (See Appendix IV)

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c. For residues of EPA listed hazardous wastes (e.g. acute, "P-list chemicals") the IBC is empty only if it has been "…triple-rinsed using a solvent capable of removing the product, or has been cleaned by another method shown to achieve equivalent removal."

3. DOT IBC transport requirements (§173.29)

a. Closures and labels. All openings on the empty packaging must be closed, and all markings and labels must be in place as if the packaging were full of its original contents.

b. Truck marking and placarding. Trucks transporting empty IBCs that previously contained a regulated material should be placarded and accompanied by shipping papers. The placards and shipping papers should be offered to the carrier by the shipper and indicate the hazard class of the residue as well as the unique 4-digit UN identification number marking for those contents.

4. Inspection procedures

a. Each incoming IBC should be inspected to determine if it meets –

b. the emptiness criteria in 40 CFR 261.7.

c. the original design specification of the IBC, as well as its capability for reprocessing.

NOTE: If the IBC does <u>not</u> meet the emptiness criteria, a RIPA "Rejected" sticker should be applied to the IBC and the unit should be placed in an area specific to this purpose. The closed IBC with its residue should be returned to the shipper as unused product as soon as possible.

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d. Inspection procedures for IBCs should include:

i. Cage assessment, e.g., corrosion, broken welds, valve well, cross bars, etc.

ii. Pallet assessment, e.g., broken legs, corner supports, struts, capability for mechanical handling, etc.

iii. Inner receptacle assessment, e.g., valve, top cap etc.

Note: For IBCs with an outer receptacle fully enclosing the inner receptacle, it may be difficult to assess the condition of a bottle without removing the cap. This should be done cautiously, due to possible exposure to fumes.

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iv. Other, e.g., corner protectors, cushioning materials, etc.

e. IBCs that are assessed as not being capable of being reused for hazardous materials after reprocessing shall be segregated and managed in an environmentally sound manner.

f. Residue management

RIPA members should take the following steps to help minimize the amount of legally authorized residue in emptied IBCs.

g. Advise emptiers of the RCRA-empty standards that apply to emptied IBCs that are transported to reconditioning facilities.

h. Advise customers that every incoming load of empty IBCs must be accompanied by an "Empty IBC Certification." A sample certification form is included with this manual.

i. Ask customers to read and sign an "Agreement Between IBC Reprocessors and emptiers' (copy attached as Appendix I).

j. Assess every incoming IBC for emptiness. Be sure employees are aware of procedures for dealing with IBCs that do not meet the RCRA-emptiness requirement.

k. Set aside in a clearly marked location IBCs that do not meet the emptiness requirement.

l. Apply a "Rejected" sticker to each IBC that is set aside in accordance with (e) above.

m. Notify the emptier in writing (email is acceptable) that they have sent a non-empty IBC to your company, and that the shipper is responsible for ensuring proper pick-up and return.

n. Ensure the "rejected" IBC is properly returned to the original emptier as product, using shipping papers provided by the emptier.

o. Establish procedures for on-site management — including segregation as needed — and, when required, testing of regulated residues. Procedures for proper disposition of residues should be established to ensure compliance with applicable federal and state laws and regulations.

5. Incoming inspection of new IBC inner receptacles i.e. "new IBC bottles"

RIPA recommends IBC reprocessors who purchase new IBC bottles from manufacturers visually inspect each incoming bottle on all six sides to determine if any damage has occurred during transportation that would render the bottle unusable.

IBC REPROCESSING – MARKING

1. General marking requirements (178.703)

Every IBC must be marked in a durable and clearly visible manner. The marks must be at least 12 mm (1/2 inch) in height. New and remanufactured composite IBCs must have a "primary" mark and an "additional" mark, which appear in conjunction with one another in a visible location on the outer receptacle.

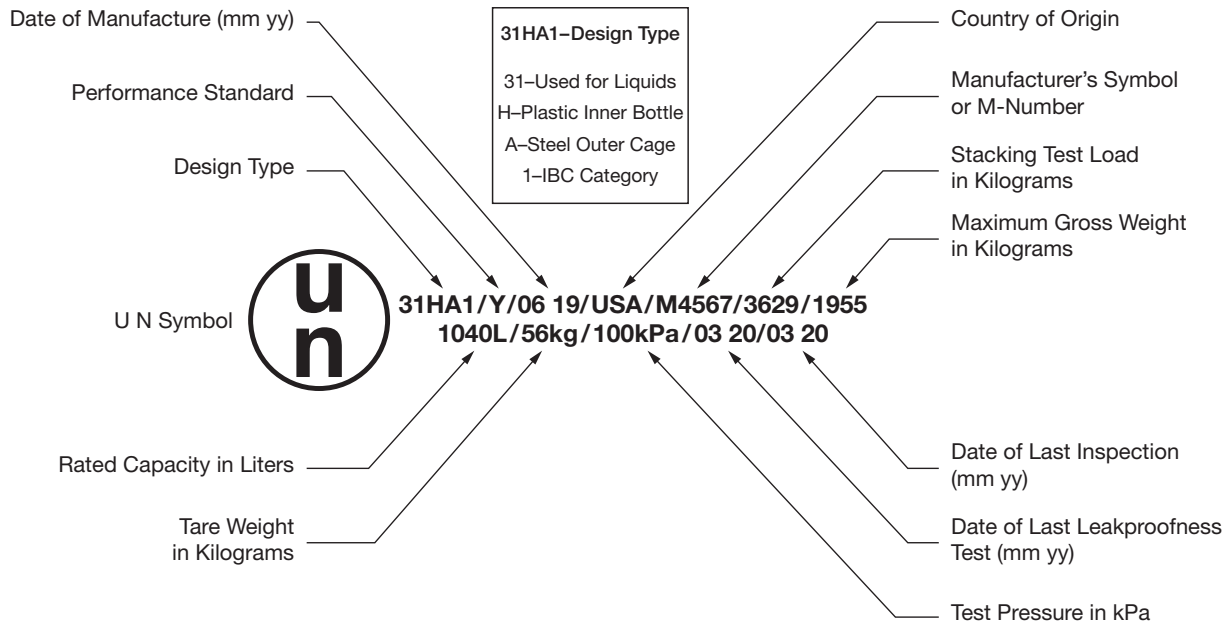
a. Primary marks for composite IBCs
- UN symbol
- 31HA1 (liquids); 11HA1 or 21HA1 (solids) ("H" indicates plastic inner receptacle; "A" indicates steel outer packaging)
- Y, or Z, reflecting Packing Groups II, or III
- Month and last two digits of year of manufacture or remanufacture
- Country (USA)
- Name or symbol of manufacturer or remanufacturer
- Stacking test load, in kilograms
- Maximum permissible gross mass, kilograms

b. Additional marks for composite IBCs
- Rated capacity in liters of water
- Tare mass in kilograms
- Gage pressure in kPa
- Date of last leakproofness test (month/year)
- Date of last inspection (month/year)

c. Inner bottle marks for composite IBCs
- The code designating the IBC design type (e.g. 31HA1)
- Name and address or symbol of the manufacturer
- Date of Manufacture
- Country authorizing the mark

See below for full marking example.

UN Mark Sample
(units of measure required where shown)



d. For example, some reprocessors apply a mark indicating that stacking in transit is authorized up to 250 kg (see example below). Ths is intended to allow IBCs to be double-stacked, after being emptied, in transportation back to the reprocessor. Some manufacturers are applying marks with a higher stack load authorization, e.g. 1650 kg. This is intended to allow new IBCs to be double-stacked for transportation when filled. Customers that demand a higher stacking limit may request the mark from the IBC supplier.

2. IBC reprocessor marks (§180.350)

a. Reprocessors can reprocess composite IBCs in three different ways:

i. Routine maintenance

ii. Repair

iii. Remanufacture

b. Remanufactured IBCs include "cross-bottled" IBCs. A cross-bottled IBC has an inner receptacle produced by a manufacturer other than the one that produced the outer receptacle, which is often referred to as the "cage."

c. Remanufactured IBC markings are the same as those required for new IBCs. This means that each remanufactured IBC must contain a primary mark and an additional mark. *See example on previous page.*

d. If your company is using DOT-SP 16323 to by-pass leakproofness testing of newly purchased inner receptacles, a label with the "DOT-SP" number must be affixed to the IBC in a visible location, near to the full IBC mark. The letters on the SP mark or label must be at least ¼ inch wide and 2 inches high.

DOT-SP 16323

e. Repaired IBCs must retain the original manufacturer's mark. If the original UN mark is removed during the reconditioning process, it must be reapplied by the reprocessor.

i. The repair mark includes three elements and should be placed near the original UN mark in a location accessible for inspection.

- Country
- Name or symbol registered with DOT of the reconditioner
- Month and year in which repair took place

Repaired IBC mark (Sample) USA/M1234/03 11

f. Routinely maintained IBCs must show the original producer's UN mark. If the original mark is removed during the reconditioning process, it must be reapplied by the reprocessor.

g. The routine maintenance mark includes two elements, and should be placed near the original mark in a location accessible for inspection:

- Country
- Name or symbol registered with the DOT of the reconditioner

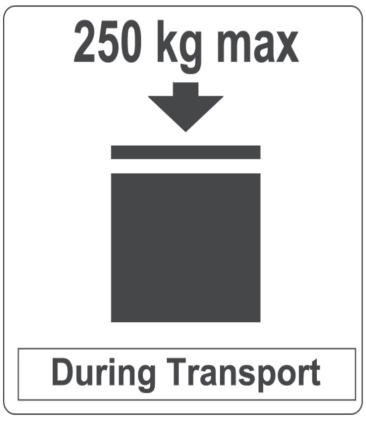
Routine maintenance (Sample) USA/M1234

3. What does it mean to "re-apply" or "restore" an original mark on an IBC?

Sometimes the markings on a used IBC are partially missing or simply unreadable. DOT regulations authorize a reconditioner to restore these markings. §180.352(b)(2)(i) states: "Missing or damaged markings, or markings difficult to read must be restored or returned to original condition."

4. IBC "stacking" mark (§§178.703(b)(7)(i) – (iv))

a. DOT requires every company that manufactures, repairs or remanufactures an intermediate bulk container (IBC) used for hazardous materials transportation to mark each unit with one of two symbols that indicate that the IBC is designed for stacking, or not designed for stacking. The stacking symbol must identify a maximum load limit, in kilograms.



IBC TESTING REQUIREMENTS

1. Leak tests

a. DOT requires IBC reprocessors to perform two forms of "production" leak tests on IBCs, depending on the specific reprocessing procedure employed, i.e. remanufacture, repair or routine maintenance.

   i. New, remanufactured or repaired IBCs for liquids must be "leakproofness" tested.

   ii. Routinely maintained IBCs must have the "leaktightness" of the unit verified.

b. DOT provides a specific procedure for the performance of leakproofness testing (see below) but offers no guidance on how to conduct a "leaktightness" test. RIPA offers two optional procedures for performance of the leak tightness test (see no. 3 below).

2. DOT Leakproofness test (§178.813)

a. Vented closures must either be replaced by non-vented closures or the vent must be sealed. The inner receptacle of a composite IBC may be tested without the outer packaging provided the test results are not affected.

b. The leakproofness test must be carried out for a suitable length of time using air at a gauge pressure of not less than 20 kPa (2.9 psig). Leakproofness must be determined by coating the seams and joints with a heavy oil, a soap solution and water, or other methods suitable for the purpose of detecting leaks. Testers are looking for bubbles as evidence of leaks. Other methods, if at least equally effective, may be used.

c. Pass criteria – no leakage of air.

3. Leaktightness test (§180.350)

a. DOT does not specify the way a leaktightness test must be performed. RIPA suggests two effective methods, or another method of equal technical validity. The pass criteria for either test is "no leakage of air."

   i. Solution over discharge valve. Internal air pressure should be applied for an adequate period of time. The valve connection should be fully coated with a soap solution. The test must be conducted for a period of time sufficient to pressurize the interior of the packaging to the desired level and determine if there is air leaking from the discharge valve.

   ii. Water submersion of discharge valve. The IBC should be restrained while internal air pressure is applied for an adequate period of time. The method of restraint should not affect the outcome of the test. The IBC should be submerged under water until the discharge valve is fully covered. The test must be conducted for a period of time sufficient to pressurize the interior of the packaging to the desired level and determine if there is air leaking from the discharge valve.

4. IBC retest and inspection (§180.352)

a. DOT requires that each IBC used to transport liquid hazardous materials (or discharge solids under pressure) be tested and inspected every 2.5 years starting from the date of manufacture or the date of a repair. The requirements are:

   i. Performance of a leakproofness test

   ii. External visual inspection (bottle removed from the cage) to ensure:

      1. The IBC is marked properly. Missing or damaged marks, or marks that are difficult to read must be restored or returned to original condition.

      2. Service equipment is fully functional and free from damage which may cause failure. Missing, broken, or damaged parts must be repaired or replaced.

      3. The IBC is capable of withstanding the applicable design qualification tests.

      4. There are no cracks, warpage, corrosion or any other damage which might render the IBC unsafe for transportation. An IBC found with such defects must be removed from service or repaired.

b. Every five (5) years from the date of original manufacture the IBC inner receptacle must be internally inspected to ensure that the IBC is free from damage (e.g. cracks, warpage) and to ensure that the IBC is capable of withstanding the applicable design qualification tests.

NOTE: The retest and inspection process above can be performed at any time and can be considered to restart the 2.5 and 5-year inspection period.

RECORDKEEPING

1. Design type test report for remanufactured IBCs (§178.801)

Reprocessors that sell remanufactured (including cross-bottled) IBCs should maintain a current copy of the test report for each IBC design type sold (e.g. Schuetz cage/ Mauser bottle). These reports must be retained for as long as the IBC is produced, and for at least 2.5 years after production ceases. The reports must be available to DOT, upon request.

2. IBC retest and inspection (§180.352(g))

a. Reprocessors performing IBC retests and inspections must maintain written records of all retests, initial and periodic inspections and other tests performed on an IBC.

b. Special Permit 16323

c. DOT requires IBC reprocessors that employ a special permit to maintain a copy at each facility. Companies using SP 16323 must apply to the U.S. Department of Transportation

Records must include the following:

i. A description of the design types and packaging specifications.

ii. Test and inspection dates.

iii. Name and address of test and inspection facilities.

iv. Name of person(s) conducting test or inspections.

v. Test or inspection specifics and results.

NOTE: These records must be kept for each packaging at each location where periodic tests are conducted, until such tests are successfully performed again or for at least 2.5 years from the date of the last test. If the tests are performed by a third-party laboratory, both the reconditioner and the laboratory should maintain copies of the test report. The records must be made available for inspection by DOT. (A sample test record is attached as Appendix II.) More than one employee should know how to locate these records in case of a DOT inspection.

3. Records of reprocessed IBCs

DOT officials have asked some members of the association to maintain records indicating the total number of IBCs that are produced each day. While this is NOT a legal requirement, RIPA suggests that reconditioners maintain a log with this basic information and freely share this information with DOT enforcement officials.

CLOSURE INSTRUCTIONS (§178.2)

DOT requires IBC reprocessors and distributors to provide closure instructions to each person to whom a hazmat packaging is sold. It is the shipper's responsibility to assemble the container for shipment in accordance with the manufacturer's or distributor's closure instructions. If you are using closure instructions provided by an IBC manufacturer or producer of inner receptacles, RIPA recommends that you obtain a copy from your supplier with each shipment to ensure your company has the most recent version.

The closure instruction must include the following information:

i. All requirements (for closing) not met at the time of transfer.

ii. Information about closures that must be used, including gaskets, sufficient to ensure the closed packaging can pass design tests.

iii. Closing procedures.

iv. Instructions of sufficient clarity to provide for "consistent" and "repeatable" means of closure.

v. Other relevant guidance to ensure safety by various modes of transport.

NOTES: 1. Closure instructions must be retained by the manufacturer or distributor for at least one year and be made available to DOT upon request.
2. Closure instructions can be provided to shippers by electronic means, including e-mail or CD. Such communication must be capable of being printed. Merely referring a customer to a company web site for closure instructions is not acceptable.

MANAGEMENT RESPONSIBILITIES

1. Quality assurance program

a. DOT does not require packaging producers to maintain a quality assurance (QA) program. However, RIPA's Code of Operating Practice recommends that all members maintain a "written quality assurance program."

b. RIPA has developed a draft intermediate bulk container QA program for use by its members. A copy of this draft program appears as Appendix III to this manual.

2. Policies

a. Empty IBC management policy. RIPA has developed an "Empty Intermediate Bulk Container Management Policy" that deals with the issues below. (A copy of this policy is attached as Appendix IV to this document.)

   i. Proper emptying.

   ii. Preparation for transportation.

   iii. Empty IBC transportation, including "Empty IBC certification" and a written IBC acceptance policy.

   iv. IBC acceptance and residue management.

   v. Employee safety and training.

b. Employee training. RIPA has developed a Hazardous Materials Employee Training module designed to assist RIPA members in complying with the hazmat employee training requirements of the U.S. Department of Transportation (§172.700).

The RIPA training module offers instruction in the three areas required by DOT:

   i. General Awareness of the Hazardous Materials Regulations (including Security Awareness).

   ii. Function-Specific Training (such as packaging testing).

   iii. Safety and Emergency Response.

The RIPA employee training module is a concise and efficient means of delivering all these types of training. It also comes equipped with a set of test questions and a form for certifying training for each trainee. Employers will find the RIPA module, its certification test, and its trainees' certification form a useful means of compliance with the rules. Training is required for new employees within 90 days, and "refresher" training is required every 3 years. A copy of the RIPA training module in English and Spanish is available from RIPA.

c. Worker safety. RIPA members are encouraged to make health and safety considerations a priority in plant operation. The Code of Practice asks members to ensure that un-reprocessed empty IBCs be stored with all closures in place, and be inspected periodically to assure no residual contents are leaking. All wastes generated in the reprocessing process must be managed in full compliance with applicable regulations governing such wastes

Discharges of wastewater from the reprocessing plant to the environment or to the sewer system, and emissions to the atmosphere, must meet applicable water and air pollution regulations for that geographical area. Offensive odors should be minimized whether subject to government controls or not.

Exposure of employees to any chemicals in the workplace, including the contents of incoming IBCs, must be reduced to the extent practicable. At a minimum, this necessitates the reprocessing firm providing and requiring the use of effective personal protective equipment. The firm must have in place a program of Hazard Communication for employees, including federally mandated access to Safety Data Sheets (SDS's). Subscriptions for an SDS "Fax-on-Demand" service are available from RIPA.

The reprocessing firm shall employ drivers to operate company vehicles in compliance with standards of the U.S. Federal Motor Carrier Safety Administration. The firm shall adhere to rules regarding the qualification, training and licensing of drivers, recording of hours of service, alcohol and controlled substance testing, and proper maintenance and inspection of company vehicles to ensure they are in safe operating condition. Company vehicles shall be maintained in safe operating condition.

Reasonable precautions against fires should be implemented, including having adequate fire extinguishing capability, contingency planning, effective coordination with local emergency response authorities, and good housekeeping to minimize opportunities for ignition and to facilitate employee evacuation in emergencies.

APPENDICES

APPENDIX I

Agreement Between IBC Reprocessors and Emptiers

In consideration of mutual benefits of proper container disposition and reuse of valuable industrial packaging, _____ ("Reprocessor"), a company engaged in routine maintenance, repair, and remanufacturing of intermediate bulk containers (IBCs), and _____, an emptier of IBCs ("Emptier"), agree as follows:

1. IBCs that will be offered by Emptier to Reprocessor shall have been thoroughly emptied, not damaged beyond a serviceable condition, and shall meet the quantitative definition of an empty container in the Environmental Protection Agency's definition of that term in title 40 of the Code of Federal Regulations, Section 261.7. This requirement and definition shall apply to all former contents, not just those regulated by the Environmental Protection Agency or the U.S. Department of Transportation.
2. The IBCs shall contain only residue of their former original contents, and shall not contain other materials, contaminants, or excessive external residues. All IBCs shall continue to bear original product markings and labels, and all closures shall be in place and tight.
3. Reprocessor shall accept properly emptied IBCs and shall manage the IBCs and former contents in accordance with applicable laws and regulations.
4. It is agreed that any IBC sent by Emptier and received by Reprocessor, that has not been emptied in complete satisfaction of Paragraphs 1 and 2, above, shall be returned to Emptier as if it were still full of its original product contents. When not rejected upon arrival, and sent back with the same shipping papers, an appropriate signed shipping paper for the return of the IBC shall be provided to the Reprocessor by the Emptier or a designated third party. The Emptier agrees to accept the returned IBC and its contents, shall reimburse Reprocessor for the costs of initial transportation of the non-empty IBC to Reprocessor and its return to Emptier. All liabilities associated with the handling and transportation of a non-empty IBC shall be the responsibility of Emptier.

Agreed:

_____ _____

For Reprocessor For Emptier

Date _____

APPENDIX II

Composite IBC Inspection and Test Record (49 CFR 180.352(g))

Design Type: UN 31HA1 (composite IBC)

Date of inspection: _____/_____/_____

☐ 2 ½–year external inspection

☐ 5-year internal and external inspection

Name of company: _____

Address: _____

Name of person(s) conducting tests or inspection:_____

2 ½ – Year External Inspection check list

Remove inner bottle for inspection (unless welded or riveted)

__ UN marks are legible and complete or UN marks are restored to original condition

__ Service equipment is fully functional, repaired or replaced

__ No cracks, warpage, corrosion or other defects which might render the unit unsafe for transportation

__ IBC is capable of passing the full panel of design qualification tests (i.e. drop, stack, leakproofness, lift, hydrostatic, vibration)

Was inner bottle replaced? ____ YES ____ NO

If Yes, the 2 ½ -year "clock" starts anew. If "No", conduct leakproofness test and record results to restart the "clock".

Results of Leakproofness Test (20 kPa per 49 CFR 178.813) ____ PASS ____ FAIL

5–Year Combined External and Internal Inspection Record check list

Remove inner bottle for internal and external inspection (unless welded or riveted)

__ UN marks are legible and complete or UN marks are restored to original condition

__ Service equipment is fully functional, repaired or replaced

__ No cracks, warpage, corrosion or other defects which might render the unit unsafe for transportation

__ IBC is capable of passing the full panel of design qualification tests (i.e. drop, stack, leakproofness, lift, hydrostatic, vibration)

Was inner bottle replaced? ____ YES ____ NO

If Yes, the 2 ½ -year "clock" starts anew. If "No", conduct leakproofness test and record results to restart the "clock."

Results of leakproofness test (20 kPa (3 psi) per 49 CFR 178.813) ____ PASS ____ FAIL

APPENDIX III

Quality Assurance Guideline

for Reprocessing Intermediate Bulk Containers Intended for Use in the Transportation of Hazardous Materials

1.0 Introduction

The Reusable Industrial Packaging Association (RIPA) is a North American association representing private companies that manufacture, remanufacture, repair, and routinely maintain reusable industrial packagings, including intermediate bulk containers.

This Guideline was prepared by RIPA for use by its members that reprocess intermediate bulk containers intended for use in the transportation of hazardous materials.

This document is not a definitive guide to all processes and procedures necessary to reprocess intermediate bulk containers. It is meant to provide managers and other personnel who are responsible for ensuring compliance with DOT IBC regulations with the basic tools necessary to create and maintain a quality assurance system that best fits the needs of their company and its customers.

2.0 Scope

This guideline specifies the quality assurance elements for intermediate bulk containers that are reprocessed for use with hazardous materials, sufficient to enable companies to comply with the U.S. Department of Transportation's Hazardous Materials Regulations (HMR).

3.0 Terms and Definitions

For purposes of this QA guideline, the terms and definitions shown below apply. These definitions track, but do not replicate exactly, existing DOT definitions in 49 CFR.

3.1 Competent Authority. The Pipeline and Hazardous Materials Safety Administration's Office of Hazardous Materials Safety.

3.2 Composite IBC. A rigid IBC designed for mechanical handling, comprised of a plastic inner receptacle surrounded by a metal frame that holds the inner receptacle in place, and is affixed to a pallet.

3.3 Cross-bottled IBC. A remanufactured composite IBC in which an inner receptacle from one manufacturer is placed into an IBC frame produced by another manufacturer. *(See also Remanufactured IBC).*

3.4 Design Qualification Tests. The tests specified in 49 CFR 178.803, which apply to composite intermediate bulk containers.

3.5 HazMat Employee Training. Training conducted in accordance with 49 CFR Subpart H – Training, which includes, as applicable, general awareness, function-specific, safety, and security training.

3.6 Intermediate Bulk Container or IBC. A rigid or flexible portable packaging, other than a cylinder or portable tank, which is designed for mechanical handling. The capacity of the container ranges from 450 L to 3000 L.

3.7 Quality Assurance Guidelines. The guidelines set forth in this document.

3.8 Re-bottled IBC. A repaired composite IBC in which an inner receptacle from one manufacturer is replaced by an inner receptacle of the same design type from the original manufacturer or remanufacturer. (See also Repaired IBC.)

3.9 Remanufactured IBC. A metal, rigid plastic or composite IBC produced as a UN type from a non-UN type, or converted from one UN design type to another UN design type.

3.10 Repaired IBC. A metal, rigid plastic or composite IBC that is restored so as to conform to the design type and is able to withstand the design type tests. The inner receptacle of a repaired IBC may be replaced with another inner receptacle of the same design from the original manufacturer. The bodies and inner receptacles of composite IBCs are not repairable.

3.11 Reprocessing. The steps outlined in Section 5.0 of Appendix 3, Code of Operating Practice: Reprocessing Intermediate Bulk Containers, "Responsible Packaging Management." Steps include cleaning, inspection, and the use of proper reprocessing equipment. Reprocessing includes repair and routine maintenance activities. *(See also Responsible Packaging Management.)*

3.12 Responsible Packaging Management. Guidelines for reprocessing IBCs published by the Reusable Industrial Packaging Association.

3.13 Routinely Maintained IBC. A metal, rigid plastic or composite IBC that is cleaned, with body closures reinstalled or replaced in conformance with the original manufacturer's specifications, with structural equipment not performing a hazardous materials containment function (e.g. legs) restored as necessary to conform to the design type.

4.0 Management Responsibility

A management representative shall be assigned responsibility for oversight and implementation of this Quality Assurance program. Responsibilities include, but are not limited to:

- Training of personnel involved in IBC reprocessing activities.
- Oversight of testing and tools used for testing IBCs.
- Oversight of daily IBC production activities.
- Management of record keeping activities.
- Maintenance of QA Manual.

5.0 Responsible Packaging Management (RPM)

5.1 Members of RIPA are required to adhere to the association's "Principles of Responsible Packaging Management (RPM)." A copy of the RPM provisions relating to reprocessing intermediate bulk containers shall be maintained in conjunction with the QA manual at each facility performing IBC reprocessing activities.

5.2 Members are required to have in their files a letter from each manufacturer from whom new IBC inner receptacles are purchased stating that the inner receptacles have been internally inspected and leakproofness tested by that manufacturer in accordance with 49 CFR 178.813.

6.0 Inspection Procedures – Incoming IBCs and new inner receptacles

6.1 Each incoming IBC must be visually inspected to determine its capability for reprocessing and to ensure that it meets the emptiness criteria in 40 CFR 261.7.

6.2 Each incoming new IBC inner receptacle should be visually inspected on all six sides to determine if any damage has occurred during transportation that would render the unit unusable.

6.3 Each incoming IBC should be visually inspected to determine if it meets the original design specification of the IBC.

6.4 The inspection procedures for selected IBCs shall include:

- Cage assessment, e.g., corrosion, broken welds, valve well, cross bars, etc.
- Pallet assessment, e.g., broken legs, corner supports, struts, capability for mechanical handling, etc.
- Bottle assessment, e.g., valve, top cap etc., and a visual inspection of all six sides to determine if any damage has occurred during transportation that would render the unit unusable.
- Other materials assessment, e.g., corner protectors, cushioning materials, etc.

6.5 IBCs that are assessed as not being capable for reuse with hazardous materials after reprocessing shall be segregated.

6.6 IBCs that are sold for reuse with non-hazardous materials may bear UN or DOT compliance marks, however, if the compliance marks are retained or applied, the IBC must be capable of meeting the marked performance levels.

7.0 Disassembly Procedures

Each IBC intended for reprocessing shall be disassembled in a manner that does not harm the structural integrity of the IBC and enables workers to reassemble the IBC in a safe and structurally sound manner. Companies should inspect the disassembled unit for structural defects and, where feasible, repair those defects in a manner that allows for successful reprocessing.

8.0 Assembly

Each IBC intended for reprocessing shall be assembled in a manner that assures its safety in transportation. Companies should:

Train personnel in reprocessing techniques and procedures, sufficient to ensure they are able to can carry out their duties.

Establish and maintain procedures to ensure reprocessed IBCs conform to approved designs.

Establish and maintain procedures for the inspection of assembled IBCs, including bottle and cage securement, mechanical operation of valves and other service equipment, etc.

9.0 Testing

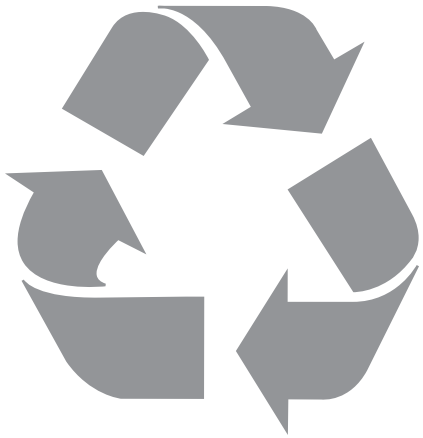
9.1 Production

9.1.1 Each assembled reprocessed IBC must be tested for leaktightness or leakproofness, as appropriate. Equipment used for testing shall be operational and calibrated as per manufacturer's recommendations. New inner receptacles that have been leakproofness tested by the seller need not be re-tested by the reprocessor.

9.1.2 Employees responsible for performing tests on reprocessed IBCs must be trained functionally to execute these tasks. Records of such training shall be maintained by the employer together with other DOT compliance records, and made available to DOT upon request.

9.2 Design Qualification and Re-Qualification

9.2.1 All remanufactured IBC designs must be tested initially and re-tested annually thereafter. The person performing the tests shall perform the applicable tests in 49 CFR 178.800.



10.0 Marking

10.1 Each remanufactured IBC shall be marked –

a. In a durable and readily visible manner on the valve side of the unit.

b. In accordance with 49 CFR 178.703.

10.2 Each assembled repaired IBC shall be marked –

a. With the manufacturer's design type marking (See 49 CFR 178.703) in a durable and readily visible manner.

b. In accordance with 49 CFR 180.350(d)(1)(A) – (C), in a durable and readily visible manner on the valve side of the unit.

10.3 Each assembled routinely maintained IBC shall be marked –

a. With the manufacturer's design type marking (See 49 CFR 178.703) in a durable and readily visible manner.

b. In a durable and readily visible manner on the valve side of the unit.

c. In accordance with 49 CFR 180.350(e)(1) – (2).

11.0 Closure Instructions

Each person performing IBC reprocessing operations shall supply written closure instructions to every customer in accordance with 49 CFR 178.2(c). Copies of instruction must be retained for at least one year and shall be made available to DOT upon request. Copies can be e-mailed.

12.0 Recordkeeping

Each company that performs IBC reprocessing operations shall maintain appropriate records. These records include:

- HazMat Employee training, including function specific training for inspecting incoming IBCS and IBC inner receptacles, and performing the leakproofness and leaktightness tests.
- Updated copy of the company's quality assurance guideline.
- Copy of "RIPA Code of Operating Practice: Reprocessing of Intermediate Bulk Containers."
- Copies of test and inspection records, as well as other approval documents for repaired and remanufactured IBCs combinations.

APPENDIX IV

RIPA Empty Intermediate Bulk Container Management Policy

Summary of Empty IBC Management Policy

- Each IBC must be properly emptied by the filler, so that it meets U.S. EPA or California emptiness definitions, as appropriate.
- Each IBC should be properly prepared for transportation and reprocessing by a qualified IBC reprocessor. All original labels and markings must be retained and be legible. All closures must be secure to prevent leakage.
- No residues other than those remaining from the original lading should be in an IBC intended for reprocessing.
- IBCs containing highly hazardous residues (e.g., pesticides) must be triple-rinsed and handled in accordance with a written IBC acceptance policy.
- IBCs containing certain highly hazardous residues (e.g., radioactive) described in the written IBC acceptance policy will not be accepted for reprocessing.
- Personnel handling IBCs that previously contained hazardous materials are "hazmat employees" and must be trained in accordance with DOT regulations.
- Emptiers should sign an "Empty IBC Certification" form for each load of IBCs.
- All empty IBCs must be "serviceable" (i.e., meet applicable quality assurance requirements) in accordance with the written IBC acceptance policy.

Introduction

Every year, businesses throughout North America fill millions of rigid intermediate bulk containers (IBCs) with food, chemicals and other products for distribution throughout the region and around the world. These containers, which range in size from 450 L (119 gallons) to 3000 L (793 gallons), usually are constructed from high density plastics, metal, or a combination thereof. The most common IBC is the composite design. The most commonly produced composite IBCs have a 275 or 330 gallon rigid plastic inner receptacle ("bottle") encased in a cage made of steel tubes or wires. The bottle and cage are secured to a wood, metal or plastic pallet for ease of storage and handling.

Due to their size and value, IBCs often are reused following cleaning and refurbishing. In addition, empty IBCs, particularly those that previously contained hazardous materials, represent both a safety and an environmental liability for the emptier and the original shipper if not handled properly.

Over the years, IBC manufacturers, fillers, emptiers and reprocessors have collaborated informally to create collection systems to ensure that these containers, when properly emptied, are transported to qualified reconditioning facilities for reprocessing. Some IBC manufacturers developed their own collection systems, while others partnered with reprocessors to address customer collection needs.

Manufacturers and reprocessors recognize that existing collection programs, while useful, by themselves are not capable of satisfying the logistical, environmental safety and informational needs of all users and emptiers.

To address these concerns, the Reusable Industrial Packaging Association (RIPA) has partnered with companies that manufacture and reprocess IBCs to create this Empty IBC Management Policy ("Policy"). This Policy explains the key commercial and governmental rules that apply to companies that receive products in IBCs and help to manage the storage, transportation, and reprocessing of emptied units. Companies that follow the Policy will reduce potential liabilities substantially, avoid unnecessary costs associated with IBC collection and reprocessing, and help ensure that all emptied IBCs are stored, transported, reprocessed or scrapped in a safe, secure, environmentally sound and economic manner.

General Requirements

An empty intermediate bulk container that previously held U.S. DOT—or Canadian TDG—regulated hazardous material (i.e., dangerous goods) must be handled properly to ensure it does not become a safety or environmental liability for either the emptier or the original shipper. Companies that fill IBCs should ensure that firms to which product is shipped have clear empty packaging handling and environmental protection procedures in place. Emptiers should review their own empty packaging management practices to reduce potential liabilities.

Each reprocessor handling emptied IBCs should conform to the RIPA IBC Code of Operating Practice and have a written IBC acceptance policy. The Code of Practice provides clear guidelines for safe and environmentally sound operating practices. The written IBC acceptance

policy describes the packagings that will be accepted, those that will not be accepted, and the process for returning any unit found not to be in conformity with that acceptance policy. A copy of this policy and the Code of Practice should be given to each new customer seeking to have IBCs reprocessed.

Proper IBC Emptying and Transportation

Proper emptying of every IBC is the most important aspect of in-plant IBC management. This activity affects costs, regulatory compliance, and legal liability.

Costs. Avoidable residues of costly materials left in IBCs can represent enormous lost profits. Even IBCs that appear empty can contain nearly a gallon of product. This is valuable material that has been paid for and should not be discarded.

Regulatory compliance. For most IBCs being transported in the United States for reprocessing, that formerly contained hazardous products, only IBCs meeting the EPA "empty" definition (see below) escape classification as hazardous wastes. Used IBCs that are hazardous wastes face staggering costs of proper disposal—far more than the cost of proper management by container reprocessor and dealers.

Legal liability for environmental damage. Persons arranging for disposition of non-empty IBCs (i.e., hazardous wastes) may be considered to have "arranged for disposal or treatment…of hazardous substances," or to have engaged in "abandonment or discard" of unclean containers. Both of these terms are from the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601), or "Superfund" and both activities establish strict, retroactive, joint-and-several liability for any subsequent contamination of the disposal site and related environmental response and remediation costs.

Legal liability for improper transportation. An emptied IBC that contains any residue of a U.S. DOT-regulated hazardous material, even if it meets the EPA "empty" definition, may be transported only if all closures are in place and secure, and the original labels and markings are visible, as if the IBC were full of that material. Trucks carrying empty IBCs containing residue should be properly placarded, including the 4-digit UN number.

Emptying personnel and their supervisors should know and understand the details of the EPA (or California) empty container definitions, which are summarized below. Transport Canada does not presently have such a definition but Canadian reconditioners are encouraged to include details on emptying in their written IBC acceptance policies. Full copies of applicable government rules are available from the association.

Federal and State Empty Container Regulations

EPA Empty Container Rule (40 CFR 261.7). The U.S. Environmental Protection Agency (EPA) regulates the status of IBCs that retain residues of hazardous materials. The general policy is that containers which retain any amount of hazardous material must be treated as hazardous waste unless the following standards are met by the emptier:

a. All residues have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating; and

b. No more than 0.3 per-cent by weight of the total capacity of the container remain in the container or inner liner if the container is greater than 110 gallons in size.

Note: Paragraph (c)has been interpreted to mean that for IBCs with capacities between 275 and 330 gallons, slightly less than one gallon of product may remain in an "empty" IBC.

This rule is often misinterpreted by emptiers who believe the rule permits one inch or 0.3 per-cent of the original material to remain in the container. In fact, EPA has issued the following interpretation of this rule (47 Fed. Reg. 36092, 36093):

…[A]pparently, many individuals are reading the "and" at the end of paragraph [(a)] as "or" and therefore believe that the practice of leaving one inch of residue in a container qualifies the container as being empty, whether or not the container has been emptied of all its contents by methods commonly employed to remove materials from that type of container…. EPA emphatically states that this is not the case. When the two paragraphs…are properly read together, it should be clear that one-inch of waste material is an overriding constraint and may remain in an empty container only if it cannot be removed by normal means. The rationale for this provision is that there are certain tars and other extremely viscous materials that will remain in the container even after the container is emptied by normal means.

California Empty Container Regulation (Title 22 CCR 66261.7 et seq.). California has adopted more stringent

requirements for empty packagings than has the U.S. Environmental Protection Agency. California requires emptiers to comply with federal empty container regulations in all respects, taking care to ensure that the packagings have been emptied as much as possible "using methods commonly employed to remove waste or material from packagings." In addition, if the contents are pourable, the [emptier] must empty the packaging "until no flow of waste or material can be poured from the packaging… when the packaging or inner liner is held in any orientation (e.g., tilted, inverted, etc.) and dripping has ceased…." If the waste or material is not pourable, the [emptier] must have emptied the packaging or inner liner "…until no visible material remains in the packaging or inner liner which can be removed by scraping, chipping, etc."

Preparing Empty IBCs for Collection and Reprocessing

A. Employee Training

Emptied IBCs containing residues of hazardous materials remain regulated by DOT. As such, persons who prepare these packagings for transportation must be trained in the proper performance of their functions as "hazmat employees" (49 CFR 172.704).

Note: RIPA offers an excellent employee training program to association members at no charge; non-members can purchase the program for a small fee (click "publications" on the Web page).

B. Labels, Markings and Closures

Emptied IBCs may not be transported to a reprocessor or dealer unless they meet the emptiness criteria, as well as all applicable DOT regulations. Labels and marks must be retained on all hazardous materials packaging. Closures, valves, covers, etc., must be properly closed in accordance with DOT requirements (49 CFR 173.29). This is required by regulation, because it is important to prevent leaks in transportation, which could result in environmental damage and/or worker exposure. These liabilities would be borne by the emptier.

C. Proper IBC Emptying Procedures

Emptiers are required to remove all the contents from an IBCs using "practices commonly employed" to empty such containers. For example, IBCs filled with liquids should be emptied by opening the bottom valve until such time as no more product flows from the unit. Emptiers seeking to optimize product usage should consider raising the side of the IBC opposite to the valve a few inches off the ground. Simple tools are available to emptiers to facilitate this practice. IBCs filled with viscous materials should follow the same emptying procedures, but should consider establishing a standard practice of elevating the side of the unit since these materials do not flow as easily as do liquids.

D. Control Procedures

No other products should be added to any IBC containing residue or its or original lading. Such packaging would contain a residue that is no longer described by the label, thereby imposing liability for improper transport of the IBC on the shipper/emptier. Moreover, mixing of residues can create serious safety hazards.

E. Empty IBC Certification

Empty IBC Certification is a written document, executed by the container emptier and the container reprocessor or dealer. It confirms that the IBCs being transferred are actually empty in accordance with the EPA definition of empty containers, and that they have been properly prepared for transportation. Some companies execute these on an annual basis, but many reprocessors print the certification on their receiving tickets so that one is signed every time there is an IBC pick-up.

Certification is vital because it is an IBC user's principal guarantee of compliance with two of the nation's most important environmental laws: The Resource Conservation and Recovery Act of 1976 (RCRA) 42 USC 6901; and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 42 USC 9601. Also covered is the Hazardous Materials Transportation Act, 49 USC 5101.

Empty IBC Certification is also a legal business record. It documents the fact that the IBCs were empty, and therefore are not subject to the complex and expensive EPA Hazardous Waste Regulations created by RCRA.

Following is a sample Empty IBC Certification Form

EMPTY IBC CERTIFICATION FORM

I hereby certify that these intermediate bulk containers are "empty" as that term is defined in Environmental Protection Agency regulations, 40 CFR 261.7*, and that they have been properly prepared for transportation under the regulations of the U.S. Department of Transportation, 49 CFR 173.29.**

Date: _____ Company Name _____

Signature: _____

*With regard to most regulated residues, EPA's 40 CFR 261.7 says: "A packaging…is empty if:

i. All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating; and

ii. No more than 2.5 centimeters (one inch) of residue remain on the bottom or inner container; or,

A. ….

B. No more than 0.3 per-cent by weight of the total capacity of the container remain in the container or inner liner if the container is greater than 119 gallons in size.

Note: The total capacity of most IBCs ranges from 275 to about 330 gallons. Please check with your reprocessor for more precise figures. For residues of "P-list" products specifically listed by name in 40 CFR 261.33(e), EPA says the packaging is empty only "if the packaging…has been triple rinsed using a solvent capable of removing the product, or has been cleaned by another method show to achieve equivalent removal.

**DOT's 49 CFR 173.29 says that all openings on the empty packaging must be closed, and that all markings and labels must be in place and legible as if the packaging were full of its original contents.

NOTE: Companies doing business in California should create a form that specifically refers to the California Contaminated Container Regulations, Title 22 Section 66261.7. This provision states that a container which previously held hazardous materials is empty if:
1. no material can be poured or drained from the container when it is held in any orientation (e.g., tilted, inverted, etc.),
2. no material remains in or on the container that can feasibly be removed by physical methods which are commonly employed to remove such materials. The interior of the container should not contain crusted or a mass of solidified material.

Residue Acceptance Criteria

Certain hazardous materials are regulated more stringently by governments because they are highly toxic or present severe environmental risks if improperly handled. Many reprocessing facilities will not accept IBCs that previously contained the products shown in the list below, even if the emptied IBC has been triple-rinsed. If you are uncertain about the acceptability of a specific product residue, contact your IBC supplier or reprocessor with whom you do business, or check the reprocessor's written IBC acceptance policy. Exceptions to the general rule must always be made in writing.

In situations where an emptied IBC must be discarded, you are urged to contact a local hazardous waste disposal company.

Some reprocessors will accept IBCs that contain residues of certain highly hazardous materials only if the IBC has been "triple-rinsed." Again, acceptance policies vary, so be sure to contact the IBC acceptance policy of the reprocessor with whom you do business before sending out an emptied IBC that previously contained residue from this list.

Examples of materials not accepted by many IBC reprocessors:

- Herbicides/some pesticides;
- Biological agents;
- Cyanides or Cyanide compounds;
- Radioactive materials;
- Dioxin;
- PCBs
- Packing Groups I and II poisons as well as Poison–Inhalation Hazards (PIH)

Emptied IBC Quality Issues (Serviceability)

The value of an empty IBC to a reprocessor depends on a number of factors, including prior contents, exterior and interior cleanliness, proximity to a reprocessing facility, number of IBCs available for collection, and the units' physical condition.
To help emptiers obtain the greatest value for their empty IBCs, RIPA has created a "serviceability" check list. A high quality emptied IBC will exhibit the following traits:

- The cage should be free of excessive rust or stains.
- The cage should not be bowed, nor should there be any broken welds or bolts.
- Steel pallets should have all welds and bolts intact with no broken or bent corners.
- Wooden pallets should have no broken or missing boards.

Bottles in composite IBCs should be intact, free of punctures, cuts or cracks. Caps and closures should be intact.

- Residue should meet EPA (of California) emptiness criteria, and no foreign residue should have been placed in the bottle.
- All plastic IBCs should be free of excessive stains.
- The outside of IBCs should not be contaminated with product residue.
- Emptiers should sign or otherwise execute an "Empty IBC Certification Form" for each load of empty IBCs.

Empty IBC Collection

Reconditioners throughout the U.S. and Canada collect and reprocess emptied IBCs in a cost effective and environmentally sound manner. Each reconditioner has their own acceptance criteria that may vary somewhat from the general guidelines provided in this document. Emptiers are advised to contact reconditioners to arrange for emptied IBC collection, and be prepared with the following information:

- How many IBCs are available for collection?
- What kind of IBCs will be collected (e.g., composite, all metal, all plastic)?
- What is the capacity of the IBCs (e.g., 275 gallon)?
- Did the IBC previously contain a hazardous material? If so, what material?
- Is the IBC UN marked for hazardous materials transportation? If so, what is the mark?
- Does the IBC meet the applicable empty container definition?
- What is the quality of the IBC (e.g., almost new, rusty and dirty, etc.)?
- Is this a one-time event, or should a long-term collection agreement be developed?
- Your name and your company's name, address and phone number.

Conclusion

Companies that follow these simple empty IBC collection guidelines will enjoy a good working relationship with their reconditioner. They will always be in compliance with applicable regulations and, as such, enjoy protection from exposure to the harsh state and federal penalties associated with improper handling, transportation and disposition of IBCs.

APPENDIX V

SAMPLE EMPTY IBC CERTIFICATION FORM

I hereby certify that these intermediate bulk packagings (IBCs) are "empty" as that term is defined in Environmental Protection Agency regulations, 40 CFR 261.7*, and that they have been properly prepared for transportation under the regulations of the U.S. Department of Transportation, 49 CFR 173.29.**

Date_____/_____/_____ Company name _____

Signature _____

*With regard to most regulated residues, EPA's 40 CFR 261.7 says: "A packaging…is empty if:

i. All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of packaging, e.g., pouring, pumping, and aspirating, and

ii. No more than 2.5 centimeters (one inch) of residue remain on the bottom of the packaging… or,

A. ….

B. No more than 0.3 percent by weight of the total capacity of the packaging remains in the packaging or inner liner if the packaging is greater than 119 gallons in size.

Note: The total capacity of most IBCs ranges from 275 to about 330 gallons. Please check with your reprocessor for more precise figures. For residues of "P–list" products specifically listed by name in 40 CFR 261.33 (e), EPA says the packaging is empty only "if the packaging…has been triple-rinsed using a solvent capable of removing the product," or has been cleaned by another method shown to achieve equivalent removal.

**DOT's 49 CFR 173.29 says that all openings on the empty packaging must be closed, and that all markings and labels must be in place as if the drum were full of its original contents.

*** Residues of hazardous materials in emptied packagings are still considered hazardous by DOT. Only triple-rinsed or purged IBCs may be shipped without shipping papers.

NOTE: Companies operating in California should create a certification form that references the California Contaminated Container Regulations, Title 22 Section 66261.7.

APPENDIX VI – *Sample closure instructions*

Important: The following are samples of closure instructions and should not be used without permission. These samples are printe with permissiom of the providers

MAUSER Packaging Solutions — *CLOSING INSTRUCTIONS – INTERMEDIATE BULK CONTAINERS*

United States Department of Transportation regulations state that packaging manufacturers are required to notify each person to whom the packaging is transferred of all requirements not met at the time of transfer. This requirement is given in Title 49, Code of Federal Regulations (49 CFR), Part 178 Specifications for Packagings, § 178.2 (c). In addition this Paragraph requires the closing information to be provided to any person to whom this package is transferred who may need to close the packaging prior to re-shipment. Furthermore, it is the shipper's responsibility as set forth in §173.22(a)(4) to ensure that these closing instructions are carried out as described. In order to ensure the instructions are followed in a manner to result in safe transport of hazardous materials the shipper is obligated, as set forth in § 172.704(a)(4), namely - function specific training - to train his/her employees in the correct way to close the packaging for shipment. In order to fulfill this obligation the shipper often turns to the packaging manufacturer for this training since the manufacturer has designed, produced and tested the packaging to meet UN performance standards. MAUSER is prepared to provide this training in addition to supplying closing instructions. It has been the practice of MAUSER to send closing instructions attached to the shipping documents with each shipment of IBCs. This document provides specific information on closing MAUSER packagings.

These closing instructions must be given to the individuals responsible for closing the packagings prior to shipment. A hard copy (printed) must be maintained by the filler or offeror for shipment. Copies should be immediately available at the fill lines.

The following tables and text give examples of the parts and closing torque required to prepare the IBC for shipment so that it is capable of meeting the performance standards indicated by the UN marking on the side or top of the packaging. **MAUSER recommends that only parts that have been tested and certified by MAUSER be used to close the packagings for shipment**. **Any UN marking is voided if parts other than those used in the original design qualifications are used**. Each closure is supplied with the proper gasket in accordance with the UN design type tests for the packaging supplied. In the case of Intermediate Bulk Containers, IBC's, the lid, gaskets, plugs, cages, pallets, valves and service equipment are supplied as tested.

PRIOR TO CLOSING: **Inspect each closure to ensure that the closure has the proper gasket and that both closure and gasket are in good condition. Inspect the sealing surface for damage and make sure the threads and sealing surfaces are dry. Replace any defective gaskets, plugs or lids with new, defect free parts identical to the original packaging design.**

CLOSING PROCEDURES FOR PLUGS AND CAPS:

1. **The plug or cap is inserted into the appropriate opening and screwed down "hand tight" until the gasket is in contact with the sealing surface.**
2. **A torque wrench capable of applying the proper torque to the fitting as specified by the closing instructions following is then used to tighten the plug or cap until it reaches the pre-set torque as indicated by a release or click. These wrenches should be calibrated at least annually.**

INTERMEDIATE BULK CONTAINERS

	IBC Type	Gasket type	Torque
A	MAUSER® Passport 135/220/275/330 gallon	EPDM	40 ft. -lbs. using compatible lubricant
B	MAUSER® Passport 135/220/275/330 gallon	FKM/FPM	40 ft. -lbs. using compatible lubricant
C	MAUSER® Passport 135/220/275/330 gallon	Santoprene	40 ft. -lbs. using compatible lubricant
D	2" plug in 150 mm lid, vented and solid on Passport 135/220/275/330 gallon	Santoprene	10-15 ft.-lbs.
E	MAUSER® Passport 135/275/330 gallon 9" lid	Santoprene	75 ft.-lbs.
F	MAUSER® SM and MaschioPack 275/330 gallon	EPDM	70 ft.-lbs.
G	MAUSER® SM and MaschioPack 275/330 gallon	FKM/FPM	70 ft.-lbs.
H	MAUSER® SM and MaschioPack 275/330 gallon	Santoprene	70 ft.-lbs.
I	2" plug in 150 mm lid, vented and solid MAUSER® SM and MaschioPack 275/330 gallon	EPDM/FKM	20-25 ft.-lbs.
J	56 mm plug in 150 mm lid, vented and solid MAUSER® SM and MaschioPack 275/330 gallon	EPDM/FKM	20-25 ft.-lbs.
K	2" Buttress plug in top of MAUSER® SM series 275/330 gallon	EPDM/FKM	20 ft.-lbs.

All UN 31HA1 (UN 31HZ1) Composite IBC's 49CFR §§ 178.704 & 178.707 that are supplied with lids, cages, pallets and service equipment must be **closed for shipment using only the components supplied and specified in the design qualification tests for that IBC.**

- Place the lid with gasket in place on the top opening of the IBC.

MAUSER Packaging Solutions ***CLOSING INSTRUCTIONS – INTERMEDIATE BULK CONTAINERS***

- Screw the lid by hand until the gasket is in contact with the sealing surface.
- Using the lid adaptor and torque wrench tighten the lid to the recommended torque. Recommended torque is reached when the wrench releases or clicks.

Preset torque wrenches or adjustable torque wrenches are suitable for this procedure. Please calibrate wrenches at least annually. Variable range adjustable machinist torque wrenches are available and most auto parts stores, catalog stores like Grainger and Mc Master Carr, Sears, Home Depot, Lowes, on-line drum parts suppliers, and many others. IBC Cap and valve adapters are available through MAUSER or many catalog houses that specialize in drum and IBC parts and components.

VALVES

The valves supplied with MAUSER IBCs are factory installed and are not meant to be installed by the filler. A qualified IBC reconditioner is equipped and staffed with trained technicians for all valve replacements. If an IBC valve must be replaced the following procedures must be followed. Only valves as specified in the original design qualification are suitable.

IBC valve replacement must adhere to the requirements of 49 CFR § 178.704 (e) and §§ 180.350 -180.352. MAUSER assumes no responsibility for the performance of any packaging modified from the original design by any person or company. This information is provided as an accommodation and MAUSER assumes no warranty or guarantee of any kind and the recipients use or non-use of this information is at the sole discretion and responsibility of the recipient.

1. Inspect new unused replacement valve for presence of defect free, clean gaskets.
2. Hand thread the valve until the threads begin to grip.
3. MAUSER Butterfly, Cylinder and Integrated Collar Valves: Using a torque wrench with a valve adapter as above tighten the valve to a minimum of 70 ft-lbs, finishing the procedure with the valve in the proper vertical orientation. If the valve reaches 70 ft-lbs and will not orient properly, or if it cannot reach 70 ft-lbs, it may be cross threaded or bad thread. Discard and repeat with a new valve. The polyolefin gasket on the valve collar is not designed for multiple installations.
4. Metal collar valves: Holding the valve in the proper vertical orientation spin the metal collar until hand tight. Using a calibrated torque wrench with valve adapter tighten the collar to ≥ 55 ft-lbs.
5. Passport 1.5″ or 2″ ball valves: Using a torque wrench with a valve adapter as above tighten the valve to 60 ft-lbs, finishing the procedure with the valve in the proper vertical orientation. If the valve reaches 60 ft-lbs and will not orient properly, or if it cannot reach 60 ft-lbs, it may be cross threaded or bad thread. Discard the bottle. Passport bottle may not be reused if torque is not reached on the first attempt.
6. MaschioPack 2″ butterfly valve: Begin with valve handle starting in the 12:00 position, turn valve three complete rotations with valve handle finishing in the 12:00 position.
7. Leak proof test the empty IBC with ≥20 kPa air pressure per 49 CFR 178.813.

CAP SEALS

It is the responsibility of the filler to verify the torque on all closures that have been “factory torqued” and/or closures that have been supplied with a cap seal, dust cover or tamper evidence. This includes any bungs in an IBC lid/cap. For this reason we suggest all cap seals and the like be installed after filling and all closures have been properly closed. Please be aware that cap seals and tamper evidence devices may interfere with the proper function of vents or other pressure and vacuum relief devices.

DIP TUBES AND EXTRACTION VALVES:

Please consult the manufacturer for proper closing torques on the style being used.

TORQUE WRENCHES

The following are photographs of various torque wrenches MAUSER has found suitable to apply the required closing torque. These are typical units and other brands of adjustable wrenched are acceptable. These should be regularly calibrated.

Dial Indicating and Adjustable Torque Wrench

Husky Brand Indicating Wrench

SCHUETZ
packaging update
PACKAGING CLOSURE INFORMATION
April 23, 2020

CLOSURE SPECIFICATIONS FOR TIGHT HEAD DRUMS

PLUGS MUST BE TORQUED TO THE FOLLOWING

2" NPS AND 2" BUTTRESS - 20 FT LBS,
Dip tubes - 20 ft lbs 3/4" NPT - 9 FT LBS
Note: Closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR OPEN HEAD DRUMS

CLOSE AND SECURE LID WITH LOCKING RING - ATTACH HOLDING PIN FOR HANDLE TO KEEP RING CLOSED.

PLUGS MUST BE TORQUED TO THE FOLLOWING :
2" NPS AND 2" BUTTRESS - 20 FT LBS
3/4" NPS - 9 FT LBS
note: closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR IBC'S

FILL PORT CAP AND VALVE MUST BE TORQUED TO THE FOLLOWING:

6" AND 9" FILL PORT CAP - 75 FT LBS

2" plug in 6" or 9" fill port cap must be torqued to 15 ft lbs. (Schuetz does not recommend that you remove this plug. Filling should be done through the 6" or 9" opening)
*** 56 x 4 mm and 2" buttress plug - 20 ft lbs**

Dip tubes - 20 ft lbs

Old style valves and EVOH valves
VALVE NUT - 55 FT LBS
Note: caps, valves, and plugs must have gaskets to seal

New Style valves - valve must have gasket to seal. Two complete turns and line up the hole in the valve body and the hole in the bottle insert and insert clip. (Customers receive new valves torqued).

*** - Underline indicates the latest change to the instructions.**

APPENDIX VII

DOT Special Permit 16323

The U.S. Department of Transportation will grant reconditioning companies "party-to" status to DOT-SP 16323 upon application and review, in accordance with 49 CFR 107.107.

This Special Permit entitles the bearer to install a tested inner receptacle of a composite intermediate bulk container (IBC) into an outer cage without subjecting the inner receptacle to a leakproofness test after installation. Reconditioning companies that utilize this Special Permit must apply a sticker to each IBC produced using this authorization. A sample of the sticker is shown below.

DOT-SP 16323

Reconditioners may apply for party-to status to DOT-SP 16323 by writing to DOT, using the format suggested below:

COMPANY LETTERHEAD

Date

Mr. William Schoonover
Office of Hazardous Materials Safety
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation - East Building
1200 New Jersey Avenue, SE
Washington, DC 20590

Attn: General Approvals and Permits, PHH-31
RE: Application for status as Party-to DOT-SP 16323

Dear Mr. Schoonover,

In accordance with 49 CFR 107.07, [insert company name]

hereby applies for status as a Party to DOT-SP 16323, issued on May 20, 2015 (First Revision June 15, 2016), pertaining to repair and remanufacture of composite intermediate bulk containers (IBCs).

Applicant:	Company name	Company President/CEO
	Address	Phone
	Phone	Email
	Email	
	DUNS (if applicable)	
	M or R number	

Business description: [Insert company name] is engaged in the reprocessing of industrial containers, including IBCs. Part of this function includes re-bottling (repair and remanufacturing) of composite IBCS. For safety and efficiency purposes, our company needs the benefits of being a party to DOT-DP 16323.

[Insert company name] does not ship of carry any Class 1 hazardous materials in IBCs. We collect and carry empty IBCs, some of which previously contained hazardous materials. This activity is done in accordance with all applicable regulations.

We certify that we understand all the requirements of the Special Permit. Please contact me if you have any questions:

Signed

RIPA
REUSABLE INDUSTRIAL PACKAGING ASSOCIATION

Reusable Industrial Packaging Association
150 South Street, Suite 103-B, Annapolis, Maryland 21401
Phone: 301/577-3786 • www.reusablepackaging.org