

**SUBJECT** Best practice on dealing with Packaging  
**FROM** ICTA SSHE Committee  
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## Introduction

The Best Practice supports companies in the chemical supply chain to set up the right processes for packaging of their chemicals. It is aimed at members of the International Chemical Trade Association (ICTA) and their supply chain partners. ICTA globally represents the interests of companies involved in the trade and distribution of chemical products. The Best Practice applies to packaging between 10 and 1000 liters (can, barrel, IBC).

Please note that the Best Practice is only an addition to your applicable local regulations and permits. If you have any questions or comments, please contact us via [info@icta-chem.org](mailto:info@icta-chem.org).

## 2. New packaging

Before using new packaging, it is recommended to consider:

1. Choose the right packaging
  - Reusable packaging. So-called multi-trip IBCs have a lifespan of up to 10 years, although the inner container must be replaced after 5 years.
  - Packaging made from recycled material.
  - Packaging that leaves as little chemical residue as possible after use. This means less chemical waste and lower cleaning costs, because less water is needed to clean the packaging. Moreover, this makes it easier to transport the packaging safely.
  - UN-approved packaging. In many countries, using UN-approved packaging is mandatory for high risk (e.g. ADR-classified) products. UN approved packaging is not required for unclassified (i.e. non-hazardous) products. In ICTA's experience, using only UN-approved packaging pays off financially in the long term.
  - In case of a special use, for example for food, pay extra attention that the packaging is suitable.
2. Collect and store complete documentation of all packaging, and check for discrepancies
  - Technical specifications
  - Test report for UN-approved packaging
  - Consignment note
3. Check packaging upon receipt
  - Check for damage, such as leaks, closure (qualitative)
  - Check for possible shortages (quantitative)
4. Store the newly received packaging correctly in the designated locations.

## 3. Reusing packaging

### 3.1 General

Packaging can often be re-used after cleaning and/or reconditioning. And packaging that cannot be reused can often be recycled. This is not only good for the environment, but also saves on waste processing costs. Despite precautions, reusing packaging still entails a certain risk. It is recommended to communicate clearly about these risks with customers receiving reused packaging.

International Chemical Trade Association

A: Hogeweg 16 // 2585 JD The Hague // NL  
E: [info@icta-chem.org](mailto:info@icta-chem.org)  
T: + 31 70 750 3125  
W: [www.icta-chem.org](http://www.icta-chem.org)

There are the several options for reusing and recycling packaging safely:

#	Options for packaging	Comment
1.	Dedicated system	<ul style="list-style-type: none"> <li>- More sustainable than cleaning and reconditioning</li> <li>- Ensure that the system is closed by sealing</li> <li>- Pay attention to the perishability of product(s)</li> <li>- Good option for products with a strong odor (e.g. acetic acid, CMR)</li> </ul>
2.	Cleaning	<ul style="list-style-type: none"> <li>- Rinsing, if permitted and according to established procedures</li> </ul>
3.	Reconditioning	<ul style="list-style-type: none"> <li>- Reuse of e.g. IBC steel frame, new inner bladder</li> </ul>
4.	Recycling	<ul style="list-style-type: none"> <li>- Ensure all packaging is recycled at the end of lifetime</li> </ul>

### 3.2 Method for collecting packaging

#### 1. Provide a specified instruction for the carrier.

- Indicate for all packaging whether it contained a hazardous substance, including the relevant hazard class.
- The client for transport issues a specified order to the carrier as to what needs to be loaded. The sender ensures that the empty packaging is delivered in accordance with the transport rules for dangerous goods, such as ADR.
- The driver records the returned packaging for each customer on a specific consignment note. Specification by type of packaging is desirable, consider using a pre-printed consignment note. In practice, this is often difficult because pallets typically contain a mix of packaging from different customers.
- Note that local warehousing regulations might require empty, uncleaned packaging to be treated as if they are full.

#### 2. Set requirements for the packaging to be collected

- The packaging must be closed. They must be fitted with all caps and/or lids. Drums must be provided with their (screw) lid and clamping ring.
- The packaging must not be damaged and all necessary parts, such as drain valves, vent caps, etc., must be present and functioning.
- All original labels describing the packaging and its (former) contents must be visible. If packaging has already been cleaned, this must be indicated on the outside.
- There may be no residual product in the packaging other than what the label indicates.
- The outside of the packaging must be free of residual product.
- The packaging must be empty. This is the case when it has been carefully emptied in the appropriate manner, using the best available techniques such as pouring, pumping, suctioning, scraping, shaking or a combination of several techniques.
- The amount of residual material present typically may not exceed 1% of the contents of the empty packaging.
- It is also possible to transport empty but uncleaned packaging. Empty, uncleaned packaging (including IBCs and large packaging), can be transported, even if it has contained substances dangerous goods<sup>1</sup>, as long as appropriate risk management measures have been taken.
- Jerrycans and barrels must be neatly stacked and tightly wrapped with transparent foil on sturdy pallets.

<sup>1</sup> Under ADR this is only allowed for hazardous goods being: Gases; Flammable liquids; Flammable solids, self-reactive substances and solid desensitized explosives; Oxidizing substances; Toxic substances; Corrosive substances; Miscellaneous dangerous substances and articles

### 3. Entry control

- Upon receipt on your location, check the quantities of packaging supplied and the associated specific consignment note. Make a distinction between packaging from your company, packaging from the customer (e.g. for filling) and unknown packaging (these are typically not to be unloaded).
- Check the general condition of the packaging received, including type approval and stability/durability.
- Reusing caps from jugs (20 – 30 liters) is strongly discouraged. This is partly due to the transience of packaging rings and possible wear of the thread.
- Describe the further handling of residual products in your company-specific work instruction Standard Operational Process.

## 4. Further handling

### 4.1 Packaging is cleaned by (and at) an external processor

When collaborating with external processors, it is recommended to consider the following three elements:

1. Record the agreements about cleaning and further treatment of the packaging in a contract or other document with the external processor.
2. Assess the professional competence and environmental permit of the external processor. This could also include collaborating with ISO-certified companies or using an external audit prior to collaboration.
3. Keep good records of the production date of the packaging.
4. Keep good records of supplied 'dirty' packaging and returned 'clean' packaging.

Note that producers of IBCs often offer a “return ticket service” where they collect their IBC for reconditioning.

### 4.2 Packaging is cleaned in-house

For in-house cleaning of packaging that is returned after the customer has consumed the product, it is recommended to refer to the procedure in Appendix 1.

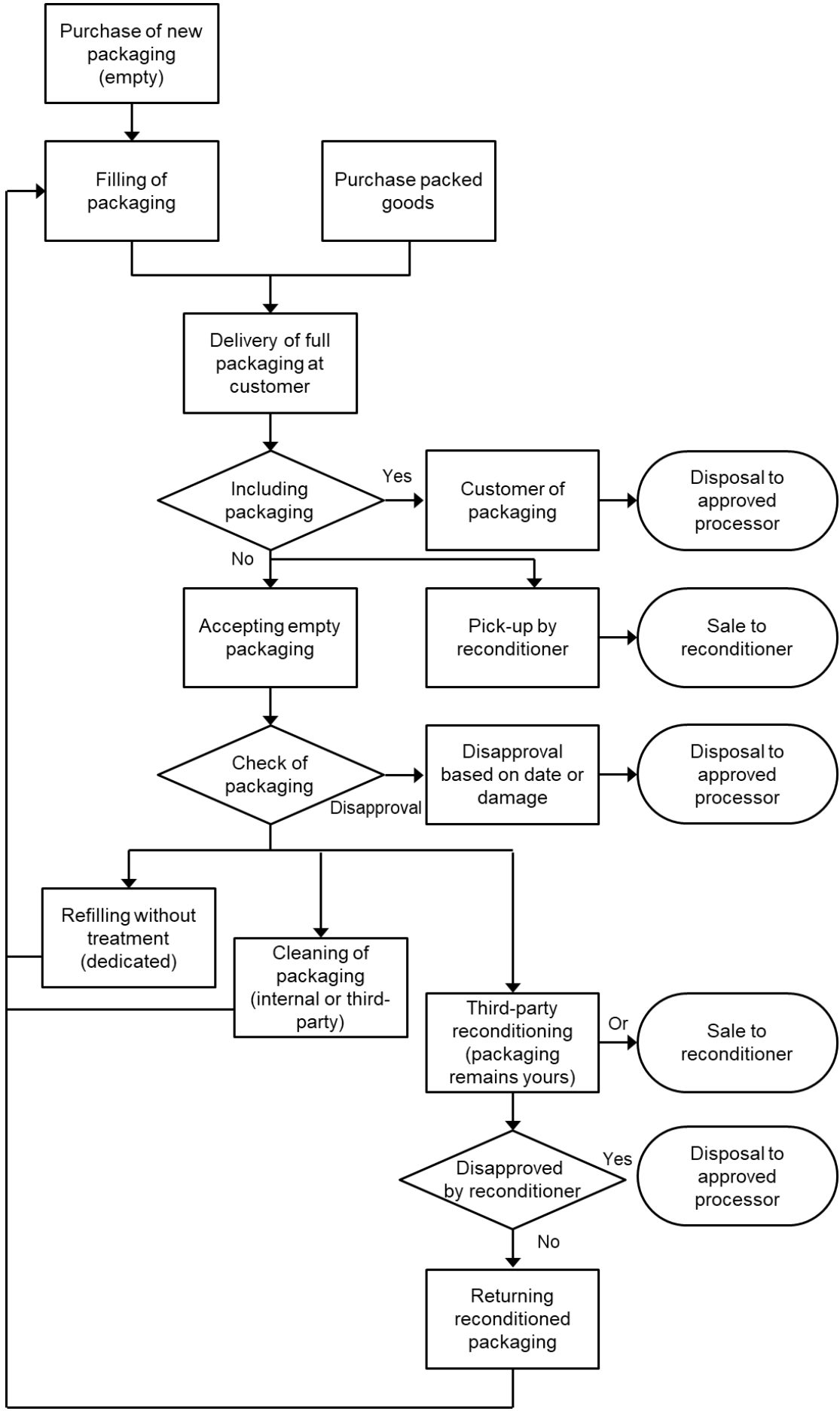
### 4.3 Packaging is refilled with the same product without cleaning.

Refilling used packaging without cleaning is not recommended. Sorting out packaging requires a high degree of precision. The chance of unwanted reactions is quite high. This is therefore qualified as a very risky handling method. It requires excellent and comprehensive instructions for the employees. Conduct a risk assessment of this process as a basis for instructions.

### 4.4 Packaging is not reused, but is recycled.

When destroying rejected packaging, it is worthwhile to separate waste streams of metal and plastic, especially with IBCs. In the case of an IBC, the metal frame can be used considerably more often than the plastic parts, especially the inner bladder. The plastic parts (HDPE) can be shredded, washed and prepared for a new life, for example in the packaging industry or automotive industry.

The above considerations lead to the flowchart below.



## Appendix 1 Example in-house procedure for cleaning IBCs

### 1. Preparation

- Ensure that you have the correct permit;
- Carry out a risk assessment of the cleaning activities;
- Sort the packaging to prevent unwanted reactions from occurring during cleaning.
- Keep a daily log of the number of packaging cleaned and its contents;
- Check whether space, equipment and people are suitable;
- Wear all prescribed PPE;
- Reject and separate packaging based on:
  - (Possible) improper use
  - Excessive residual liquid (fitted with lid/cap)
  - Without (readable) identification
  - Damage
  - Production date of the packaging. The maximum age is 5 years, but this varies per type of packaging. For the sake of care, formulate a policy regarding production date and the reuse of packaging.
- Remove screw cap, closing plate, lid, suction lance and/or looking glass. Collect these parts and keep them with the batch;
- Open bottom tap.

### 2. Cleaning

- Remove any labels immediately before cleaning;
- Clean internally depending on substance, determine:
  - Temperature (e.g. 50°C)
  - Pressure (e.g. 150 bar)
  - Duration (e.g. 5 minutes)
  - Pre-spray
  - Soap use (NSF approved)
- Clean externally, e.g. a spray lance with dirt blaster;
- Clean parts and gaskets, e.g. manually in a cleaned bucket with clean, warm water;
- Clean the tap internally and externally (be careful to prevent leakage due to a crooked gasket);
- Report undesirable vapor formation and odor nuisance immediately to the production coordinator.
- Cleaning water must be treated according to local regulations. Do not release into the environment.

### 3. Drying

- Empty the container;
- Remove residual moisture by shifting the container diagonally towards the opening twice;
- Dry with a hot air dryer or in the air for at least 24 hours (bottom tap open, cap on top and bottom removed). Do not mop dry due to the risk of bacterial smearing and hair loosening from the mop;
- If necessary, vacuum with a disinfected vacuum cleaner.

### 4. Check organoleptically

- Condition of the container
  - No leakage
    - Check used and cleaned packaging for leaks. It is recommended to use a leak tester. The costs of such a tester certainly outweigh the benefits. It prevents a lot of misery during reuse and possible leaks. In case of a leak test with a spray, use an NSF-approved leak spray. Other options for a leak test include checking via immersion or a pressure test.
  - No broken gaskets

- No damage (bladder, frame, pallet, bottom tap)
- No remains of the product on the outside of the packaging
- Cleaning result inside
  - No product residue
  - Clean tap opening
  - No residual moisture
- Cleaning result outside
  - No sticker residue
  - No adhesive residue
  - Label board undamaged
  - Stickers (e.g. with UN marking with age of IBC) still present
  - Bottom side of packaging
- Sorting and removing rejected packaging
  - Inform supplier about rejected packaging
  - Do not use packaging for Feed of Food products
- No odor

#### 5. Get ready

- Sign off checklist;
- Where relevant, under the responsibility of the production coordinator, close packaging by:
  - Placing a cap at the top;
  - Installing a new tap on the IBC (note that this is not allowed under ADR )
  - Placing a cap at the bottom tap on the container (for any condensation water)
- Immediately after cleaning, destroy packaging that no longer meets the criteria for reuse. This prevents improper use. A necessary and simple shredder can be purchased or rented for this purpose.

#### 6. Filling

- Perform the organoleptic check again before filling (step 4), paying extra attention to moisture formation and mold.