

Handling Guidelines for Flexible Intermediate Bulk Containers

1. General

Flexible intermediate bulk containers (hereinafter referred to as PP big bags) are designed for packaging, transportation, and temporary storage of bulk substances assigned to packaging group III pursuant to ADR section 3511(2) and other non-dangerous goods as well as bulk food products (potatoes, starch, flower, grain, etc.).

2. Selection of PP big bags

The following shall be considered when choosing a PP big bag:

- a) *physical and chemical properties of the substance to be contained in the PP big bag, e.g.:*
 - 1) bulk density;
 - 2) filling temperature;
 - 3) flow characteristics;
 - 4) particle size and shape;
- b) *preferred method of filling, handling, transportation, storage, and emptying of PP big bags;*
- c) *required number of trips, number of lifting cycles per each trip, and ambient conditions;*
- d) *general ambient conditions.*

3. Storage and transportation of unfilled PP big bags

Packaged unfilled PP big bags shall be transported in a manner that will prevent accidental damage, exposure to direct sunlight, rain or snow, extreme climatic conditions, contact with chemical substances that may destroy the fabric, irrespective of the transport mode.

When stored in heated premises, distance between the PP big bags and the heat source shall be at least 1 m.

4. Filling and stability of PP big bags

Prior to filling the PP big bags with the goods, make sure that they are free from any defects or damages.

PP big bags are usually lifted (using the appropriate lifting devices) during filling process in a way that the bottom of the PP big bag is supported by the ground or pallet. The bag inlet is pulled over the loading spout that first feeds the air to inflate the PP big bag. Prior to feeding the product into the bag, make sure the inner liner has completely straightened out. If the PP big bag has a discharge spout or any other discharging device, the spout shall be tied off or closed before filling. The inner PE liner shall be tightly closed to prevent moisture penetration.

Safe working load (SWL) indicated in the marking of the big bag shall not be exceeded during filling.

PP big bags shall be filled in a way that the ratio between its filling height and base dimensions is 0.5 to 2.0 longer than the shorter horizontal dimension of the big bag:

- a) *the shorter horizontal dimension is the diameter of the base for big bags with the round cross section;*
- b) *the shorter horizontal dimension is the shorter side for big bags with a rectangular base.*

Make sure that the stack of filled PP big bags is stable during storage and transportation.

Note 1: important factors of stability of PP big bags are flow characteristics of the contained substance, free volume and air content in the contained substance.

Note 2: stability may usually be improved by vibrating the big bag during or after filling to remove part of the air and thicken the contained substance.

In case of transportation or storage of the filled PP big bags at a temperature below -20°C , the containers shall be kept at a temperature of at least 10°C for at least one hour.

5. Lifting of the filled PP big bags

Each time before lifting a PP big bag, make sure to follow the following instructions:

- a) check for any damages that may compromise safety of the big bag;
- b) make sure that positions of the lifting loops or lifting devices conform to the manufacturer or supplier's instructions;

c) hooks, poles or forklift forks used for lifting shall be free from sharp edges and rust. Recommended radius of edge rounding is greater than the diameter of the hanger of the big bag with packaged loads (minimum radius – 5 mm), and/or protection by wrapping shall be provided.

d) lifting shall be performed in a vertical upward direction; the lifting device shall be attached to the centre of the loop of the big bag;

e) make sure that equipment of adequate lifting capacity is used;

f) do not tear, drag, use jerky movements during starting and stopping operations of the lifting process;

g) do not lift the big bag above the motor vehicle or other type of vehicle cabin;

h) do not allow the personnel into the area under the suspended/lifted big bag; make sure that the respective safety specifications are followed.

6. Storage and transportation of the filled PP big bags

PP big bags are not designed to store in open storage sites under exposure to direct UV radiation or sunlight, atmospheric precipitation. All PP big bags shall meet the following requirements during storage or transportation:

a) The big bags shall be fully covered with a waterproof outdoor canvas (tarpaulin or dark-coloured UV resistant outdoor canvas are recommended) to avoid water, snow accumulation on the top of PP big bags, and protect against direct sunlight and atmospheric precipitation.

b) Pyramid-shaped stacking of the big bags is recommended during storage, where the bottom row is placed on the pallets free from any protruding nails, sharp wood splinters, etc. that may damage a big bag. All subsequent rows are stacked on top evenly for maximum stability; unstacking is performed in reverse order.

c) The big bags shall not protrude above the top of the vehicle or overhang the edge of the pallet during transportation.

The stock of the filled big bags shall regularly change during storage to avoid possible damage during long-term storage.

Do not stop or start suddenly during transportation.

7. Discharging of filled PP big bags

Substance contained in the big bags is discharged from the discharge spout located on the bottom of the big bag or by making a cut in the bottom of the big bag. Discharge method is chosen by the customer and depends on the flow characteristics of the substance contained.

Prior to using the PP big bags, check them for any damaged seams, surface abrasion, cuts, tears or other damages:

a) **Abrasion:** abrasion may lead to a number of different consequences; partial loss of strength and, in extreme cases, fabric, seam wear are possible. Individual areas of abrasion may develop on the lifting loops or devices as a result of sharp edges on the fixings of the lifting loop. Significant loss of strength may occur in such areas.

b) **Cuts, punctures:** cuts, in particular, in lifting loops or devices, may lead to significant loss of strength.

c) **UV degradation and/or chemical effect:** may occur in the form of fabric softening (and discoloration in certain cases), leading to possible wear or picking and, in extreme cases, potential disintegration of the outer surface into powder.

d) **Damaged coating:** be aware of the possible adverse contamination of the contained substance with laminate particles, as well as higher risk of moisture penetration (in the case of a hygroscopic substance, in particular) caused by damages in the inner and/or outer layer.

Stop using the PP big bags immediately in case any damages that may affect the strength properties of the big bags have been detected.

8. Manufacturer's warranties

The manufacturer warrants that the PP big bags conform to the specifications under the factory standards, as long as "Handling Guidelines for Flexible Intermediate Bulk Containers" are followed. The period of warranty for the new unused PP big bags and quality-related claims is 6 months from the date of purchase, provided that the big bags have been stored in an appropriate manner, i.e. all specifications under these guidelines have been followed.

The seller is entitled to inspect the storage conditions of the big bags during the period of 6 months from the date of purchase on the site of storage of the PP big bags. Any non-compliance with the storage conditions is registered in the document that shall be signed and submitted to the both parties; in such event, any quality-related claims by the Buyer will not be considered.

Checklist of the most important points to consider prior to choosing the PP big bags is provided in Table 1.

Handling Instructions for Flexible Intermediate Bulk Containers (FIBC)

Table 1

Always	Never
Prior to selecting the appropriate PP big bag, consult the manufacturer or supplier.	Choose PP big bags without consulting the manufacturer or supplier first.
Read the instructions label located on the PP big bag.	Exceed the certified SWL (safe working load), the maximum load that may be carried by the FIBC during handling.
Inspect the PP big bags prior to repeated filling.	Fill the PP big bags unevenly.
Make sure that the discharge spout is closed off before filling the PP big bags.	Stop or accelerate suddenly during transportation of the PP big bags.
Make sure that the filled FIBC is stable.	Use jerky movements when lifting and/or moving the PP big bags.
Close the top inlet properly.	Drag the PP big bags.
Use lifting gear of sufficient capacity to lift the suspended load.	Allow personnel under suspended PP big bags.
Adjust proper distance between the forklift forks prior to lifting a PP big bag.	Allow a PP big bag overhang the vehicle or pallet edges.
Tilt the forklift mast backward at an appropriate angle.	Tilt the forklift mast forward.
Make sure that the crane hooks, poles or forklift forks used for lifting are of appropriate dimensions and rounded at least to the thickness of suspension slings, belts or ropes. The minimum radius of the rounding – 5 mm.	Withdraw the forklift forks prior to relieving the entire load on the lifting devices.
Take appropriate measures regarding dust control.	Stack PP big bags unless sure of their stability.
Consider the possible risk of static electricity charge.	Use PP big bags under new conditions without consulting the manufacturer or supplier first.
Protect the PP big bags from rain and exposure to sunlight.	Use single-trip PP big bags repeatedly.
Make sure that the transported PP big bags are adequately secured.	Attempt to repair very solid PP big bags, unless the repaired big bags conform to the specifications of new PP big bags.

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