



## Guideline

# Delivery forms of empty steel drums



## Aim of the guideline

Communicating information to the customers and fillers of steel drums regarding

- Selection of the ideal delivery form
- Avoidance of damage to the delivered empty drums
- Help with the creation of a ready-to-ship loading unit in coordination with the specifications and details of its formation.
- Increased safety during transport and internal movement palletised drums

through

- Description of possible forms of transport and delivery
- Naming and use of load securing aids

## Scope

This guideline primarily considers the ideal delivery forms and associated securing of empty steel and composite drums with a volume of over 200 litres.



## Delivery forms for empty drums

### Loose loading

Loose loading of empty drums is preferred when the drums are filled on so-called line filling plants or single place fillers.

With loose loading, good load securing can be achieved with a minimum of additional materials through positive locking. A high degree of automation and integration into the production process is also possible. Drum grippers enable automatic unloading.

In the case of small containers (< 200 litres), loose loading is very rare and only in sea containers.



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During delivery with loose loading, the following problems may occur:

- The drums “rise” at the fold, at the beads or at the tensioning ring. This means that the lashing belts or straps are no longer sufficiently tensioned and the load securing effect is significantly reduced. (Note: The problem of rising does not only occur with loose loads – see below).
- Paint damage up to slight dents (see also the SEFA guideline – “Assessment of newly delivered empty steel drums”).

Delivery forms of empty steel drums



The drums slide over each other at the seam



With open head drums, the clamping rings slide over each other

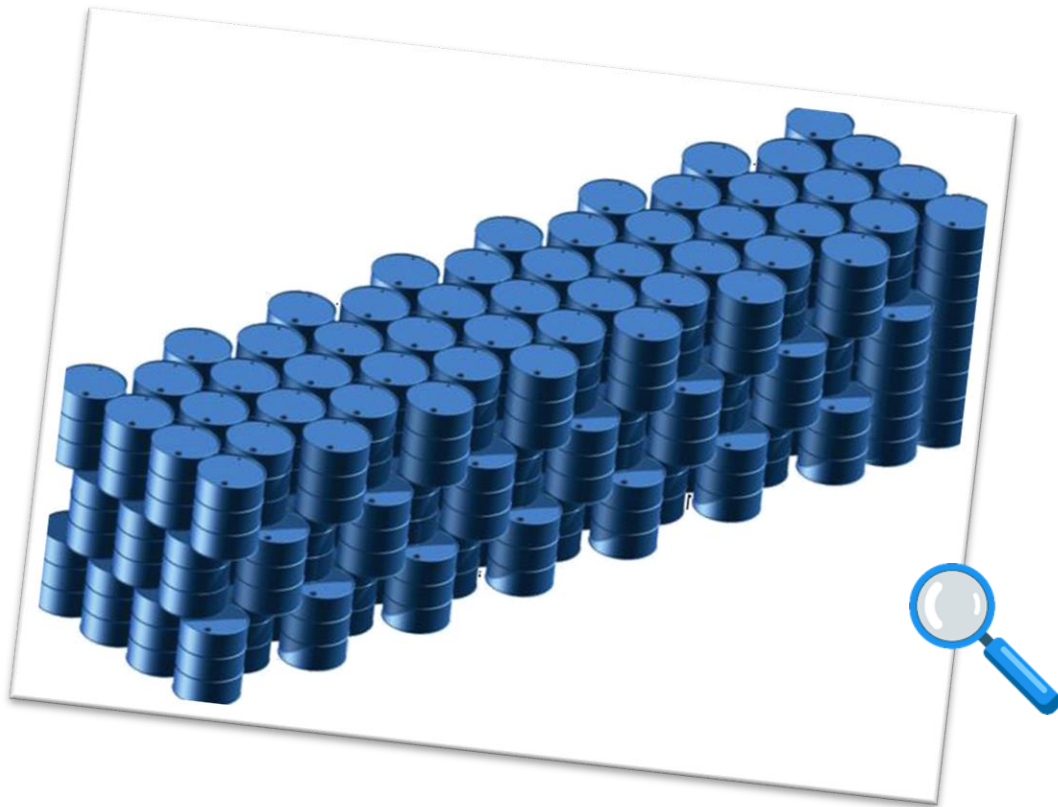


## Notes on occupational safety:

- Before unloading, the doors of the load carrier shall be carefully opened and then „with the door to the side“- the bond may have loosened during transport (e.g. due to shocks).
- Do not climb on the drums to unload them but remove them in rows.
- A “telescopic conveyor” can be used to increase work safety during unloading.

## Delivery forms of empty steel drums

Damage and occupational safety risks can be reduced by means of aids and an optimised loading scheme.



Loose loading (loading scheme “pyramid loading”)

## Palletised loading

A palletised delivery allows the customer to fill the drums directly on the pallet, e.g. with so-called pallet filling systems. With palletised delivery, loading and unloading with a forklift as well as moving with other floor conveyor vehicles is possible.

Here, too, the aim is to make the best possible use of the load space, not least in terms of load securing.

The usual methods of creating loading units for empty drums are not sufficient for filled drums. This means that the bottler either has to take additional measures or already instructs the drums supplier to take the appropriate measures. More information on the possibilities can be found later in this guide.

## Pallet formats

- 1140 x 1140 mm:  
for sea transport (in ISO containers) optimised size (e. g. certain chemical pallets such as CP3 and CP9).
- 1200 x 1200 mm:  
Not suitable for sea transport (in ISO containers). No overhang if the drums are precisely aligned.
- 800 x 1200 mm:  
Euro pallet when shipping a maximum of two filled drums per pallet.



## Palletising types

- Pallet of 4 drums (up to 3 high):  
Alignment of bungs or clamping rings possible. Delivery ready to fill possible (ready to fill does not mean ready for dispatch – additional load securing may be required).  
When stacking 3 pallets on top of each other, sufficient height is required for loading, which is not given with every trailer.
- Pallet of 8 drums:  
With a combination of an 8-pallet plus a 4-pallet on top of each other, most trailers can be loaded.  
No ready-to-fill delivery possible.
- Pallet of 12 drums:  
This type of palletising of empty drums (3 layers per pallet) requires additional measures for load securing (shrink or stretch hood).

Delivery forms of empty steel drums



Stacking of 4 drums per pallet



Pallet of 4 on pallet of 8



Notes on occupational safety:

Ideally, the customer needs suitable equipment to ensure safe destacking. With manual handling, there is a risk of falling drums.

## Securing empty drums on pallets

The drums must be secured on the pallet for transport but also for handling up to the filling station.

It is always important to note that for filled drums higher requirements for the formation of loading units are to be provided.

## Horizontal strapping

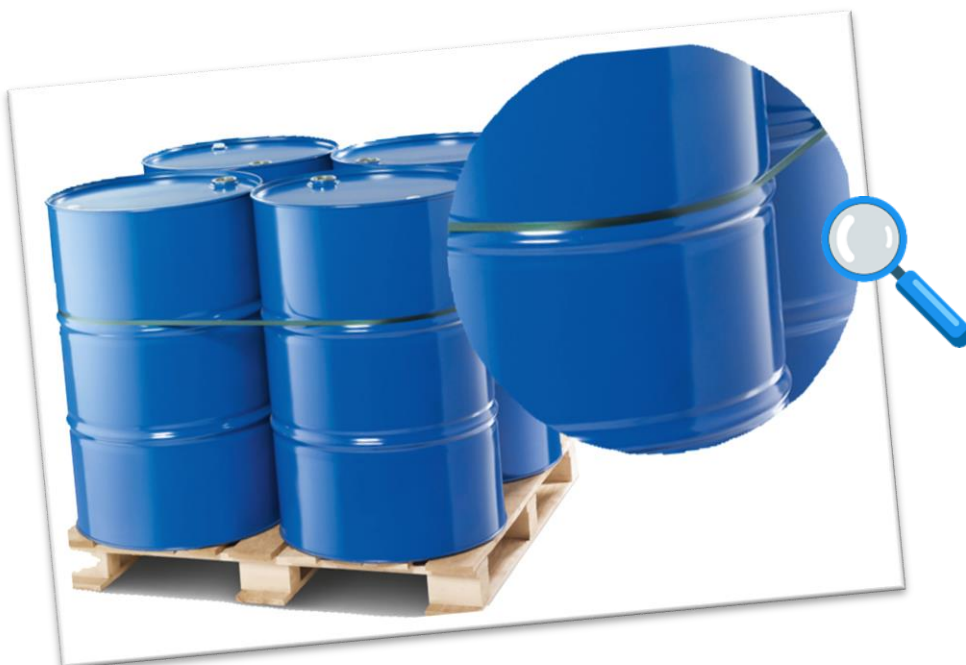
(made of plastic, e. g. PET), machine cord



Low material use – little packaging waste



This means that there is no connection to the pallet – additional measures are necessary (re-alignment of the drums before filling, form-fit loading or fixing, see p. 20/21). The drums may also rise here.



Securing with horizontal strapping

# Stretch film (wrapped)



Good connection to the pallet



Rising of the drums possible



Securing with stretch film



Small container  
palletising with stretch  
hood

## Stretch hood (pulled over, stretched or shrunk)



Good connection to the pallet, good means of preventing the drums from rising.

This is the load securing method of choice for small containers.



Stretch hood hinders further processing and must be removed (packaging waste).

## Additional instructions for the formation of a ready-to-fill (filled) loading unit

Filled drums require additional measures for securing the loading unit. This applies both to the handling of the loading unit and to shipping on all modes of transport.

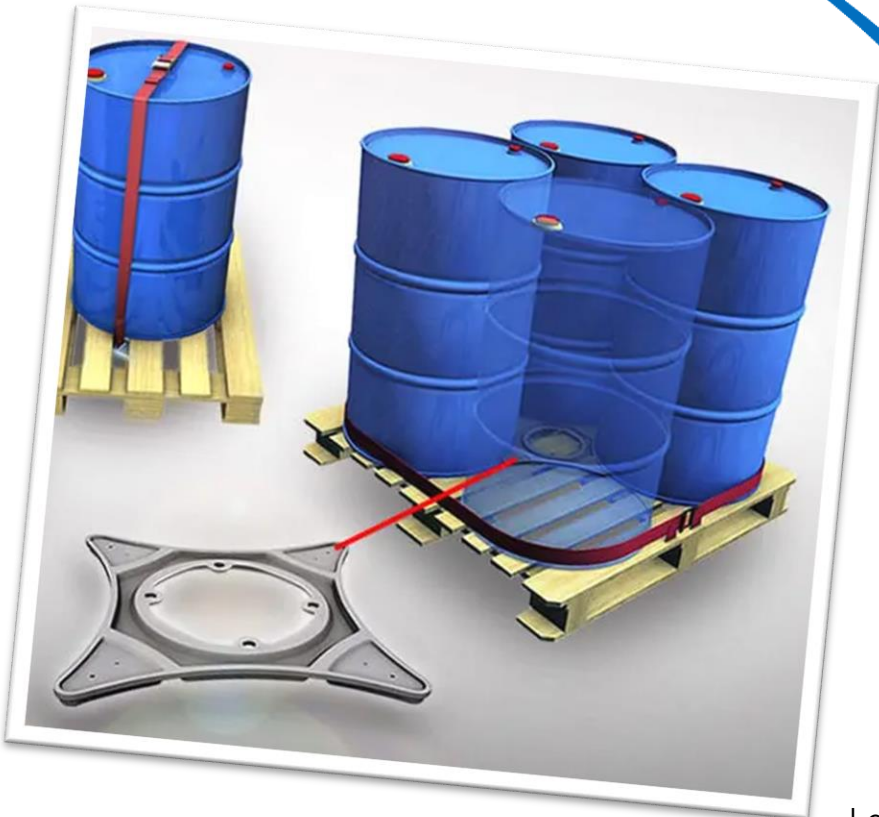
The quality of the formation of loading units must meet the resulting loads.

Some of the following systems cannot be used by the supplier of the empty drums due to the short cycle times in drums production and the time required for the securing measures. They should nevertheless be mentioned here, as they may be recommendable for the bottler and can be used there.

These measures ensure optimum fixation of the drums on the pallet and thus the formation of a tested/certified load unit ready for dispatch. The transmission of vibrations is reduced, and the rising of the drums and the resulting damage are avoided.

# “Lasistern ®”

Central fixation by means of a moulded part on the pallet plus horizontally attached lashing strap or strapping band.



Load securing with the “LaSi Star”

Delivery forms of empty steel drums

## “DrumGuard”

Central clamping plate screwed into the centre block on the top of the drum.



Fitting a “DrumGuard” safety device

## Delivery forms of empty steel drums



Tied down loading unit  
with edge protection



Tied down loading unit  
with pallet on top

## Tie-down systems (on pallet)



Vertical lashing straps guided over edge protection segments etc. are suitable for forming a secured loading unit with filled drums.

## Security aids for the mode of transport

The use of tie-down straps (for lashing down on the loading area), stowage material etc. depends on the mode of transport. Such load securing measures, which ensure a firm bond of the load in the means of transport (lorry, swap body, sea container), are not discussed in detail here, as this topic is of a very general nature and not specifically related to steel drums. Some references to further literature can be found in the following links.

## Cross-thematic information

CTU “Cargo Transport Unit” – packing guidelines

(see e. g. here: <https://unece.org/transport/intermodal-transport/imoilounece-code-practice-packing-cargo-transport-units-ctu-code>)

VCI-Leitfaden – Ladungssicherungs-Informationen-System L-I-S

(see here: <https://www.vci.de/services/leitfaeden/leitfaden-zur-ladungssicherung-von-stueckgut-ladungssicherungs-informations-system-lis.jsp>)



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